

G. Weissmann (New York University) showed that enzymes released from lysosomes can degrade the protein-polysaccharides of cartilage. Both in vivo and in vitro, cortisone and its analogues retard the release of enzymes from lysosomes; other steroids and membrane active agents, such as vitamin A, accelerate release. In amphibian metamorphosis, not only the metachromatic material of amphibian tail is resorbed under the influence of vitamin A, but also collagen is lost. This effect can be significantly retarded by treatment of premetamorphic larvae with cortisone or chloroquine. Weissmann described studies during which he used synthetic lipid spherulites. The membranes of such spherulites resemble those of lysosomes or erythrocytes in their response to steroids or other agents, and suggest that effects of steroids on the permeability of cells and organelles may be explained by their direct interaction with surface lipid, independent of sugars, proteins, or cell metabolism. It was further suggested that, if collagenase of mammalian cells is indeed a lysosomal enzyme, its release could be governed by steroid hormones.

In order to investigate the possible role of lysosomes in uterine involution, J. F. Woessner (Howard Hughes Institute) assayed for a variety of uterine acid hydrolases which are normally found in the lysosomal fraction of rat liver. He found that cathepsin, β -galactosidase, and acid phosphatase increase in concentration by 240 to 400 percent during involution. Studies of the subcellular distribution of these enzymes were inconclusive because of problems encountered in homogenizing the uteri. However, the proportion of the enzymes in the lysosomal fraction appeared to increase during involution. The hypothesis is presented that the major feature in the breakdown of uterine collagen is phagocytosis by macrophages and possibly other endocytic cells, followed by intracellular digestion involving lysosomal enzymes. The earliest step of the breakdown may involve a secreted collagenase. Attempts to show a mammalian collagenase in homogenates, prepared by various methods from various species of uteri, have been unsuccessful. However, collagen is digested in vitro at pH 3 to 4 by a uterine cathepsin which was purified 1000-fold. It has a specificity identical to that of cathepsin D.

From two systems, the chick embryo

and guinea pig skin, D. S. Jackson (Oregon University) presented evidence that free hydroxyproline and peptide-bound hydroxyproline is derived, in part, from breakdown of newly synthesized collagen. In a study of wound-healing in the colon, he found that after the wound is made collagen degradation takes place at a distance from the wound along the colon. Almost simultaneously there is a rapid increase in the rate of collagen synthesis in the same area, concomitant with the formation of collagen in the wound itself.

D. J. Prockop (University of Pennsylvania) reported on his studies of hydroxyproline excretion. Proline- C^{14} was injected into young rats and the specific activity of the hydroxyproline- C^{14} excreted in urine was compared with the specific activity of the hydroxyproline- C^{14} in soluble and insoluble collagen. Fifteen hours after the proline- C^{14} injection, the specific activity of the urine hydroxyproline- C^{14} was comparable to the specific activity of hydroxyproline- C^{14} in soluble collagen. The results were consistent with earlier observations which suggested that part of the hydroxyproline excreted in urine originates from the degradation of early forms of collagen such as soluble collagen. Four weeks after the administration of the isotope, the specific activity of urine hydroxyproline- C^{14} was considerably greater than the specific activity of hydroxyproline in soluble collagen, but somewhat less than the specific activity of the hydroxyproline in insoluble collagen. Calculations performed with the data obtained from two rats indicated that between 60 and 75 percent of the hydroxyproline peptide excreted in urine comes from the degradation of insoluble collagen and that only 5 to 10 percent of the hydroxyproline released during the degradation of insoluble collagen was excreted in urine.

L. Klein (Western Reserve) reported that concentrations of hydroxyproline in urine did not reflect bone resorption in rats treated with large doses of parathyroid extract and did not reflect collagen resorption during the post-partum involution of the human uterus. The in vivo catabolism of collagen was studied by administering C^{14} -gelatin parenterally to rats. Of the catabolized C^{14} -hydroxyproline, 20 to 30 percent appeared as peptides in the urine. In preliminary experiments C^{14} -hydroxyproline peptides excreted by chroni-

cally labeled rats were given parenterally to unlabeled animals. Almost quantitative (70 to 90 percent) urinary excretion of C^{14} -hydroxyproline was found, indicating that urinary hydroxyproline peptides were not catabolized. These data indicate that a relatively constant proportion of the gelatin catabolized is excreted in the urine, which casts doubt on the catabolic nature of collagen resorption.

The workshop was initiated by Robert R. Kohn as coordinator of the Aging Research Program at Western University, a program supported by a grant (HD-00669) from the National Institute of Child Health and Human Development, U.S. Public Health Service.

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Forthcoming Events

June

28-30. **Electromagnetic Scattering**, conf., Univ. of Massachusetts, Amherst. (R. S. Stein, Polymer Research Inst., Univ. of Massachusetts, Amherst)

29. **National Council of Teachers of Mathematics**, New York, N.Y. (J. D. Gates, NCTM, 1201 16th St., NW, Washington, D.C. 20036)

29-1. **Mutant Mice with Neurological Diseases**, conf., Jackson Laboratory, Bar Harbor, Maine. (J. L. Fuller, Jackson Laboratory, Bar Harbor)

29-2. **Data Processing Management Assoc.**, intern. conf., Philadelphia, Pa. (Conference Registrar, Data Processing Management Assoc., P. O. Box 1079, Philadelphia 19105)

30-2. **Microwave Applications of Semiconductors**, symp., University College, London, England. (Symposium Secretary, Inst. of Electronic and Radio Engineers, 8-9 Bedford Square, London, W.C.1)

30-3. **National Soc. of Professional Engineers**, annual, Albuquerque, N.M. (NSPE, 2029 K St., NW, Washington, D.C.)

July

1-4. **Astronomical League**, Miami, Fla. (A. P. Smith, Jr., 1601 S.W. 10th St., Miami)

1-10. **General Relativity and Gravitation**, intern. conf., London, England. (H. Bondi, Dept. of Mathematics, King's College, London, W.C.2)

1-1 August. **Theoretical Biology and Theoretical Biophysics**, Colorado State Univ. colloquium, Fort Collins. (H. J. Morowitz, Dept. of Molecular Biology and Biophysics, Box 2166, Yale Station, New Haven, Conn.)

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2-3. British Soc. for Immunology, summer meeting, Glasgow, Scotland. (I. Roitt, Courtauld Inst., Middlesex Hospital, London W.1, England)

2-4. Astronomical League, Milwaukee, Wis. (W. M. DuVall, 518 Emmertsen Rd., Racine, Wis. 53406)

2-5. Meteorological Data Processing, Uccle and Brussels, Belgium. (World Meteorological Organization, 41, avenue Giuseppe Motta, Geneva, Switzerland)

2-9. International Union of Pure and Applied Chemistry, 23rd conf., Paris, France. (R. Morf, c/o F. Hoffman-La Roche, Ltd., Grenzacherstr. 124, Basel, Switzerland)

4-10. American Library Assoc., annual, Detroit, Mich. (D. H. Clift, American Library Assoc., 50 E. Huron St., Chicago, Ill.)

5-6. Low-Level Radioactivity Measurements, symp., London, England. (N. G. Trott, Physics Dept., Royal Marsden Hospital, Surrey Branch, Downs Rd., Sutton, Surrey, England)

5-7. Astrophysical, intern. symp., Liege, Belgium. (P. Swings, Inst. D'Astrophysique, Cointe-Sclussin, Belgium)

5-7. American Soc. of Heating, Refrigerating, and Air-Conditioning Engineers, Portland, Ore. (R. C. Cross, 345 E. 47 St., New York 10017)

5-10. French Soc. for the Advancement of Science, 84th annual congr., Tours. (The Association, 28 rue Serpente, Paris 6^e, France)

5-6 Aug. American Mathematical Soc., summer inst. on algebraic groups and discontinuous subgroups, Boulder, Colo. (G. L. Walker, 190 Hope St., Providence, R.I. 02906)

6-8. Water Resources Research, western conf., Colorado State University, Fort Collins. (Office of Conference Services, 204 Administration Bldg., Colorado State Univ., Fort Collins 80521)

6-9. American Dental Soc. of Europe, annual, Florence, Italy. (A. Sturridge, 35 Harley St., London W.1, England)

6-9. Microscopy, 12th intern. symp., Sheffield, England. (MICRO-65, McCrone Research Inst., 451 E. 31 St., Chicago, Ill.)

6-10. Plant Viruses, 5th intern. conf., Wageningen, Netherlands. (State Agricultural Univ. of Wageningen, Laboratory of Virology, Salverdaplein 10, Wageningen)

7-9. Molecular Relaxation Processes, symp., Aberystwyth, Wales. (General Secretary, Chemical Soc., Burlington House, London W.1, England)

7-11. Society for the Study of Fertility, annual, Edinburgh, Scotland. (C. A. Simons, 129 Harley St., London, W.1)

8-16. British Medical Assoc., annual, Swansea, England. (D. Gullick, BMA, Tavistock Sq., London, W.C.1, England)

9-11. Heat Flow below 100°K, and Its Technological Applications, Grenoble, France. (J. Wilks, Commission 1, Intern. Inst. of Refrigeration, c/o Clarendon Laboratory, Parks Rd., Oxford, England)

10-17. Education and Health, intern. conf., Madrid, Spain. (L. P. Aujoulat, 1 rue de Tilsit, Paris 8^e, France)

11-15. Psychoanalysis, 2nd intern. forum, Zurich, Switzerland. (G. Chrzanowski, 4 E. 95 St., New York 10028)

11-15. American Veterinary Medical

Assoc., annual, Portland, Ore. (AVMA, Dept. of Public Information, 600 S. Michigan Ave., Chicago 5, Ill.)

12-14. **Biological Sciences** Symp., 16th annual, Univ. of Michigan, Ann Arbor. (L. B. Mellett, Dept. of Pharmacology, Univ. of Michigan Medical School, Ann Arbor)

12-14. **Physiology and Biochemistry of Muscle as a Food**, symp., University of Wisconsin, Madison. (E. J. Briskey, College of Agriculture, Univ. of Wisconsin, Madison 53706)

12-15. **Japan Soc. of Constitutional and Diathetic Medicine**, congr., Kyoto, Japan. (The Society, Dept. of Pathology, Kyoto Univ., Kyoto)

12-15. **Nuclear and Space Radiation Effects**, annual conf., Univ. of Michigan, Ann Arbor. (S. C. Rogers, Radiation Effects Dept., 5312, Sandia Corp., Albuquerque, N.M.)

12-17. **Spectroscopy**, 12th intern. colloquium, University of Exeter, Exeter, England. (C. E. Arregger, 1 Lowther Gardens, Prince Consort Rd., London, S.W.7, England)

12-18. **Pure and Applied Chemistry**, 20th intern. congr., Moscow, U.S.S.R. (N. A. Kleimenov, Inst. of Chemical Physics, Acad. of Sciences, Vorobyevskoye chaussee 2-b, Moscow)

13-15. **Aerospace Vehicle Flight Control**, Soc. of Automotive Engineers/NASA conf., Los Angeles, Calif. (SAE, 485 Lexington Ave., New York 10017)

13-16. **Royal Medico-Psychological Assoc.**, annual, Glasgow, Scotland. (RMPA, 11 Chandos St., London W.1, England)

14-15. **Reinforced Plastics**, regional conf., Soc. of Plastics Engineers, Seattle, Wash. (J. B. Meyer, RETEC Registration, c/o J. B. Meyer Co., P.O. Box 6664, Seattle)

15-16. **Water Quality Management in River and Reservoir Systems**, seminar, Vanderbilt Univ., Nashville, Tenn. (W. H. Wisely, American Soc. of Civil Engineers, 345 East 47 St., New York 17)

15-18. **Properties and Applications of Low Temperature Plasma**, symp., Moscow, U.S.S.R. (E. S. Starkman, College of Engineering, Univ. of California, Berkeley)

15-21. **Education of Professional Physicists**, intern. conf., London, England. (Miss P. N. Boston, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London, S.W.1)

18-24. **Dental**, 2nd intern. congr., Rio de Janeiro, Brazil. (P. F. Reis Filho, Associacao Brasileira de Odontologia, Rua da Baia 570, 5.º Andar, C. Postal 2357, Minas Gerais, Brazil)

18-24. **International Ophthalmic-Optical Congr.**, Dublin, Ireland. [E. Pemberton, Assoc. of Ophthalmic Opticians (Ireland), 11 Harrington St., Dublin]

19-21. **Surgery of the Hand**, 1st intern. congr., Rio de Janeiro, Brazil. (Sociedade Brasileira de Mão, Rio de Janeiro)

19-21. **Swine in Biomedical Research**, intern. symp., Richland, Wash. (L. K. Bustad, Biology Dept., Battelle-Northwest, P.O. Box 999, Richland 99352)

19-22. **Association of Food and Drug Officials of the U.S.**, 69th annual, New York, N.Y. (The Association, P.O. Box 9095, Austin, Tex.)

25 JUNE 1965



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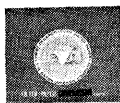
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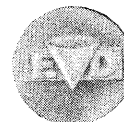
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19-22. **Space**, 5th European symp., Munich, Germany. (Executive Secretary, British Interplanetary Soc., 12, Bessborough Gardens, London, S.W.1, England)

19-23. Study of **Nuclear Structure** with Neutrons, intern. conf., Antwerp, Belgium. (M. Neve de Mevergnies, Neutron Physics Dept., CEN-CSK, Mol, Belgium)

19-23. Society for **Analytical Chemistry**, conf., Nottingham, England. (C. A. Johnson, 14 Belgrave Sq., London, S.W.1, England)

20-23. American **Malacological Union**, Wagner College, New York, N.Y. (J. J. Parodiz, Carnegie Museum, Pittsburgh, Pa.)

21-31. **Mental Health**, 5th Caribbean conf., Fort-de-France, Martinique, French West Indies. (Caribbean Federation for Mental Health, Mme. Charles Saint-Cyr, Ravine Vilaine, Fort-de-France)

22-24. International Assoc. for **Dental Research**, 43rd general meeting, Toronto, Ont., Canada. (G. H. Rovelstad, U.S. Navy Dental School, Natl. Naval Medical Center, Bethesda, Md.)

22-26. **Rorschach and Projective Methods**, 6th intern. congr., Paris, France. (A. Morali-Daninos, 7 avenue Trudaine, Paris 9e)

22-27. Thermodynamics of **Nuclear Materials and Atomic Transport in Solids**, Vienna, Austria. (C. E. Holley, Jr., Div. of Research and Laboratories, Intern. Atomic Energy Agency, Kärntnerring 11, Vienna 1)

24-4 Sept. **Organism-Sediment Interrelationship**, NSF seminar, Bermuda Biological Station. (K. E. Chave, Marine Science Center, Lehigh Univ., Bethlehem, Pa. 18015)

25-28. American Assoc. of **Dental Schools**, Toronto, Canada. (C. V. Rault, Georgetown Univ., Washington, D.C.)

25-29. Pacific **Dermatologic Assoc.**, Portland, Ore. (G. MacDonald, 4294 Orange St., Riverside, Calif.)

25-30. **Neurochemical**, intern. conf., Oxford, England. (J. N. Cummings, Dept. of Chemical Pathology, Natl. Hospital, Queen Sq., London, W.C.1, England)

25-30. International **Psycho-Analytical Assoc.**, 24th congr., Amsterdam, Netherlands. (R. P. McKnight, Austin Riggs Center, Stockbridge, Mass.)

26-29. American Inst. of **Aeronautics and Astronautics**, 2nd annual, San Francisco, Calif. (D. L. Raymond, 1290 Sixth Ave., New York 10019)

26-30. Interpretation and Therapy of **Cardiac Arrhythmias**, conf., Hahnemann Medical College and Hospital, Philadelphia 2, Pa. (L. S. Dreifus, Dept. of Medicine, Hahnemann Medical College and Hospital, 230 North Broad St., Philadelphia)

27-29. **Positron Annihilation**, conf., Wayne State Univ., Detroit, Mich. (A. T. Stewart, Physics Dept., Univ. of North Carolina, Chapel Hill)

27-29. **Research Program Effectiveness**, Washington, D.C. (Secretary, Research Conf. Committee, Room 808, Old Post Office Bldg., 12th St. and Pennsylvania Ave., NW, Washington, D.C. 20368)

28-30. **Library Science**, symp., Syracuse Univ., Syracuse, N.Y. (D. Bergen, School of Library Science, Syracuse Univ., Syracuse 13210)

28-30. **Reactor Operating Experience**, Jackson Lake Lodge, Wyo. (F. Schroeder, Phillips Petroleum, Idaho Falls, Idaho)

28-30. **Reliability and Maintainability**, 4th annual conf., Los Angeles, Calif. (J. de S. Coutinho, 32 Dartmouth St., Garden City, N.Y.)

28-31. **Spanish Biochemists**, 3rd meeting, Oviedo, Spain. (J. R. Villanueva, Centro de Investigaciones Biológicas, Velázquez 138, Madrid 6, Spain)

29-2. **Microcalorimetry**, intern. symp., Marseille, France. [E. Calvert, Institut de Microcalorimétrie et de Thermogénèse, 26, rue du 1414 RIA (3^e), Marseille]

29-5. **Protozoology**, 2nd intern. conf., London, England. (R. S. Bray, London School of Hygiene and Tropical Medicine, Keppel St., London, W.C.1)

30-31. **Animal Reproduction**, 7th biennial symp., Michigan State Univ., East Lansing. (W. Hansel, Dept. of Animal Husbandry, Cornell Univ., Ithaca, N.Y.)

31-7. **Universala Medicina Esperanto-Asocio**, meeting, during the 50th intern. esperanto congr., Tokyo, Japan. (H. Shinoda, Kasumicho, Yamagata, Japan)

August

1-5. American Soc. of **Animal Science**, Michigan State Univ., East Lansing. (J. E. Oldfield, Dept. of Animal Science, Oregon State Univ., Corvallis)

1-8. **Chemistry**, 9th Latin American congr., San Juan, P.R. (Secretary, 9th Latin American Chemical Congr., Box 2647, Rio Piedras, P.R.)

2-4. Society for **Cryobiology**, 2nd annual, Madison, Wis. (G. Rapatz, American Foundation of Biological Research, RFD 1, Madison 53716)

2-5. **Comparative Endocrinologists**, 3rd European conf., Copenhagen, Denmark. (C. Barker-Jørgensen, Universitets Zoofysiologiske Laboratorium Juliane Maries Vej 32, Copenhagen Ø)

2-6. **High Pressure**, intern. conf., Saône et Loire, France. (B. Vodar, Centre National de la Recherche Scientifique, B.P. 30, Bellevue, Seine et Oise, France)

2-6. **Instrumentation Science**, 2nd research conf., Instrument Soc. of America, Geneva, N.Y. (K. B. Schnelle, Jr., ISA, 539 William Penn Pl., Pittsburgh, Pa.)

3-7. **Acta Endocrinologica**, 5th congr., Hamburg, Germany. (A. Jores, 2 Medizinische Klinik, Eppendorfer Krankenhaus, Hamburg 20)

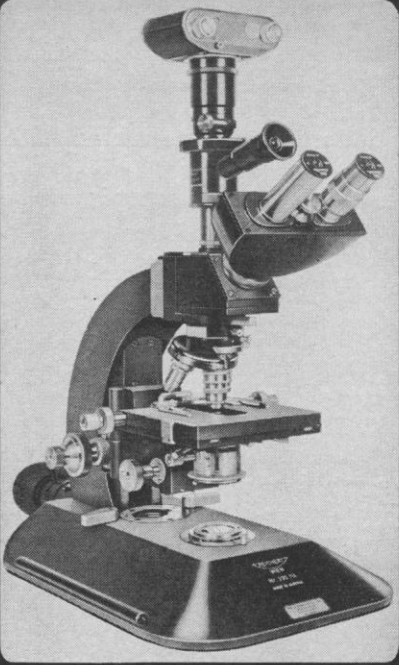
3-7. **Poultry Science Assoc.**, Univ. of Georgia, Athens. (C. B. Ryan, Texas A&M Univ., College Station 77843)

4-6. **Space and Ballistic Missile Technology**, 10th symp., U.S. Naval Training Center, San Diego, Calif. (C. T. Morrow, Aerospace Corp., Box 95085, Los Angeles, Calif. 90045)

4-7. **Genetics**, G. Mendel memorial symp., Brno, Czechoslovakia. (M. Sosna, G. Mendel Memorial Symp., Na cvicisti 2, Prague 6, Czechoslovakia)

5-12. **EEG and Neurophysiology**, 6th intern. congr., Vienna, Austria. (K. Pateisky, Wiener Medizinische Akademie, Alserstr. 4, Vienna 9)

8-11. **Heat Transfer**, 8th natl. conf., Los Angeles, Calif. (K. O. Beatti, Jr., Dept. of Chemical Engineering, North Carolina State College, Raleigh)



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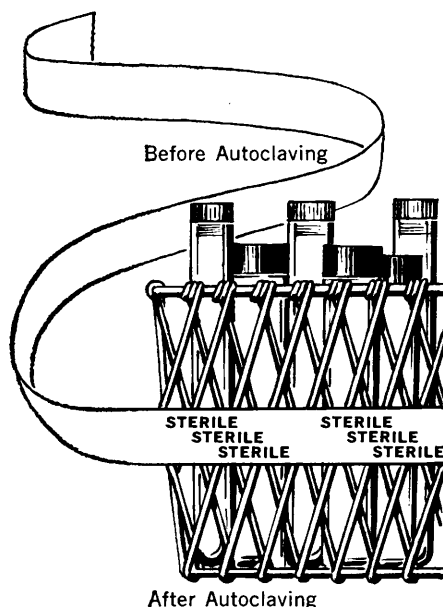
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8-14. **Anatomists**, 8th intern. conf., Wiesbaden, Germany. (M. Watzka, Anatomisches Institut der Universität, Mainz, West Germany)

8-27. **Fracture Mechanics**, workshop, Denver Research Inst., Denver, Colo. (D. L. Wells, University Technology Corp., P.O. Box 7, Dayton, Ohio 45449)

9-11. **Mutation Process**, symp., Prague, Czechoslovakia. (M. Sosna, Na cvicisti 2, Prague 6)

9-13. **Meteor Orbits and Dust**, intern. symp (invitation only), Cambridge, Mass. (G. S. Hawkins, Smithsonian Astrophysical Observatory, 60 Garden St., Cambridge 02138)

9-15. **Nordic Entomology Congr.**, Oslo, Norway. (Norwegian Natl. Travel Office, 290 Madison Ave., New York 10017)

9-20. **Electromagnetic Measurements and Standards**, Natl. Bureau of Standards, Boulder, Colo. (Bureau of Continuation Education, University Memorial Center, Univ. of Colorado, Boulder)

10-20. **Theory of Groups**, intern. conf., Intern. Mathematical Union, Canberra, Australia. (L. G. Kovacs, Dept. of Mathematics, Australian Natl. Univ. Inst. of Advanced Studies, Box 4, G.P.O., Canberra)

11-13. **Calorimetry**, 20th conf., Ames, Iowa. (R. Hultgren, Univ. of California, Berkeley)

11-15. **European Malacological Union**, 2nd congr., Copenhagen, Denmark. (G. Højner Peterson, c/o Zoologisk Museum, 5 Afdeling, Universitetsparken 15, Copenhagen)

12-21. **Veterinary Education**, 2nd intern., Copenhagen, Denmark. (Inter. Agency Liaison Branch, Office of the Director General, Food and Agriculture Organization, Via delle Terme di Caracalla, Rome, Italy)

14-20. **Australian Medical Assoc.**, 2nd medical congr., Perth, Western Australia. (O. R. Corr, 8 King's Park Rd., West Perth, Western Australia)

14-20. **Molecular Spectroscopy**, 8th European congr., Copenhagen, Denmark. (The Congress, Universitetsparken 5, København Ø, Denmark)

14-6. **Digital Computers for College Teachers of Science, Mathematics, and Engineering**, Univ. of Southwestern Louisiana, Lafayette. (J. R. Oliver, Box 133, USL Station, Lafayette 70506)

14-19 Sept. **International Assoc. for Quaternary Research**, 7th congr., Boulder and Denver, Colo. Field conf., 14-29 Aug. and 5-19 Sept.; general assembly, 30 Aug-5 Sept. (G. M. Richmond, Room 2462, Bldg. 25, Denver Federal Center, Denver 80225)

15-20. **American Inst. of Biological Sciences**, Urbana, Ill. (AIBS, 3900 Wisconsin Ave., NW, Washington, D.C. 20016)

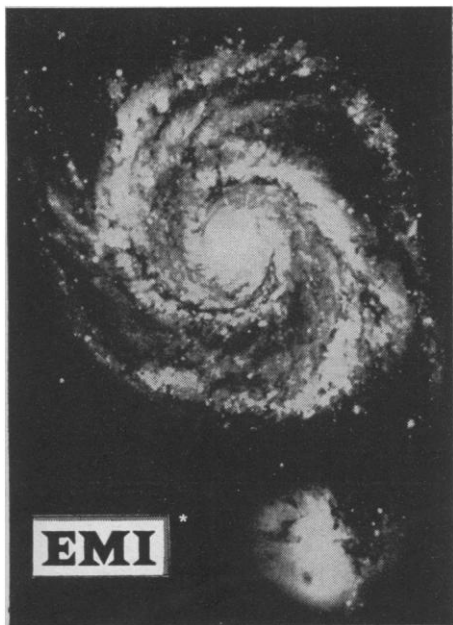
The following societies will meet in conjunction with the AIBS. Unless otherwise indicated, the local chairmen are at the University of Illinois, Urbana.

American Bryological Soc. (G. N. Jones, Dept. of Botany)

American Fern Soc. (G. N. Jones, Dept. of Botany)

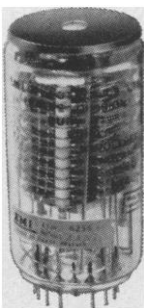
American Fisheries Soc. (G. Bennett, Aquatic Biology Section)

American Genetic Assoc. (S. Price, Room 210 S. Bldg., Plant Industry Station, Beltsville, Md.)



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American Microscopical Soc. (L. J. Thomas, Dept. of Zoology)
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American Soc. of Limnology and Oceanography. (W. Larrimore, Illinois Natural History Survey, Urbana)

American Soc. of Plant Physiologists. (J. B. Hanson, Dept. of Agronomy)

American Soc. of Plant Taxonomists. (W. Payne, Dept. of Botany)

American Soc. of Zoologists. (L. Ingle, Dept. of Zoology)

Animal Behavior Soc. (G. P. Waldbauer, Dept. of Entomology)

Botanical Soc. of America. (D. J. Paolillo, Dept. of Botany, 302 Natural History Bldg.)

Ecological Soc. of America. (L. C. Bliss, Dept. of Botany)

Mycological Soc. of America. (D. P. Rogers, Dept. of Botany)

National Assoc. of Biology Teachers. (H. Weaver, Dept. of Recreation and Municipal Park Administration)

Nature Conservancy. (L. T. Stannard, Illinois Natural History Survey, Urbana)

Phycological Soc. of America. (L. Hoffman, Dept. of Botany)

Society for Industrial Microbiology. (L. D. Witter, Food Science Dept.)

Society for the Study of Development and Growth. (D. L. Nanney, Dept. of Zoology)

Society for the Study of Evolution. (L. J. Stannard, Illinois Natural History Survey, Urbana)

Society of Nematologists. (D. P. Taylor, 106 Horticulture Field Laboratory)

Tomato Genetics Cooperative. (A. Thompson, Dept. of Horticulture)

15-20. **Energetics**, American Soc. of Mechanical Engineers, conf., Rochester, N.Y. (ASME, 345 E. 47 St., New York 10017)

15-21. **Ophthalmology**, 8th Pan American congr., Rio de Janeiro, Brazil. (W. D. Estrada, Praca Cardea, Arcoverde 25, Copacabana, Rio de Janeiro)

16-18. **Guidance and Control**, conf., Minneapolis, Minn. (D. L. Mellen, Mail Station 677, Military Products Group, Aeronautical Div., Honeywell, Inc., Minneapolis 55440)

16-20. Australian-New Zealand Assoc. for the **Advancement of Science**, Univ. of Tasmania, Hobart, Tasmania, Australia. (K. D. Nicolls, Div. of Soils, CSIRO, Stowell Ave., Hobart)

16-20. **Liquid Crystals**, conf., Kent State Univ., Kent, Ohio. (G. H. Brown, Dept. of Chemistry, Kent State Univ., Kent)

16-20. American Soc. for **Pharmacology and Experimental Therapeutics**, fall meeting, Univ. of Pennsylvania, Philadelphia. (E. B. Cook, 9650 Wisconsin Ave., Washington, D.C. 20014)

16-21. **Electron Diffraction and the Nature of Defects in Crystals**, intern. conf., Melbourne, Australia. (R. I. Garrod, Astronautical Research Laboratories, Box 4331, G.P.O., Melbourne)

16-3. **Kinematical and Chemical History of the Galaxy**, NATO inst., Sussex, England. (R. Wooley, Herstmonceux Castle, Sussex)

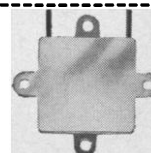
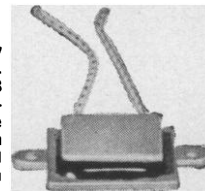
16-3. **Radiation Trapped in the Earth's Magnetic Field**, NATO institute, Bergen,

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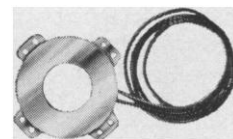


MODULE 3951-1

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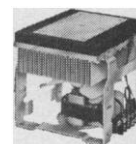
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Very low current requirements (1500 milliamps), high heat pumping capacity (2000 milliwatts)—yet very small (.786" sq. x .196" thick) and light (less than 1/4 oz.). Ideal for hot spot problems in circuits with low available power.



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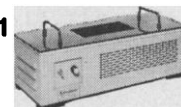


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Norway. (B. M. McCormac, Geophysics Div., IIT Research Inst., 10 W. 35 St., Chicago, Ill. 60515)

17-20. **Anesthesiology**, symp., Czechoslovak Medical Soc., Prague. (J. Hoder, Unemocnice 2, Prague 2)

17-20. **Atmospheric Pollution**, 2nd Clean Air Conf., Sydney, Australia. (J. L. Sullivan, New South Wales Dept. of Health, P.O. Box 31, George St. North Post Office, Sydney)

17-27. **Infrared Spectroscopy**, 16th annual inst., Fisk Univ., Nashville, Tenn. (Director, Fisk Infrared Inst., Fisk Univ., Nashville 8)

18-20. **American Astronautical Soc.**, natl. meeting, San Francisco, Calif. (J. N. Nielsen, P.O. Box 642, Los Altos, Calif.)

18-25. **Upper Atmosphere Chemistry** Circulation and Aerosols, symp., Intern. Assoc. of Meteorology and Atmospheric Physics, Visby, Sweden. (The Association, Commission of Atmospheric Chemistry and Radioactivity, c/o Natl. Center for Atmospheric Research, Boulder, Colo.)

20-21. **American Inst. of Ultrasonics in Medicine**, 1st Pan American meeting, Lima, Peru. (C. Bustamante Ruiz, Dept. of Physical Medicine and Rehabilitation, Hospital Obrero, Lima)

21. **American Assoc. of Electromyography and Electrodiagnosis**, annual, Philadelphia, Pa. (16861 Wyoming Ave., Detroit, Mich. 48221)

21. **Spectroscopy**, 5th, Intern. Union of Pure and Applied Physics commission, Copenhagen, Denmark. (W. Price, Dept. of Physics, Kings College, Univ. of London, London, W.C.2, England)

21-25. **Insect Endocrinology**, symp., Prague, Czechoslovakia. (F. Hrabal, Foreign Relations Dept., Czechoslovak Acad. of Sciences, Narodni tr. 3, Prague 1)

22-25. **Soil Conservation Soc. of America**, Philadelphia, Pa. (H. W. Pritchard, 7515 Ankeny Rd., Ankeny, Iowa)

22-27. **Medical Electronics and Biomedical Engineering**, Tokyo, Japan. (K. Suhara, Japan Soc. of Medical Electronics and Biological Engineering, Old Toden Bldg., 1-1 Shiba-tamura-cho, Minato-ku, Tokyo)

22-27. **Microchemical Techniques**, intern. symp., Pennsylvania State Univ., University Park. (H. Francis, Jr., Pennsalt Chemicals Corp., 900 First Ave., King of Prussia, Pa.)

22-27. **American Acad. of Physical Medicine and Rehabilitation**, Philadelphia, Pa. (M. K. Newman, 16861 Wyoming Ave., Detroit, Mich. 48221)

22-28. **Physiology of Giant Algal Cell**, conf., Australian Acad. of Science, Canberra, Australia. (The Academy, Gordon St., Canberra)

22-28. **Industrial Research**, 16th annual conf., Tuxedo, N.Y. (R. T. Livingston, School of Engineering and Applied Science, Columbia Univ., New York, N.Y.)

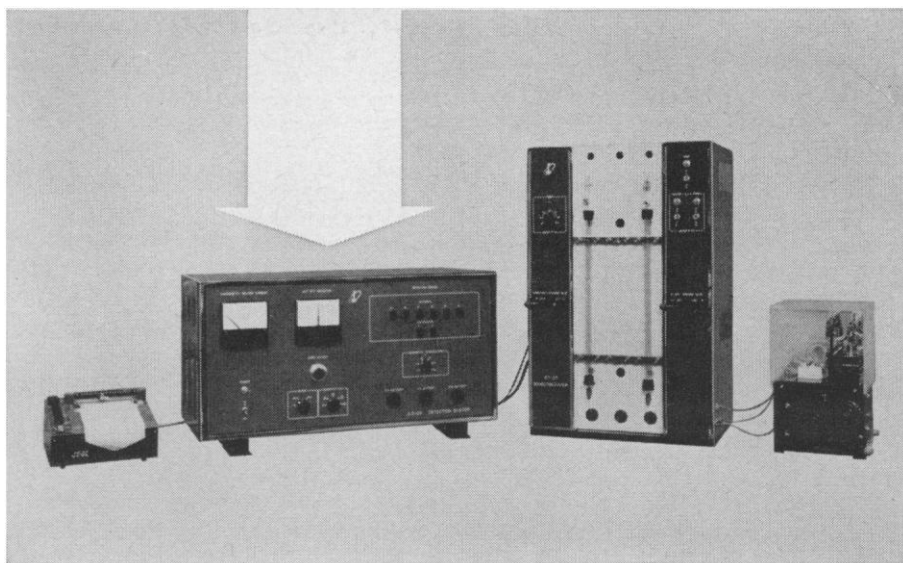
22-28. **Lunar Geology**, intern. field conf., Bend, Ore. (L. Staples, Dept. of Geology, Univ. of Oregon, Eugene)

23-25. **Cryogenic Engineering**, conf., Houston, Tex. (K. D. Timmerhaus, Engineering Research Center, Univ. of Colorado, Boulder 80304)

23-25. **American Soc. of Human Genetics**, Seattle, Wash. (J. B. Graham, Dept. of Pathology, Univ. of North Carolina, Chapel Hill)

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23-25. **Plant Phenolics** Group of North America, annual, Albany, Calif. (V. C. Runeckles, Imperial Tobacco Co. of Canada, P.O. Box 6500, Montreal, Quebec)

23-26. **Clay Minerals** Soc., 2nd annual, Univ. of California, Berkeley. (J. A. Pask, Dept. of Mineral Technology, Univ. of California, Berkeley 94720)

23-26. **Quantum Chemistry**, Physical Chemistry Div., Chemical Inst. of Canada, Edmonton, Alta. (The Institute, 48 Rideau St., Ottawa 2, Ont.)

23-27. **Control Procedures in Drug Production**, seminar, Univ. of Wisconsin, Madison. (W. Blockstein, Extension Services in Pharmacy, Univ. of Wisconsin, Madison)

23-27. **Neurological Surgery**, 3rd intern. congr., Copenhagen, Denmark. (DIS Congress Service, Sankt Peders Straide 19, Copenhagen K)

23-27. **American Ornithologists** Union, Ohio State Univ., Columbus. (R. Mewaldt, San Jose State Teachers College, San Jose, Calif.)

23-27. **Space**, 5th annual conf., Virginia Polytechnic Inst., Blacksburg. (M. L. Collier, Jr., Virginia Polytechnic Inst., Blacksburg)

23-29. **European Soc. of Haematology**, 10th congr., Strasbourg, France. (R. Waitz, Faculté de Médecine, Inst. d'Hématologie, 1, Pl. de l'Hôpital, Strasbourg, Bas-Rhin, France)

23-29. **Logopaedics and Phoniatrics**, 13th intern. congr., Vienna, Austria. (Mrs. A. M. Jorg, Vienna Acad. of Medicine, Alserstr. 4, Vienna 9)

23-30. **Limnology**, 16th intern. congr., Warsaw, Poland. (G. E. Hutchinson, Yale Univ., New Haven, Conn.)

24-26. **Association for Computing Machinery**, 20th natl. conf., Cleveland, Ohio. (G. J. Moshos, P.O. Box 4741, Cleveland 44126)

24-26/28-29. **History of Science**, 11th intern. congr., Warsaw and Krakow, Poland. (W. Voisé, Inst. of the History of Science and Technology, Polish Acad. of Sciences, Nowy Swiat 72, Room 19, Warsaw 1)

24-27. **Western Electronic Conv. (WESCON)**, San Francisco, Calif. (E. L. Rogers, Wescon, Suite 203, 780 Welch Rd., Palo Alto, Calif.)

24-27. **Pharmaceutical Sciences**, 25th intern. congr., Prague, Czechoslovakia. (Pharmaceutical Section, Czechoslovak Medical Soc., J. E. Purkny, U Elektry 8, Prague)

24-28. **Electron Microscope** Soc., 23rd annual, New York, N.Y. (L. Ross, Anatomy Dept., Cornell Univ. Medical College, 1300 York Ave., New York)

24-28. **American Physiological** Soc., Univ. of California, Los Angeles. (R. G. Daggs, 9650 Wisconsin Ave., Washington, D.C. 20014)

25-27. **Gas Dynamics**, 6th biennial conf., Evanston, Ill. (A. B. Cambel, Gas Dynamics Symp., Northwestern Univ., Evanston 60201)

25-27. **Thymus**, Ciba Foundation symp., Melbourne, Australia. (Ciba, 41, Portland Place, London, W.1, England)

25-27. **X-Ray Analysis**, 14th annual conf., Denver, Colo. (Metallurgy Div., Denver Research Inst., Univ. of Denver 80210)

25-28. **Systems Engineering for Con-**

trol System Design, Tokyo, Japan. (H. M. Paynter, Mechanical Engineering Dept., Massachusetts Inst. of Technology, Cambridge 39)

25-28. **Photochemistry**, intern. conf., Tokyo, Japan. (I. Tanada, Laboratory of Physical Chemistry, Tokyo Inst. of Technology, Ookayama, Meguro-ku, Tokyo)

25-28. **International Phycological** Soc., Halifax, N.S., Canada. (E. G. Young, Natl. Research Council of Canada, Halifax)

25-28. **Seaweed**, 5th intern. symp., Halifax, N.S., Canada. (E. G. Young, Natl. Research Council of Canada, Halifax)

26-28. **Helium Superfluidity**, symp., St. Andrews, Scotland. (J. F. Allen, St. Andrews Univ., St. Andrews)

26-28. **Neurovirulence**, symp., Munich, Germany. (Permanent Section of Microbiological Standardization, Intern. Assoc. of Microbiological Societies, Inst. d'Hygiène, Geneva, Switzerland)

26-28. **National Council of Teachers of Mathematics**, Vancouver, B.C., Canada. (J. D. Gates, 1201 16th St., NW, Washington, D.C. 20036)

29-2. **American Assoc. of Clinical Chemists**, 17th natl., Chicago, Ill. (M. E. Hanke, 8424 Rhodes Ave., Chicago 60619)

29-2. **Illuminating Engineering** Soc., New York, N.Y. (A. D. Hinckley, 345 East 47 St., New York 10017)

29-3. **AAAS, Laurentian Hormone** Conf., Mont Tremblant, Quebec, Canada. (J. C. Foss, Laurentian Hormone Conf., 222 Maple Ave., Shrewsbury, Mass.)

29-10. **Forest Hydrology**, intern. symp., Pennsylvania State Univ., University Park. (W. E. Sopper, School of Forestry, Pennsylvania State Univ., University Park)

30-31. **Past and Future of Science**, symp., Krakow, Poland. (B. Suchodolski, Polish Acad. of Sciences, Palace of Culture and Sciences, Warsaw)

30-1. **Antennas and Propagation**, intern. symp., Washington, D.C. (R. J. Adams, Code 5330, U.S. Naval Research Laboratory, Washington 20390)

30-1. **Applied Mechanics**, West Coast conf., Univ. of California, Los Angeles. (P. M. Naghdi, Div. of Applied Mechanics, Univ. of California, Berkeley 94720)

30-1. **Rare Earth Research**, 5th conf., Iowa State Univ., Ames. (S. Legvold, Dept. of Physics, Iowa State Univ., Ames 50012)

30-1. **Structural Dynamics and Aeroelasticity**, conf., Boston, Mass. (F. C. Hung, Space Information Systems Div., North American Aviation, Inc., Downey, Calif.)

30-2. **Fluorine Chemistry**, 3rd intern. symp., Munich, Germany. (F. Weygand, Inst. für Organische Chemie, Technische Hochschule München, Arcisstr. 21, 8 Munich 2)

30-2. **Mathematical** Assoc. of America, 46th summer, Cornell Univ., Ithaca, N.Y. (H. M. Gehman, State University of New York at Buffalo, Buffalo 14214)

30-2. **Regional Science** Assoc., 5th European congr., Krakow, Poland. (H. Wood, Dept. of Regional Science, Univ. of Pennsylvania, Philadelphia 19104)

30-2. **American Sociological** Assoc., Chicago, Ill. (G. M. Sykes, ASA, 1755 Massachusetts Ave., NW, Washington, D.C.)