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with the task of producing reasonable and fair presentations of the contrasting sides of the issue.

The academic environment, with its traditional dialogue and cooperative approach toward assessing the truth, should be a good setting for this task. It might help to transform the relationship between the public sector and corporate decision-makers from the present adversarial one "to one of joint decision-making and negotiation of differences in good faith," as Baram suggests. Our universities should make a joint effort to assess and plan the uses of technology.

The new citizen-feedback techniques mentioned by Baram could help to keep the universities in tune with the realities of the pervasive social impacts of technology, which are difficult to measure or quantify but are, as Baram states, "nevertheless real and should be as integral to decision-making as quantifiable technical and economic considerations."

Do we teach this in our university science and technology courses? We should.

JOHN C. CORB
University of Colorado Medical Center, Denver 80220

Women Job Applicants

The biochemistry and botany departments at the University of British Columbia have recently advertised vacancies for assistant or associate professors. Since 10 to 20 percent of the Ph.D.'s in these two fields are awarded to women, one would expect about the same proportion among the applicants. Not so.

Only 7 out of 140 applicants for the biochemistry position (5 percent) and 3 out of 90 applicants for the botany position (3 percent) were women.

It's no wonder that women make up such a small proportion of faculty if they don't apply for the jobs. This is one factor we can't blame on the men. It's a rare department chairman these days who isn't sensitive to the possibility of being criticized for not having enough women on (his) staff. Figures like these give them an excuse.

Come on, girls, let's not give up without trying. This is one aspect of our problem we can solve, ourselves, right now.

BEVERLEY R. GREEN
Department of Botany,
University of British Columbia,
Vancouver 8, Canada

Survey of Academic Job Applicants

In Science of 4 February 1972, we advertised vacancies for qualified faculty in several areas of biology. We received 465 applications from qualified candidates, and at the end of April 1972, the 459 unsuccessful persons were invited to complete and return a prepaid postcard stating the number of applications they had submitted, the number of interviews to which they had been invited, and the number of positions they had been offered. By the end of July 1972, we had received 246 usable replies which represent 54 percent of the survey.

The data show that the 246 candidates submitted a total of 17,431 applications, an average of 70 per candidate; 34 percent submitted 20 or less, 28 percent submitted between 21 and 50, 15 percent submitted between 51 and 90, and 23 percent submitted over 91 (including 8 over 300). The 246 candidates had a total of 367 interviews distributed between 162 persons; 34 percent had no interview, 25 percent had one, 21 percent had two, 14 percent had three or four, and 6 percent had between five and eight interviews. The 246 applicants received a total of 161 job offers distributed between 99 applicants; 60 percent received no offer, 23 percent received one, 12 percent received two, and 5 percent received between three and five offers.

The individual experiences of the candidates must have affected the likelihood of their responding to the questionnaire, but I have no way of knowing in which direction the bias operated.

It is possible that the rejection of excess job offers by some candidates provided openings for a few of those who indicated no offer at the time of response, and the appearance of the situation would be improved a little by including in the survey the six successful candidates hired by George Mason University. The inclusion of these raises the number of successful candidates to 105, that is, 42 percent of the responders.

No further analysis of the data has been undertaken, but I would be pleased to make the data available. We expect to hire at least four more biology faculty this year so any suggestions for a better-planned survey would be welcome.

MICHAEL G. EMSLEY
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The people who sell more spectrophotometers than any other manufacturer
that the intrinsic membrane potential in chloroplasts, but not the pH gradient, could be correlated with the capacity for photosynthetic phosphorylation. Second, mention was made of evidence obtained in several different laboratories that coupling could be achieved in non-membranous suspensions of macromolecules (reported by M. I. H. Aleem, University of Kentucky; and T. Ozawa, Nagoya University; and published by D. R. Sanadi, Retina Foundation, Boston). If there was one issue on which a consensus was reached at the conference, it was that the Mitchell model could only be viable with an intrinsic membrane potential as the driving force. In that revised form, the Mitchell model shares common ground with the electromechanochemical model.

E. N. Moudrianakis (Johns Hopkins University) has opened wide the door to a reevaluation of the first acceptor for activated phosphate in photosynthetic phosphorylation. He presented unequivocal evidence that the first acceptor was adenosine monophosphate and that formation of adenosine tripophosphate (ATP) depended on a myokinase-like transfer of a phosphoryl group between two molecules of bound adenosine diphosphate (ADP). A similar interpretation, based on results obtained with submitochondrial particles, was first proposed by Ozawa several years ago, but eventually came in for severe criticism published by F. Boyer (University of California, Los Angeles) and M. E. Pullman (Public Health Research Institute, New York). What this demonstration by Moudrianakis probably means is that the hydrolysis of ATP to ADP and inorganic phosphate is not the microscopic reversal of oxidative or photosynthetic phosphorylation.

The sticky problem of how electrons from reduced complex III can find their way into the heme group in a crevice in the interior of cytochrome c was considered by R. Dickerson (California Institute of Technology), B. Chance (University of Pennsylvania), and Winfield. Despite the elegant x-ray studies of Dickerson and the exhaustive spectroscopic studies of Chance, there was no consensus about the mechanism of electron transfer, although the cloud of conjecture was thick. Winfield, in one of the most penetrating presentations of the conference, laid bare the sorry state of our present ignorance of this crucial problem. If evidence were needed for the crisis in bioenergetics, the problem posed by the mechanism of electron transfer involving the components of the mitochondrial electron transfer chain can provide food for thought.

The generation of accurate structural information about energy-transducing systems is undoubtedly the crowning achievement of contemporary bioenergetics. The surveys of progress in muscle (Huxley; M. Morales, University of California School of Medicine, San Francisco; and J. Gergely, Retina Foundation), the mitochondrion (Y. Hatefi, Scripps Clinic and Research Foundation, La Jolla, California; L. Packer, University of California, Berkeley; and A. Tzagoloff, Public Health Research Institute), the sarcoplastic reticulum (D. MacLennan, University of Toronto; and A. Martonosi, St. Louis University), and the chloroplast (Moudrianakis; L. Vernon, Brigham Young University; and R. Park, University of California, Berkeley) were among the high points of the conference. The x-ray crystallographic studies of chymotrypsin (Hartley) and of cytochrome c (Dickerson) pointed up the stark contrast between the precision and beauty of the accumulated structural information about these two macromolecules and the pitifully limited understanding of the mechanisms of both catalysis and electron transfer. Clearly, knowledge of the structural information is a necessary but not sufficient condition for understanding the functional principles.

The number of new concepts presented at the conference was high. These included enzymes as transducers of thermal to electromechanical potential energy (Green and Ji), force-generating mechanisms for muscular contraction (R. Dowben, Northwestern Medical School, Dallas; McClare; and Ji), thermodynamic models for oxidative phosphorylation (Bennun and Weber), and molecular models for nerve transmission (R. Keynes, Agricultural Research Council Institute of Animal Physiology, Babraham, Cambridge, England; Wei; I. Tasaki, National Institute of Mental Health, Bethesda, Maryland; and Nachmansohn). Cope developed a solid-state model for mitochondrial function.

A gap of at least 100 years separates parallel developments in physics and biology. The cooperative and symbiotic relation between theory and experiment has by now a long tradition in physics, but this relation is only in its formative stage in biology. If this conference has helped to convey the message to workers in bioenergetics that experiment without theory is as sterile as theory without experiment, it will have served a useful and historic purpose.

H. Baum (Chelsea College, London), played the role of Solomon in a brilliant summary of the conference. He pointed out the close analogies between the prolonged debate over atomism that raged in the late 19th century and the present dilemma in bioenergetics.

Mitchell, the cosponsor of the conference, was unfortunately unable to be present, but, nonetheless, the power of his approach and insights dominated the proceedings. The notion of vectorial electron flow and vectorial coupling, which he has championed, would now appear to be one of the greatest achievements in bioenergetics.

David E. Green

Institute for Enzyme Research, University of Wisconsin, Madison 53706

Forthcoming Events

September

9-12. American Soc. of Mechanical Engineers (Plant Engineering and Maintenance Div.), 16th annual, Cincinnati, Ohio (E. M. Jones, ASME, United Engineering Center, 345 E. 47 St., New York 10017)


10-13. Carbonisation and Graphitisation, Inst. of Physics, Newcastle upon Tyne, England (E. M. Jones, ASME, Northern Coke Research Labs., Univ. of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU)


12-14. American Ceramic Soc. (Electronics Div.), Atlanta, Ga. (F. P. Reid, ACS, 4055 North High St., Columbus, Ohio 43214)

12-14. Physics of Semimetals and Narrow-Gap Semiconductors, Univ. of Wales and Inst. of Science and Technology, Cardiff, Wales. (E. M. Jones, ASME, Dept. of Applied Physics, UW and IST, King Edward VII Ave., Cardiff CF1 3NU)


12-17. American Medical Writers Assoc., Bethesda, Md. (E. Stahl, Ayerst Labs., Montreal, P.Q., Canada)

13-14. Society for Management Information Systems, 5th annual conf., Chicago, Ill. (A. Suter, SMIS, 221 North La Salle St., Chicago 60601)

13-15. International Congr. on the Knee Joint, 75th, Dutch Orthopedic
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Assoc., Rotterdam, Netherlands. (Secretariat, Holland Organizing Centre, 16 Lange Voorhout, The Hague, Netherlands)

14-15. West Coast Cancer Foundation, 9th symp., San Francisco, Calif. (J. M. Vaeth, WCCF, Suite 615, 2155 Webster St., San Francisco 94115)

16-20. American Oil Chemists Soc., Chicago, Ill. (J. Lyon, AOCS, 508 S. Sixth St., Champaign, Ill. 61820)

16-20. American Acad. of Ophthalmology and Otolaryngology, Dallas, Texas. (C. M. Kos, 15 Second St., SW, Rochester, Minn. 55901)

16-21. International Assoc. for Comparative Research on Leukemia and Related Diseases, 11th, Nagoya, Ise-Shima, Japan. (R. M. Dutcher, IACIRLD, 1530 E. Jefferson St., Rockville, Md. 20852)


19-21. International Congr. of Aerosols in Medicine, Vienna, Austria. (Mrs. E. Weidenhaus, Wiener Medizinische Akademie, Stadiongasse 6-8, A-1010 Vienna)

19-22. American Ceramic Soc. (Structural Clay Products Div.), Salt Lake City, Utah. (F. P. Reid, ACS, 4055 N. High St., Columbus, Ohio 43214)


23-24. Society for Pediatric Radiology, Montreal, P.Q., Canada. (J. L. Gwinn, Children's Hospital 4650 Sunset Blvd., Los Angeles, Calif. 90027)


23-26. American Ceramic Soc. (Basic Science and Ceramic-Metal Systems Divs.), Pittsburgh, Pa. (F. P. Reid, ACS, 4055 N. High St., Columbus, Ohio 43214)


24-28. Noble Gases Symp., jointly by
U.S. Environmental Protection Agency, Natl. Environmental Research Center, and Univ. of Nevada, Las Vegas. (D. S. Barth, NERC, P.O. Box 15027, Las Vegas 89114)


26–27. International Symp. on Vitamin E, Minneapolis, Minn. (M. K. Horwitt, Dept. of Biochemistry, St. Louis Univ. Medical School, St. Louis, Mo. 63104)

26–29. American Ceramic Soc. (Materials and Equipment and White Wares Divs.), Bedford, Pa. (F. P. Reid, 4055 N. High St., Columbus, Ohio 43214)


30–4. Engineering in Medicine and Biology, 26th conf., Alliance for Engineering in Medicine and Biology, Minneapolis, Minn. (A. Kuhn, AEMB, 3055 Old Highway Eight, Minneapolis 55418)


October


1–4. American Acad. of Family Physicians, Denver, Colo. (R. Tusken, AAFP, Volker Blvd. at Brookside, Kansas City, Mo. 64112)


1–3. American Assoc. for Laboratory Animal Science. 24th annual, Miami
Beach, Fla. (J. J. Garvey, AALAS, 2317 W. Jefferson St., Joliet, Ill. 60435)

1–5. Symposium on Remote Sensing in Oceanography, American Soc. of Photogrammetry, Orlando (Disney World), Fla. (J. S. Beazley, 330 Ponce St., Tallahassee, Fla. 32303)

1–6. International Cong. of Rheumatology, 13th, Kyoto, Japan. (S. Sasaki, Japan Rheumatism Assoc., Shimbunkaikan 63, 3-8-4 Ginza, Chuo-ku, Tokyo, Japan)


4–6. Refractories Div., American Ceramic Soc., Bedford, Pa. (F. F. Reid, ACS, 4055 N. High St., Columbus, Ohio 43214)


5–6. Southeastern Cancer Research Assoc., Atlanta, Ga. (W. E. Criss, Dept. of Obstetrics and Gynecology, Univ. of Florida College of Medicine, Gainesville 32601)

5–6. Psychopharmacology Symp., World Psychiatric Assoc., Wroclaw, Poland. (A. Bukowczyn, Kraszewskiego 25, Wroclaw)

5–9. Sigma XI, Fontana, Wis. (T. T. Holme, SX, 345 Whitney Ave., New Haven, Conn. 06510)

6–12. American Concrete Inst., Ottawa, Ont., Canada. (ACI, Box 4754, Redford Stat., 22400 W. Seven Mile Rd., Detroit, Mich. 48219)

6–13. World Federation for Mental Health, 25th congr., Sydney, Australia. (A. Stoller, Mental Health Authority, 300 Queen St., Melbourne CI, Australia)

7–11. Clay Minerals Soc. (10th mtg.) and Clay Minerals Conf. (22nd), Banff, Alta., Canada. (J. E. Giliott, Dept. of Civil Engineering, Univ. of Calgary, Calgary 44, Alberta)

7–11. International Iron and Steel Inst., 7th annual conf., Johannesburg, South Africa. (IISL, 5 Place du Champ de Mars, 1050 Brussels, Belgium)

7–11. Life Assurance Medicine, 11th intern. congr., Mexico City, Mexico. (J. Rendon, Edificio Bancomer, Aptdo Postal M-7817, Mexico, D.F.)


7–13. Neurological Surgery, 8th intern. congr., Tokyo, Japan. (S. Ishii, Dept. of Neurosurgery, Juntendo Univ. Hospital, Hongo, Bunkyo-ku, Tokyo)


8–12. International Drivers’ Behaviour Research Assoc., Zurich, Switzerland. (T. E. A. Benjamin, Room 9C27, 10, Paul Doumer, F-92 Courbevoie, France)


10–12. Glass Div., American Ceramic Soc., Bedford, Pa. (F. F. Reid, ACS, 4055 N. High St., Columbus, Ohio 43214)


11–13. American Soc. for Colposcopy and Colposcopy Microscopy, 6th clinical, Key Biscayne, Fla. (A. C. Corzo, Symposia Intern., P.O. Box 580, Tujunga, Calif. 91042)

11–13. American Assoc. for the Surgery of Trauma, Chicago, Ill. (J. A. Boswick, AAST, 4200 E. Ninth Ave., Denver, Colo. 80220)


12–14. National Assoc. of Biology Teachers, St. Louis, Mo. (J. P. Lightner, NATB, 1420 N St., NW, Washington, D.C. 20005)

12–14. Association for Women in Psychology, Fort Wayne, Ind. (C. Adamsky, Dept. of Psychological Sciences, Purdue Univ., Fort Wayne 46905)

12–20. American Soc. of Clinical Pathologists, Chicago, Ill. (M. Damron, ASCP, 710 S. Wolcott Ave., Chicago 60612)

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21–25. American College of Chest Physicians, 39th fall scientific assembly, Toronto, Ont., Canada. (A. Sofer, ACCP, 112 E. Chestnut St., Chicago, Ill. 60611)

21–25. Society of Exploration Geophysicists, Mexico City, Mexico (H. Breck, F.O. Box 3098, Tulsa, Okla. 74101)


22–25. Civil Aviation Medical Assoc., Guadalajara, Mexico. (A. Carriere, 801 Green Bay Rd., Lake Bluff, Ill. 60044)


23–25. International Symp. on Immunoglobulin A System, 25th, Birmingham, Ala. (F. W. Kraus, Box 103, University Station, Birmingham 35294)

23–26. International Conf. on Environmental Health, American Medical Assoc., Primosten, Yugoslavia. (Dept. of Environmental, Public and Occupational Health, AMA, 535 N. Dearborn St., Chicago 60610)


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