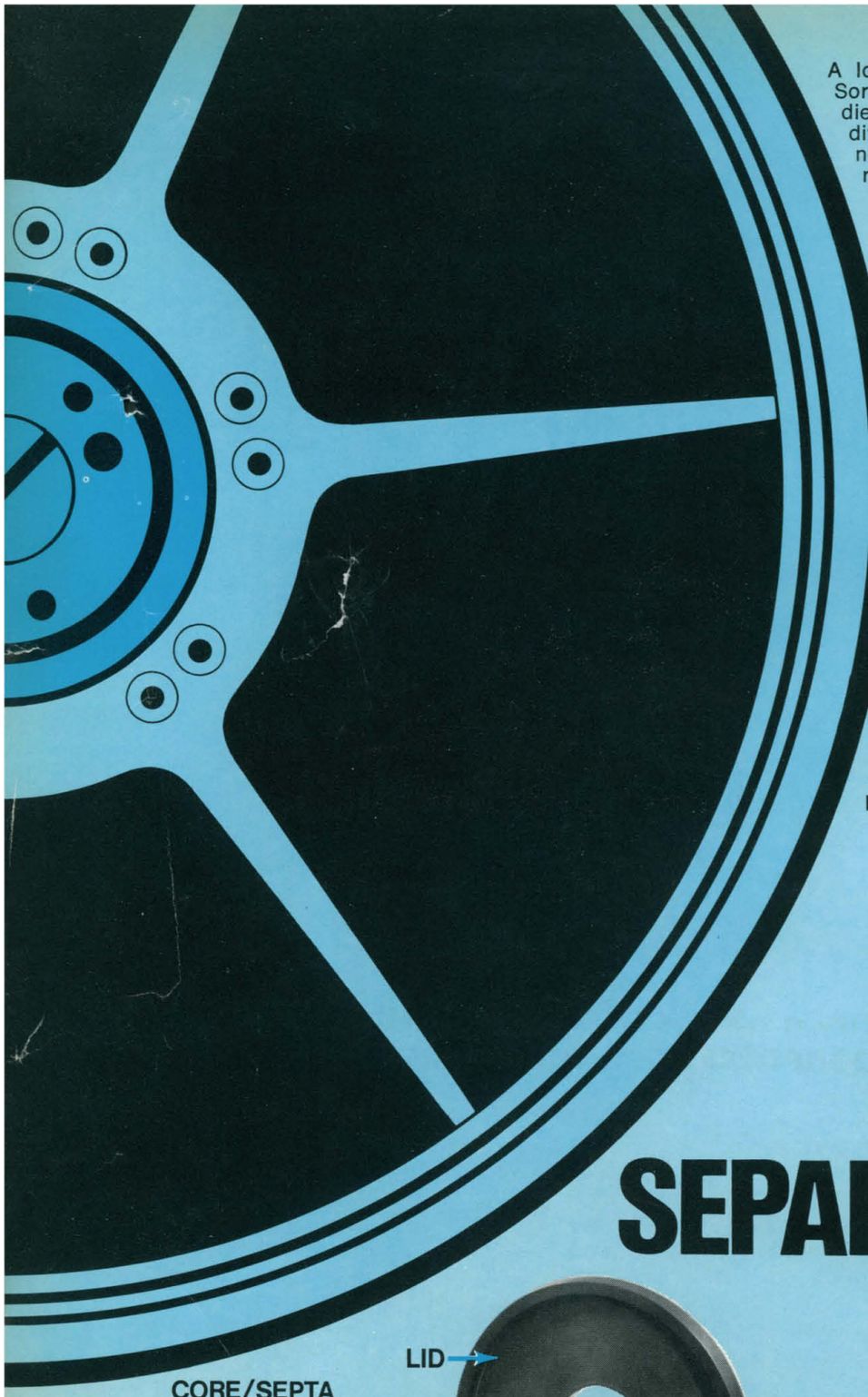
SCIENCE

11 February 1972

Vol. 175, No. 4022

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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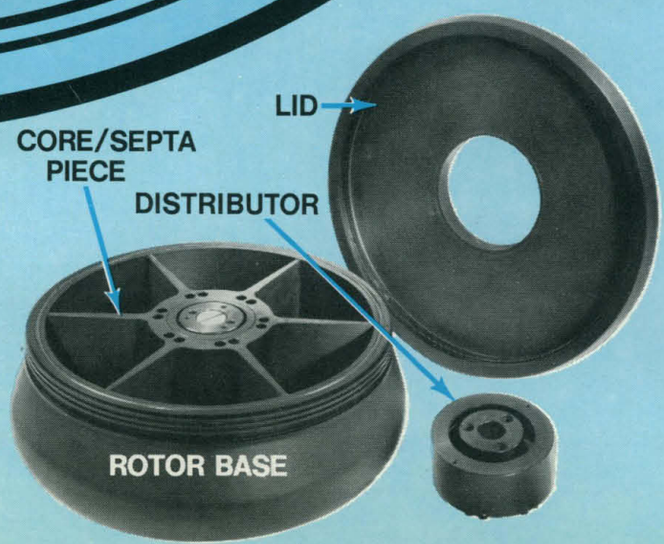

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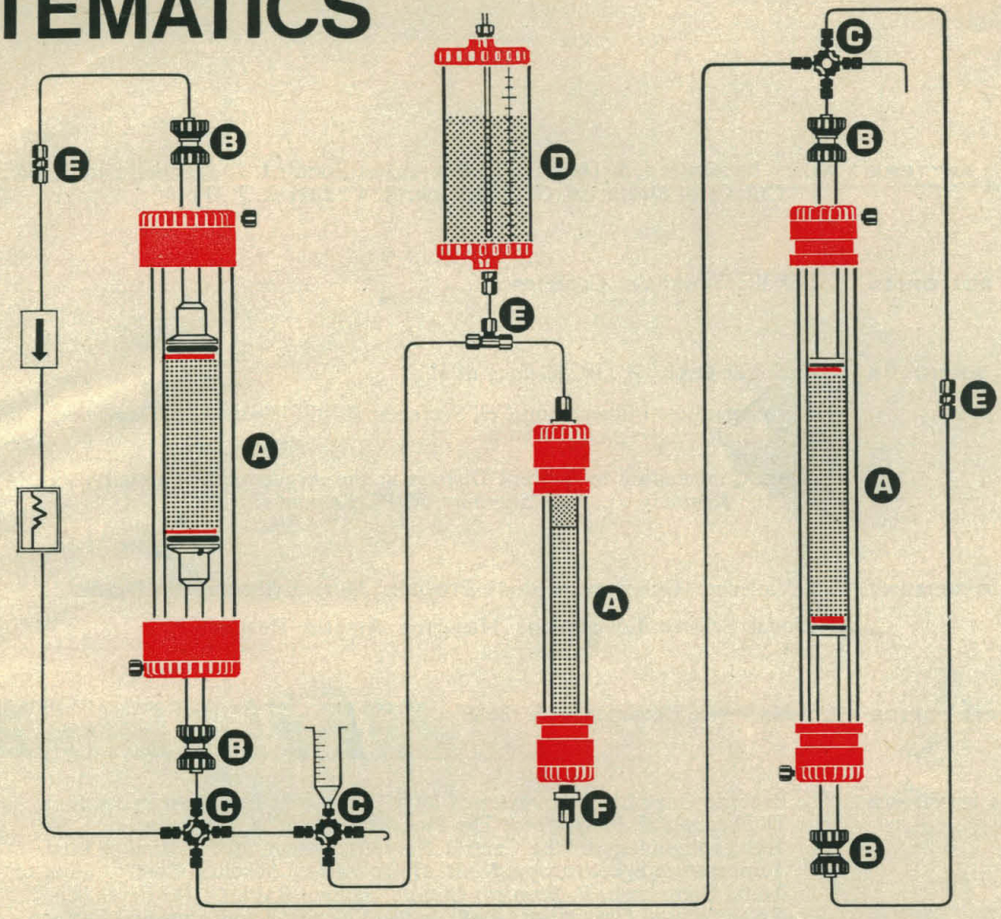
SYSTEMATICS



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SCIENCE

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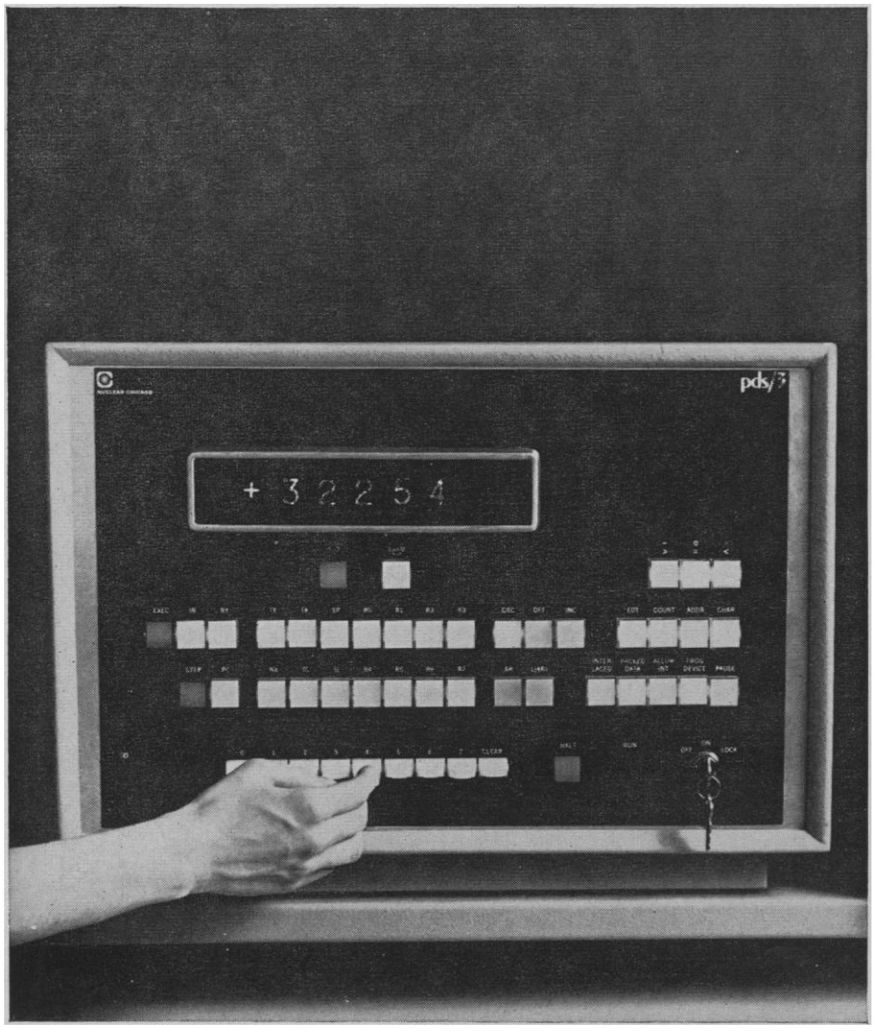

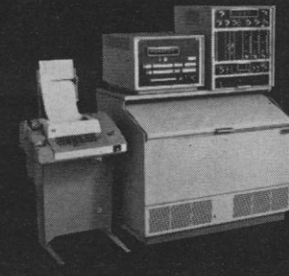

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vidual no longer has subjective decision-making power as he nears death. Then whose subjective decisions are we talking about? Society's, of course.

If a man falls off a cliff in a wilderness and is instantly killed, it is an event about which the buzzards can debate. If he is found alive and is rushed to a hospital, social forces become part of his struggle for life. Nurses, doctors, pharmacists, technicians, drug suppliers, medical electronics specialists, and so forth decide the events instead of nature. The dying patient is kept alive. Sometimes this is a victory and sometimes it is a tragic mess. The objective possibility of permanent brain damage forces the family doctor to make subjective decisions.

Yet, Kass, the champion of particular events that decide life or death, rushes in with a precise decision. Is it the height of the EEG wave? No. Is it the width of the pupils? No. It's all much more simple. Our particularist gives us a generalist's answer. It is the death of the patient "as a whole."

We technicians at the bedside, like infantrymen in the field, need clear-cut orders. Kass's answer is like no orders at all. Morison has some "suggestions" but is as cautious as McClellan before Richmond. We need generals who know properly how to deal with *events* without getting confused in the *process*. To pretend that individuals exist apart from society is as absurd as to pretend that society exists apart from individuals. To pretend that the death of a patient *under our care* is an objective event independent of society's role and does not depend on our subjective decisions is equally false. We must institute new criteria of death that correspond to the new technology that has evolved in the struggle for life.

MASON G. ROBERTSON
600 East 70 Street,
Savannah, Georgia 31405

Neither Morison's article nor the analysis of it by Kass gives much help to the physician, confronted as he has always been by the problem of death and dying, and now additionally confronted by the many devices and procedures that enable him, if he so desires, to prolong life to absurd lengths.

I have practiced medicine for 52 years and have actually seen hundreds of deaths. It has been necessary to find some practical solutions to the dilemmas posed by these new capabilities. As physicians, we should preserve life and enhance its potential for the person. When unable to preserve a meaningful life, we should do all that is possible to protect the patient from suffering. When the ultimate preservation of life is impossible, and the alleviation of suffering may shorten life, the relief of pain should take precedence over the prolongation of life. The prolongation of life per se is not moral, humane, or profitable just for itself alone. It is a theatrical stunt.

I support abortion even when the birth of a defective child is only probable; those unfit for normal human participation in life should not be born. Whether any pregnant woman should have the right to abortion is something for society to decide. Whether it is proper to grant euthanasia to the hopelessly insane, criminal, or incapacitated individual is also a decision for society to make.

I personally think such procedures should be authorized, but the physician should not carry them out on his own. Actually, such decisions need be considered very rarely. The question of whether there is "life" or "death" or whether these are merely biological attributes cannot really be solved by philosophical argument. We must simply agree on definitions.

RUSSEL V. LEE
300 Homer Avenue,
Palo Alto, California 94301

My wife and I take the strongest possible exception to the words of Kass in his reference 15 (p. 702), "Strictly speaking, I doubt if we could establish the *right* to be mercifully killed. Rights imply duties, and I doubt that we can make killing the *duty* of a friend or loved one." It is not a question of making it a duty; the duty is there.

As Kass's words appeared in print, my wife's mother was entering the last few weeks of a long and agonized decline into death. Every time we visited her she asked (when she was lucid) "*Why* don't you help me die?" She was accusing us, and rightly, of not doing our duty by one whom we loved and respected. Had we allowed any lower animal to remain in such a state of torture, we might have been subject to criminal action.

We were, of course, too craven to do anything. In that "of course" lies an indictment of our society, if not of us.

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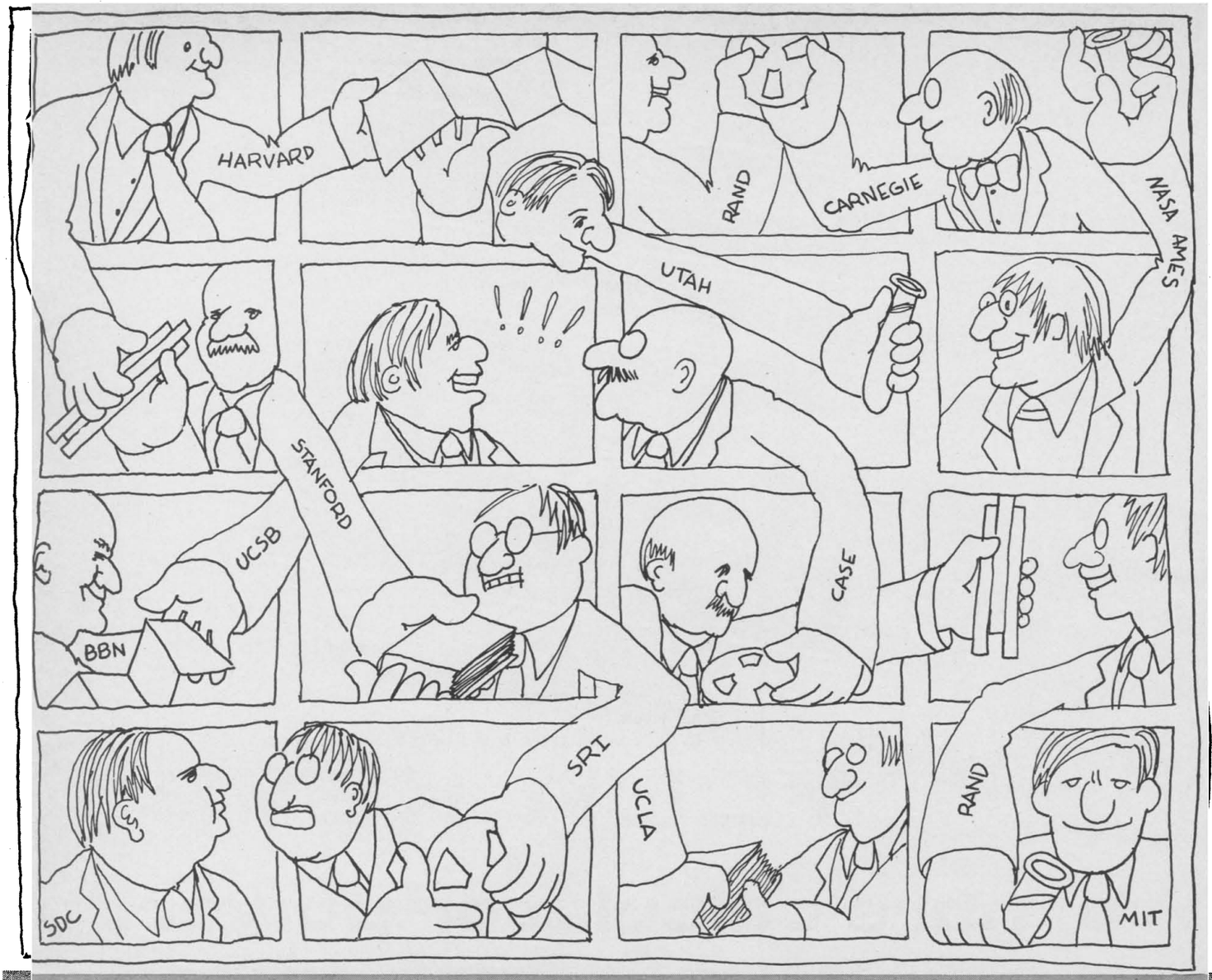

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11 February 1972, Volume 175, Number 4022

SCIENCE

After the Stockholm Conference

The fate of the U.N. Conference on the Human Environment, scheduled for June 1972 in Stockholm, is in doubt. The Soviet Union and other Communist countries have threatened to withdraw over the issue of East German participation. Preparations for the conference are nearly complete. The Secretariat has finished its work on the basic conference papers, which deal with the six principal themes: human settlements, resources management, pollution, education and information, development and environment, and organizational implications. Cancellation of the conference would not lessen the urgency of responding to these problems—it would delay action.

Whether or not the conference takes place, the preparatory effort has had effects that justify the outlay of money and energy to date. Stockholm has sounded a global alert that has prompted a substantial number of countries to move environmental problems to the center of the political stage. It has spotlighted matters of concerns common to East and West as well as North and South. It has led to a new concept of economic development that includes concern for the quality of the environment. It has prodded governments to reorganize their institutions to accommodate environmental priorities on the national and international levels.

If the conference is held, we can expect an increasing volume of news and comment concerning it as we approach the June dates. Reporters will engage in their usual practice of building up the story. Greater expectations will be raised than can practically be achieved. In part, this is because of the difficulties of achieving common action by more than 100 jealous sovereign states. In part, disappointments would be in store because there are no magic wands or quick paths to a clean environment, to proper resource management, or to solutions of related, complex social problems. One impediment to achieving a livable environment is that we do not really know in quantitative terms what we are trying to achieve. Man has had many adverse effects on the environment, but we have not identified all, or even probably most, of these effects. Beyond that, we are largely uninformed as to rates of change of cogent variables. We have only to contemplate how little is known about environmental effects in the United States and its surroundings to get a picture of how poorly the situation is known in many parts of the world.

We should not expect miracles from Stockholm. Instead, the scientific community, for its part, should begin to look beyond June to the years of sustained effort that will be necessary to fill the voids in our knowledge and to build a basis for informed global action. Already stimulated by the conference, one basis for future action has been outlined in a report entitled *Global Environmental Monitoring*.* This document was prepared under international auspices by a high-quality commission. The report identifies major crucial variables to be measured and outlines components of a monitoring system. It also discusses the technical organization needed for a coherent global monitoring system.

If the Stockholm Conference is canceled, many people throughout the world will feel despair, for it will seem that man is unable to submerge small political considerations to gain common objectives. But there is a brighter side to the picture. The Stockholm conference has already justified the efforts devoted to it, and we begin to see something of the continuing efforts that will go on after June.—PHILIP H. ABELSON

* *Global Environmental Monitoring*, a report submitted to the U.N. Conference on the Human Environment (Scientific Committee on Problems of the Environment, International Council of Scientific Unions, Stockholm, Sweden, 1972). Copies are available from Dr. Bengt Lundholm, Swedish Natural Science Research Council, Sveavägen 166 8tr., S-113 46 Stockholm, Sweden.

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not viable alternatives where a finite groundwater supply is being depleted or where irrigation-water quality is deteriorating.

If these critical areas contain large urban centers based upon nonagricultural industries, reduction in irrigation may cause a minimum of social upheaval as farmers find employment in the nearby cities. If, however, the economy of the region is almost wholly dependent upon irrigated agriculture, reductions will produce severe economic strains that, in turn, will lead to social upheaval as agriculture-based workers are unable to find other jobs within the region. Mass migration away from the region becomes necessary, and the towns become pockets of economic stagnation. The ramifications of mass migration away from the region are felt far beyond the borders of the region. Water importation thus becomes a rescue operation to avoid social and economic upheaval.

Conclusion

We conclude, then, that large-scale importation of irrigation water into water-deficient areas in the United States should not be undertaken simply because it is technically feasible, the water and land are available, and water deficits now or in the foreseeable future can be documented. Rather, we believe that if there is a compelling reason for large-scale water importation, it is to prevent massive social and economic disruption in an established irrigated area.

Appendix

Water importations (interbasin water transfers) for the purpose of irrigation were initiated thousands of years ago in the Middle East. Warnick (*1*, pp. 340–352) has traced the history of water transfers and has summarized the principal features of 20 proposed plans for interbasin transfers in the United States.

The uncertain ecological and social implications of interbasin water transfers were discussed in a AAAS Committee on Arid Lands Symposium in Dallas in 1968 (*2*). Howe, at that same symposium, concluded that the estimates of costs and benefits of large-scale water transfers indicate that such transfers are, at best, of marginal economic value, at present (*3*). He noted that established, highly specialized agricultural areas which face a permanent loss of water supplies are in a special category that warrants more careful study of benefit-cost ratios. Peterson emphasized the need for evaluating indirect and intangible benefits, such as the distribution of economic benefits nationwide, in arriving at a benefit-cost ratio for water importation (*4*). Import alternatives are available for nearly every water-short

area (*5*), by waste water recycling, desalting, weather modification, and water harvesting, to say nothing of more efficient use of water supplies in agriculture, industry, and the home. Wollman *et al.* have pointed out the greater economic benefits of using water for municipal and industrial purposes than for agriculture in areas experiencing industrial development (*6*).

Cropland acreage in the United States has been declining since 1950, at an annual rate of about 2.5 million acres per year (*7*). Productive capacity of the land exceeds current demands for food and fiber, resulting in government programs of acreage diversion of cropland to noncrop uses. Under these programs, 50 to 60 million acres of cropland are diverted temporarily to noncropland (*8*).

Needs of the potential water-importing regions is not the only consideration. Regions of potential water export are sensitive to the possible restrictions on their economic development that may result if part of their presently excess water supplies are permanently diverted to another region (*9*). That sensitivity has led to assurances, of doubtful legality, that the area of origin of transferred water would always be able to retain the water it would need for future development (*10*). Predicting those needs is extremely difficult.

References

1. C. C. Warnick, in *Arid Lands in Perspective*, W. G. McGinnies and B. J. Goldman, Eds. (Univ. of Arizona Press, Tucson, 1969), pp. 340–352.
2. P. H. McGauhey, *ibid.*, pp. 358–363; G. W. Thomas and T. W. Box, *ibid.*, pp. 363–374.
3. C. W. Howe, *ibid.*, pp. 374–382.
4. D. F. Peterson, *ibid.*, pp. 398–405.
5. G. Young, *ibid.*, pp. 382–397.
6. N. Wollman *et al.*, *The Value of Water in Alternate Uses* (Univ. of New Mexico Press, Albuquerque, 1962).
7. L. E. Partain, in *Contours of Change: The Yearbook of Agriculture 1970* (Government Printing Office, Washington, D.C., 1970), pp. 189–196.
8. R. F. Daly, *ibid.*, pp. 342–346.
9. E. R. Tinney and F. J. Quinn, in *Arid Lands in Perspective*, W. G. McGinnies and B. J. Goldman, Eds. (Univ. of Arizona Press, Tucson, 1969), pp. 411–415.
10. *The California Water Plan* (Bulletin No. 3, Department of Water Resources, State of California, Sacramento, 1957), pp. 217–218.

Forthcoming Events

March

7–9. **Vertebrate Pest** Conf., 5th, Fresno, Calif. (R. E. Marsh, Dept. of Animal Physiology, Univ. of California, Davis 95616)

7–10. **Computer Graphics in Medicine**, Assoc. for Computing Machinery, Pittsburgh, Pa. (Dept. of Computer Information Science, Point Park College, 201 Wood St., Pittsburgh, Pa. 15222)

10–12. National **Wildlife** Federation, Mexico City, Mexico. (T. L. Kimball, NWF, 1412 16th St., NW, Washington, D.C. 20036)

11–14. American Assoc. of **Pathologists and Bacteriologists**, 68th annual, Cincinnati, Ohio. (Miss J. Graves, Intersociety

Committee on Pathology Information, Inc., 9650 Rockville Pike, Bethesda, Md. 20014)

11–18. American Assoc. of **Pathologists and Bacteriologists**, American Assoc. of **Neuropathologists**, and **Pediatric Pathology** Club (joint), Cincinnati, Ohio. (A. J. French, 1335 E. Catherine St., Ann Arbor, Mich. 48104)

12–17. American Soc. of **Photogrammetry**, Washington, D.C. (L. P. Jacobs, 105 N. Virginia Ave., Falls Church, Va. 20046)

13–14. American **Astronautical** Soc., Washington, D.C. (Miss A. Mitchell, AAS, Suite 700, 1629 K St., NW, Washington, D.C. 20006)

13–17. International Union against **Cancer** Conf. (melanoma and skin cancer, leukemia), Sydney, Australia. (Intern. Cancer Conf., GPO Box 475, Sydney, NSW)

13–17. California **Membrane** Conf., Squaw Valley. (C. F. Fox, Dept. of Bacteriology, Univ. of California, Los Angeles 90024)

14–16. **Mineral Waste Utilization**, 3rd symp., U.S. Bureau of Mines and IIT Research Inst., Chicago, Ill. (M. A. Schwartz, IIT Research Inst., 10 W. 35 St., Chicago 60616)

14–18. International Acad. of **Pathology**, 61st annual, Cincinnati, Ohio. (Miss J. Graves, Intersociety Committee on Pathology Information, Inc., 9650 Rockville Pike, Bethesda, Md. 20014)

19–22. American Soc. of **Limnology and Oceanography**, Tallahassee, Fla. (G. W. Saunders, Jr., Dept. of Zoology, Univ. of Michigan, Ann Arbor 48104)

19–25. Council for **Exceptional Children**, 50th annual intern. conv., Washington, D.C. (W. C. Geer, CEC, Suite 900, Jefferson Plaza, 1411 S. Jefferson Davis Highway, Arlington, Va. 22202)

20–22. **Physical Electronics** Conf., 32nd annual, Albuquerque, N.M. (R. L. Schwoebel, Dept. 5330, Sandia Labs., Albuquerque 87115)

20–23. American Assoc. of **Dental Schools**, Las Vegas, Nev. (B. F. Miller, 211 E. Chicago Ave., Chicago, Ill. 60611)

20–23. Institute of **Electrical and Electronics Engineers**, New York, N.Y. (D. G. Fink, IEEE, 345 E. 47 St., New York 10017)

20–23. American Soc. of **Neurochemistry**, 3rd natl., Seattle, Wash. (W. L. Stahl, Dept. of Medicine (Neurology), School of Medicine, Univ. of Washington, Seattle 98105)

20–24. Use of **Isotopes in Studies on the Physiology of Domestic Animals** with Special Reference to Hot Climates, Intern. Atomic Energy Agency, Athens, Greece. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

21–23. **Control of Hazardous Material Spills** Conf., Houston, Tex. (H. N. Myrick, Univ. of Houston, 3801 Cullen Blvd., Houston 77004)

23–25. **Quality of Life**, American Medical Assoc., Chicago, Ill. (E. O. Ellis, AMA, 535 N. Dearborn St., Chicago 60610)

23–25. American **Philosophical** Assoc., San Francisco, Calif. (A. Pasch, APA, 117 Lehigh Road, College Park, Md. 20742)

23–25. **Seismological** Soc. of America, Honolulu, Hawaii. (D. Tocher, P.O. Box 826, Berkeley, Calif. 94701)

23–26. International Assoc. for **Dental Research**, North American Div., Las Vegas, Nev. (A. R. Frechette, IADR, 211 E. Chicago Ave., Chicago, Ill. 60611)

25–26. Symposium on **Viral Hepatitis and Blood Transfusion**, San Francisco, Calif. (G. N. Vyas, Continuing Education in Health Sciences, Univ. of California, San Francisco 94122)

26–29. **Environmental Mutagen** Soc., Cherry Hill, N.J. (W. W. Nichols, Inst. for Medical Research, Copewood St., Camden, N.J. 08103)

27–29. **Electronics in Medicine**, 4th natl. conf., Chicago, Ill. (D. S. Rubin, *Medical World News*, 299 Park Ave., New York 10017)

27–30. **Meteorological Observations and Instrumentation**, 3rd symp., Air Force Cambridge Research Labs., San Diego, Calif. (A. S. Carten, Jr., AFCRL (LX/1124), L. G. Hanscom Field, Bedford, Mass.)

April

3–6. National Assoc. for **Research in Science Teaching**, Chicago, Ill. (R. W. Lefler, Dept. of Physics, Purdue Univ., Lafayette, Ind. 47907)

3–7. American **Educational Research** Assoc., Chicago, Ill. (R. A. Dershimer, AERA, 1126 16th St., NW, Washington, D.C. 20036)

3–8. American College of **Radiology**, Bal Harbour, Fla. (W. C. Tronach, ACR, 20 N. Wacher Dr., Chicago, Ill. 60606)

4–6. Symposium on **Computer-Communications Networks and Teletraffic**, 22nd annual intern. symp., New York, N.Y. (J. Fox, Polytechnic Inst. of Brooklyn, MRI Symp. Committee, 333 Jay St., Brooklyn, N.Y. 11201)

4–7. American Assoc. of **Anatomists**, Dallas, Tex. (R. T. Woodburne, Dept. of Anatomy, 4643 Medical Science II, Univ. of Michigan, Ann Arbor 48104)

4–8. Institute of **Management Sciences**, Houston, Tex. (Mrs. M. R. DeMelim, IMS, 146 Westminster St., Providence, R.I.)

5–7. **Reliability Physics** Symp., 10th annual, Inst. of Electrical and Electronics Engineers, Las Vegas, Nev. (H. Lauffenburger, IITRI, 10 W. 35 St., Chicago, Ill. 60616)

5–7. **Phase Analysis: Identification and Quantitative Determination**, Hull, England. (Meetings Officer, Inst. of Physics, 47 Belgrave Sq., London SW1X 8QX)

5–8. American **Orthopsychiatric** Assoc., 49th annual, Detroit, Mich. (Miss M. F. Langer, AOA, 1790 Broadway, New York 10019)

5–9. American **Ethnological** Soc., Montreal, P.Q., Canada. (J. M. Collins, State Univ. of New York at Buffalo, 1300 Elmwood Ave., Buffalo, N.Y. 14222)

5–9. **Learning and Culture**, Soc. for Applied Anthropology, American Ethnological Soc., and Council on Anthropology and Education (joint), Montreal, Canada.

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Ref. 1. Dalziel, K. J. Biol. chem., **283**, 1538 (1963)
2. Winer, A.D., J. Biol. chem., **239**, PC 3598 (1964)

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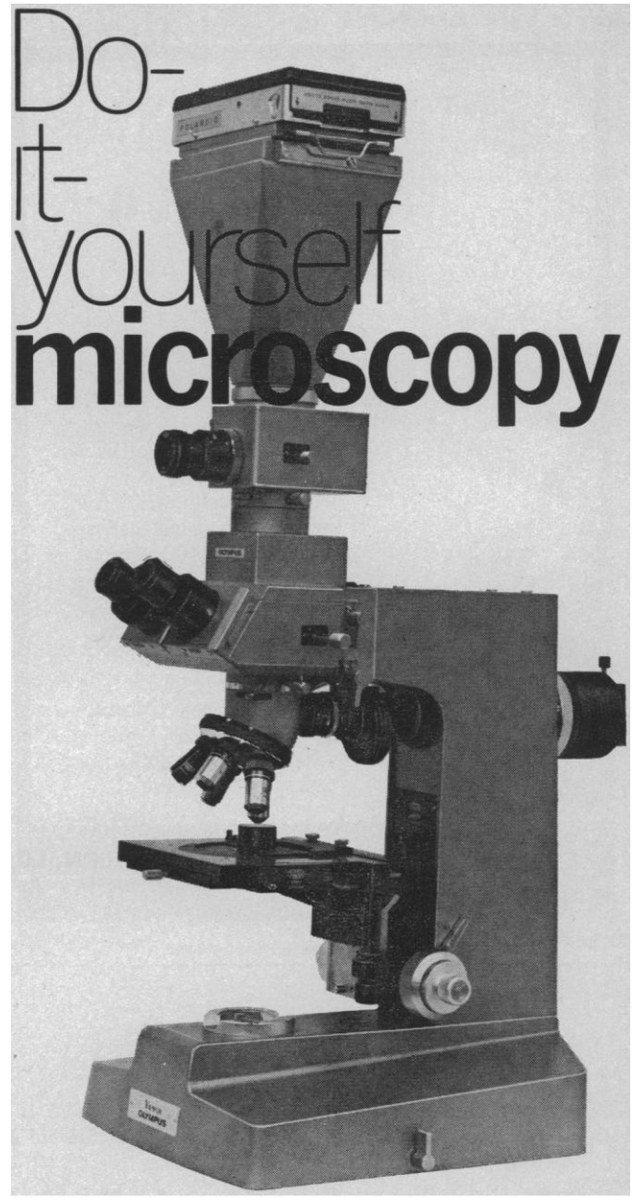

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(Miss N. Gonzalez, Dept. of Anthropology, Univ. of Iowa, Iowa City)

6–8. Florida **Acad. of Sciences**, Winter Park. (R. W. Long, Dept. of Biology, Univ. of South Florida, Tampa 33620)

6–8. Association of Southeastern **Biologists**, Mobile, Ala. (Miss M. L. Gilbert, Biology Dept., Florida Southern College, Lakeland 33802)

7–8. **Two-Year College Chemistry** Conf., 12th annual natl., Boston, Mass. (W. T. Mooney, Jr., Dept. of Chemistry, El Camino College, 16007 S. Crenshaw Blvd., Torrance, Calif. 90506)

7–11. National **Science Teachers** Assoc., New York, N.Y. (R. H. Carleton, NSTA, 1201 16th St., Washington, D.C. 20036)

8–12. American **Astronomical** Soc., Seattle, Wash. (H. M. Gurin, AAS, 211 FitzRandolph Rd., Princeton, N.J. 08540)

9–14. American Soc. of **Biological Chemists**, Atlantic City, N.J. (R. A. Harte, ASBC, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American **Chemical** Soc., Boston, Mass. (F. T. Wall, ACS, 1155 16th St., NW, Washington, D.C. 20036)

9–14. Federation of American Societies for **Experimental Biology**, Atlantic City, N.J. (Miss A. Nixon, FASEB, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American Soc. for **Experimental Pathology**, Atlantic City, N.J. (R. E. Knutti, ASEP, 9650 Rockville Pike, Bethesda, Md. 20014)

9–14. American Soc. of **Pharmacology and Experimental Therapeutics**, Atlantic City, N.J. (E. B. Cook, ASPET, 9640 Rockville Pike, Bethesda, Md. 20014)

10–12. **Acoustical Holography**, 4th intern. symp., Inst. of Electrical and Electronics Engineers, Inc., Santa Barbara, Calif. (Meetings Officer, IEEE, 345 E. 47 St., New York 10017)

10–13. International Conf. on **Magnetics** (Intermag), 10th, Inst. of Electrical and Electronics Engineers, Kyoto, Japan. (D. H. Looney, Bell Telephone Laboratories, Inc., Whippany, N.J. 07981)

10–14. Modern Trends in **Activation Analysis**, 4th intern. conf., Saclay, France. (P. L. Leveque, Centre d'Etudes Nucléaires de Saclay, B. P. No. 2, 91-Gif-sur-Yvette, France)

10–14. American Assoc. of **Immunologists**, Atlantic City, N.J. (Mrs. B. B. Reines, AAI, 9650 Rockville Pike, Bethesda, Md. 20014)

10–14. **Nuclear Activation Techniques in the Life Sciences**, Intern. Atomic Energy Agency, Ljubljana, Yugoslavia. (IAEE, Kärntnerring 11-13, A-1011 Vienna, Austria)

11–13. Conference on **Phosphorus in Fresh Water and the Marine Environment**, Intern. Assoc. on Water Pollution Research, London, England. (K. J. Ives, Dept. of Civil and Municipal Engineering, University College, London, W.C.1)

11–14. **Optical** Soc. of America, New York, N.Y. (Miss M. E. Warga, OSA, 2100 Pennsylvania Ave., NW, Washington, D.C. 20037)

12–14. **Machine Perception of Patterns and Pictures**, Teddington, Middlesex, England. (Meetings Officer, Inst. of Physics

(Miss N. Gonzalez, Dept. of Anthropology, Univ. of Iowa, Iowa City)

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13–15. American Assoc. of **Physical Anthropologists**, Lawrence, Kans. (E. I. Fry, Box 339, Southern Methodist Univ., Dallas, Tex. 75222)

13–15. **Population** Assoc. of America, Toronto, Ont., Canada. (J. W. Brackett, PAA, P.O. Box 14182, Benjamin Franklin Sta., Washington, D.C. 20044)

14. Utah **Acad. of Sciences, Arts and Letters**, Provo. (K. T. Slack, Marriott Library, Univ. of Utah, Salt Lake City 84112)

14–16. American **Psychosomatic** Soc., 29th annual, Boston, Mass. (H. Weiner, APS, 265 Nassau Rd., Roosevelt, N.Y. 11575)

15–18. International **Filter** Symp., Los Angeles, Calif. (G. C. Temes, 7732 Boelter Hall, Univ. of California, Los Angeles 90024)

16–19. National Council of **Teachers of Mathematics**, 50th annual, Chicago, Ill. (J. D. Gates, NCTM, 1201 16th St., Washington, D.C. 20036)

16–20. American Assoc. of **Cereal Chemists**, St. Louis, Mo. (R. J. Tarleton, 1821 University Ave., St. Paul, Minn. 55104)

16–20. American Assoc. of **Immunologists**, Atlantic City, N.J. (H. Metzger, 9650 Rockville Pike, Bethesda, Md. 20014)

17–19. Society of **Economic Paleontologists and Mineralogists**, Denver, Colo. (Mrs. R. Tener, P.O. Box 979, Tulsa, Okla. 74101)

17–19. American Assoc. of **Petroleum Geologists**, Denver, Colo. (N. C. Smith, Box 979, Tulsa, Okla. 74101)

17–20. **Atomic and Molecular Physics** Conf., 4th, Sussex, England. (Meetings Officer, Inst. of Physics, 47 Belgrave Sq., London SW1X 8QX)

17–20. **Medical Advisers in the Pharmaceutical Industry**, intern. conf., London, England. (W. L. Burland, Conf. Management, 29 Old Bond St., London, W.1)

17–21. **Dosimetry** Techniques Applied to Agriculture, Industry, Biology and Medicine, Intern. Atomic Energy Agency, Prague, Czechoslovakia. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

17–21. **Inner Shell Ionization Phenomena**, intern. conf., Atlanta, Ga. (R. W. Fink, School of Chemistry, Georgia Inst. of Technology, Atlanta 30332)

18–21. **Acoustical** Soc. of America, Buffalo, N.Y. (Miss B. H. Goodfriend, ASA, 335 E. 45 St., New York 10017)

20–22. Louisiana **Acad. of Sciences**, Baton Rouge. (B. F. Dowden, Dept. of Biological Sciences, Louisiana State Univ., Shreveport 71105)

20–22. Ohio **Acad. of Science**, Marietta. (J. H. Melvin, OAS, 445 King Ave., Columbus)

20–22. American Assoc. of Colleges of **Pharmacy**, Houston, Tex. (C. W. Bliven, AACP, 850 Sligo Ave., Silver Spring, Md. 20910)

20–23. Cooper **Ornithological** Soc., Las Cruces, N.M. (W. H. Behle, Dept. of Biology, Univ. of Utah, Salt Lake City 84112)

21–22. Iowa **Acad. of Science**, Iowa City. (R. W. Hanson, Dept. of Chemistry, Univ. of Northern Iowa, Cedar Falls 50613)

21–22. North Carolina **Acad. of Science**, Greenville. (J. G. Boyette, Dept. of Biology, East Carolina Univ., Greenville, 27834)

21–22. **Modern Optics**, American Physical Soc., New York State Section, Poughkeepsie, N.Y. (D. T. Teaney, IBM Research Center, P.O. Box 218, Yorktown Heights, N.Y. 10598)

22. American Soc. of **Hospital Pharmacists**, Houston, Tex. (J. A. Oddis, 4630 Montgomery Ave., Bethesda, Md. 20014)

22–28. American **Pharmaceutical** Assoc., Houston, Tex. (W. S. Apple, APA, 2215 Constitution Ave., NW, Washington, D.C.)

23–24. Congress on **Environmental Health**, American Medical Assoc., Los Angeles, Calif. (F. W. Barton, Council on Environmental and Public Health, 535 N. Dearborn St., Chicago, Ill. 60610)

23–26. Association of American **Geographers**, Kansas City, Kan. (J. W. Nystrom, AAG, 1146 16th St., NW, Washington, D.C. 20036)

23–26. American **Oil Chemists'** Soc., Los Angeles, Calif. (J. C. Lyon, 508 S. 6 St., Champaign, Ill. 61820)

23–28. American Soc. for **Microbiology**, Philadelphia, Pa. (R. W. Sarber, ASM, 1913 Eye St., NW, Washington, D.C. 20006)

24–26. **Speech Communications and Processing**, Inst. of Electrical and Electronics Engineers, Inc., Boston, Mass. (W. D. Chapman, IBM Corp., P.O. Box 12275, Dept. E82, Bldg. 060, Research Triangle Park, N.C. 27709)

24–26. **Frontiers in Education**, Inst. of Electrical and Electronics Engineers, Inc., Tucson, Ariz. (IEEE, 345 E. 47 St., New York 10017)

24–26. **Reactor Materials Performance**, American Nuclear Soc., Richland, Wash. (T. T. Claudson, Pacific Northwest Lab., Battelle Memorial Inst., P.O. Box 999, Richland 99352)

24–27. **Chemical Vapor Deposition**, American Nuclear Soc., Salt Lake City, Utah. (F. A. Glaski, Fansteel Inc., 10258 Norris Ave., Pacoima, Calif. 91331

24–27. American **Physical** Soc., Washington, D.C. (W. W. Havens, Jr., APS, 335 E. 45 St., New York 10017)

24–28. Society of **Manufacturing Engineers**, Chicago, Ill. (R. W. Taylor, 20501 Ford Rd., Dearborn, Mich. 48128)

24–28. Inter-American Congr. of **Cardiology**, San Francisco, Calif. (A. M. Bennett, American Heart Assoc., 44 E. 23 St., New York 10019)

24–29. American Acad. of **Neurology**, Palm Beach, Fla. (C. N. Patterson, 1110 W. Main St., Durham, N.C. 27701)

24–6. **Psychotherapy** Week, 22nd, Assoc. for Psychotherapeutic Training, Lindau, Germany. (H. Stolze, Lindauer Psychotherapiewochen, Adalbert-Stifterstrasse 31, D-8 Munchen 81, Germany)

26–28. **Biometric** Soc., Eastern North American regional, Ames, Iowa. (F. B. Cady, Jr., Biometric Unit, 337 Warren Hall, Cornell Univ., Ithaca, N.Y. 14850)