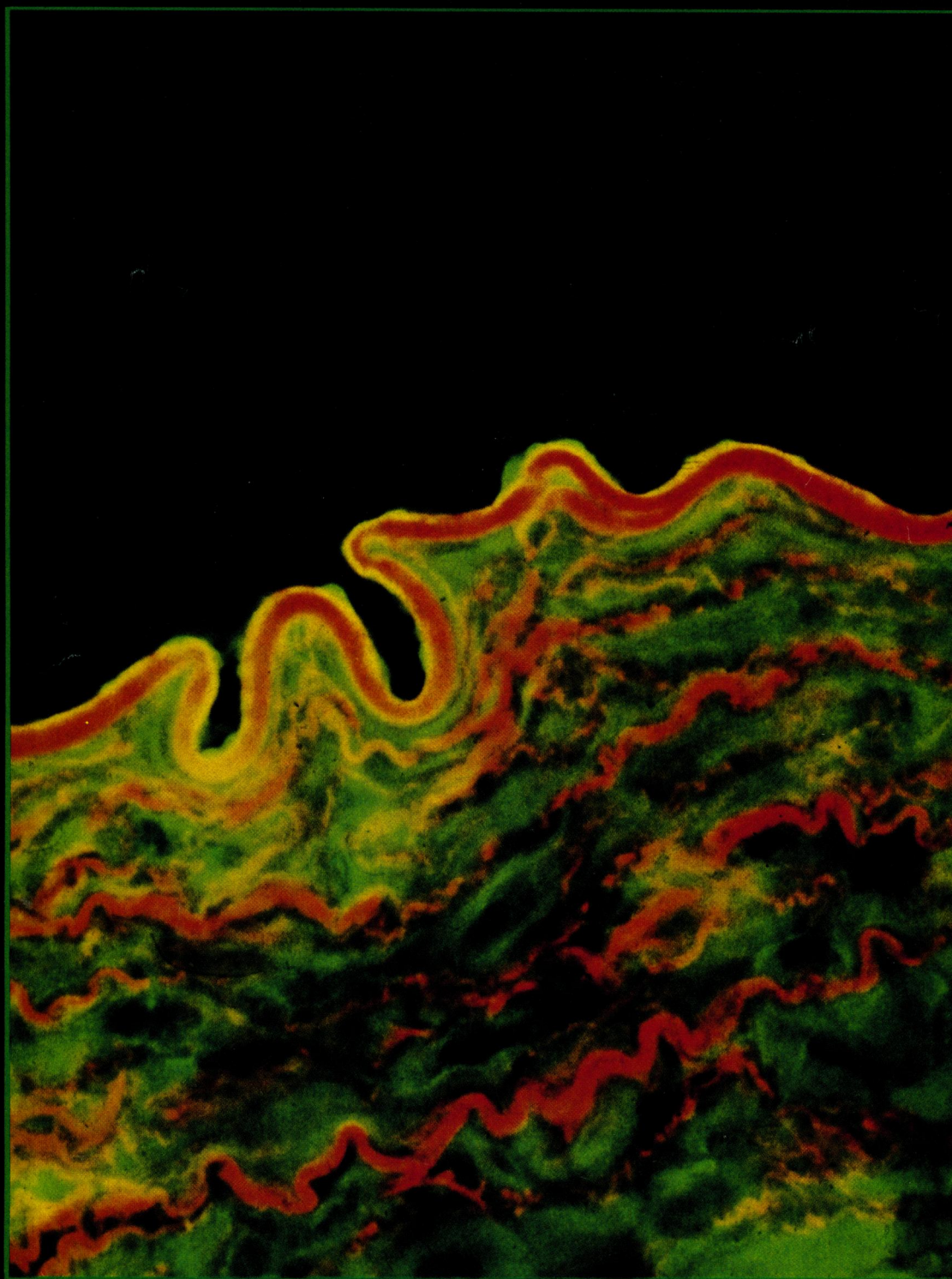


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# SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



# AAAS Chautauqua Short Courses

The AAAS Office of Science Education announces the schedules of the 1980-81 Chautauqua Short Courses.

**For college teachers:** Fifty-four short courses will be held at twelve Regional Field Centers throughout the United States.

**For nonacademic scientists and engineers:** Ten short courses — at the Polytechnic Institute of New York and the Oregon Graduate Center — will be open to a mixed audience of college teachers and nonacademic professionals in science and engineering.

For further information (course descriptions, applications, etc.) please write or call:

**American Association for the Advancement of Science**  
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## Field Centers

### WESTERN CIRCUIT

**OGC—Oregon Graduate Center for Study and Research**, Nicholas G. Eror, Department of Materials Science, 19600 N.W. Walker Road, Beaverton, Oregon 97005. Tel: (503) 645-1121.

**ANA—Santa Ana College**, David Dobos, Division of Social Science, 17th at Bristol, Santa Ana, California 92706. Tel: (714) 835-3000, ext. 475.

**UUT—University of Utah**, E. Allan Davis, Department of Mathematics, Salt Lake City, Utah 84112. Tel: (801)581-5809.

**TXA—University of Texas at Austin**, James P. Barufaldi, Science Education Center, EDB 340, Austin, Texas 78712. Tel: (512)471-7354.

### CENTRAL CIRCUIT

**UIA—University of Iowa**, Robert E. Yager, Science Education Center, 450 Physics Building, Iowa City, Iowa 52240. Tel: (319)353-3600.

#### Satellite Centers:

**NDK—University of North Dakota**,  
Grand Forks

**NMX—University of New Mexico**, Albuquerque

*Applications for courses at the satellite centers should be sent to Dr. Robert Yager at the University of Iowa field center.*

**PAR—Parkland College**, Susan G. Kelley, 2400 W. Bradley Avenue, Champaign, Illinois 61820. Tel: (217)351-2465.

**DAY—University of Dayton**, George K. Miner, Chautauqua Field Center, Department of Physics, University of Dayton, Dayton, Ohio 45469. Tel: (513)229-2327.

**CBC—Christian Brothers College**, John Edward Doody, Division of Science and Mathematics, 650 East Parkway South, Memphis, Tennessee 38104. Tel: (901)278-0100, ext. 290.

### EASTERN CIRCUIT

**UGA—University of Georgia**, W.R. Zeitler, Department of Science Education, Athens, Georgia 30602. Tel: (404)542-1763.

**TEM—Temple University**, Leonard Muldawer, Department of Physics, Philadelphia, Pennsylvania 19122. Tel: (215)787-7668.

**POL—Polytechnic Institute of New York**, Bernard J. Bulkin, Polytechnic/Westchester, 456 North Street, White Plains, New York 10605. Tel: (914)949-1775.

**HAM—Hampshire College**, Arthur H. Westing, School of Natural Science, Amherst, Massachusetts 01002. Tel: (413)549-4600, ext. 372 or 524.

# WESTERN CIRCUIT

		OGC	ANA	UUT	TXA
1.	<b>Historical Foundations of Modern Science</b> DUANE H. D. ROLLER, University of Oklahoma				20-21 Nov 5- 6 Mar
4.	<b>Cosmology: The Origin, Evolution and Future of the Universe</b> DAVID N. SCHRAMM, University of Chicago	20-21 Oct 26-27 Mar		16-17 Oct 23-24 Mar	
5.	<b>Cosmology: Man's Place in the Universe</b> VIRGINIA TRIMBLE, University of California, Irvine, and University of Maryland		20-21 Oct 16-17 Mar		
6.	<b>How Life Began on Earth</b> SIDNEY FOX, University of Miami	10-11 Nov 30-31 Mar	13-14 Nov 2- 3 Apr		
10.	<b>Advances in Coherent Optical Science and Engineering</b> BRIAN THOMPSON, University of Rochester	24-25 Nov 9-10 Mar			
13.	<b>Life in the Oceans</b> EUGENIE CLARK, University of Maryland				10-11 Nov 23-24 Feb
16.	<b>Solar Energy Conversion by Green Plants</b> BERT G. DRAKE, Smithsonian Radiation Biology Laboratory			13-14 Nov 16-17 Mar	
18.	<b>Recent Advances in Genetics and Fetal Development: Biological and Social Implications</b> ELIZABETH KUTTER, Evergreen State College and JANE A B. RAIBLE, Northwest Institute for Ethics and Life Sciences	30-31 Oct 26-27 Feb		23-24 Oct 5- 6 Mar	
19.	<b>Immunobiology: Evolutionary, Developmental and Molecular Perspectives</b> RICHARD GOLDSBY, University of Maryland			20-21 Oct 12-13 Mar	
20.	<b>Frontiers of Neurosciences</b> ROBERT LIVINGSTON and ELISABETH J. STERN, University of California, San Diego	13-14 Nov 12-13 Mar		27-28 Oct 9-10 Mar	
21.	<b>Mechanisms of Drug Action</b> PHILIP C. HOFFMANN, University of Chicago		17-18 Nov 30-31 Mar		13-14 Nov 26-27 Mar
22.	<b>Genetic and Environmental Determinants of Behavior</b> ISRAEL GOLDIAMOND and PAUL ANDRONIS, University of Chicago		27-28 Oct 5- 6 Mar		
23.	<b>Mathematical Modeling in the Biological Sciences</b> H.T. BANKS, Brown University				3- 4 Nov 12-13 Mar
24.	<b>Combinatorial Problem-Solving in the Mathematical Sciences</b> ALAN TUCKER, SUNY, Stony Brook		10-11 Nov 19-20 Mar		
26.	<b>Strategies for Increasing the Participation of Women in Mathematics-Related Fields</b> LENORE BLUM, Mills College and RUTH AFFLACK, California State University, Long Beach	23-24 Oct 2- 3 Mar			
28.	<b>Risk-Benefit Analysis</b> CHRIS WHIPPLE, Electric Power Research Institute	3- 4 Nov 16-17 Mar		6- 7 Nov 19-20 Mar	
31.	<b>*Soft Energy Paths: How to Enjoy the Inevitable</b> AMORY LOVINS and L. HUNTER LOVINS, Friends of the Earth		20-22 Nov		
32.	<b>Alternative Fuels from an Engineering Perspective</b> REGINALD VACHON, Vachon, Nix and Associates, JOHN GOODLING, Auburn University, and JEFFREY MOREHOUSE, Science Applications, Inc	27-28 Oct 9-20 Mar			30-31 Oct 16-17 Mar
33.	<b>Energy and Society: Concepts and Teaching Strategies</b> MICHAEL FIASCA and GEORGE TSONGAS, Portland State University			17-18 Nov 30-31 Mar	
37.	<b>Walter Pollution</b> DAVID KIDD, University of New Mexico		24-25 Nov 2- 3 Mar		16-17 Oct 9-10 Mar
38.	<b>Science, the Media, and the Public</b> SHARON DUNWOODY, Ohio State University, and CAROL ROGERS, Office of Public Information, AAAS				24-25 Nov 19-20 Mar
39.	<b>Public Affairs Television and Contemporary Politics</b> MICHAEL ROBINSON, George Washington University	20-21 Nov 23-24 Mar			
40.	<b>Elections: Presidential and Congressional</b> ARTHUR H. MILLER, University of Michigan			10-11 Nov 26-27 Feb	
41.	<b>*Community Power Studies</b> NELSON POLSBY, University of California, Berkeley				2- 4 Apr
43.	<b>The Changing American Family</b> FRANK FURSTENBERG, University of Pennsylvania, and GRAHAM SPANIER, Pennsylvania State University		16-17 Oct 9-10 Mar		
44.	<b>Aging, Family, and Bureaucracy</b> MARVIN SUSSMAN, University of Delaware			20-21 Nov 2- 3 Apr	17-18 Nov 30-31 Mar
45.	<b>Psychology of the Female Experience</b> SHARON LORD, University of Tennessee			30-31 Oct 23-24 Feb	
48.	<b>Cognition and Teaching</b> RUTH DAY, Duke University	16-17 Oct 5- 6 Mar			
51.	<b>Computers as an Aid in Learning Science</b> ALFRED M. BORK, University of California, Irvine				6- 7 Nov 23-24 Mar
52a.	<b>Introduction to Microcomputers and Microprocessors</b> ROGER CAMP, Iowa State University		3- 4 Nov 23-24 Mar		
52b.	<b>Introduction to Microcomputers and Microprocessors</b> ROGER CAMP, Iowa State University		6- 7 Nov 26-27 Mar		

□ Nonacademic extension courses.

\*Course meets for single session only.

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## COVER

Immunofluorescent micrograph of rabbit iliac artery 30 minutes after endothelial removal. Indirect immunofluorescence was used to demonstrate platelet factor 4 antigen in the adhering platelets and in the vessel wall (about  $\times 2000$ ). See page 611 [I. D. Goldberg *et al.*, Beth Israel Hospital, Boston, Massachusetts]

# CENTRAL CIRCUIT

		UIA and Satellites:	PAR	DAY	CBC
1.	<b>Historical Foundations of Modern Science</b> DUANE H. D. ROLLER, University of Oklahoma	16-17 Oct 2- 3 Apr			
2.	<b>The Personalities of 20th Century Physics:</b> <b>Their Interactions and Struggles</b> MAX DRESDEN, SUNY, Stony Brook			13-14 Nov 26-27 Feb	
3.	<b>The Theory of Relativity</b> ROBERT BREHME, Wake Forest University		16-17 Oct 23-24 Mar		20-21 Oct 26-27 Mar
7.	<b>The Evolution of Life on Dynamic Earth</b> JAMES VALENTINE, University of California, Santa Barbara	27-28 Oct 23-24 Feb			
8.	<b>Recent Investigations of the Upper Atmosphere</b> JULIUS LONDON, University of Colorado			3- 4 Nov 5- 6 Mar	
9.	<b>Remote Sensing of the Earth</b> STEPHEN UNGAR, NASA, Goddard Institute for Space Studies and SAMUEL GOWARD, Columbia University	24-25 Nov 30-31 Mar			
12.	<b>*Chemical Oceanography</b> CONRAD CHEEK, U.S. Naval Research Laboratory				6- 8 Apr
14.	<b>Ecology of Terrestrial Microcommunities</b> DANIEL DINDAL, SUNY College of Environmental Science and Forestry	20-21 Nov 23-24 Mar		17-18 Nov 26-27 Mar	
16.	<b>Solar Energy Conversion by Green Plants</b> BERT G. DRAKE, Smithsonian Radiation Biology Laboratory		10-11 Nov 12-13 Mar		
17.	<b>Reproduction in Mammals</b> C. ALEX SHIVERS, University of Tennessee	3- 4 Nov 26-27 Feb			13-14 Nov 23-24 Feb
19.	<b>Immunobiology: Evolutionary, Developmental and Molecular Perspectives</b> RICHARD GOLDSBY, University of Maryland			16-17 Oct 9-10 Mar	
20.	<b>Frontiers of Neurosciences</b> ROBERT LIVINGSTON and ELISABETH J. STERN University of California, San Diego	23-24 Oct 5- 6 Mar			
22.	<b>Genetic and Environmental Determinants of Behavior</b> ISRAEL GOLDIAMOND and PAUL ANDRONIS, University of Chicago		13-14 Nov 26-27 Mar		
24.	<b>Combinatorial Problem-Solving in the Mathematical Sciences</b> ALAN TUCKER, SUNY, Stony Brook		6- 7 Nov 16-17 Mar		
27.	<b>*Numerical Solution of Nonlinear Equations and Optimization Problems</b> RICHARD TAPIA, Rice University	‡NMX: 20-22 Nov*			
29.	<b>New Uncertainties in Macroeconomics</b> LAWRENCE SUMMERS, MIT				30-31 Oct 5- 6 Mar
31.	<b>*Soft Energy Paths: How to Enjoy the Inevitable</b> AMORY LOVINS and L. HUNTER LOVINS, Friends of the Earth		30 Oct - 1 Nov *		
34.	<b>Food, Energy, and Society</b> DAVID PIMENTEL, Cornell University			10-11 Nov 23-24 Feb	
35.	<b>Technology and Humanism in Meeting World Food Needs</b> LLOYD SLATER, Aspen Institute for Humanistic Studies		20-21 Oct 9-10 Mar		23-24 Oct 12-13 Mar
37.	<b>Water Pollution</b> DAVID KIDD, University of New Mexico		23-24 Oct 30-31 Mar		27-28 Oct 2- 3 Apr
38.	<b>Science, the Media, and the Public</b> SHARON DUNWOODY, Ohio State University, and CAROL ROGERS, Office of Public Information, AAAS			20-21 Nov 16-17 Mar	
39.	<b>Public Affairs Television and Contemporary Politics</b> MICHAEL ROBINSON, George Washington University		17-18 Nov 19-20 Mar		
40.	<b>Elections: Presidential and Congressional</b> ARTHUR H. MILLER, University of Michigan			24-25 Nov 23-24 Mar	
42.	<b>The 1980 Census in the Undergraduate Classroom</b> DUDLEY L. POSTON, JR., University of Texas	6- 7 Nov 19-20 Mar		30-31 Oct 12-13 Mar	3- 4 Nov 16-17 Mar
45.	<b>Psychology of the Female Experience</b> SHARON LORD, University of Tennessee		27-28 Oct 26-27 Feb		
46.	<b>Linguistics: Current Issues in the Theory of Grammar</b> WAYNE O'NEIL, MIT	13-14 Nov 26-27 Mar			10-11 Nov 23-24 Mar
47.	<b>Psychology of Problem Solving</b> JAMES GREENO, University of Pittsburgh	20-21 Oct 16-17 Mar			16-17 Oct 19-20 Mar
48.	<b>Cognition and Teaching</b> RUTH DAY, Duke University		3- 4 Nov 2- 3 Apr		
49.	<b>Calculus for Non-Majors in the Physical Sciences</b> ROBERT ROSENBAUM, Wesleyan University			23-24 Oct 19-20 Mar	
50.	<b>The Handicapped Student in Science</b> MARTHA ROSS REDDEN, Office of Opportunities in Science, AAAS				17-18 Nov 9-10 Mar
54.	<b>Microcomputers in the Laboratory</b> ROBERT TINKER, Technical Education Research Centers	‡NDK: 16-17 Oct 2- 3 Apr		20-21 Oct 30-31 Mar	

‡Courses 27 and 54 at satellite centers.

\*Course meets for single session only.

## EASTERN CIRCUIT

		UGA	TEM	POL	HAM
2.	<b>The Personalities of 20th Century Physics: Their Interactions and Struggles</b> MAX DRESDEN, SUNY, Stony Brook		10-11 Nov 23-24 Feb		
5.	Cosmology: Man's Place in the Universe VIRGINIA TRIMBLE, University of California, Irvine, and University of Maryland		23-24 Oct 19-20 Mar		
7.	<b>The Evolution of Life on Dynamic Earth</b> JAMES VALENTINE, University of California, Santa Barbara		30-31 Oct 26-27 Feb		
8.	Recent Investigations of the Upper Atmosphere JULIUS LONDON, University of Colorado				6- 7 Nov 9-10 Mar
9.	<b>Remote Sensing of the Earth</b> STEPHEN UNGAR, NASA, Goddard Institute for Space Studies, and SAMUEL GOWARD, Columbia University			10-11 Nov 16-17 Mar	
10.	Advances in Coherent Optical Science and Engineering BRIAN THOMPSON, University of Rochester			17-18 Nov 12-13 Mar	
11.	<b>Modern Chemical Dynamics</b> LEONARD SPICER, University of Utah	20-21 Oct 23-24 Feb			23-24 Oct 26-27 Feb
12.	*Chemical Oceanography CONRAD CHEEK, U.S. Naval Research Laboratory			25-27 Mar	
14.	<b>Ecology of Terrestrial Microcommunities</b> DANIEL DINDAL, SUNY College of Environmental Science and Forestry				13-14 Nov 19-20 Mar
15.	Ecology and Evolution in the Tropics JOHN KRICHER, Wheaton College	Δ 17-18 Nov Δ 30-31 Mar			20-21 Nov 2- 3 Apr
17.	<b>Reproduction in Mammals</b> C. ALEX SHIVERS, University of Tennessee		24-25 Nov 12-13 Mar		
19.	Immunobiology: Evolutionary, Developmental and Molecular Perspectives RICHARD GOLDSBY, University of Maryland	23-24 Oct 16-17 Mar		30-31 Oct 19-20 Mar	
20.	<b>Frontiers of Neurosciences</b> ROBERT LIVINGSTON and ELISABETH J. STERN University of California, San Diego			20-21 Oct 2- 3 Mar	
22.	Genetic and Environmental Determinants of Behavior ISRAEL GOLDIAMOND and PAUL ANDRONIS, University of Chicago	24-25 Nov 2- 3 Apr			
23.	<b>Mathematical Modeling in the Biological Sciences</b> H.T. BANKS, Brown University			13-14 Nov 30-31 Mar	
25.	Advances in Statistics: Exploratory Data Analysis, Robust Methods, Log-Linear Models GARY SIMON, SUNY, Stony Brook	13-14 Nov 5- 6 Mar		3- 4 Nov 23-24 Mar	
26.	<b>Strategies for Increasing the Participation of Women in Mathematics-Related Fields</b> LENORE BLUM, Mills College, and RUTH AFFLACK, California State University, Long Beach				20-21 Oct 5- 6 Mar
29.	New Uncertainties in Macroeconomics LAWRENCE SUMMERS, MIT		27-28 Oct 2- 3 Mar		
30.	<b>Arms Uncontrolled: Causes and Remedies of the Arms Race</b> EVERETT MENDELSON, Harvard University		17-18 Nov 26-27 Mar		10-11 Nov 23-24 Mar
33.	Energy and Society: Concepts and Teaching Strategies MICHAEL FIASCA and GEORGE TSONGAS, Portland State University			20-21 Nov 2- 3 Apr	
34.	<b>Food, Energy, and Society</b> DAVID PIMENTEL, Cornell University	30-31 Oct 26-27 Feb			
36.	Food and Nutrition Hassles: U.S.A. KATHRYN KOLASA, Michigan State University		20-21 Nov 2- 3 Apr		17-18 Nov 30-31 Mar
40.	<b>Elections: Presidential and Congressional</b> ARTHUR H. MILLER, University of Michigan	20-21 Nov 19-20 Mar			
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50.	<b>The Handicapped Student in Science</b> MARTHA ROSS REDDEN, Office of Opportunities in Science, AAAS			6- 7 Nov 5- 6 Mar	
51.	Computers as an Aid in Learning Science ALFRED M. BORK, University of California, Irvine				3- 4 Nov 26-27 Mar
53.	<b>Microcomputer Interfacing in the Undergraduate Laboratory</b> ALBERT S. WOODHULL, Hampshire College	3- 4 Nov 9-10 Mar			27-28 Oct 2- 3 Mar

\*Course meets for single session only. ΔBoth sessions at Ossabaw Island, Georgia. □ Nonacademic extension courses.



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## Views from Paris

A quadrennial International Geological Congress is a special scientific event. It provides a global view of the status of the earth sciences and brings together leading scientists from many countries. The Congress held this year in Paris on 7 through 17 July was also a political event. It was addressed by the President of the French Republic, Valéry Giscard d'Estaing, by the Minister for the Environment and Human Ecology, Michel d'Ornano, and by the Secretary of State for Research, Pierre Aigrain.

At the Congress there was further evidence that the earth sciences are in the midst of an exciting period. They are beneficiaries of a combination of national needs, new concepts, and powerful equipment. Many nations are experiencing acute problems of inflation, unemployment, and balance of payments. One of their hopes is to find substantial resources of petroleum, natural gas, or minerals. Thus, indigenous geologists are being accorded enhanced status in many countries. Geologists are finding that the simple model of colliding tectonic plates cannot be used to explain many phenomena. However, the concept has been fruitful and has served as a liberating stimulus. Improved methods of geophysical exploration, particularly those employing extensive computational power, have led to discoveries of petroleum and natural gas and are serving to delineate favorable prospects for future drilling. Of particular importance are offshore areas, which are expensive to explore but probably contain substantial resources. One of the highlights of the Congress was a symposium dealing with structures in the continental margins. These areas, particularly those in the North Atlantic off the coast of the United States, have been intensively explored seismically. Careful aeromagnetic surveys have been made. The four wells that were drilled by the U.S. Geological Survey in collaboration with the petroleum industry have contributed important ground truth. In such studies on both sides of the Atlantic, results from deep-sea drilling were helpful. Indeed, it was a heartwarming experience at the Congress to learn of the enthusiasm of geologists from many lands for the cooperation they had received in cruises of the drilling ship *Glomar Challenger*.

Of the three French officials who addressed the Congress, Pierre Aigrain is of special interest to American scientists. Aigrain, who is a physicist, received his doctorate from what is now Carnegie-Mellon University and later spent considerable time at Massachusetts Institute of Technology. He is regarded by those who know him as a blunt and forthright person and is well informed in the natural sciences and in technology. During his appearance at the Congress, Aigrain spoke of the renaissance that has occurred in the earth sciences and presented a thoughtful analysis of the factors contributing to the rejuvenation.

In an interview several days after his speech, Aigrain touched on aspects of French policy for science and technology. A high-level decision has been reached to increase funds for research. The target is to enhance support by 30 percent; the change will occur at the rate of 5 to 6 percent a year above inflation. Some areas will experience larger rates of increase, while support for others will not grow much. For example, Aigrain cited physics as having been unusually well supported earlier and thus not so much in need of expansion. He indicated that the earth sciences, molecular biology, and microelectronics would be among the fields favored during the next period. Aigrain indicated that some further efforts would be made in solar energy and other unconventional energy sources. However, he emphasized that France has a goal of reducing dependence on oil from 60 to 30 percent by 1990. That will be achieved, he asserted, by use of nuclear energy and imports of coal and natural gas.

The U.S. approach to support of research worked well in the past, but lately both the approach and the results seem to be deteriorating. It will be interesting to see whether the more carefully devised and forward-looking French program yields better results.—PHILIP H. ABELSON



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