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263 This Week in Science

Editorial	265	Andrei Sakharov, 1921–1989
Letters	270	The Genome Project: Pro and Con: M. S. Fox, B. Magasanik, E. R. Signer, F. Solomon, M. F. Gellert, J. E. Haber; D. E. Koshland, Jr.; L. H. Muschel The Decline of Systematics: M. R. Grehan Cone Loss of the Week: J. A. Taylor Elephant Appropriation: R. E. Leakey
News & Comment	272	Defense Research After the Cold War
	274	East German Environment Comes into the Light
	276	The Fluoride Debate: One More Time
	278	University Restructuring Based on False Premise?
Research News	279	Emerging Viruses, Emerging Threat ■ Influenza Mutants Deadly
	281	Whatever Happened to the Genetic Map?
	282	Planetary Science Funds Cut
	283	Sunny Chemistry Outlook Revealed in Hawaii ■ Mountain in the Sea ■ Reaching for the Ring ■ Getting the Blues ■ CO ₂ in Space ■ Ceramic Membranes
	284	Briefings: Inspector General Cracks Down at NSF ■ Africanized Bees Near Texas Border ■ Students: Watson Gets Mixed Grades ■ NSF Grant Sizes Trimmed for 1990 ■ Johns Hopkins Talks with MIT's Deutch ■ Oat Bran Competitor ■ Oak Ridge Seeks Fusion Reactor ■ Melting the Cold War ■ Treatment Lacking for Pregnant Addicts
Articles	286	The Loma Prieta, California, Earthquake: An Anticipated Event: U.S. Geological Survey Staff
	294	
	301	Priming and Human Memory Systems: E. TULVING AND D. L. SCHACTER
Reports	307	Elimination of Current Dissipation in High Transition Temperature Superconductors: J. Z. Sun, B. Lairson, C. B. Eom, J. Bravman, T. H. Geballe
	309	Sedimentary 24-n-Propylcholestanes, Molecular Fossils Diagnostic of Marine Algae: J. M. Moldowan, F. J. Fago, C. Y. Lee, S. R. Jacobson, D. S. Watt, NE. Slougui, A. Jeganathan, D. C. Young
	312	Effects of Fish and Plankton on Lake Temperature and Mixing Depth: A. MAZUMDER, W. D. TAYLOR, D. J. McQUEEN, D. R. S. LEAN

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COVER Immunological staining of individual Mycoplasma hyorhinis colonies with a monoclonal antibody to a surface lipoprotein antigenic variant. High-frequency switching in the expression of this component is reflected in the heterogeneous staining and sectoring of colonies representing clonally derived populations of this organism. See page 315. [Photomicrograph by Renate Rosengarten and Kim S. Wise, Department of Molecular Microbiology and Immunology, University of Missouri–Columbia, Columbia, MO 65212]

- 315 Phenotypic Switching in Mycoplasmas: Phase Variation of Diverse Surface Lipoproteins: R. ROSENGARTEN AND K. S. WISE
- 318 Prenylated Proteins: The Structure of the Isoprenoid Group: H. C. RILLING; E. Breunger, W. W. Epstein, P. F. Crain
- 320 Identification of Geranylgeranyl-Modified Proteins in HeLa Cells: C. C. Farnsworth, M. H. Gelb, J. A. Glomset
- 322 A Dominant Mutation That Predisposes to Multiple Intestinal Neoplasia in the Mouse: A. R. Moser, H. C. Pitot, W. F. Dove
- 324 Cloning of an Interleukin-3 Receptor Gene: A Member of a Distinct Receptor Gene Family: N. Itoh, S. Yonehara, J. Schreurs, D. M. Gorman, K. Maruyama, A. Ishii, I. Yahara, K. Arai, A. Miyajima
- 327 Microinjection of a Conserved Peptide Sequence of p34^{cdc2} Induces a Ca²⁺ Transient in Oocytes: A. PICARD, J.-C. CAVADORE, P. LORY, J.-C. BERNENGO, C. OJEDA, M. DORÉE
- 329 Far-Red Radiation Reflected from Adjacent Leaves: An Early Signal of Competition in Plant Canopies: C. L. BALLARÉ, A. L. SCOPEL, R. A. SÁNCHEZ
- 332 Specific Expression of a Tyrosine Kinase Gene, blk, in B Lymphoid Cells: S. M. DYMECKI, J. E. NIEDERHUBER, S. V. DESIDERIO
- 336 Auditory Association Cortex Lesions Impair Auditory Short-Term Memory in Monkeys: M. Colombo, M. R. D'Amato, H. R. Rodman, C. G. Gross
- 338 Survival of Adult Basal Forebrain Cholinergic Neurons After Loss of Target Neurons: M. V. SOFRONIEW, N. P. GALLETLY, O. ISACSON, C. N. SVENDSEN

Technical Comments

343 California Aftershock Model Uncertainties: P. A. RYDELEK; P. A. REASENBERG AND M. V. MATTHEWS

California Aftershock Hazard Forecasts: P. A. REASENBERG AND L. M. JONES

Book Reviews

347 A History of Immunology; Immunology, 1930–1980, reviewed by E. S. GOLUB ■ The Politics of Knowledge, D. H. WAGNER ■ The Mendelian Revolution, F. B. CHURCHILL ■ Blacks, Science, and American Education, T. L. HILTON ■ Gene Transfer in the Environment, R. MILKMAN ■ Percolation, J. WIERMAN ■ Books Received

Products & Materials

355 Magnetic Stirrer for Hazardous Areas ■ Factory-Formatted Disks for the Macintosh ■ Corrosion Database ■ HPLC Chemistry for Protein Purification ■ Software for Unit Conversion ■ Time-Saving Crosslinker ■ Measuring Through Microscope or Macro Lenses ■ Literature

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Andrei Sakharov, 1921-1989

eroes are essential to the improvement of society. They represent humankind at its best, a distillation of the diverse qualities that lead a person to behavior that teaches and inspires. In the modern world of media hype and investigative reporting, heroes are hard to find. Either they are suspected of being ordinary souls with good public relations agents or statuesque figures whose feet of clay will be exposed just when schoolchildren are being asked to emulate them. In this age of skepticism a man who became a hero, who never disappointed his followers, and whose influence was consistent and increasing at the time of his untimely death was Andrei Sakharov. He was a distinguished scientist and a great human being.

Sakharov received the kudos of his country for his outstanding work in physics, which led to, among other things, the Soviet hydrogen bomb. Whether the world was better off with that application is a matter for speculation, but in the eyes of the Soviet Union it provided "the equalizer." The stalemate between the superpowers produced an era of relative world peace (defined as the absence of a major war) for an unprecedented period in modern times. Sakharov could have spent the rest of his life basking in the tributes of his countrymen; but when he saw abuse of power, he chose instead to use his prestige to fight the authorities who had recently honored him.

He was treated with unbelievable indignity and cruelty. He and his family were constantly harassed, as were visitors to his Moscow home. He was not allowed to continue his scientific work. His papers and personal effects were stolen from him by order of the state. He was exiled, and he and his wife were denied needed medical attention. Throughout this period he acted with steadfastness and will. His words became rallying points for scientists worldwide, and Sakharov became their symbolic leader in the cause of scientific freedom. When praised for his courage, he replied with modesty, naming others less well known who had been imprisoned for similar actions and statements.

To the credit of Mikhail Gorbachev, this disgraceful situation was reversed. Sakharov was allowed to return to his home, to speak freely, and even to travel abroad. Again that would have been a time to relax. Instead, Sakharov responded in characteristic fashion, praising acts of democracy, returning from trips abroad even though he could never be sure of his future in his homeland, and continuing to criticize where he saw only partial movement toward the democracy for which he yearned. His enormous stature stemmed not only from his past as a physicist, but also from the excellence of his judgment in dissent. He never simply railed against the system, but always had constructive alternatives to propose.

In the modern world, integrity and courage are usually expressed in intellectual and moral terms. We moderns are rarely subjected to the physical hardships and dangers that challenged our ancestors. Even challenges to moral courage can be daunting, as the McCarthy era in this country proved only too well. At that time Edward R. Murrow, a distinguished journalist, and Herbert H. Lehman, a governor of New York, stood out as individuals willing to risk careers by speaking out when too many others were silent. Sakharov risked not only a career but physical harm. Nevertheless, his conscience, not his welfare, guided his actions. His acts of dissent started when the most confirmed optimist considered them hopeless, symbolic gestures devoid of any chance of success. The events of recent days in Eastern Europe and the Soviet Union changed the picture. How much of this change was generated by Sakharov's courageous idealism, how much by the stark reality of economic disaster, and how much by the new ideas of Gorbachev only history can decide. At this time all three appear to have played major roles. Andrei Sakharov set a standard for the modern hero. Few will achieve his level, but many will fight injustice more fiercely because of his example.—Daniel E. Koshland, Jr.

19 JANUARY 1990 EDITORIAL 265