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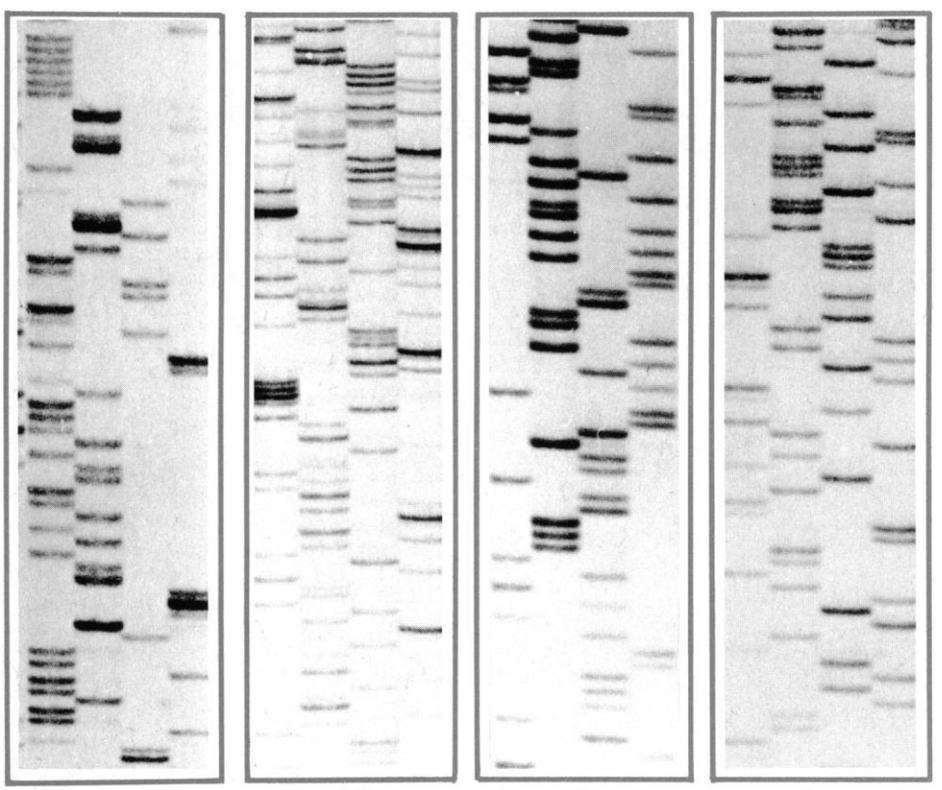

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COVER Salve Regina College, Newport, Rhode Island. The college campus is one of the sites of the Gordon Research Conferences in 1987. See page 1233. [Photograph courtesy of Salve Regina College]

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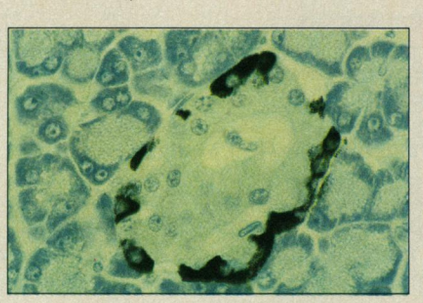

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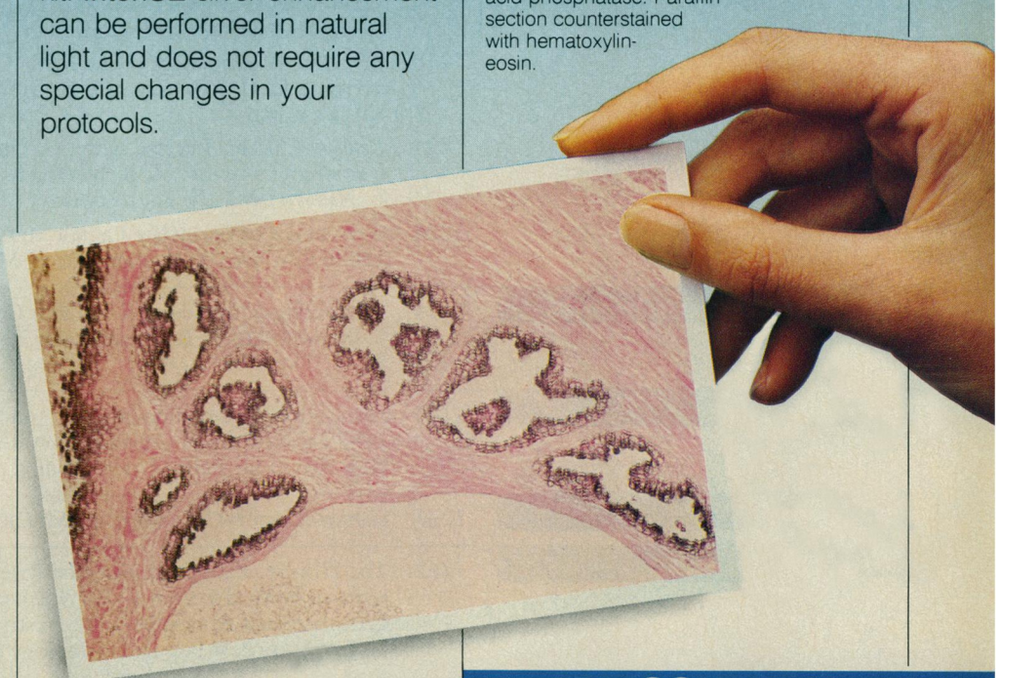

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This Week in
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Fluctuating sea level

IN conjunction with the changes that have occurred in sea level throughout the earth's history have come changes in the circulation of ocean waters, the organic productivity of the oceans, and the climate of the earth (page 1156). Many forms of evidence from the stratigraphic record attest to the coincidence of these events and processes. Haq, Hardenbol, and Vail add new data obtained from marine and continental outcrops in the United States and central and western Europe with continental shelf seismic and oil well data to provide a detailed profile of synchronous sea level changes that have left their mark during the last 250 million years. The curves are tools that can be used for identifying and dating sediments throughout the world. Kerr discusses the expanded and refined Vail curves and other recent data from studies of both the continental shelf and the deep sea; these generally verify the global nature of past sea level changes, but some inconsistencies and puzzling findings remain to be integrated into the picture of how the earth's seas have fluctuated (page 1141).

China's population goals

TO keep its population from growing beyond 1.2 billion by the year 2000, the government of China instituted a policy in 1979 that encouraged every couple to have only one child (page 1167). This policy has been difficult to implement, particularly in rural areas, because it ignores some long-held cultural values as well as family economics. Greenhalgh and Bongaarts compare the one-child policy with five alternatives that vary with regard to timing, spacing, and number of children per family. All were assessed for their effects on population size (the predominant consideration for the one-child policy), the pace at which the population would age, the ability of families to support elderly relatives, the economic well-being afforded to women and girls, the economic potential of the family, and the compatibility of the policy with cultural values. Projections indicated that all policies would restrict the population to about 1.2 billion in the year 2000; all the alternatives satisfied more of the demographic, social, and cultural objectives than does the one-child policy.

Model of superconductivity

ELECTRICAL resistance vanishes in superconducting materials, and electric currents can then pass freely through them; the recent technologic feat of developing high-temperature superconductors has preceded an understanding of exactly how these materials work (page 1196). Anderson proposes a model, quite different from the standard model invoked to explain superconductivity at lower temperatures, that may account for the properties of these new superconducting materials. The materials are oxides of lanthanum and copper that first act as magnetic-phase insulators. They are thought to exhibit resonating valence bonds (which may be analogous to the bonding that Pauling proposed to explain the structures of benzene and similar molecules). When enough impurities are added to the insulating magnetic phase (a process that is called doping) so that the material is metallized, a superconductor is produced. Electronic and magnetic interactions thus drive the materials to superconductivity; only a small contribution is made by phonon and electron interactions, which are the driving interactions for superconductivity according to the standard model.

Structure of cuticle

CUTICLE, the hard material that forms the exoskeleton of insects, consists mostly of water, protein, and chitin (an amorphous polysaccharide); the protein and chitin are linked through catecholamine derivatives (page 1200). Using cross-polarization magic-angle-spinning nuclear magnetic resonance, Schaefer *et al.* studied organic components (protein, chitin, catechols, lipids) in cuticle of pupae of tobacco hornworms at the time of molting and 3 days afterward. At molting, the cuticle is soft; within a few hours it stiffens and becomes dark brown. Links form during this sclerotization (strengthening) period, and the exoskeleton dries out, toughens, and hardens. The relative levels of proteins, chitin, and catechols increase during this process while those of water and lipids decrease. Nitrogens of histidyl residues in the proteins link with carbons of catecholamines, and these carbons probably also link with oxygen of chitin. Through knowledge of what makes the cuticle strong, it may be possible to develop pest control agents that would disrupt sclerotization.

Gene cloned for vitamin D receptor

VITAMIN D participates in many important physiologic and biochemical processes, regulation of cell proliferation and differentiation, hormone secretion, enzyme induction, and immune responses (page 1214). The receptor within cells to which this vitamin binds is a polypeptide; complementary DNA for the gene encoding the receptor has now been cloned by McDonnell *et al.* Vitamin D receptors are present in only tiny amounts in animal cells, even in target tissues; their abundance is, in general, less than one-tenth that of steroid receptors. The deduced amino acid sequence of the receptor includes a region rich in cysteines, lysines, and arginines that is similar to regions on receptors for steroids; even stronger homology exists with domains of an avian oncogene product. Vitamin D is known to regulate the level of its receptor in cultured mammalian cells, and the receptor appears to regulate the expression of its own gene. The antibodies and probes developed for this study will have many uses; for example, they will be helpful in analyzing a form of rickets that is vitamin D–dependent and for which the origin of the disease has been traced to dysfunctional vitamin D receptor domains. This is the first gene for a vitamin receptor that has been cloned.

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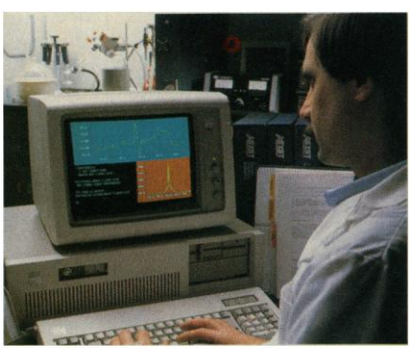

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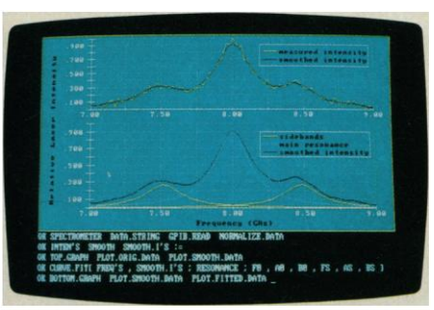

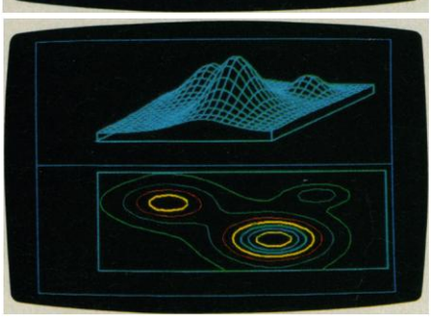

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Insomnia and the Pious Parchment Pile

It has been brought to my attention that millions of people are suffering from insomnia. This strikes me as a waste since I have developed a simple, drug-free, solution.

The first step in this treatment involves the acquisition of a Pious Parchment Pile (PPP). Pious Parchments are documents that one ought to read, but they are usually as heavy going as a walk through molten asphalt. For instance, I recently received a heavy book—Pious Parchments weigh more than 2 pounds—from the Carnegie Foundation for the Advancement of Teaching entitled *College: The Undergraduate Experience in America*. This is a perfect example of an important treatise turned out by a prestigious institution on a subject of interest to every college professor. This report finds that undergraduate education is in terrible shape and that students work hard to pass examinations, not for pure joy. Also revealed are discoveries that there are conflicts between teaching and research, conformity and creativity, and academic requirements and extracurricular activities. There is no way to finish reading such a document between 9 a.m. and 5 p.m. Interruptions by irate students, irrelevant deans, and even obnoxious salespersons are welcomed to obtain relief from such a monograph. After dinner reading is also difficult: a survey of 537 educated middle-class adults found that the reading of Pious Parchments induces sleep within 37 ± 2 seconds.

The next step in solving the insomnia problem is to arrange the PPP at one's bedside. Once a sizable pile is achieved, one can be secure from fear of an attack of insomnia. If at 3 a.m. one awakens, tosses in bed, and realizes that sleep will not return, there is now no reason to become tense, gnash teeth, or resort to drugs. One simply takes up the Parchment that is on the top of the PPP and proceeds to read. Two outcomes are possible, both beneficial: either one falls asleep promptly (the most common outcome) or one actually finishes the document, thereby becoming one of the few people in captivity who have ever done so. People with severe insomnia have occasionally gone to a second PP.

Upon reading *College: The Undergraduate Experience in America*, one finds that it has as a not-so-well-hidden agenda the idea that training for careers is stifling undergraduate education and that vastly increased liberal arts and a heavy infusion of history, ethics, and community values are needed. A curriculum built around the academic framework of "language, art, heritage, institutions, nature, work, and identity" is recommended. A thesis simply solving an exciting physics problem would fail to qualify, since theses are recommended to include historical, social, and ethical perspectives. The document recommends that senior students prepare summaries of their activities as campus citizens—participation in student government, clubs, and cultural events, and, most importantly, voluntary service. To go through each recommendation is to become appalled at their increasing fuzziness and inconsistency, but mostly at the apparent lack of commitment to an intellectually exhilarating experience. Developing "good guys" and "civic minded women" is all very well, but the greatest contribution that can be made by undergraduate training is to expose students to deep intellectual experiences and to show them how to do a job, almost any job, extremely well.

Majors are designed to expose students to a body of knowledge and to learn to apply disciplined reasoning to that knowledge. Good educators are usually trained to squeeze an adequate number of courses into tight schedules. Dilution by courses in "community values," "morals," and "heritage," most of which push one person's set of values in preference to another's, would produce cultured dilettantes. Scientists can benefit from learning more liberal arts, and liberal arts majors can benefit from learning more science, but neither can benefit from the substitution of moralizing for tough intellectual courses. This Parchment would best be read from an airplane speeding at treetop level, in which case the clichés tend to blur and appear as real thoughts.

Considered on balance, Pious Parchments such as *College: The Undergraduate Experience in America* cannot cause too much damage so long as they are not taken seriously, and they do have some redeeming social value in that they can help hardworking educators and grubby scientists get a good night's sleep.—DANIEL E. KOSHLAND, JR.

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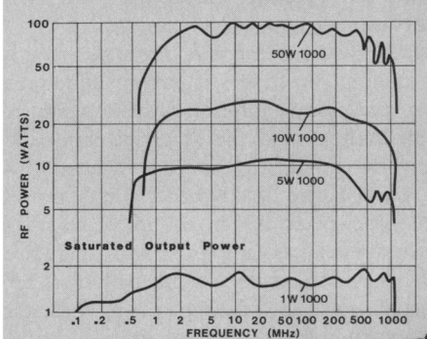

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alcohol antagonist devoid of discernible side effects a possibility. It will be interesting to see whether the actions of Ro15-4513 in reversing alcohol's sedative actions in primates as reported by Miczek and Weerts are observed with other inverse agonists. Finally, Miczek and Weerts confirm our findings in rats that Ro15-4513 will "partially restore motor activity that was impaired by large alcohol doses (1.5 to 3.0 grams per kilogram orally)" and extend these observations to squirrel monkeys. We would like to emphasize that in our studies in rats Ro15-4513 is more potent at blocking the intoxication syndrome (that is, when administered before alcohol) than in reversing it, since the latter requires higher doses of drug (*10*). Ro15-4513 promises to remain an important tool in alcohol research as we and others attempt to develop analogues that are more efficacious and devoid of inverse agonist properties.

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Erratum: In the Technical Comment "*Trans*-activator gene of HTLV-II: Interpretation" by W. C. Greene *et al.* (27 Feb., p. 1073), the third-from-the-last sentence should have read, "In addition, using Jurkat or other T-cell lines, Inoue and colleagues (*2*) and Maruyama *et al.* (*3*) have described activation of both the IL-2 receptor and IL-2 genes by the *tat*-I gene isolated from HTLV-I, which shares similar structural and functional properties with the *tat*-II gene." Reference 3 should have been to M. Maruyama *et al.*, *Cell* **48**, 343 (1987).

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FC RECEPTORS AND IMMUNOGLOBULIN-BINDING FACTORS ***June 14-19*** Chairs: Richard G. Lynch, University of Iowa; Wolf H. Fridman, Curie Institute. **Molecular Structure.** K. Ishizaka, R. Coico, M. Adachi, C. Neuprot-Sautes, J. Banchereau, R. Lynch, J. McGhee, R. Geha, J. Marcelleti; **Signal Transduction.** M. Beavan, B. Baird, J. Fernandez, R. Seriganian, T. Ishizaka; **Immunoglobulin Sites Interacting with Fc Receptors.** K. Dorrington, D. Burton, D. Stanworth, J. Gergely; **Internalization and Transport.** K. Mostov, I. Mellman, R. Rodewald, G. Palade; **Biology of Host Response.** A. Capron, D. Segal, M. Fanger, I. Witz, M. Boyle, M. Capron; **Conclusion and Perspectives.** W. Fridman, A. Capron, N. Dickler.

TARGETED DRUG DELIVERY ***June 21-26*** Chairs: Francis C. Szoka, Jr., University of California/SF; Rudolph Juliano, University of Texas Medical School. **Pharmacokinetic Considerations for Targeted Drug Delivery.** F. Szoka, J. Weinstein, K. Himmelstein, R. Seigel; **Disposition and Metabolism of Liposomes.** G. Scherphof, J. Dijkstra; **Applications of Targeting to the Reticuloendothelial System.** C. Alving, M. Kende; **Physico-Chemical Considerations.** K. Dill, J. Bentz; **Protein Adsorption to Surfaces.** R. Juliano; **Therapeutic Applications of Targeted Liposomes.** E. Mayhew/D. Bankert, T. Allen, A. Gabizon; **Carrier Dependent Drugs.** T. Heath, W-C. Shen, J. Turcotte, R. Perez; **pH Sensitive Liposomes.** L. Huang, F. Szoka, R. Nayar; **Clinical Trials of Liposome Encapsulated Agents.** G. Lopez-Berestein, R. Sells/R. Owen.

NEURAL MECHANISMS IN CARDIOVASCULAR REGULATION ***June 28-July 3*** Chairs: Franco R. Calaresu, University of Western Ontario; Vernon S. Bishop, University of Texas HSC; **Regional Brain Metabolism and Cardiovascular Neural Integration.** D. Kostreva, J. Seagard; **New Approaches to Establishing the Functional Neuroanatomy of Cardiovascular Control.** C. Saper, J. Cabot, D. Cechetto, R. Lind; **Control of Spinal Preganglionic Sympathetic Neurons.** L. Weaver, K. Dembowsky, R. McCall, C. Polosa; **CNS Control of the Cardiovascular System in Humans.** C. Mathias; **Putative Transmitters in "Cardiovascular" Pathways: Biogenic Amines and Amino Acids.** J. Saavedra, M. Palkovits, K. Fuxe, D. Reis; **Putative Transmitters in "Cardiovascular" Pathways: Peptides.** C. Helke, C. Sasek, J. Kessler, P. Needleman; **Vasopressin-Neural Interactions in the Control of Cardiovascular Function.** A. Cowley, V. Bishop, A. Johnson; **Current Controversies: Discussion of Selected Posters.** L. Schramm, S. Hilton; **Perspectives for the Future.** D. Reis, H. Gainer, R. Llinas, J. Ledoux.

SOMATIC CELL GENETICS ***July 5-10*** Chairs: David Housman, Massachusetts Institute of Technology; Geoffrey Wahl, Salk Institute. **Oncogenes.** W. Cavanee, E. Stanbridge, S. Aaronson, G. VandeWoude; **Immunology.** J. Frelinger, V. Oi, K. Calame, P. Marrack; **Recombination and Repair.** R. Kucherlapati, D. Bootsma, M. Calos, P. Hanawalt; **Control of Gene Expression.** S. Tilghman, N. Jenkins, R. Jaenisch, N. Copeland; **Differentiation in Hybrids.** H. Blau, K. Fournier, A. Skoultchi, M. Baron; **Genome Plasticity.** G. Wahl, R. Painter, H. Eisen; **Human Genetics.** D. Housman, K. Davies; **Cell Surface Receptors.** M. Krieger, M. Bothwell, A. Robbins; **DNA Replication.** M. DePamphilis.

CALCIUM AND CELL FUNCTION ***July 12-17*** Chairs: Thomas C. Vanaman, University of Kentucky; Richard Tsien, Yale University School of Medicine. **Molecular Aspects of Ca^{2+}-Regulatory Systems.** A. Means, M. James, D. Blumenthal, D. Watterson; **Molecular Aspects of Ca^{2+}-Dependent Regulation of Cytoskeleton and Cell Motility.** M. Shelanski, J. Dedman, W. Frazier, J. Bryan; **Protein Kinase C Structure, Function and Regulation.** W. Anderson, Y. Hannun, Y. Nishizuka, M. Waterfield; **Roundtable: Ca^{2+}-Dependent Phosphorylation Cascades.** C. Klee, H. Lee, M. Kennedy, D. Armstrong; **Polyphosphoinositide Metabolism and Ca^{2+}-Signalling.** J. Exton, P. Majerus/T. Connally, R. Irvine, H. Rasmussen; **Intracellular Calcium Imaging.** R. Y. Tsien, F. Fay, J. Connor; **Calcium Channels and Internal Release Mechanisms.** R. Tsien, M. Lazdunski, K. Dunlop, R. Coranado, H. Reuter; **Calcium Sequestration and Extrusion Systems.** E. Carafoli, T. Vanaman, B. MacLennan; **New Directions in Calcium Regulation.** R. Williams.

MECHANISMS OF CARCINOGENESIS ***July 19-24*** Chairs: Nancy Colburn, National Institutes of Health; G. Tim Bowden, University of Arizona HSC. **Genetics of Susceptibility to Carcinogenesis I & II.** Peter Leder, N. Colburn, J. Smith, J. Whitlock, W. Cavenee, J. Peto, J. DiGiovanni, N. Drinkwater, S. O'Brien, M. Weber; **Genetic Determinants of Multistage Carcinogenesis.** R. Weinber, T. Slaga, G. Bowden, M. Tainsky; **DNA Changes and Oncogene Activation.** M. Barbacid, W. Summers, P. Hanawalt, B. Strauss, M. Poirier; **Transforming Genes and their Products.** T. Gilmore, C. Sherr, D. Lowy, L. Rohrschneider, N. Rosen; **Signal Transduction: Protein Kinases and their Substrates.** B. Wallner, M. Rosner, J. Sando, J. Brugge; **Transcriptional/Post-Transcriptional Signals and Nuclear Oncogenes.** G. Khoury, J. Steitz, R. Eisenman, S. Cory, R. Muller; **Signal Transduction: Ion Signals, Heat, Oxidant and Metabolic Stress Response.** J. Pouyssegur, T. O'Brien, T. Kensler, W. Welch; **Drug and Heat Resistance.** L. Lui, C. Myers, E. Gerner, M. Gottesman.

BIOLOGY OF TUMOR METASTASES ***July 26-31*** Chairs: Lance A. Liotta, National Institutes of Health; Leo T. Furcht, University of Minnesota. **Growth Factors and Oncogenes.** L. Liotta, I. Verma, T. Triche, M. Dean, L. Wakefield; **Oncogenes and Metastases.** L. Liotta, R. Pozzatti, G. Scangos, A. Chambers, G. Martin; **Drug Resistance and Gene Regulation.** D. Welch, V. Ling; **Immune Mechanisms.** J. Weinstein, M. Linehan, I. Fidler, R. Herberman, J. Talmadge, J. Schlom; **Proteases.** D. Rifkin, C. Brinkerhoff, U. Thorgeirsson, B. Sloane, M. Nakajima; **Laminin/Proteoglycans and Matrix Interactions.** G. Martin, Y. Yamada, M. Sobel, J. Varani, D. Eppstein; **Fibronectin and Matrix Interactions.** L. Furcht, M. Humphries, R. Juliano, D. Roberts; **Endothelium/Angiogenesis.** G. Nicolson, T. Maciag, J. Folkman, D. Bowen-Pope; **Cell Motility.** L. Liotta, J. McCarthy, R. Snyderman, B. Zetter.

RESEARCH CONFERENCES

NUTRITION AND BRAIN FUNCTION ***August 2-7*** Chairs: John D. Fernstrom, University of Pittsburgh; Alfred E. Harper, University of Wisconsin. **Nutritional and Metabolic Factors Influencing Brain Amino Acid Uptake and Monoamine Formation: Normal Physiology and Pathophysiology.** G. Anderson, J. Fernstrom, C. Curzon, R. Roth, R. Hawkins, J. Brosnan, M. Fernstrom, J. Fischer; **CNS Effects of Aromatic Amino Acids.** R. Fuller, J. Commissiong, M. Trulson, A. Sved, J. Thurmond; **Amino Acids, Brain Neurotransmitters and Feeding Behavior I & II.** A. Harper, P. Leathwood, J. Wurtman, G. Anderson, J. Blundell, R. Kanarek, Q. Rogers, J. Tews; **Aspartame: Effects on Brain Amino Acids, Monoamines and Behavior.** J. Fernstrom, J. Harwood, T. Maher, K. Torii; **Workshop: Methods for Measuring Neurotransmitter Synthesis and Turnover.** J. Commissiong. **Nutrition and Neuroendocrine Function.** K. Pirke, F. Bronson, J. Cameron, M. Quigley; **Nutrition and Psychiatric Diseases.** H. Van Praag, B. Walsh, M. Fernstrom, W. Kaye; **Workshop: Methods for Quantitating Appetite and Food Intake/Preference in Experimental Animals and Subjects.** P. Leathwood; **Nutritional and Metabolic Factors Influencing Brain Monoamine Formation: Effects of Vitamins/Trace Elements on Brain Catecholamines.** J. Prohaska, M. Youdim, W. McEntee, K. Dakshinamurti.

ENERGY REGULATION OF ENERGY BALANCE ***August 9-14*** Chairs: George A. Bray, University of Southern California; Barbara Hansen, University of Southern Illinois. **Neuroanatomy of Energy Regulation.** T. Scalafani, R. Keesey, R. Ritter, G. ter Horst; **Central Neurotransmitters Involved in Regulation of Energy Balance.** S. Leibowitz, B. Hoebel, G. Anderson, W. Kaye; **Gut Liver and Circulating Nutrients in Energy Balance.** D. Novin, G. Smith, M. Friedman, E. Scharrer; **Autonomic Nervous System and Energy Balance.** G. Bray, L. Landsberg, T. Powley, L. Campfield; **Endocrine Factors in Energy Balance.** B. Hansen, E. Danforth, G. Wade, J. Stern; **Fat as a Signal for Energy Regulation.** M. Greenwood, R. Leibel, S. Cushman, A. Kissebah; **Resting Metabolic Expenditure and Efficiency.** C. Bogardus, J. Flatt, E. Jecquier, J. Kinney; **Dietary Thermogenesis and Efficiency.** O. Owen, E. Ravussin, S. Welle, M. Stock; **Exercise and Efficiency.** E. Horton, C. Bouchard, E. Buskirk, K. Segal.

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GENETIC RECOMBINATION AND GENOME REARRANGEMENTS ***June 28-July 3*** Chairs: Gerald R. Smith, Fred Hutchison Cancer Research Center; John H. Wilson, Baylor College of Medicine. **Enzymology of DNA Synapsis.** C. Radding, H. Stern, M. Cox, T. Kodadek; **Prokaryotic Transposons.** N. Craig, N. Kleckner, K. Mizuuchi; **Eukaryotic Transposons.** A. Skalka, V. Corces, S. Emmons; **Site-Specific Recombination.** H. Nash, A. Landy, K. Appelt; **Mismatch Repair.** R. Kolodner, D. Patel, P. Modrich, M. Fox; **Homologous Recombination in Phage, Bacteria and Fungi.** F. Stahl, G. Mosig, J. Haber; **Sites Controlling Homologous Recombination.** S. Roeder, D. Treco, G. Smith, R. Malone, J. Kohli; **Recombination in Vertebrates.** R. Kucherlapati, M. Liskay, D. Camerini-Otero, K. Thomas; **Biological Consequences of Recombination.** A. Klar, F. Alt.

GASTROINTESTINAL TRACT II: ADAPTATION AND GROWTH ***July 5-10*** Chairs: Leonard R. Johnson, University of Texas HSC; James D. Jamieson, Yale University School of Medicine. **Mucosal Growth.** L. Johnson, H. Leffert, M. Moyer, E. Weser; **Pancreatic Growth.** J. Williams, G. Green, J. Morisset, C. Logsdon; **Dietary Adaptation of Enzymes and Proteins in the GI Tract: Molecular Mechanisms.** G. Scheele, G. Schultz, H. Kern, D. Alpers; **Regulation, Development and Evolution of Intestinal Nutrient Transport.** J. Diamond, M. Smith, W. Karosov, G. Gray; **Transport Adaptation to Na^+ Depletion.** S. Schultz, H. Binder, M. Kashgarian, B. Rossier; **Adaptation of GI Motility.** M. Gershon, J. Wood, A. Willard, J. Szurszewski; **Adaptation of Intestinal Epithelia to Exogenous Macromolecules.** M. Neutra, R. Rodewald, R. Owen, J.-P. Kraehenbuhl; **Physiological and Immunological Adaptations to Infections.** G. Castro, J. Bienenstock, H. Miller, N. Weisbrodt; **Molecular Mechanisms of Epithelial Cell Growth.** J. Jamieson, D. Louvard, M. Mooseker, L. Reid.

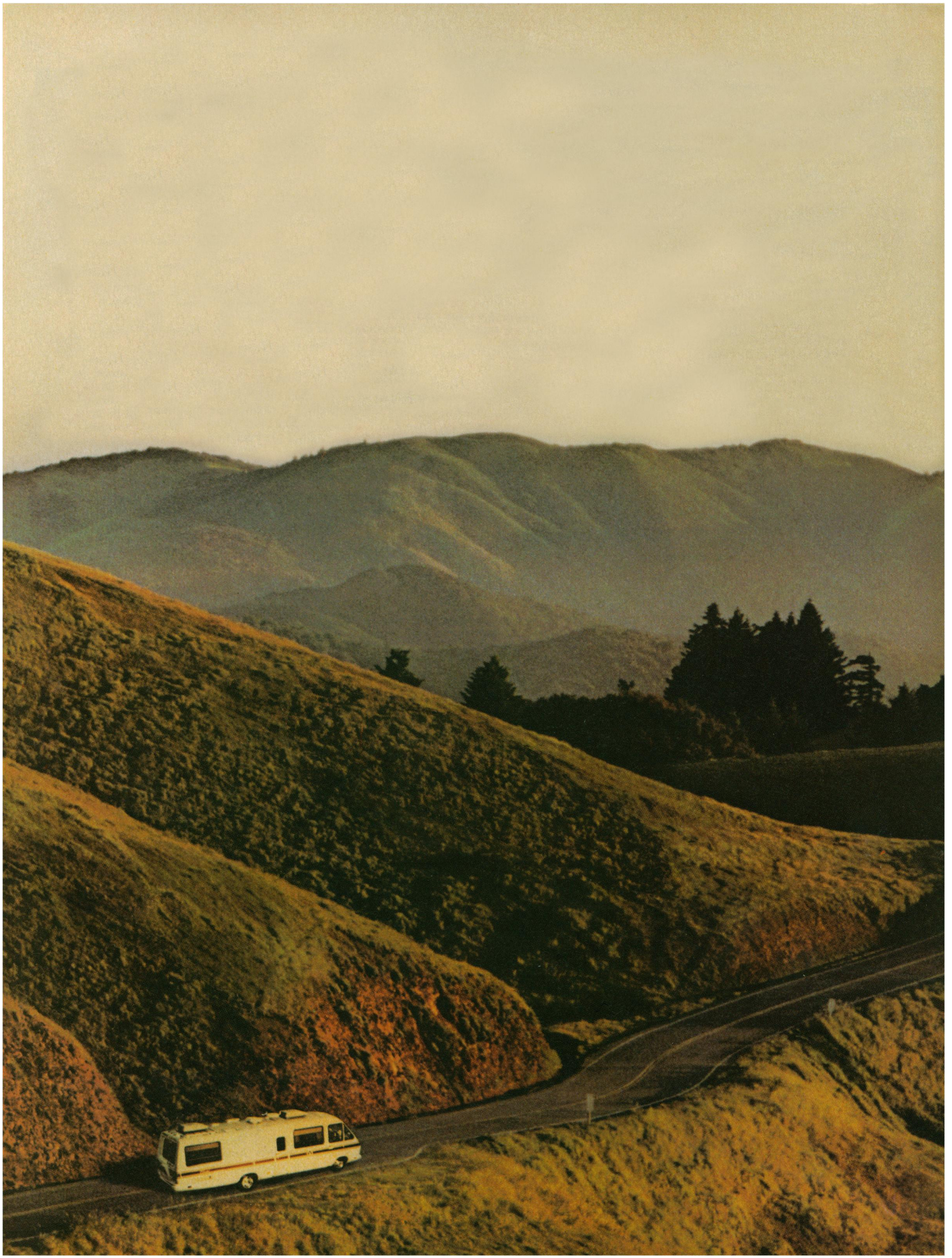
PLANT GENE EXPRESSION ***July 12-17*** Chairs: Robert T. Fraley, Monsanto Company; Joe L. Key, University of Georgia; **Ti Plasmid Vector Transformation.** M. Bevan, L. Herrera-Estrella, P. van den Elzen, J. Velten, C. Young; **Workshop: Crop Plant Transformation.** R. Horsch, D. Hildebrand, J. Fillatti; **Plant Gene Promoters.** N-H. Chua, J. Schell, E. Dennis, B. Gurley, R. Beachy; **Viral/Free DNA Vector Transformation.** S. Rogers, B. Gronenborn, M. Fromm, R. Shillito; **Workshop: Maximizing Gene Expression.** J. Jones, A. Hoekema, L. Gehrke; **Cellular Regulatory Molecules.** P. Quail, T. Guilfoyle, H. Kende, A. Darvill; **Somatic Cell/Plant Genetics.** R. Chaleff, R. Riedel, I. Negrutiu, G. Donn; **Workshop: Plant Genetics.** E. Meyerowitz, B. Baker, C. Sommerville, H. Klee; **Reproductive Biology.** B. Goldberg, S. McCormick, S. Levings, J. Nasrallah; **Protein Trafficking.** T. Cashmore, K. Keegstra, E. Tobin, G. della-Cioppa; **Novel Gene Systems.** R. Broglie, B. Ryan, D. Klessig, C. Lamb; **Crop Modification.** J. Leemans, R. Nelson, S. Loesch-Fries, J. Duesing.

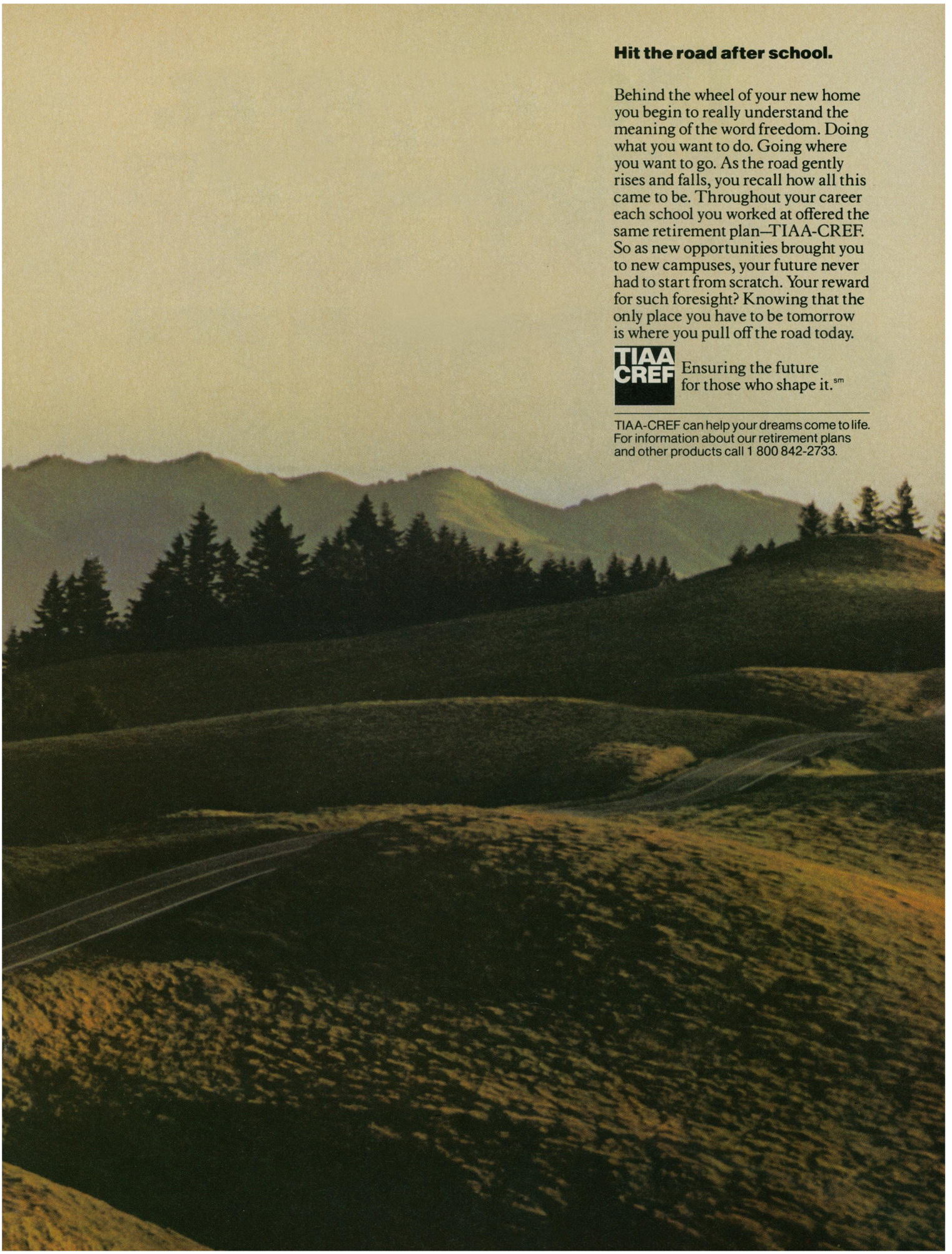
PROTEIN KINASES ***July 19-24*** Chairs: Jyh-Fa Kuo, Emory University School of Medicine; Perry J. Blackshear, Duke University Medical Center. **Keynote Address:** E. Krebs; **Cyclic Nucleotid-Dependent Protein Kinases.** D. Walsh, J. Corbin, S. Taylor, G. McKnight; **Calcium/Calmodulin-Dependent Protein Kinases.** A. Nairn, J. Stull, C. Klee, B. Kemp; **Molecular Aspects.** R. Bell, Y. Takai, Y. Hannun, P. Blumberg, K-P. Haung; **Functional Aspects.** P. Blackshear, P. Parker, W. Anderson, S. Pontremoli, B. Horecker; **Growth Factor Receptors and Tyrosine Protein Kinases.** M. Czech, R. Klausner, E. Ullrich, L. Williams; **Oncogene Products and Tyrosine Protein Kinases.** T. Hunter, B. Sefton, O. Witte, T. Pawson; **Inhibitors.** H. Hidaka, T. Nagatsu, J. Tash, J-F. Kuo; **Regulation and Gene Expression during Cell Proliferation.** R. Erikson; **Protein Kinase Substrates.** D. Glass, P. Roach, J. Feramisco, R. Lefkowitz, J. Traugh.

THE BIOLOGY AND CHEMISTRY OF VISION ***July 26-31*** Chairs: Meredithe L. Applebury, Purdue University; Denis A. Baylor, Stanford University; **Rhodopsin/Structure and Function.** P. Hargrave, G. Khorana, R. Mathies; **Visual Pigments/Diversity and Evolution.** D. Oesterhelt, G. Rubin, N. Abdulaev, K. Foster; **Transduction/Signalling and Amplification.** B. Fung, V. Lipkin, H. Bourne, T. Shinohara, E. Ross; **Transduction/Control and Adaptation.** M. Chabre, H. Kuhn, A. Sitaramayya; **Light-Regulated Channel.** P. MacLeish, B. Kaupp, D. Matesic; **Photoreceptor Responses: Integration.** K-Y. Yau, A. Cohen, J. Lisman; **Visual Transduction in Cones.** E. Pugh, J. Hurley, W. Cobbs, J. Beavo; **Photoreceptors/Diurnal and Circadian Control.** B. Burnside, J. Besharse, R. Barlow, A. Dearry, P. Witkovsky; **Signal Communication.** E. Schwartz, J. Dowling, R. Masland, A. Kaneko; **Discussion Groups and Posters.** D. Baylor.

MOLECULAR NEUROGENETICS ***August 2-7*** Chairs: Edward I. Ginns, National Institutes of Health; David Housman, Massachusetts Institute of Technology. **Neural Development.** M. Chalfie, J. Yuan, G. Rubin, F. Katz, C. Goodman; **Rhythms/Clocks.** J. Hall, M. Young, J. Feldman, J. Dunlap, M. Menaker; **Memory/Synaptic Regulation.** M. Kennedy, B. Quinn, C. Jahr, P., Goelet; **Neurotransmission.** L. Jan, R. Tsien, B. Lefkowitz, J. Patrick; **Receptors.** A. Tobin, S. Paul, P. Sternweis, M. Radeke; **Gene Regulation within the Nervous System.** G. Sutcliffe, I. Brown, G. Khoury, R. Evans, R. Scheller; **Nervous System Disorders.** E. Ginns, H. Baker, S. Woo, P. Davies, M. Applebury; **Human Diseases I & II.** S. Barondes, D. Housman, C. Gilliam, S. Tsuji, N. Wexler, J. Barranger, E. Hoffman, H. Moser.

NEUROTRANSMITTERS ***August 9-14*** Chairs: Jack Cooper, Yale University; Michael Brownstein, National Institutes of Health. **Receptor Characterization.** R. Margolskee, M. Brownstein, M. Caron, M. Rodbell, J. Patrick, C. Weinberger; **Second Messengers.** A. Nairn, J. Axelrod, C. Tanaka, S. Fisher, R. Roth; **Peptides.** M. Rosenfeld, F. Bloom, P. Seeburg, T. Joh, S. Young, J. Dixon; **Storage.** N. Weiner, R. Holtz, J. Trifara, N. Kirshner; **Modulation of Transmission.** T. Bartfai, T. Dunwiddie, J. Cooper; **Amino Acid Transmitters.** J. Coyle, V. Nadler, J. Tallman, R. Dingledine, A. Young; **Release.** B. Howard, M. Israel, V. Whittaker, B. Collier, L. Eiden; **Transport.** N. Nelson, S. Schuldiner, S. Parsons, D. Michaelson, T. Ueda; **Invertebrate Model Systems.** W. Quinn, J. Truman, E. Kravitz, J. Schwartz, E. Marder.





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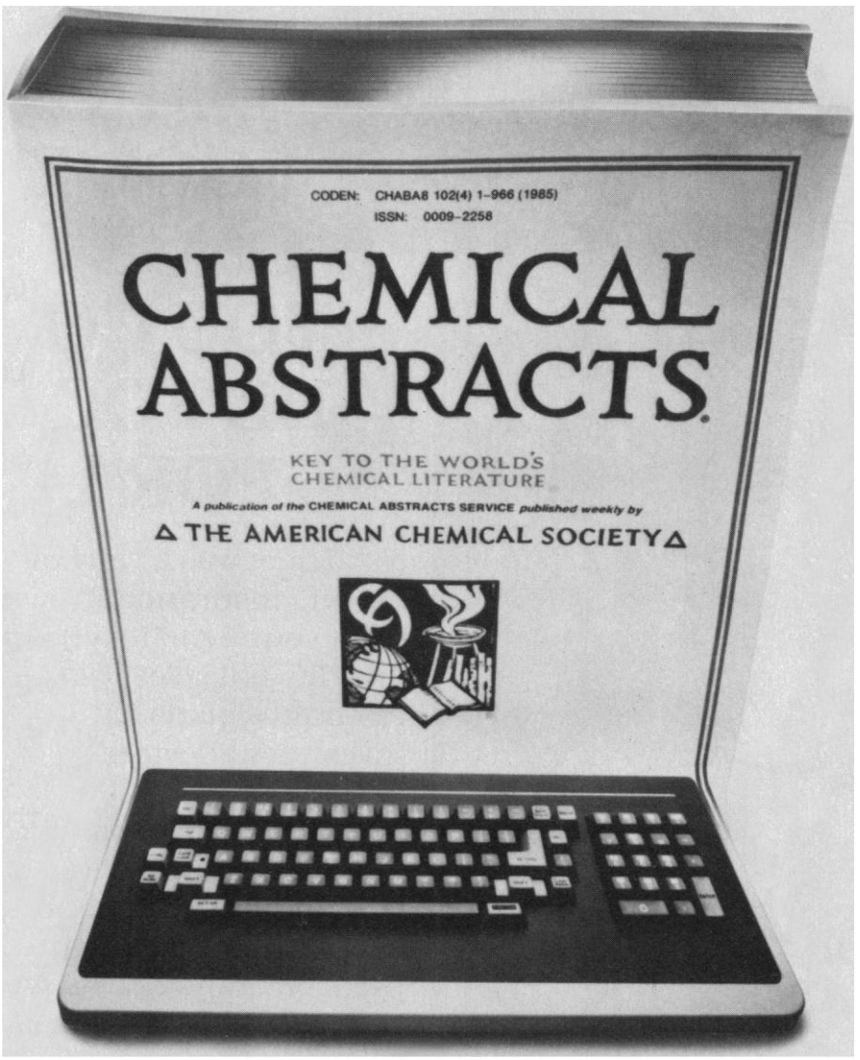

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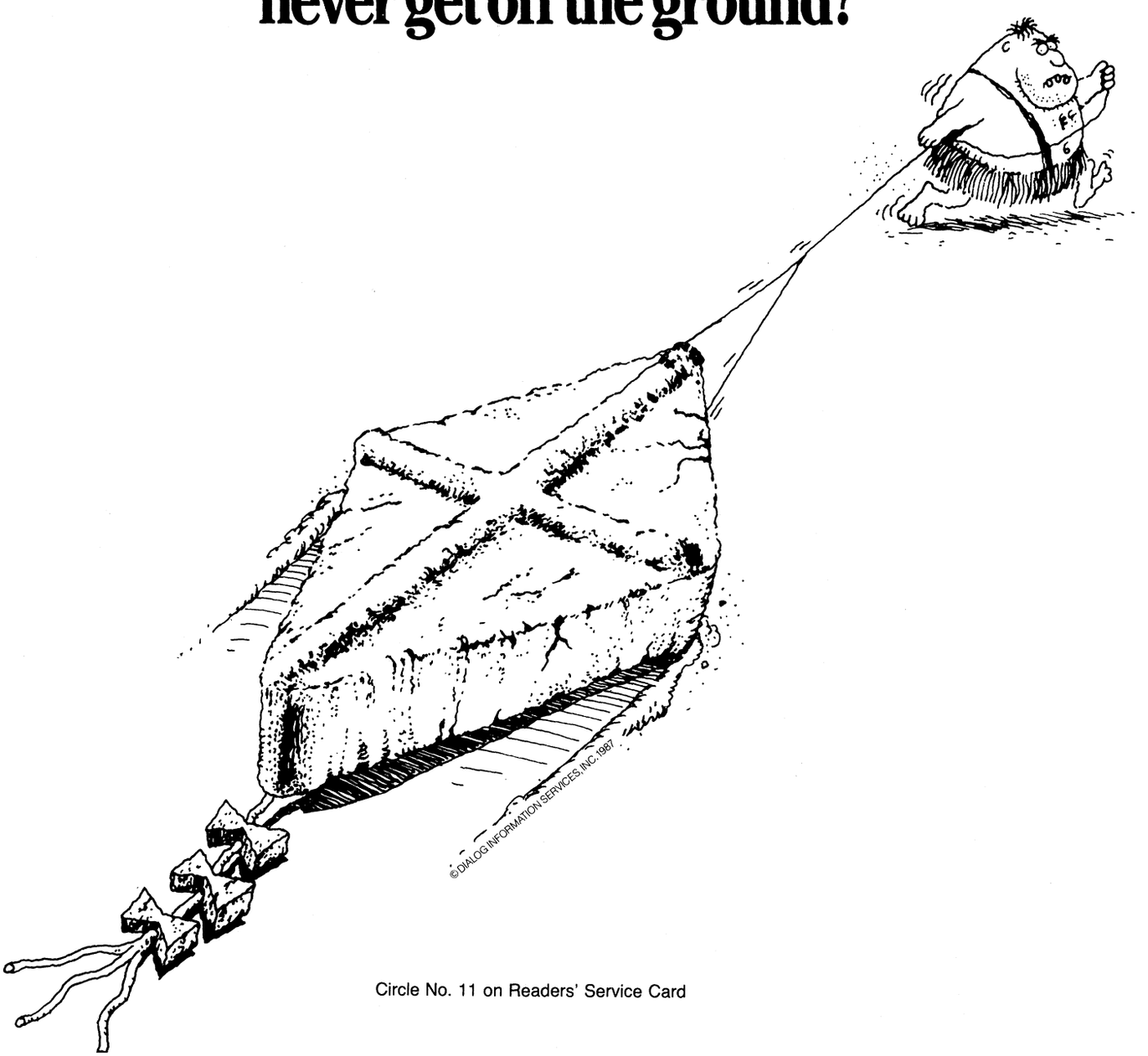

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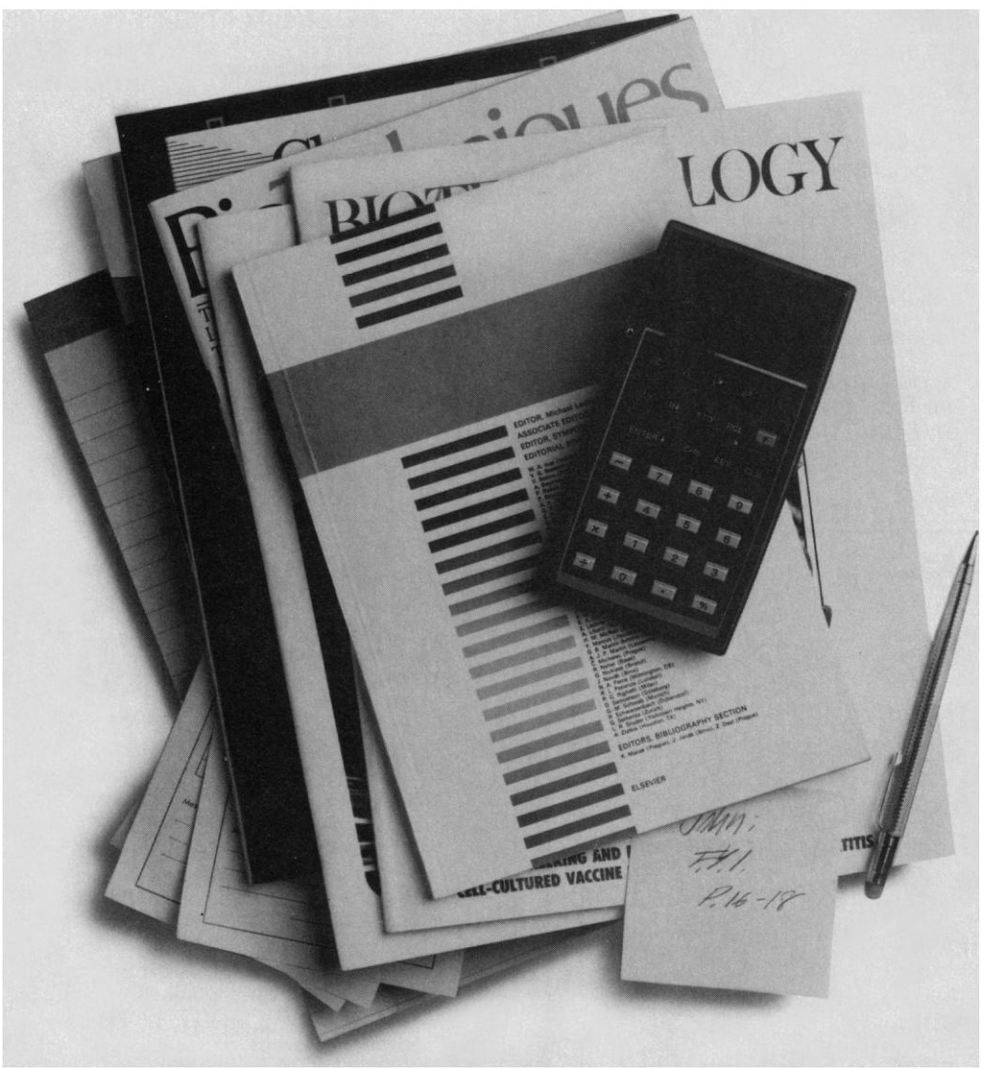

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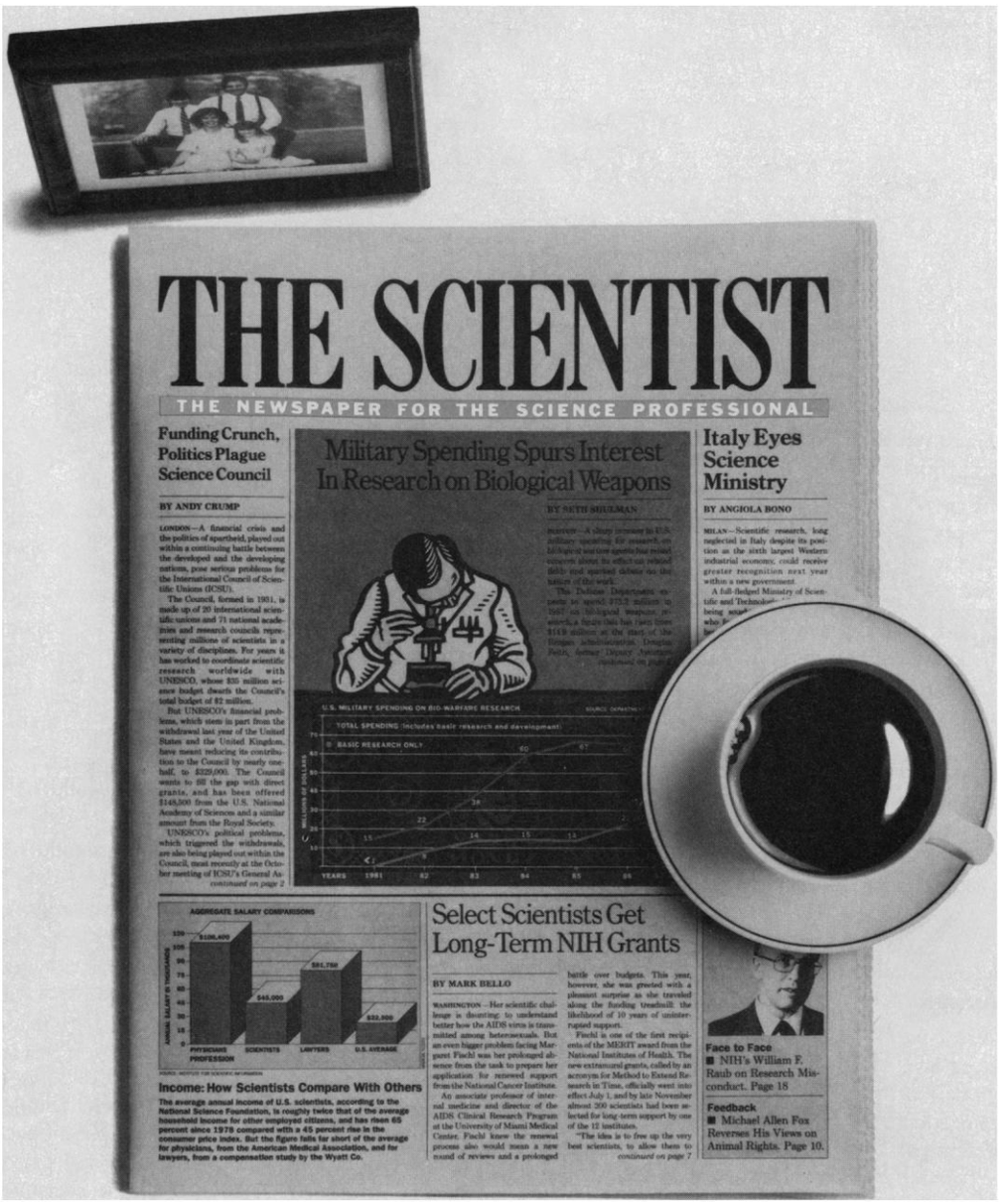

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The full fixed fee will be required IN ADVANCE of *ALL* PARTICIPANTS AND GUESTS. Attendance and/or accommodations will NOT be reserved unless this fee is paid 3 weeks prior to the Conference. (Foreign participants will also be required to pay Gordon Research Conferences in advance in U.S. dollars payable by wire only to a U.S. bank.) Checks drawn on Canadian banks and foreign banks cannot be accepted and will be returned. Scientists in Canada must use a bank draft obtained from their bank payable in U.S. dollars and drawn on a U.S. bank. Detailed information on payment, travel, etc. mailed with registration material.

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