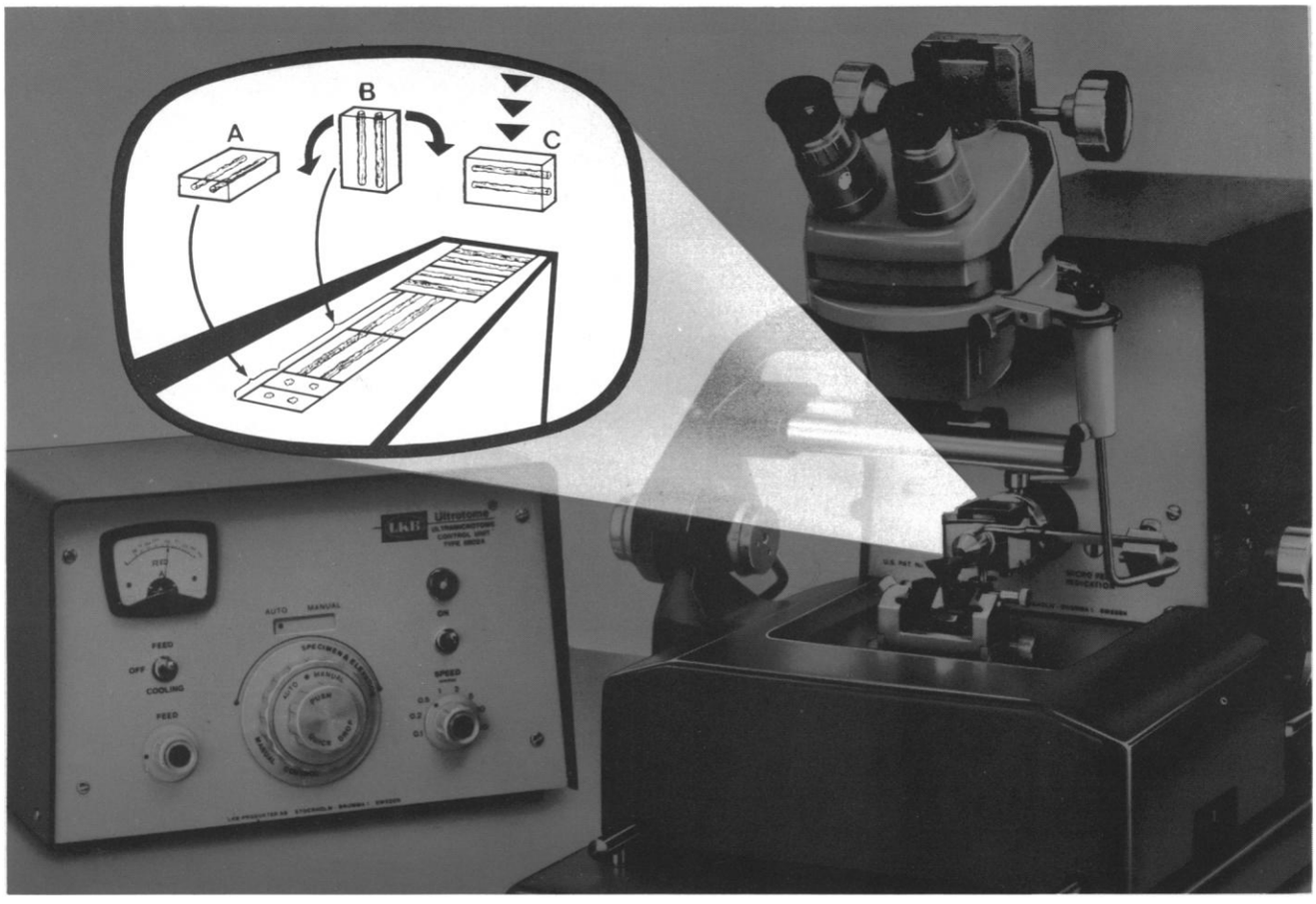
SCIENCE

26 July 1968

Vol. 161, No. 3839

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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LKB ULTROTOME III SOLVES PROBLEM OF ORIENTATION.

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COVER

Postlarval glaucothoes of the coconut crab *Birgus latro* (L.) enter small empty gastropod shells and emigrate from the sea to the land. Although adult coconut crabs do not live in shells, the glaucothoes and juvenile crabs show patterns of behavior toward shells which are characteristic of their hermit crab ancestors (actual size, 3 to 4 millimeters). See page 385. [Karl J. Frogner and Ernst S. Reese, Department of Zoology and the Hawaii Institute of Marine Biology, University of Hawaii, Honolulu]

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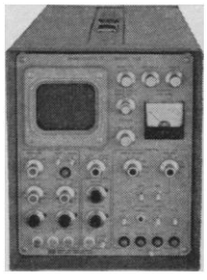

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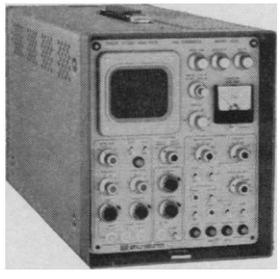
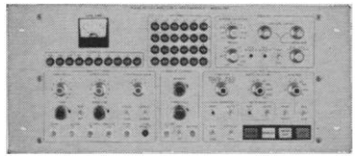


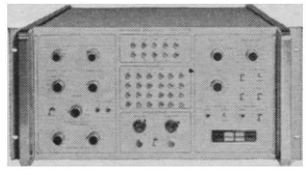
Model 401D — Pulse Height Analyzer

Provides portability . . . 400-channel memory . . . simultaneous single-channel/multi-channel operation . . . internal multi-scaling . . . scale expansion . . . live or static display (linear or log) or internal CRT . . . visual single channel window.



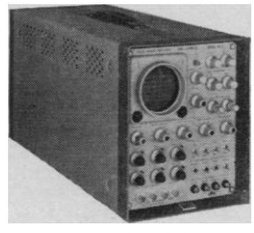
MODEL 1001 PHA

Features a 12.5 megacycle ADC and a 15 Microsecond memory cycle time . . . operating modes are provided for multiscaling, analog sampling, and single channel or multi-channel pulse height analysis. The 1001 is directly compatible with every standard type of analog or digital readout device.



MODEL 1017B/461 PULSE HEIGHT ANALYZER

Features a 1024 10^4 memory with selective storage allowing any 512 channel sub group of the ADC 4096 full scale range to be stored in either half of the memory. The 461 offers 50MHZ clock digital baseline offset and other "pacesetter" features.



MODEL 404C PHA

This unit accepts up to four simultaneous inputs . . . four internal low level amplifiers and a built-in mixer circuit permit direct connection to detector preamplifiers . . . data derived from each input is stored in a separate quarter of the memory . . . display provisions with independent vertical displacement controls, simplify comparison of data stored in separate quarters or halves of the memory.

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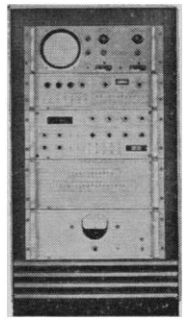
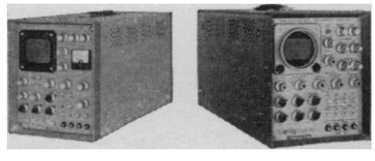


PACESETTER 4096

Channel analyzer for hi-speed, hi-resolution pulse height analysis, features include 50MHZ, 8192 Channel range ADC, digital baseline control, multi-scaling dwell time 10_{μ} sec. to 90,000 sec., single sweep, up-up or up-down scaling, selective readout, dynascan display and switch selectable binary or BCD 1/0 simplifying G.P. computer interfacing.



MODELS 1010 — 1004

These 1024 channel "blue boxes", have 12.5MHZ 2048 max range ADC's, 15 μ sec., 10^4 BCD memory . . . automatic programming and data transfer . . . 1010D has built-in single channel analyzer and live time meter . . . 1004 has 4 inputs and display overlap.

DECIMAL READOUT

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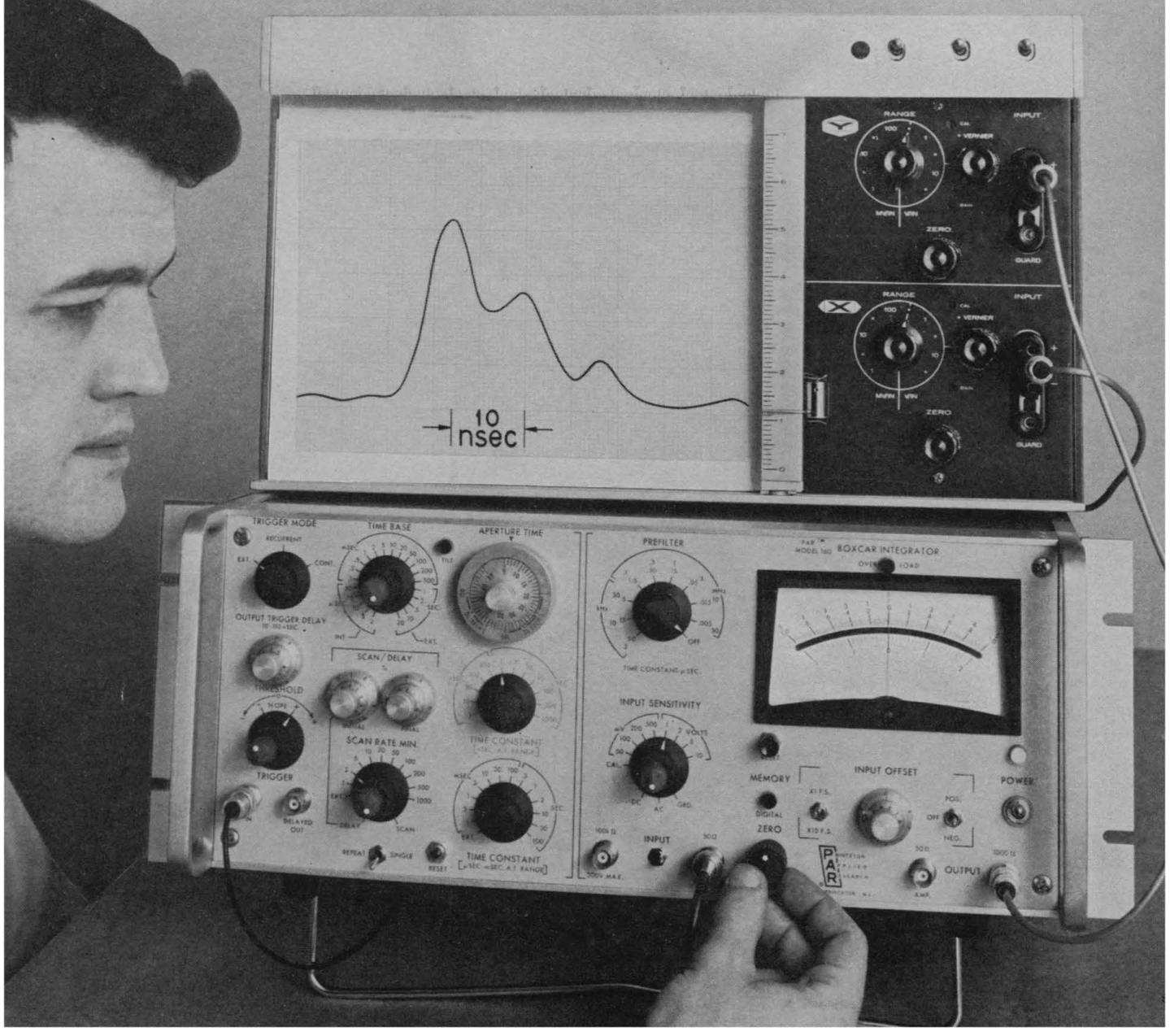

agreed national IBP plans is not retarded through lack of funds. But there are now 55 countries which formally participate in this program, and a number of others which make contributions thereto. Although the national programs of most are relatively modest compared with that of the U.S., many of their projects have already been in operation for several years, and results are beginning to come forward. A comprehensive index of national projects, which will be published shortly, includes more than 1500 entries classified under the seven main section headings and some 50 themes of the agreed international program.

Take the theme, for example, of the grassland ecosystems of the world: the largest study yet proposed and already underway is the Matador Project in Canada, and there are 40 other grassland projects of some 20 other countries. One of the biggest, in Colorado, will now go forward with a grant of $350,000 from the National Science Foundation. The U.S. is also a major contributor to a coordinated program on the study of human adaptability to living in the Arctic zone. It would be highly regrettable if U.S. scientists had to defer scheduled studies of certain Eskimo populations, but this would not stop other countries which contribute to this particular theme, namely Canada, Denmark, Finland, France, and Sweden, from continuing their parallel investigations on Eskimos, Scolt Lapps, and other Arctic peoples.

The U.S. plans for new biological research under IBP have been carefully developed by many leading scientists, under the guidance of Roger Revelle and Frank Blair as successive chairmen of the national IBP committee. To withdraw or defer these plans will obviously retard, but will not necessarily prevent, the achievement of IBP in reaching its goals. I am sure that all other participating countries, as well as IBP international, trust that ways will be found through the present financial impasse.

E. B. WORTHINGTON

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Mathematics: Catalyst to Science

The National Study of Mathematics Requirements for Scientists and Engineers survey reported by G. H. Miller (17 May, p. 742) provides some interesting facts, but omits many others. . . . My major disagreements with the study are:

1) It has assumed that science in the future will consist simply of more people doing the same things being done today. The scientists responding to the survey were reporting on methods they have found to be useful for the problems they have solved. Scientists in the future will be working on problems which are not yet solved; problems for which present methods have not worked. We wish education to prepare scientists to walk new paths, not to retrace the old ones. The history of the partnership of science and mathematics has one lesson: that mathematics has contributed to science with a success fantastically beyond what could be reasonably expected. No one understands why. But certainly, by this time, scientists should expect that great contributions will be made by parts of mathematics which appear, at first glance, to be irrelevant. These contributions, however, can only come about if there are scientists who know and appreciate the mathematics.

2) The questions about use of course content are off the point. The important aspects of mathematics courses are the habits of thought, the ways of approaching problems, the attitudes. For example, although I now work with problems of systems analysis and electromagnetic phenomena, my Ph.D. research and 2 years of teaching experience were in pure abstract algebra. The thought patterns I developed in abstract algebra allow me many insights and a freshness of approach not available to my colleagues. Thus, I "use my algebra" every day, even though I rarely use any of the "content" of abstract algebra.

Most of the theoretical work in organic chemistry and zoology, which were mentioned by Miller as having "less need for advanced mathematics," is in fact almost identical in spirit and technique with much of modern algebra and combinatorial topology. I am dismayed that the scientists in these fields don't seem to know that.

3) For this survey to be meaningful, it needs to be compared with surveys of other groups of scientists, notably (i) scientists who have been successful in the managerial, political, and educational areas of science, rather than being successful researchers in their own right; and (ii) scientists who have not been very productive. The last group would include, for example,

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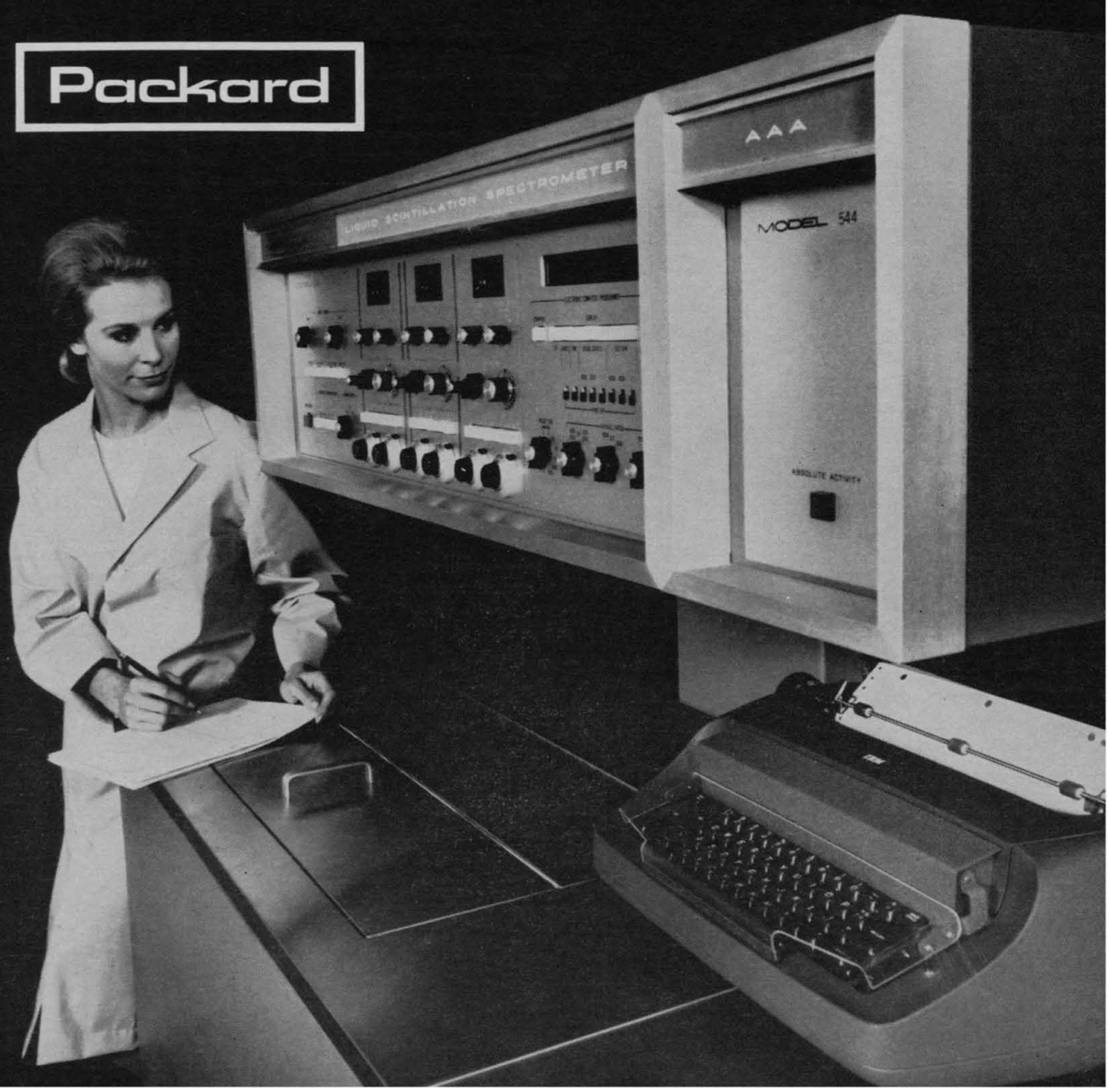

most of the science faculty at most of our colleges and universities; people who put in 5 or 6 years of sweat and tears to produce one mediocre paper. In fact, if NSMRSE could survey only one group, I would select this one. These scientists are acutely aware of the deficiencies in their own education. Their opinions would be far more valuable than those of very productive scientists, who would probably have been just as successful if their education had been in classical Greek or comparative theology.

DONALD R. WEIDMAN
U.S. Naval Weapons Laboratory, Dahlgren, Virginia 22448

Fulsome?

Greenberg (17 May, p. 744) describes the praise by the Institute for Defense Analyses of its academic underpinnings as being fulsome, but the quotations from IDA's 1965 report are anything but fulsome in praise of its academic foundation. One can agree with Greenberg that a university can perform a public service by preventing itself from blowing up [*sic*]. It is no less true that IDA is performing a public service, toward which academic talent has made a contribution, according to the 1965 IDA report. If Greenberg is interested in public service and the national welfare, perhaps he should attack the Students for a Democratic Society for impairing IDA's academic relationships, rather than to attack the extension of the academic world into IDA.

I agree that antimilitary sentiments exist in the academic world, but military force also exists in the world and one should not be surprised when military force overruns and subjugates a society that permits itself to become vulnerable. Those with antimilitary sentiments frequently display a fulsome lack of discrimination between military force employed for aggressive purposes and military force employed for defensive purposes.

FRANCIS J. KENDRICK
National Institute of Child Health and Human Development, National Institutes of Health, Bethesda, Maryland 20014

Please clarify the intended meaning of "fulsomely" in the sentence "Throughout its history it [IDA] has fulsomely praised its academic under-

pinnings as vital to its successful operation" (p. 748). My dictionary defines *fulsome* "(1) Offensive to good taste, esp. as being excessive; gross; (2) disgusting; sickening; repulsive." In the context of the article a more savory adverb such as "generously" or even "lavishly" might be appropriate, but in view of the IDA controversy I'm not at all sure which meaning was intended.

STEPHEN KIDD
Research and Project Administration, Princeton University, Princeton New Jersey 08540

State Science Projects

Sapolsky's analysis ("Science advice for state and local government," 19 Apr., p. 280) shows that the primary consideration of state science advisory units has been the procurement of financial aid for scientific research, a relationship similar to that of the National Science Foundation with the federal government. The question is whether state governments should follow the federal pattern, or initiate different methods more adaptable to the needs of individual states.

The limited resources of many states discourage large investments for research which cannot be undertaken without heavy financial support. Hence research support should not constitute the primary objective of a state science body. Its function should be twofold: formulation of broad principles of state science policy, and initiation and planning of scientific programs and projects. It becomes imperative then to conduct (i) inquiries concerning the present status of science and technology in the state, its effect upon the state economy, industrial capabilities, and natural resources available in the state in a specific field, and (ii) studies of workable projects which could be beneficial to the state.

Such a program would require a permanent science advisory committee with an administrator and staff. It would be responsible for screening proposals and the administrator would have to interpret the scientific plans to state legislators in layman's language in the course of securing the necessary legislative approval—not a simple task.

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333 Second Street, NE, Washington, D.C. 20002

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Changing Attitudes Toward Smoking

The attitudes of the people of the United States toward cigarette smoking are undergoing a major change. In the 30-year period prior to 1964, per capita consumption of cigarettes tripled. During the last 4 years, per capita consumption of cigarettes has leveled off, and currently it may be dropping. The 1964 Surgeon General's Advisory Committee report entitled "Smoking and Health" was a major milestone. The report set in motion developments that ultimately will have a profound effect. One consequence was the stimulation of research bearing upon the effects of smoking. A recent compendium lists 364 projects in 36 states, the District of Columbia, and 25 foreign countries.

Out of this research activity has come substantial evidence that the effects of smoking are even more serious than was stated in the 1964 report. Highlights of the findings have been presented in a new U.S. Public Health Service document.* The most striking finding is that "the life expectancy for a two-pack a day, or more, smoker at age 25 is 8.3 years less than [that for] the corresponding non-smoker."

The 1964 report probably has influenced the smoking habits of physicians. At one time many of them were heavy smokers. A recent survey† indicates that 100,000 physicians have stopped smoking cigarettes. Of all the physicians surveyed, 35 percent had never smoked, 36 percent had smoked at one time but had stopped, and only 29 percent were still smoking. In contrast, 52 percent of the general adult male population currently smoke cigarettes.

The survey also indicates that physicians are deeply concerned over the effects of smoking. More than 90 percent stated that they associate smoking with chronic bronchitis, lung cancer, and emphysema, and almost as many associate it with peripheral vascular disease and coronary artery disease. The responses of physicians who have stopped smoking are revealing. When asked on the survey questionnaire why they stopped, 60 percent checked "Protect my future health," 47 percent checked "Occurrence of certain symptoms," and 43 percent checked "Scientific reports convinced me."

Directly and indirectly, the 1964 report has affected the attitudes of teenagers. Another survey‡ indicates that 91 percent of this group believe that smoking is harmful to health, while only 4 percent believe it is not. Only 2.6 percent of the entire sample said they definitely expect to become cigarette smokers 5 years from now, while 45.1 percent said they do not expect to be smokers. Another 12.3 percent said they probably will be smokers, while 34.2 percent said they probably will not be. Other studies have shown that young people in junior and senior high school are likely to predict accurately what they eventually will do. Thus the new survey indicates an important new pattern of behavior.

Another consequence of the 1964 report was the enactment of a Federal Labeling and Advertising Act. This act required, among other things, that each package of cigarettes distributed in the United States bear a warning label. The Federal Trade Commission now recommends that legislation be enacted to make the warning much stronger. The FTC also has called for legislation banning cigarette advertising on radio and television. It seems unlikely that this will be enacted soon. The tobacco industry has many friends, and it spends more than $300 million annually on advertising. In contrast, those seeking to publicize harmful effects of smoking have only limited access to radio and TV. Nevertheless, the weight of the facts is against cigarettes, and in the end the facts will prevail.—PHILIP H. ABELSON

* "The Health Consequences of Smoking: 1968 Supplement to the 1967 Public Health Service Review," *U.S. Public Health Service Publication* (1968). † Dorothy E. Green and Daniel Horn, "Physicians' Attitude toward Their Involvement in Smoking Problems of Patients," paper presented at the National Forum on Office Management of Smoking Problems, Chicago, April 1968. ‡ Daniel Horn, "Current Smoking among Teenagers," paper presented at the American Cancer Society's Science Writers' Seminar, San Diego, Calif., March 1968.

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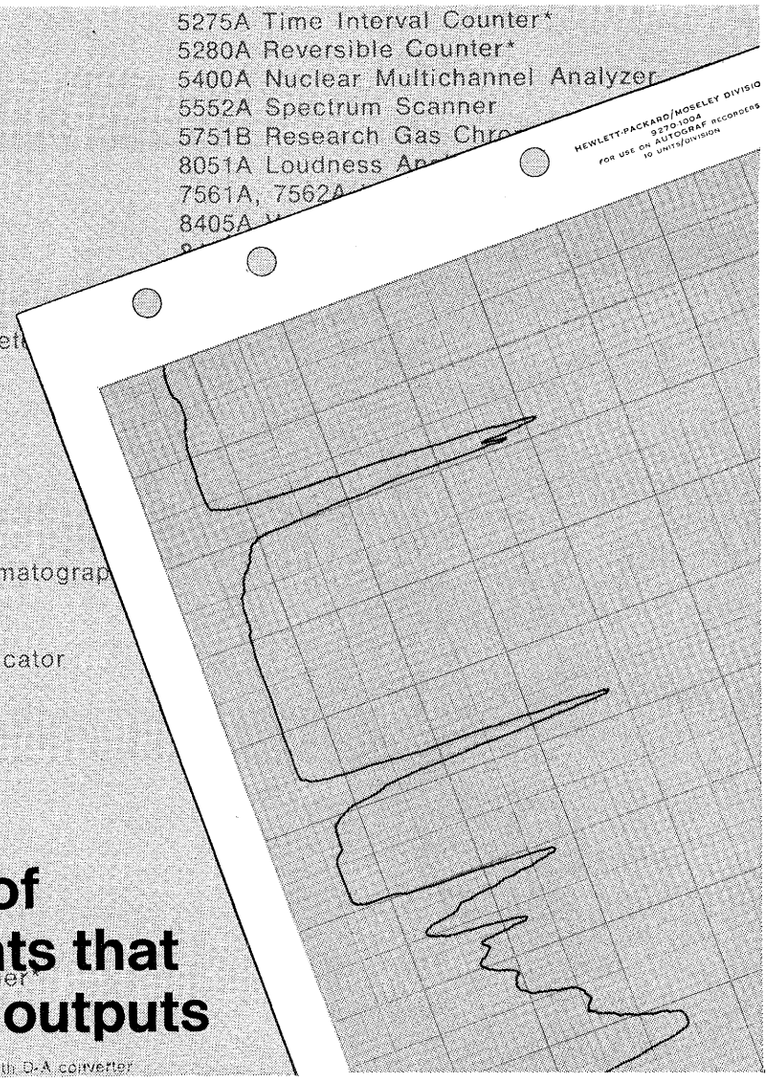

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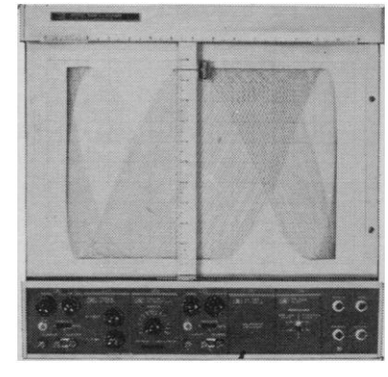

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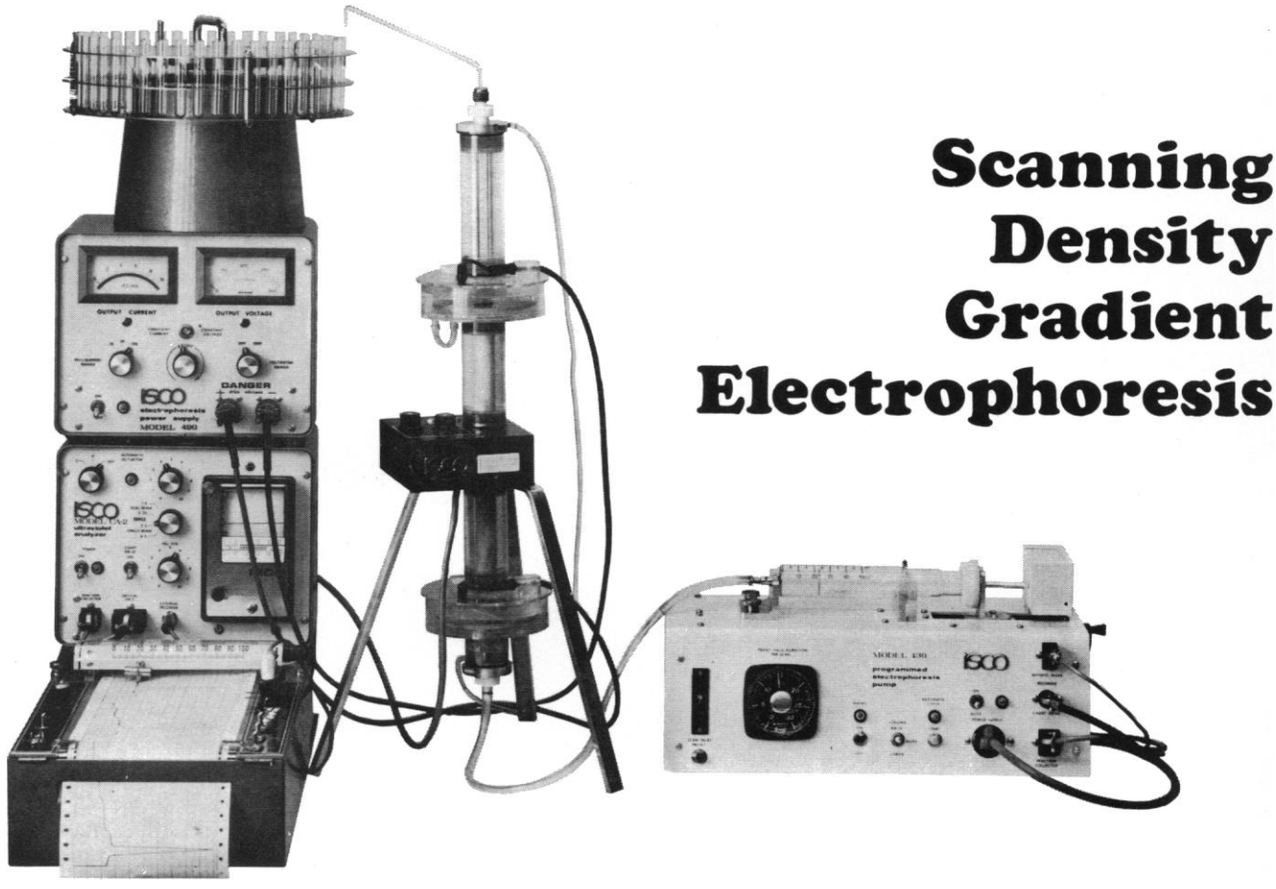

Top: Model 270 Fraction Collector
Center: Electrophoresis Power Supply
Bottom: Model UA-2 UV Monitor

Model 210 Density Gradient Electrophoresis Apparatus

Model 430 Programmed Electrophoresis Pump

Accurate analysis and fractionation of mixtures has been possible for some time with conventional density gradient electrophoresis equipment. Now easy determination of electrophoretic mobilities as well as physical separation of mixtures and quantitative microanalytical results can be obtained with the new ISCO Model 210 Density Gradient Electrophoresis apparatus. Microgram size samples can readily be separated. Low sample concentration permits the use of dilute buffers, resulting in a wide operational temperature range of from 0 to 25° C.

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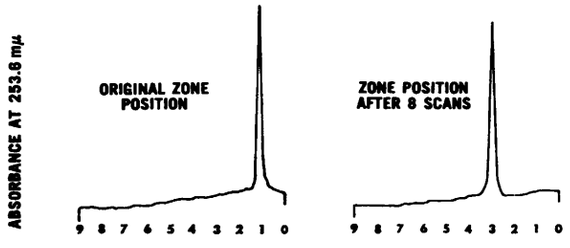

FIG. 1 ZONE POSITION OF 10 μg TMV IN GRADIENT COLUMN, CENTIMETERS.

Semipermeable membranes between the buffer and electrode chambers and the gradient column eliminate the difficulties normally associated with loading density gradient electrophoresis equipment. There is no need to maintain hydrostatic equilibrium: the gradient may be pipetted directly into the column. The separating membranes also prevent pH changes at the electrodes from reaching the gradient column.

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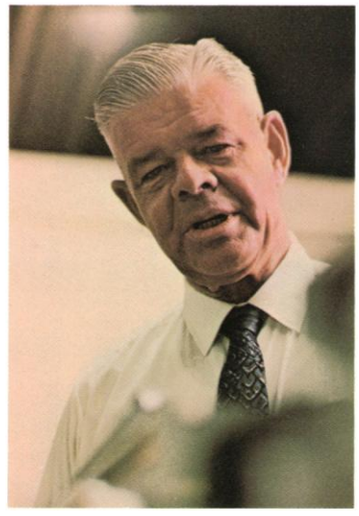


Howard Cary—
President of Cary Instruments,
a Varian subsidiary.

We have two of the best recording spectrophotometers in the business. We also have a slight problem because some people still don't know which instrument does what better. So I thought this may be the appropriate time to clear up the confusion once and for all.

THE MAIN DIFFERENCE

For work in the ultraviolet through visible and near infrared wavelength range, the Cary 14 has no peer. For studies in the ultraviolet and visible only, the Cary 15 cannot be equalled. It's that simple.

There are other differences, of course. For instance, the 14 is more versatile than the narrower-ranged (1850-8000Å) 15. But because it was designed to perform specific tasks, the 15 is easier to operate. Then there's price. The Cary 14 sells for about $18,000, while the Cary 15 costs a little over $12,000. The additional $6,000 becomes a worthwhile investment when you consider the variety and quality of the studies routinely available with this instrument whose range extends from 1860Å to 2.65 microns. Studies like hydrogen bonding investigations in the near infrared. Or quantitative protein analyses in the ultraviolet.

CONSERVATIVE DESIGN: WHAT & WHY

One similarity between the two instruments is the fact that both are conservatively designed. By conservative design we mean (1) that at no point in the instrument system are the electrical or mechanical components operated near their tolerance limits, and (2) that performance specifications are greater than required under normal sample conditions. This design philosophy produces acceptable performance even under the most rigorous sampling conditions. Just as important, it insures longer instrument life and complete confidence in

outperform the Cary 14 is the Cary 15. And, vice-versa.

the quality of the recorded information.

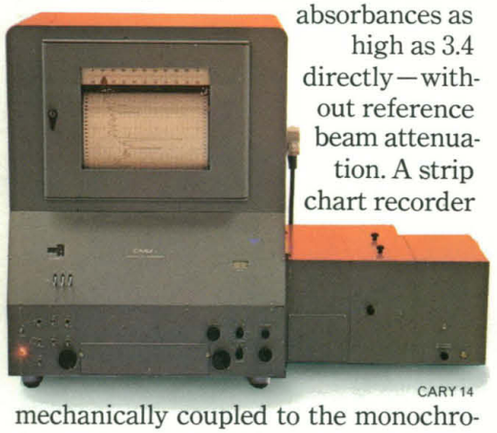
PHOTOMETRIC ACCURACY

While the electronics of the Cary 14 and 15 differ, the photometric accuracy of each is competitively unsurpassed.

The Cary 14 uses a prism-grating double monochromator, plus a dual beam sampling system and a single detector. Reference and sample beams are separated by time then compared and the ratio recorded on a chart which is effectively 20 inches wide. Measurements are accurate within 0.002 abs between zero and 1 abs; 0.005 near 2 abs. At high absorbance levels of 4, or even 5, valid measurements can be obtained using reference beam attenuation.

The Cary 15 employs a two-prism double monochromator and two detectors. Sample and reference beams are separated in space and measured simultaneously by the matched detectors.

From zero to 1 abs the accuracy is between 0.002 and 0.005 abs; at 2 it's 0.008. Because of the dual detector photometric system, the 15 measures at absorbances as high as 3.4 directly—without reference beam attenuation. A strip chart recorder



CARY 14

mechanically coupled to the monochromator records the information.

STRAY LIGHT

The double monochromator and optical design of the 14 and 15 hold stray light to a negligible amount—less than 0.0001% (14) and 0.001% (15) over most of the range; 0.1% at range limits for both instruments.

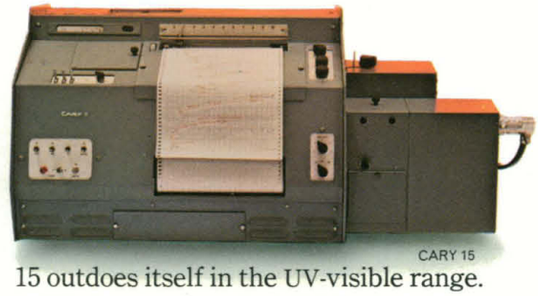
Because of this low stray light, both the 14 and 15 can work at high absorbances without sacrificing photometric accuracy—an extremely useful asset in most spectrophotometric work.

RESOLUTION

Another notable contribution of the double monochromator is the ability to achieve resolution as good as or better than any other recording spectrophotometer (at the same signal-to-noise ratio) in one-half to one-fourth the scanning time.

Some people, no doubt, may feel that they'll never need the high resolution offered by the Cary 14 and 15. What they fail to realize is that much of the "unneeded" resolving power can be exchanged for additional energy (resulting in better accuracy) when working with very dense or micro samples.

There's a lot more to tell about the Cary 14 and 15. Like the wide variety of accessories available for each. Or the fact that we've made instrument drift just about obsolete. For now, just remember that the 14 is unexcelled in the UV-visible-to-near infrared, while the



CARY 15

15 outdoes itself in the UV-visible range.

We have a catalog which describes the spectrophotometers. If you'd like a copy, write Cary Instruments, 2724 So. Peck Road, Monrovia, California 91016. Ask for data file E805-78.

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Circle No. 10 On Readers' Service Card

Filter plus clear, durable polycarbonate frame. As simple as that. The Econo-Filter System comes with a choice of two filters. A disposable filter insert which can be used for an experiment and thrown away. Or a reusable autoclavable nonwoven filter cover that's good for extended use in a number of experiments.

Because the Econo-Filter System is so remarkably simple in design, so completely practical, it's low in cost as well as effective. As effective as any general filtration system can be. It protects laboratory animals from airborne contaminants such as viruses, insects and dust and helps prevent infantile diarrhea. It also provides protection against sudden temperature changes and drafts.

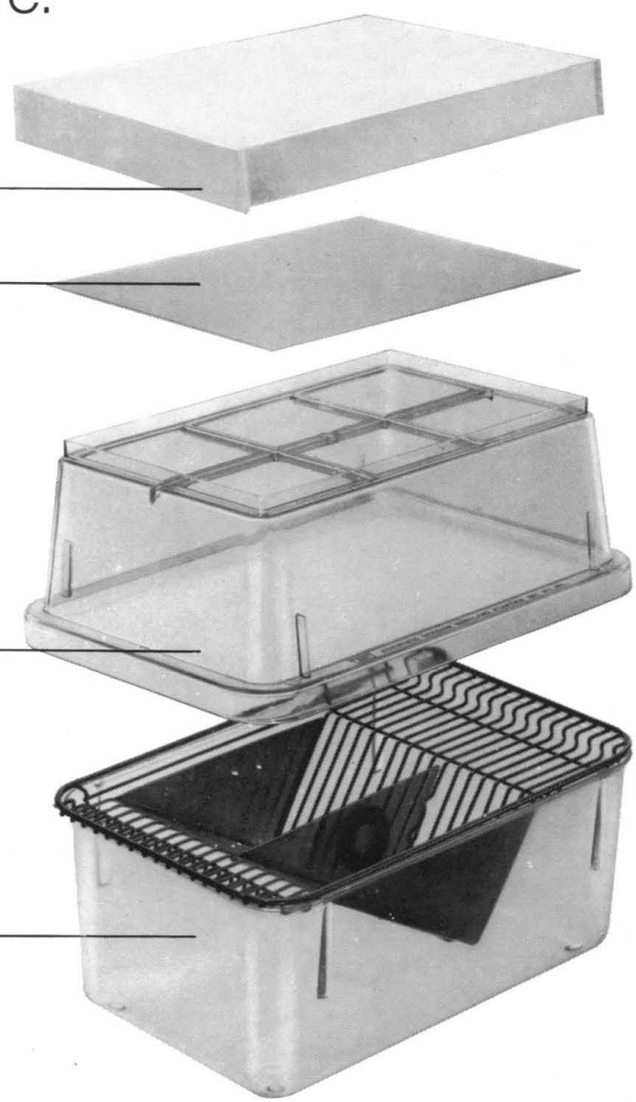
The Econo-Filter System fits all standard plastic mouse cages without special adaptors. With ample room for a full-size water bottle. And full visibility on all four sides.

Your Econo-Cage distributor has the details and prices. He can also tell you about the full Econo-Cage line—permanent and disposable cages, lids, restraining cages and metabolic units. In the widest choice of sizes and materials. From the leading manufacturer of plastic cages. Request our catalog. From your Econo-Cage distributor or from us.

SCIENTIFIC DIVISION
MP MARYLAND PLASTICS, INC.
9 East 37th Street, New York, New York 10016

No filter system is more effective than this one.

Or less expensive.



The Filter.
The reusable E-132 Econo-Filter —durable, autoclavable. For extended use in a number of experiments.

Or the disposable E-02 Econo-Filter. Use it for an experiment and throw it away.

The Frame. (Patent pending)

E-20 Econo-Filter Frame—polycarbonate. Clear, durable, autoclavable, virtually indestructible. Excellent optical clarity. Visibility of animals on all four sides. Fits any standard plastic mouse cage.

The Cage.
Maryland Plastic's E-20 Series of permanent or disposable Econo-Cages.

ECONO-CAGE DISTRIBUTORS:

☐ ALOE SCIENTIFIC ☐ W. H. CURTIN & CO. ☐ FISHER SCIENTIFIC ☐ JOSEPH FRANKLE CO.
☐ E. H. SARGENT & CO. ☐ SCIENTIFIC PRODUCTS ☐ ARTHUR H. THOMAS CO. ☐ WILL SCIENTIFIC, INC.

EC-FS-3

Circle No. 1 on Readers' Service Card

29–2. American Soc. of **Photogrammetry**, San Antonio, Tex. (E. C. Palmer, 105 North Virginia Ave., Falls Church, Va. 22046)

29–3. Association of **Medical Illustrators**, Chicago, Ill. (C. S. Holt, 738 Keystone Ave., River Forest, Ill. 60305)

30. Society for **Pediatric Radiology**, New Orleans, La. (J. L. Gwinn, Children's Hospital, 4614 Sunset Blvd., Los Angeles, Calif. 93027)

30–3. American **Psychiatric** Assoc., 20th, Washington, D. C. (Public Information Officer, 1700 18th St. NW, Washington, D. C. 20009)

30–3. American **Roentgen Ray** Soc., Washington, D. C. (T. F. Leigh, Emory Univ. Clinic, Atlanta, Ga. 30322)

International and Foreign Meetings

August

21–28. British Assoc. for the Advancement of **Science**, 130th annual, Dundee, U.K. (N. C. Wright, 3 Sanctuary Bldgs. 20 Great Smith St., London, S.W.1, England)

24–29. **Gerontology**, 8th Intern. Congr., Washington, D.C. (Secretary, 9650 Rockville Pike, Bethesda, Md. 20014)

24–29. **Neuropathology**, 6th intern. congr., Copenhagen, Denmark. (E. Christensen, % Universitets Psykiatriske Lab., Rigshospitalet, Copenhagen)

24–31. **Cell Biology**, 12th intern. congr., Brussels, Belgium. (D. Dustin, 97, rue Aux Laines, Brussels)

25–30. International Union of **Pure and Applied** Chemistry, 6th, Schenectady, N.Y. (P. Cannon, General Electric Co., R & D Center, Bldg. K-1, Room 3A36, P.O. Box 8, Schenectady 12301)

25–31. **History of Science**, 12th intern. congr., Paris, France. (Mlle. S. Delorme, 12, rue Colbert, Paris)

25–31. International Union of **Physiological Sciences**, 24th, Washington, D.C. (Secretary, 9650 Rockville Pike, Bethesda, Md. 20014)

25–31. **Physical Medicine**, 5th intern. congr., Montreal, Canada. (B. Talbot, 6300 Darlington Ave., Montreal, P.Q.)

26–29. Western Hemisphere **Nutrition** Congr., San Juan, P. R. (American Medical Assoc. Council on Foods and Nutrition, 535 N. Dearborn St., Chicago, Ill. 60610)

26–30. International **Health** Conf., Copenhagen, Denmark. (P. A. Wells, Royal Soc. of Health, 90 Buckingham Palace Rd., London, S.W.1, England)

26–31. International Conf. on **Cloud Physics**, Toronto, Ont., Canada. (R. List, Dept. of Physics, Univ. of Toronto, Toronto 5)

26–31. **Photobiology**, 5th intern. congr., Hanover, N.H. (S. A. Gordon, Room 202, Argonne National Lab., Argonne, Ill. 60439)

26–31. International Assoc. of **Meteorology and Atmospheric Physics**, Toronto, Ont., Canada. (R. List, Dept. of Physics, Univ. of Toronto, Toronto 5)

26–13. Australian School of **Nuclear Technology**, Lucas Heights, New South Wales. (Principal, Australian School of Nuclear Technology, Private Mail Bag, Sutherland, N.S.W.)

28–5. World **Natural Rubber** Conf., Kuala Lumpur, Malaysia (Natural Rubber Bureau, 1108 16th St., NW, Washington, D.C.)

29–31. Society of **Neurologists and Psychiatrists** of South Africa, Johannesburg. (N. Don, Pan Africa House, Jeppe St., Johannesburg)

31–2. South African **Radiological** Conf., 1st, Johannesburg. (P. Sneider, P. O. Box 4878, Johannesburg)

31–7. International Assoc. of **Logopedics and Phoniatrics**, 15th congr., Paris, France. (B. Vallancien, 16, rue Spontini, Paris 16)

September

1–6. Asian-Pacific Congr. of **Cardiology**, 4th, Jerusalem and Tel Aviv, Israel. (L. Sherf, Tel Hashomer Government Hospital, Ward 22, Tel Hashomer, Israel)

1–6. International Soc. of **Hematology**, 12th, New York. (P. Reznikoff, 449 E. 68 St., New York 10021)

1–7. Italian Soc. of **Electron Microscopy**, Rome. (D. S. Bocciarelli, Conference Secretary, c/o Instituto Speriere di Sanita, Viale Regina Elens 299, Rome)

1–7. European Regional Conf. on **Electron Microscopy**, 4th, Rome, Italy. (D. S. Bocciarelli, Inst. Superiore di Sanita, Viale Regina Elena 299, Rome)

1–7. **Embryology**, 6th intern. congr. Paris, France. (Secretariat, Faculté des Sciences, Bat C, 9, Quai Saint-Bernard, Paris 5)

1–8. Balkan **Medical** Union, 9th, Istanbul. (A. M. Popescu Buzen, 10 rue Pregresului, Bucharest, Rumania)

2–5. International Conf. on **Laboratory Astrophysics**, Lunteren, Netherlands. (J. Rosenberg, Sterrewacht Sonneborgh der Rijksuniversiteit, Zonnenburg 2, Utrecht, Netherlands)

2–5. National Conf. of **Pure and Applied Physical Chemistry**, Bucharest, Rumania. (V. E. Sahini, Conferinta de Chimie Fizica, str Dumbrava Rosie 23, Bucharest 9)

2–6. International **Ophthalmologic** Symp., Johannesburg, South Africa. (Secretary, Dept. of Ophthalmology, Medical School, Univ. of Witwatersrand, Hospital St., Johannesburg)

2–6. Asian Cong. of **Pharmaceutical Sciences**, 2nd, Seoul, Korea. (K. Haw, B1 18–2 Dwan-Chul-Dong Chong-Bo-Ky, Seoul)

2–6. International **Fermentation** Symp., 3rd, New Brunswick, N. J. (G. M. Shull, Squibb Inst. for Medical Research, 5 Georges Rd., New Brunswick, N.J. 08903)

2–7. International Conf. on **Coordination Chemistry**, 11th, Haifa and Jerusalem, Israel. (M. Cais, Technion, Haifa)

2–7. International Union of **Pure and Applied Chemistry**, Toronto, Ont., Canada. (Organizing Committee, Box 932, Terminal A, Toronto)

2–8. World Commission on **Cerebral Palsy**, Hong Kong. (B. S. Miller, United Cerebral Palsy, 321 W. 44 St., New York 10036)

3–5. **Drugs Affecting Lipid Metabolism**, 3rd intern. symp., Milan, Italy. (H. J. Prian, Inst. of Pharmacology, Via Vanvitelli, 32, 20129 Milan)

3–6. **Archives**, intern. congr., 6th, Madrid, Spain. (L. S. Belda, Direction

Generale des Archives et des Bibliotheques Despagne, Eduardo Dato 31-33, Madrid 10)

3–6. International Symp. on **Macromolecular Chemistry**, Toronto, Ont., Canada. (Intern. Symp. on Macromolecular Chemistry, Box 932, Terminal A, Toronto)

3–6. European **Malacological** Congr., 3rd, Vienna, Austria. (Organizing Committee, Naturhistorisches Museum, Burgring 7, A-1014 Vienna)

3–10. International Union of **Anthropological and Ethnological Science**, 8th, Tokyo and Kyoto, Japan. (Organizing Committee, Science Council of Japan, Ueno Park, Tokyo)

3–12. International Congr. of **Surveyors**, 12th, London, England. (R. Steel, Intern. Federation of Surveyors, c/o Basingstoke Development Group, Erdesley, Cliddesden Rd., Basingstoke, Hampshire, England)

3–14. International **Electrotechnical** Commission, 33rd, London, England. (L. Rupper, 1 rue de Varembe, Geneva, Switzerland)

4–6. International Conf. on **Electrophotography**, Rochester, N.Y. (W. L. Hyde, Inst. of Optics, Univ. of Rochester, Rochester, N.Y.)

5–11. International Acad. of **Pathology**, 7th, Milan, Italy. (A Giordano, Inst. of Pathology and Anatomy, Univ. of Milan, Via Francisco Sforza 38, Milan)

7–15. **Tropical Medicine and Malaria**, 8th intern. congr., Teheran, Iran. (C. Mofidi, P.O. Box 1310, Teheran)

8–14. European Soc. of **Cardiology**, 5th, Athens, Greece. (A. Samaras, 24 Ravine St., Athens 140)

9–11. Ciba Foundation Symp. on **Bacterial Plasmids and Episomes**, London, England. (Ciba Foundation, Portland Pl., London W.1)

9–11. European Symp. on **Chemical Reaction Engineering**, 4th, Brussels, Belgium. (R. Jottrand, 50, avenue F. D. Roosevelt, Brussels 5, Belgium, or R. L. Gorring, Mobil Oil Corp., Research Dept., Paulsboro, N.J. 08066)

9–12. South African **Urological** Assoc., Kruger Natl. Park. (E. Abro, 804 Medical Center, Jeppe S., Johannesburg, South Africa)

9–12. International Soc. for **Rehabilitation of the Disabled**, Cork, Ireland. (J. Bermingham, Natl. Organization of Rehabilitation, 133 Oliver Plunkett St., Cork)

9–13. International Council of the **Aeronautical Sciences** Congr., Munich, Germany. (R. R. Dexter, American Inst. of Aeronautics, 1290 Sixth Avenue, New York 10009)

9–13. World Congr. of **Anaesthesiologists**, 4th, London, England. (D. D. C. Howat, Royal Marsden Hospital, Fulham Rd., London, S.W.3)

9–13. International Congr. of **Phlebology**, 3rd, Amsterdam, Netherlands. (J. Van Limbough, Mauritskade 61, Amsterdam)

9–13. International **Seaweed** Symp., 6th, Santiago de Compostela, Spain. (E. Booth, Inst. of Seaweed Research, Inveresh, Midlothian, Scotland)

9–13. International Congr. on **Surfactants**, 5th, Barcelona, Spain. (Secretary General, 5th Congr. on Surfactants, Av. Generalisimo Franco 730, Barcelona 14)

9–14. **Biodeterioration,** 1st intern. symp., Southampton, England. (First Intern. Biodeterioration Symp., 14 Belgrave Sq., London, S.W.1, England)

9–15. International Conv. on **Vital Substances, Nutrition, and Civilisation Diseases**, Travemunde, Germany. (H. Schmulling, Bemeroder Str. 61, Hannover-Kirchrode)

10–13. French Soc. of **Electronic and Radio Engineers**, Paris, France. [Societé Française des Electroniciens et Radioelectriciens, 10 Ave. Pierre-Larousse, Malakoff (Seine), France]

10–13. **Yeast Protoplasts,** 2nd intern. symp., Brno, Czechoslovakia. (A. Svoboda, Dept. of Biology, Medical Faculty, J. E. Purkyne Univ., Brno)

10–14. **Internal Medicine,** 10th intern. congr., Paris, France. (E. Reezyo, Dept. of Medicine, Inst. for Postgraduate Medical Education, ul. Solec 93, Warsaw 30, Poland)

10–20. International Conf. on **General Relativity and Gravitation**, 5th, Tiflis, U.S.S.R. (A. Mercier, Inst. de Physique Theoretique de l'University, 3000 Berne, Sidlerstrasse 5, Switzerland, or Acad. of Science, U.S.S.R., Lenin Prospekt, Moscow)

12–14. Federation of French Speaking Societies of **Gynecology,** 22nd, Paris. (Sureau, Maternire Pinard, 74 Ave. Denfert-Rochereau, Paris 14)

15–17. Society of **Radiology**, Bucharest, Rumania. (I. Caloenescu, Union of Medical Science, Societies of the Socialist Republic of Rumania, 8, Rue Progresul, Bucharest)

15–19. International Congr. of **Group Psychotherapy,** 4th, Vienna, Austria. (Z. I. Moreno, P.O. Box 311, Beacon, New York 12508)

15–19. **Audiology**, 9th intern. congr., London, England. (R. Hinchcliffe, Inst. of Laryngology and Otology, 330 Gray's Inn Rd., London, W.C.1)

16–18. Conference on **Laser Measurements**, Warsaw, Poland. (S. Hahn, Komitet Narodowy URSI, Warsaw IPPT, Swietokrzyska 21, Poland)

16–20. Austrian **Mathematical** Congr., 7th, Linz. (A. Adam, Hochschule fur Sozial-und Wirtschaftswissenschaften, A4045 Linz, Auhof, Austria)

16–21. International Soc. for **Fat Research**, 9th, Rotterdam, Netherlands. (Unilever Research Labs., P.O. Box 114, Vlaardingen, Netherlands)

17–20. Society of **Physical Chemistry**, Paris, France. (G. Emschwiller, 10, rue Vauquelin 75, Paris 5)

19–21. International **Leprosy** Assoc., 9th, London, England. (S. G. Browne, 16 Bridgefield Rd., Sutton, Surrey, England)

20–24. **Fouling and Marine Corrosion,** 2nd intern. congr., Athens, Greece. (Université Technique Nationale d'Athenes, Laboratoire Chimie-Physique, 42, rue 28 Octobre, Athens)

22–25. American Inst. of **Chemical Engineers,** Montreal, P.Q., Canada. (Chemical Inst. of Canada, 48 Rideau St., Ottawa 2, Ont.)

22–27. International Committee on **Electrochemical Thermodynamics and Kinetics**, 19th, Warren, Michigan. (S. E. Beacom, Electrochemistry Dept., Research Labs., General Motors Corp., 12 Mile & Mound Rds., Warren, Michigan 48090)

BOOKS RECEIVED

(Contnued from page 354)

Origins of Modern Biology. Url Lanham. Columbia University Press, New York, 1968. xii + 273 pp. $7.50.

Paraguay. 1852 and 1968. Edward A. Hopkins, Raymond E. Crist, and William P. Snow. American Geographical Society, New York, 1968. vi + 64 pp., illus. Paper, $4. American Geographical Society Occasional Publication No. 2.

Permanent Poverty. An American Syndrome. Ben B. Seligman. Quadrangle Books, Chicago, 1968. xiv + 238 pp. $6.50. Problems of American Society.

Pharmacology and Drug Therapy in Nursing. Morton J. Rodman and Dorothy W. Smith, Lippincott, Philadelphia, 1968. xii + 738 pp., illus. $9.75.

Phosphoric Acid. Part 1. A. V. Slack, Ed. Dekker, New York, 1968. xxii + 501 pp., illus. $31.50. Fertilizer Science and Technology Series, vol. 1.

Photophysiology. Current Topics. Vol. 4. Arthur C. Giese, Ed. Academic Press, New York, 1968. xvi + 373 pp., illus. $16.

Physics of Electric Propulsion. Robert G. Jahn. Illustrated by Woldemar von Jaskowsky. McGraw-Hill, New York, 1968. xxii + 339 pp. $14.50. McGraw-Hill Series in Missile and Space Technology.

The Physics of Electronic and Atomic Collisions. Invited papers from the 5th International Conference, Leningrad, July 1967. Lewis M. Branscomb, Ed. Published for the Conference General Committee by the Joint Institute for Laboratory Astrophysics, Boulder, Colo., 1968. xvi + 200 pp., illus. Paper, $7.

Physiological and Biochemical Aspects of Nervous Integration. A symposium, Woods Hole, Mass., Aug.–Sept. 1967. Francis D. Carlson, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1968. viii + 391 pp., illus. $7.

Physiology of Heat Regulation and the Science of Clothing. L. H. Newburgh, Ed. Hafner, New York, 1968. viii + 457 pp., illus. $12.50. Reprint of the 1949 edition.

Pigs for the Ancestors. Ritual in the Ecology of a New Guinea People. Roy A. Rappaport. Yale University Press, New Haven, Conn., 1967. xx + 311 pp., illus. $10.

Plant Communities. A Textbook of Plant Synecology. Rexford Daubenmire. Harper and Row, New York, 1968. xiv + 300 pp., illus. $9.75.

Plasticity. Theory and Application. Alexander Mendelson. Macmillan, New York; Collier-Macmillan, London, 1968. xiv + 353 pp., illus. $12.95. Macmillan Series in Applied Mechanics.

The Politics of School Desegregation. Comparative Case Studies of Community Structure and Policy-Making. Robert L. Crain, with the assistance of Morton Inger, Gerald A. McWorter, and James J. Vanecko. Aldine, Chicago, 1968. xviii + 390 pp., illus. $7.95.

The Prehistory of the Tehuacan Valley. Douglas S. Byers, Ed. Vol. 1, Environment and Subsistence (viii + 331 pp., illus., $15); vol. 2, The Non-Ceramic Artifacts (xiv +258 pp., illus., $12.50). Published for the Robert S. Peabody Founda-

tion by the University of Texas Press, Austin, 1968.

Preparative Organic Photochemistry. Alexander Schönberg in cooperation with Günther Otto Schenck and Otto-Albrecht Neumüller. Springer-Verlag, New York, ed. 2, 1968. xxiv + 608 pp., illus. $37.

Psychology. The Experimental Approach. Douglas K. Candland. McGraw-Hill, New York, 1968. xvi + 711 pp., illus. $9.95.

Publications of Goddard Space Flight Center 1959–1962. National Aeronautics and Space Administration, Washington, D.C. Vol. 1, Space Sciences (xii + 1684 pp., illus.); vol. 2, Space Technology (x + 786 pp., illus..

Pygmalion in the Classroom. Teacher Expectation and Pupils' Intellectual Development. Robert Rosenthal and Lenore Jacobson. Holt, Rinehart and Winston, New York, 1968. xiv + 240 pp., illus. Paper, $3.95.

Qualitative Organic Chemical Analysis. W. J. Criddle and G. P. Ellis. Plenum, New York; Butterworths, London, 1967. viii + 119 pp., illus. $6.

Recognizing Patterns. Studies in Living and Automatic Systems. Paul A. Kolers and Murray Eden, Eds. M.I.T. Press, Cambridge, Mass., 1968. xii + 237 pp., illus. $11.

Review of Textile Progress. A Survey of World Literature. Vol. 17, 1965–66. Plenum, New York; Textile Institute and the Society of Dyers and Colourists; Butterworths, London, 1967. x + 601 pp., illus. $30.

Science and International Public Affairs. Six Recent Experiments in International Scientific Cooperation. Warren B. Walsh. International Relations Program, Syracuse University, Syracuse, N.Y., 1967. iii + 161 pp.

Statistical Continuum Theories. Mark J. Beran. Interscience (Wiley), New York, 1968. xvi + 424 pp., illus. $17.50.

Steward's Laboratory Manual of Microbiology. Clarice M. Schmittler. Mosby, St. Louis, Mo., ed. 4, 1968. x + 106 pp., illus. Paper, $3.35.

The Structural Basis of Antibody Specificity. David Pressman and Allan L. Grossberg. Benjamin, New York, 1968. xviii + 279 pp., illus. $16.75.

Structural Concepts in Immunology and Immunochemistry. Elvin A. Kabat. Holt, Rinehart and Winston, New York, 1968. x + 310 pp., illus. Cloth, $10.50; paper, $6.50.

Third Nuffield Conference on Rheumatism. Oxfordshire, England, April 1967. Nuffield Foundation, London, 1968. Unpaged. Paper, distributed free of charge.

Work-a-Text in Physical Science. Milton Galembo. Jack Robbins and Burton E. Newman, Eds., Cambridge Book Co. (Cowles Communications), Bronxville, N.Y., 1967. viii + 245 pp., illus. Paper, $1.35.

Workbook of Solutions and Dosage of Drugs (Including Arithmetic). Ellen M. Anderson. Mosby, St. Louis, Mo., ed. 8, 1968. viii + 181 pp., illus. Paper, $3.75.

Zones and Planes of Weakness in Rocks and Slope Stability. N. I. Komarnitskii. Translated from the Russian edition (Moscow, 1966). Consultants Bureau, New York, 1968. viii + 108 pp., illus. Paper, $15.