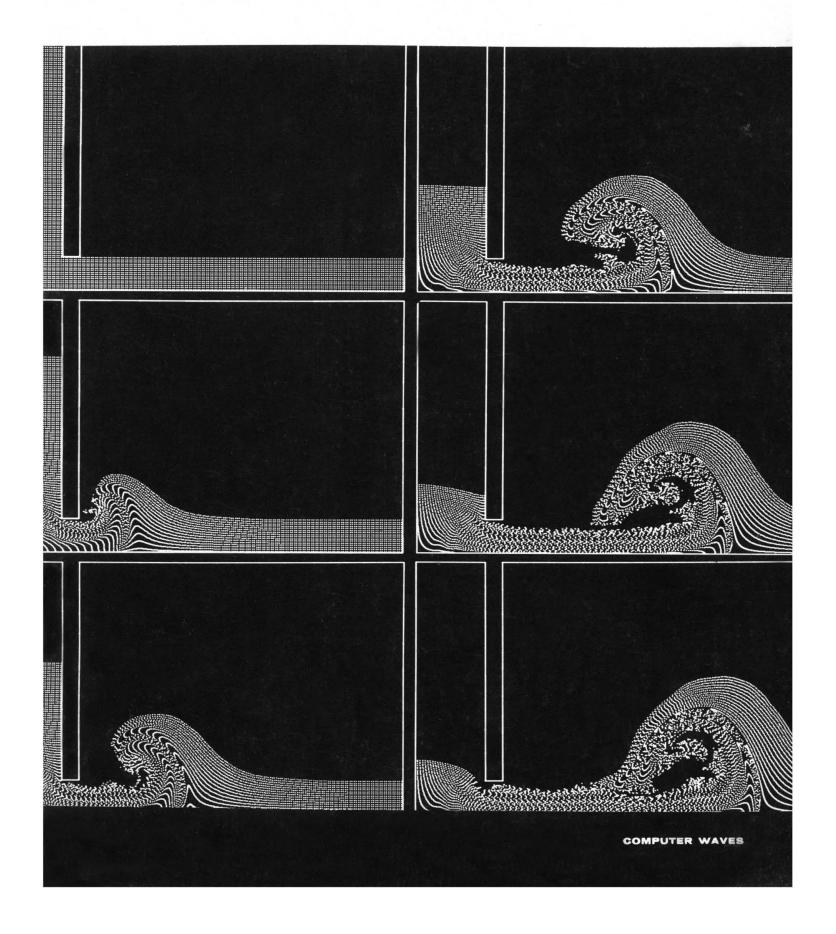
# SCIENCE 3 September 1965 Vol. 149, No. 3688

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



# The New 120C Amino Acid Analyzer

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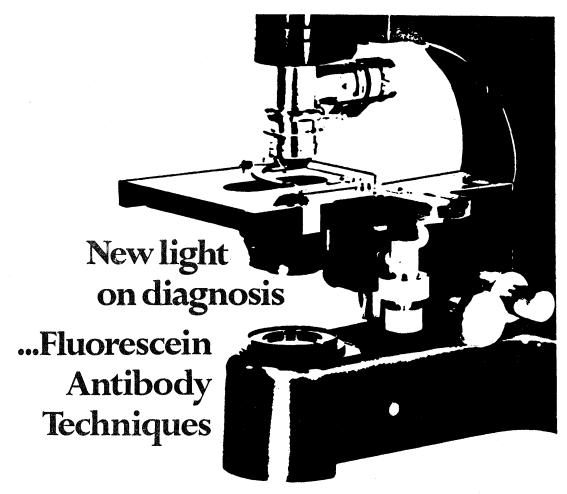
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(1) As reported in Chem. & Eng. News (Sept. 10, 1962). The literature references should not be interpreted as either an endorsement or disapproval of the biochemicals by the cited investigator.

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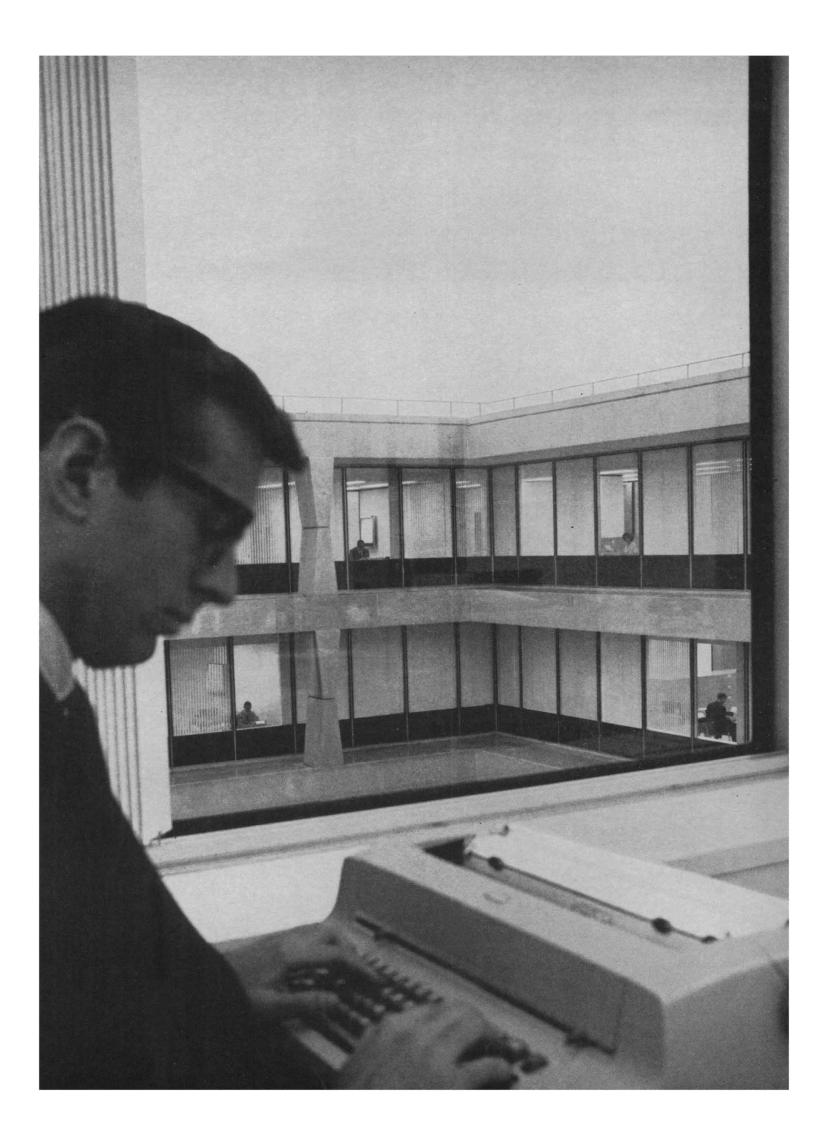
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The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

#### COVER

Surging water under a sluice gate is simulated by computer calculations. The sequence of figures shows unretouched computer output, illustrating early stages in the development of a hydraulic jump from a backwardbreaking wave. Such numerical solutions of the full nonlinear, time-dependent Navier-Stokes equations make possible the detailed study of this and numerous other problems in fluid dynamics. See page 1092.



# 100 or more people can use IBM's new time-sharing computer at the same time

At many computer installations, the average problem takes less than one minute of computing time.

Why do you have to wait so long to get your answers back?

It's simply because most computers in the past could only handle one problem at a time. When you delivered your problem it got queued up with all the jobs ahead of it.

IBM SYSTEM/360 Model 67 changed all that.

It's designed for time-sharing and remote computing.

Time-sharing lets many people use the computer at the same time. Each one thinks he's the only one using it. In actual fact, the computer is so fast it simply moves from station-to-station receiving instructions and quickly returning the answers, to the appropriate inquiry station.

And, the individual user's console stations can be next door or thousands of miles away.

#### **Dynamic Program Relocation**

What goes on inside the computer is pretty interesting too. If you've ever programmed a computer you know that ordinarily you choose the locations in memory where your instructions and data reside until the job is complete.

The new SYSTEM/360 Model 67 doesn't work that way. Instead it uses dynamic programming. It

assigns memory locations. Each user's program is free to go to any part of core storage that happens to be available. Your program or job can be interrupted (without your knowing it) and be reloaded into a different set of memory locations.

Some old-timers think it's pretty frightening not to know where their program is. But then it really doesn't matter because there's a powerful control program that's keeping track of everything and making memory assignments efficiently. It releases you from the previous restraints of memory size.

All this is possible because this new addition to SYSTEM/360 can have up to four processing units which can be interconnected to permit each one to share storage with the other three.

In addition, each has access to input/output units on a maximum of 28 channels.

It's possible to take all processing units, storage units and most of the input/output control units and partition them into individual units so that units can be serviced without affecting the operation of the rest of the system.

#### New Advances in Data Switching and Communications

To switch the vast amounts of data and programs in and out of core so rapidly we had to build two very unique features into this new time-sharing SYSTEM/360.

First, we added eight associative registers that translate the address references in your program to actual core locations... at main-frame-logic switching speed... 150 nano-seconds per address.

Then we added special channel controllers with direct access to main memory. This allows the control program, mentioned above, to locate data directly. This prevents any interference with the activity going on in the central processor.

Since most users will want to use many console stations to take full advantage of the time-sharing power of the new SYSTEM/360, we've also designed a new, lower cost terminal—the 2741 Communications Terminal. It's easy to use. It looks and acts much like a standard typewriter. Even if you "hunt and peck" you'll be completely at ease with this terminal in only minutes.

Bell Telephone Laboratories—Naperville, Illinois, System Development Corporation, The Boeing Company—Huntsville, Alabama, MIT Lincoln Laboratory, Washington State University and others have already ordered the new time-sharing SYSTEM/360. Let us tell you why. Maybe you'll order one too.

SYSTEM/360—The Computer with a Future.

**IBM** 

# **BERKELEY • 132nd AAAS**

# Order Your General Program

It provides complete, detailed information about all the sessions and symposia scheduled, the Annual Exposition of Science and Industry, and the Science Theatre.

#### Program Highlights

Moving Frontiers of Science: F. Clark Howell on Significant Advances in Human Evolutionary Studies; Norman F. Ness on A New Look at the Earth's Magnetic Field; Jerome Y. Lettvin on Physiological Basis of Mental Activity; and William M. Fairbank on Some Aspects of Low Temperature Physics.

**AAAS** Distinguished Lecture: Genetics and Cultural Change by George W. Beadle, president, University of Chicago.

Interdisciplinary Symposia: Ground-level Climatology; Proteins and Nucleic Acids; Materials Science in Medicine, Dentistry, and Pharmacy; Behavior, Brain, and Biochemistry; Mathematical Bases in Economic Planning.

Special Sessions: AAAS Presidential Address on Antarctica: Continent of International Science by Laurence M. Gould; the Joint Address of Sigma Xi and Phi Beta Kappa by J. Bronowski; the George Sarton Memorial Lecture by Stillman Drake on "The Accademia dei Lincei"; and the National Geographic Society Illustrated Lecture.

AAAS Committees: Special Program of the AAAS Committee on Council Affairs on Civil Defense: Speakers: Eugene Wigner, Wolfgang Panofsky, Owen Chamberlin, Fred Payne, Barry Commoner, Bentley Glass, and Anatol Rapoport, moderator, and Henry Eyring, chairman; Committee on Desert and Arid Zones Research.

Lawrence Hall of Science: Director Harvey E. White will lecture twice on this splendid Center of Science Education, 27 and 29 December. Sections and Societies: The 20 AAAS Sections and some 92 participating societies are scheduling specialized symposia and papers.

AAAS Science Theatre: The latest foreign and domestic films.

**Exhibits:** The Annual Exposition of Science and Industry is on the lower level of the ASUC Student Center, AAAS Headquarters.

Advance Registration: By registering in advance, you avoid delay at the Registration Center on arrival; you receive the General Program in time to plan your days at the meeting; and your name is posted in the Visible Directory when the meeting opens. Use the coupon below.



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(May be added later, after arrival)

# MEETING • 26-31 DECEMBER

# Make Your Reservations

Make sure you have the sleeping accommodations you prefer. Since this is a campus meeting—and the ASUC Student Center is AAAS headquarters—society headquarters will be mainly in university buildings.

Hotel and Motel Information. A deposit of \$5 is required by all hotels and motels. Deposits are credited toward the final bill, and are refunded if cancellation is received not later than 10 days before the date of your reservation. Make checks payable to the AAAS Housing Bureau.

Residence Hall Information. Accommodations are available for one or two persons per room, for couples, and for children 14 years or older. Hours for room registration at the Hall are 8:00 a.m.-10:30 p.m. daily. The full amount for room, with or without meals, is collected in advance. There is a special charge for overnight 30 December (no meals December 31): \$6.00 single occupancy, \$5.00 per person

double. Parking is  $50\phi$  per 24-hour day. The general deadline for residence hall reservations is 10 December.

For more details on all of the above facilities and services, see the 23 July issue of Science, page 454.

The hotel, motel, and residence hall sleeping accommodations are for your convenience in making your room reservation in Berkeley. Please use the coupon below and send it and any necessary deposit directly to the AAAS Housing Bureau in Berkeley. Give a definite date and estimated hour of arrival, and also your probable date of departure. The Housing Bureau will make the assignment and promptly send you a confirmation.

1045

		Rates	per Day		
HOTELS	Single	Double	Twin	Suite	Parking
Claremont (300)	\$11.00	\$15.00	\$15.00		Free
Durant (200)	8.50*		12.00*	\$18.00-22.00	50¢, \$1.00
Shattuck (250)	8.50	11.00	14.00	25.00-35.00	Public
* A few single rooms at \$5.50, tw	ins at \$7.50.				
MOTELS					
Berkeley House (112)	9.50	13.50	13.50	25.00-28.00	
Berkeley Plaza (52)	7.00	8.50	9.50	15.00	
Berkeley Travelodge (46)	8.00	10.00	11.00		
California Motel (42)	6.50	7.00	8.00		
Golden Bear (44) (and others)	7.00-8.00	8.00-10.00	10.00-12.00	18.00	

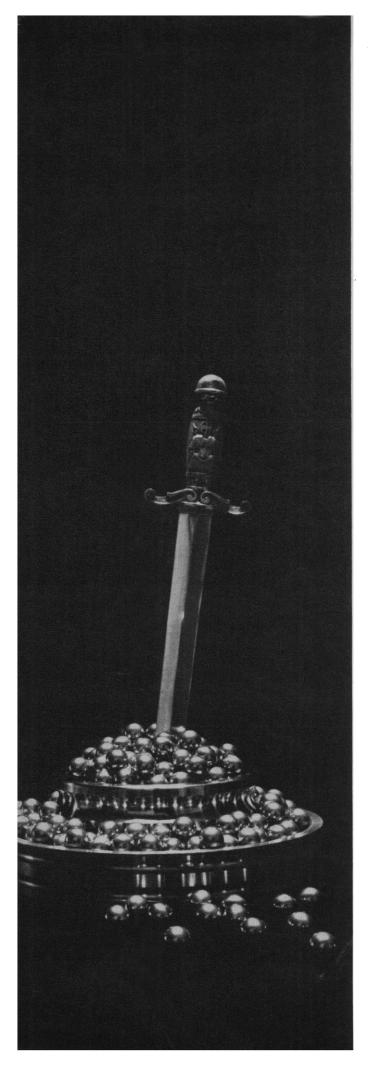
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3 SEPTEMBER 1965

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Mail this coupon now to the AAAS Housing Bureau. Enclose hotel or motel room deposit if needed. Make checks payable to AAAS Housing Bureau All rooms will be assigned and confirmed in order of receipt of reservation.



### Fighting fatigue with stress

Stress is a double-edged sword. Favorable "locked-in" stress in a material, put there to offset the effects of load stress, can dramatically extend fatigue durability.

Recently one of our physicists discovered an ingenious way to create favorable residual stresses in through-hardened steel ball bearings. Called Marstressing, it involves diffusing foreign atoms into the metal surface to lower the temperature at which austenite transforms to martensite during quenching.

Transformation then begins beneath the diffused layer and proceeds outward—the reverse of what normally takes place. When the surface region finally transforms, normal expansion is opposed by the already hardened interior. Surface material is caught in a squeeze. Result: high residual stress near the surface where failures normally originate.

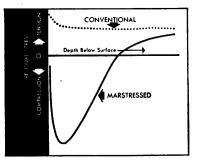
Marstressing is one of the key features of New Departure—Hyatt Division's new NDur line of bearings which boasts life at least three times the former rating when run on standard New Departure fatigue life tests.

Back of *Marstressing* are decades of GMR research in metal physics and residual stress.

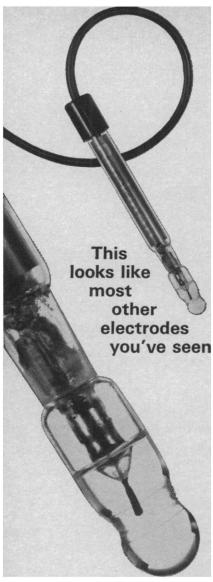
The principle behind *Marstressing* is remarkably simple; but simple answers have a way of occurring most frequently where careful, persistent research has prepared the way.

### **General Motors Research Laboratories**

Warren, Michigan



Comparison of subsurface stress patterns in conventionally hardened and Marstressed parts



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mathematics, as the "science of structure," provides the syntactical rules permitting the formation of "grammatical" scientific sentences (and the rejection of ungrammatical ones). From this point of view it is a matter of historical accident whether a particular mathematical concept arises in response to needs of scientists or develops from within pure mathematics and is later applied in science. The "crucial sentence" of Hamming in which the lack of need for empirical verification of mathematical concepts leads to the conclusion that much of modern mathematics is more closely related to medieval scholastic arguments than to science seems quite irrelevant to the main point at issue. All mathematics has that characteristic; science makes extensive use of those branches of mathematics whose postulates are in fact verified (often in such an extremely indirect manner, however, that using a strong word like "verify" may not be appropriate). In the growth of theoretical science one is continually presented with new situations in which new kinds of postulational systems must be employed.

The mathematicians, by providing the scientists with the fruit of their labors, permit a wide choice of new formal tools with which new attempts to organize experience can be made. The symbiotic relationship between science and mathematics, in which science uncovers problems that can inspire new developments in mathematics, and mathematics develops formal systems which accelerate the progress of science, is so well appreciated and so fantastically fruitful that it is hard to imagine anyone trying to "legislate" away any of the essential freedoms so helpful in the past.

The real issue in the dispute, I believe, is the nature of numerical analysis. Is it pure mathematics, or is it a field of applied mathematics close in spirit to the sciences? Numerical analysis generates desired arithmetical or other mathematical data in a welldefined mathematical system (for example, a set of partial differential equations with given boundary conditions) by mathematical methods. It is thus "all mathematics," in contrast to theoretical physics, where the nub of the problem is the discovery of a formal system which adequately describes experience. Introduction of constraints (such as minimum cost or errors) does not change the fact that the problem is fundamentally mathematical.

Whenever a sphere of applications develops which makes demands on a particular mathematical discipline which go beyond the state of development of the field at the time, the "customers" frequently proceed to remedy the deficiency from the point of view of their application rather than from the point of view of pure mathematics. If these "customers" are scientists or engineers, for whom the empirical has much importance, they will tend to neglect rigor, elegance, generality, and even consistency, in their attempts to get their main jobs done. From Hamming's article it would appear that this has occurred in numerical analysis, and that the "customers" may have tended to dominate the field in recent years because the pure mathematicians were otherwise occupied. It may be that because of history and tradition this will continue for some time (or even permanently). If I may venture to prophesy, however, I predict that the challenge of developing the mathematics of numerical analysis on a rigorous basis in keeping with the standards of pure mathematics will eventually be taken up. The subtle logical and combinatorial problems associated with computers, switching networks, systems design, and numerical analysis have so many interesting and important facets both from the viewpoint of applications and from that of pure mathematics that I cannot see the pure mathematician forever ignoring these fields. I also do not see how the "customers" will make much headway on many important problems unless some of them become, in effect, highly competent pure mathematicians. This kind of thing has often occurred in the past, and will probably happen many times in the future. Ultimately the development of numerical analysis as a "science" can be expected to encompass construction of a solid basis, in the sense of pure mathematics, similar to what has occurred in statistics. Modern probability and statistics, with their rigorous measuretheoretical basis, are a far cry from the simple data collection and reduction of the past. Along with the development of the "pure" basis has come a tremendous increase in the power and scope of statistical methodology and of its usefulness in applications. We expect to see a similar evolution in numerical analysis.

JEROME ROTHSTEIN Laboratory Electronics, Inc., 1075 Commonwealth Avenue, Boston, Massachusetts

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# Recommended Reading in Science and Technology

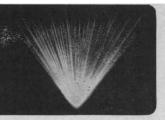
#### Watch for These New Books Now in Press.

	TIRACLES OF THE MIND: An Introduction to Parapsychology by Simeon Edmunds, London, England. bout 248 pp., about 6 il. In Press
	URGICAL APPLICATIONS OF LASER by Paul Edward McGuff, Laser Medical Research Foundation, oston, Mass. About 224 pp., about 70 il., 56 tables. In Press
	IST OF FUNGAL PRODUCTS by Shoji Shibata, University of Tokyo; and Shinsaku Natori and Shun-ichi dagawa, both of National Institute of Hygienic Sciences. All of Tokyo, Japan. '64, 178 pp. (7 x 10), \$7.75
an of	ELLULAR CONCEPTS IN RHEUMATOID ARTHRITIS. Holbrook Memorial Symposium. Compiled and edited by C. A. Stephens, Jr., Southwestern Clinic and Research Institute, Inc., and A. B. Stanfield, Univ. Arizona. Both of Tucson, Ariz. With the assistance of Margaret L. Doorly. (With 10 Contributors) About 4 pp. (7 x 10), about 78 il., 4 tables. In Press
_ of	ISION: Biophysics and Biochemistry of the Retinal Photoreceptors by Jerome J. Wolken, Carnegie Institute Technology, Pittsburgh, Pa. About 232 pp., about 154 il., 9 tables, (Amer. Lec. Living Chemistry edited I. Newton Kugelmass). In Press
15	S Outstanding New Rooks That Relong in a Science Library

- □ PAVLOVIAN PSYCHIATRY: A New Synthesis by Christian Astrup, Gaustad Hospital, Oslo, Norway. '65, 180 pp., (Amer. Lec. Objective Psychiatry edited by William Horsley Gantt), \$6.75
- ☐ RESEARCH METHODOLOGY AND NEEDS IN PERI-RESEARCH METHODOLOGY AND NEEDS IN PERINATAL STUDIES by Sidney S. Chipman, Univ. of North Carolina, Chapel Hill, N.C.; Abraham M. Lilienfeld, The Johns Hopkins Univ., Baltimore, Md.; Bernard G. Greenberg, Univ. of North Carolina; and James F. Donnelly, North Carolina State Board of Health, Raleigh, N.C. (With 67 Participants) '65, 392 pp., 16 il., 33 tables, \$16.50 \$16.50
- HUMAN RACES (2nd Ed.) by Stanley M. Garn, Antioch College, Yellow Springs, Ohio. '65, 172 pp., 26 il., \$5.50
- DEPRESSIVE STATES: A Pharmacotherapeutic Study by Anthony Hordern, King's College Hosp., London, England. In collaboration with C. G. Burt, Beechworth Hosp., and N. F. Holt, Mental Health Research Institute. Both of Victoria, Australia. '65, 184 pp., 25 il., 25 tables, \$7.50
- ANTICOAGULANT THERAPY: Pharmacological Principles by Louis B. Jacques, University of Saskatchewan, Saskatoon, Canada. '65, 174 pp., 66 il. (1 color plate), 18 tables, (Amer. Lec. Hematology edited by Walter H.
- ☐ MICROHEMOCIRCULATION: Observable and Their Biologic Control by Elio Maggio, Univ. of Illinois, Chicago, Ill. '65, 208 pp. (634 x 934), 124 il. (23 in color), 6 tables, \$16.50
- RADIOACTIVITY IN MAN: Whole Body Counting and Effects of Internal Gamma Ray-Emitting Radioisotopes. Second Symposium Sponsored by Northwestern University Medical School and the American Medical Association. Edited by George R. Mencely, Univ. of Texas Medical Center, Houston, Texas, and Shirley Motter Linde, Northwestern Univ., Chicago, Ill. (With 118 Contributors) '65, 672 pp., 208 il., 97 tables, \$24.50

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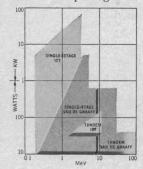
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#### THE ICT CONCEPT:

new high-current machines emerging from HVEC research

acteristics of Van de Graaff machines. As the graph shows, the high power levels available from the ICT accelerator now make possible a new realm of precision experimentation.

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The ICT is essentially a three-phase power transformer with multiple secondaries, each of which is insulated from the other. Rectified current from the secondaries is series-connected to achieve total voltage. In the ICT, electrostatic and electromagnetic fields exist in the same space, as contrasted to the conditions in a coventional transformer. The result is a highly efficient dc power source capable of stable operation at elevated potentials and power levels.

A number of ICT accelerators and power generation systems are now available.

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		PROTON ENERGY (KeV)	CURRENT (MAX.) (Analyzed)	TANK Feet	HEIGHT Meters	TANK D	IAMETER Meters	
ICT	300	300	15 mA	4'4"	1.32	4	1.2	
ICT	500	500	10 mA	5'3"	1.60	4	1.2	

The second system utilizes a rigid transmission line to transmit electrical power to the accelerator terminal.

4 MeV ICT	ENERGY (MeV)	CURRENT	DIMENSIONS	
			Feet	Meters
Positive Ions Electron Conversion	1.5-4	3 mA	26'6"	8.08
Electron Conversion	1.5-3	10 mA	26'6"	8.08
3 MeV ICT Electrons	1.5-3	20 mA	29'	8.84

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#### **International Technical Assistance**

The more immediate technical and scientific need of the developing countries is not for knowledge that lies close to the scientific frontiers, but for technical information to meet their own particular needs. Caryl P. Haskins has described the problem (Foreign Affairs, January 1962) as one "of discovery, of sensible and sensitive selection, and, above all, of adaptation to the peculiar and individual requirements of each nation, people, and region."

One effort to meet these needs is being made by Volunteers for International Technical Assistance (VITA), a nonprofit organization started in 1959 by Robert Walker and 13 colleagues from the General Electric Company and Union College in Schenectady. VITA now has nine active chapters, over 1000 members, and an advisory committee that includes Harvey Brooks, Harrison Brown, Owen Chamberlain, Walker Cisler, Augustus Kinzel, Frederick Seitz, and others. VITA's program is one of immediate, practical action to solve locally perceived problems that are submitted by members of the Peace Corps, other U.S. citizens on overseas assignments, the United Nations, and foreign individuals and organizations. Over 1100 requests have been received, and the current rate is about 50 a month. Examples cover a wide range and have included requests for nutritional analyses of foods indigenous to Laos; advice on the methods of canning orange and lemon juice that best preserve vitamin content; instructions on building a rugged and inexpensive cement mixer, a high-flow pump for irrigation, a flashlightpowered slide projector, a simple gristmill, and a poultry incubator; and methods of rodent control. VITA members wrote the Village Technology Handbook, which is widely used by AID technicians and Peace Corpsmen. Perhaps the biggest success was the development of a sturdy and effective solar cooker, built on Fresnel lines, that costs less than \$3 and that can be constructed by an unskilled worker.

With a rapidly growing number of requests coming from over the world, more money and more members are needed. As a spontaneous creation of industrial scientists and engineers, VITA is looking primarily to the industrial and business community for the \$100,000 that it needs this year, and it is well on its way to achieving this goal. VITA also wants more members who are interested in devoting part of their skill and spare time to helping with the myriad problems of agriculture, construction, health, nutrition, education, and communication that beset a nation which is trying to move rapidly ahead but which lacks an extensive technological background of its own. Contributions and offers to help will be welcome at VITA headquarters, 230 State Street, Schenectady, New York 12305.

In the long run, probably nothing is so important to the emerging nations as an increase in yield per acre, for most of them are still basically agricultural nations and most of them lie in the comparatively unfertile tropic regions. Research and demonstration programs to improve farm products and to train agricultural workers, of the kind pioneered in Latin America by the Rockefeller Foundation, or institutions of the kind exemplified by the Rice Institute in the Philippines may provide the best long-range hope. Such ventures are essential, but they require substantial financing and extended time. For immediate usefulness, and on a scale that encourages individual effort, VITA has demonstrated the effectiveness of another method of aiding developing countries to solve some of their technical problems.—DAEL WOLFLE



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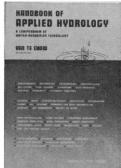
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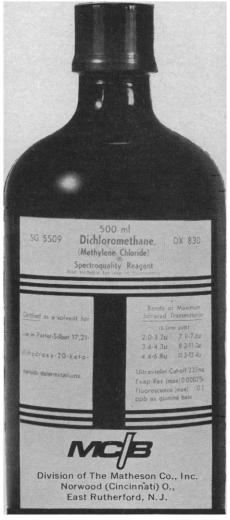
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29-1. Analytical Chemistry, symp., Graz, Austria. (Prof. Gutmann, Austrian Assoc. for Microchemistry and Analytical Chemistry, Eschenbachgasse 9, Vienna 1)

29-1. European Atomic Forum, 2nd congr., Frankfurt am Main, Germany. (European Atomic Energy Forum, 26, rue de Clichy, Paris 9)

29-1. American Vacuum Soc., 12th annual symp., New York, N.Y. (R. L. Jepsen, Varian Associates, 611 Hansen Way, Palo Alto, Calif.)

#### October

- 1-3. French-Language Assoc. of Scientific Psychology, 10th study sessions, Marseilles, France. (P. Fraisse, The Association, Inst. de Psychologie, 28, rue Serpente, Paris 6°)
- 1-11. International **Scientific Film** Assoc., 19th annual congr., Bucharest, Rumania. (ISFA, 38, avenue des Termes, Paris 17°, France)
- 2. Association of Clinical Biochemists, annual, London, England. (D. W. Moss, Postgraduate Medical School, Ducane Rd., London, W.12)
- 3-5. Refractory Metals, 4th symp., French Lick, Ind. (J. Maltz, Materials Research Div., NASA, 600 Independence Ave., SW, Washington, D.C. 20546)
- 3-7. American Phytopathological Soc., Miami Beach, Fla. (J. R. Shay, Dept. of Botany and Plant Pathology, Purdue Univ., Lafayette, Ind.)
- 3-8. Clinical Pathology, 6th intern. congr., Rome, Italy. (B. L. Della Vida, Via de'Penitenzieri 13, Rome)
- 3-9. Water Desalination, 1st intern. symp., Washington, D.C. (Atomic Industrial Forum, 850 Third Ave., New York 10022)
- 4-5. Enzyme Regulation, 4th intern. symp., Indiana Univ., Indianapolis. (G. Weber, Indiana Univ. School of Medicine, Indianapolis 46207)
- 4-5. Physical Metallurgy of Refractory Metals, conf., American Inst. of Mining, Metallurgical, and Petroleum Engineers, French Lick, Ind. (AIME, 345 E. 47 St., New York 10017)
- 4-6. Electronics, Canadian conf., Toronto, Ont. (W. M. Lower, 1819 Yonge St., Toronto)
- 4-6. Industrial Organic Analysis, Analytical Chemistry Div., Chemical Inst. of Canada, Sarnia, Ont. (R. M. Small, Research Dept., Polymer Corp, Sarnia)
- 4-6. International Scientific Radio Union/Inst. of Electrical and Electronics Engineers, fall meeting, Dartmouth College, Hanover, N.H. (IEEE, Box A, Lenox Hill Station, New York, N.Y.)
- 4–7. Instrument-Automation Conf., Los Angeles, Calif. (E. M. Grabbe, Instrument Soc. of America, 530 William Penn Pl., Pittsburgh, Pa. 15219)
- 4-7. **Otorhinolaryngology**, 62nd French congr., Paris, France. (H. Guillon, 6, avenue Mac-Mahon, Paris 16°)
- 4-7. **Research Equipment**, exhibit and instrument symp., 15th annual, Bethesda, Md. (J. B. Davis, Natl. Institutes of Health, Bethesda, Md. 20014)
- 4-7. International Committee for Social Sciences Documentation, annual plenary assembly, Budapest, Hungary. (J. Meyriat, 27, rue St. Guillaume, Paris 7)
  - 4-8. Aeronautic and Space Engineer-

- ing, Soc. of Automotive Engineers, Los Angeles, Calif. (C. C. King, SAE Western Branch, 999 North Sepulveda Blvd., El Segundo, Calif. 90245)
- 4-8. Ciba Foundation Clinical Research Guest Conf., London, England. (Ciba, 41 Portland Pl., London W.1)
- 4-10. Physicists, conf., Frankfurt am Main, Germany. (G. Schubert, Inst. für Theoretische Physik, Universität, Mainz, Germany)
- 4-13. International Council for the **Exploration of the Sea**, 53rd annual meeting, Rome, Italy. (The Council, Charlottenlund Slot, Charlottenlund, Denmark)
- 4-13. Commonwealth Medical Conf., Edinburgh, Scotland. (Mrs. J. Hotchkiss, Ministry of Overseas Development, Eland House, Stag Place, London, S.W.1, England)
- 5-7. Industrial and Commercial **Power Systems**, conf., Buffalo, N.Y. (T. O. Zittel, Bethlehem Steel Co., 3555 Lake Shore Rd., Buffalo 14219)
- 5-8. International Committee of Weights and Measures, session, Sèvres, France. (Intern. Bureau of Weights and Measures, Pavillon de Breteuil, Sèvres, Sein-et-Oise, France)
- 5-9. **Infectious Pathology**, 4th intern. congr., Freiburg im Breisgau, Germany. (G. Mossner, Hugerterstr. 55, Freiburg im Breisgau)
- 5-9. **Tuberculosis**, 18th intern. conf., Munich, Germany. (Intern. Union Against Tuberculosis, 15, rue Pomereu, Paris 16°, France)
- 6-8. Dynamics of Fluids and Plasmas, symp., Univ. of Maryland, College Park. (S. I. Pai, Inst. for Fluid Dynamics and Applied Mathematics, Univ. of Maryland, College Park 20742)
- 6-8. **Optical** Soc. of America, annual meeting, Philadelphia, Pa. (M. E. Warga, OSA, 1155 16th St., NW, Washington, D.C. 20036)
- 6-8. Royal Inst. of **Public Health and Hygiene**, annual conf., Weymouth, England. (Secretary, RIPHH, 28 Portland Place, London, W.1, England)
- 6-10. Wood and Organisms, intern. symp., Berlin, Germany. (German Soc. for Wood Research, Danneckerstr. 37, Stuttgart S, Germany)
- 7-9. Seismological Soc. of America, eastern sec. 37th annual, Lamont Geological Observatory, Palisades, N.Y. (J. Dorman, Lamont Geological Observatory, Palisades 10964)
- 8-9. Atlantic Coastal Plain Geological Assoc., field trip, South Carolina. (D. J. Colquhoun, Dept. of Geology, Univ. of South Carolina, Columbia)
- 8-9. Association of Midwestern College Biology Teachers, 9th annual conf., Northern Illinois Univ., DeKalb)
- 8-9. Indiana Acad. of Science, fall meeting, Notre Dame. (C. F. Dineen, St. Mary's College, Notre Dame)
- 9. Paleontological Research Inst., Ithaca, N.Y. (K. V. W. Palmer, Paleontological Research Inst., 109 Dearborn Pl., Ithaca)
- 9-10. Gastroenterology, French conf., Paris, France. (R. Biguie, 79, Boulevard Malesherbes, Paris 8°)
- 9-13. American Soc. of Clinical Hypnosis, Chicago, Ill. (F. D. Nowlin, ASCH, 800 Washington Ave., SE, Minneapolis, Minn. 55414)