Second Printing July 1960

**AAAS Symposium Volume No. 52** 

### **EVOLUTION OF NERVOUS CONTROL FROM PRIMITIVE** ORGANISMS TO MAN

Editor: Allan D. Bass

### 1959, 240 pp. \$5.75, AAAS members' prepaid orders \$5.00

From a review in the Psychiatric Quarterly, January 1960:

This book is another in the superb series of monographs put out by the American Association for the Advancement of Science. . . . The text is actually a very readable review of some of the major research going on in various phases of neuropsychiatry.

This book offers much more concrete and useful data than do a number of larger tomes dealing with the interdisciplinary approach to mental disease. It may be profitably read by anyone in-terested in the differing aspects of, or approaches to, the study of the nervous system and its activity.

British Agents: Bailey Bros. & Swinfen, Ltd. Hyde House, W. Central St. London, W.C.1

### AAAS

1515 Massachusetts Avenue, NW Washington 5, D.C.



The Model MPS is a precision instru-ment designed to meet the exacting requirements of science, education and industry. Ideal for work in chemistry, crystallography, biology, as well as the technology of paper, glass, textiles and petroleum.

- Evepieces: 5X (micro.), 10X (cross.) Objectives: 4X, 10X, 40X, achro matic, strain-free, centerable Nosepiece: quick-change type
- Substage condenser: focusable, 3-lens, swing-out top mount, iris diaphragm
- Polaroid polarizer : rotatable 360° Polaroid analyzer: in sliding mount
  Bertrand lens: centerable
- Stage: 115mm diameter, revolves 360°, reads to 6' with vernier 2 Compensators: quarter-wave plate and first order red plate
- · Focusing: both coarse and fine
- FREE TEN-DAY TRIAL Quantity prices on three or more

Accessory mechanical stage \$14.75

### INSTRUMENT COMPANY • MICROSCOPE SALES DIV. 66 NEEDHAM ST., NEWTON HIGHLANDS 61, MASS. Please rush UNITRON's Microscope Catalog 4B-3 I

Name	
Company	
Address	
City	State

Meetings

### **Forthcoming Events**

May

20-24. American Assoc. of Cereal Chemists, Saint Louis Park, Minn. (B. S. Miller, Dept. of Flour and Feed Milling, Kansas State Univ., Manhattan)

21-22. Society of American Military Engineers, annual, Washington, D.C. (SAME, 808 Mills Bldg., Washington 6)

21-23. National Aerospace Instrumentation Symp., Washington, D.C. (C. Creveling, Goddard Space Flight Center, Greenbelt, Md.)

21-24. Air Pollution Instrumentation Symp., Chicago. Ill. (D. F. Adams, Div. of Industrial Research, Washington State Univ., Pullman)

21-25. Max Planck Inst. for the Advancement of Science, general assembly, Düsseldorf, Germany. (MPIAS, Kaiserswerther Str. 164, Düsseldorf)

21-25. Plastic and Reconstructive Surgery of the Eye and Adnexa, intern. symp., New York, N.Y. (R. Troutman, Manhattan Eye, Ear & Throat Hospital, 210 E. 64 St., New York 21) 21–25. Thermodynamics of Nuclear

Materials, symp., Vienna, Austria. (Intern. Atomic Energy Agency, 11 Kärntner Ring, Vienna 1)

21-26. Ceramic Congr., intern., Copenhagen, Denmark. (Arbejdsgivere, Indenfor de Keramiske Industrier, Nørre Volgade 34. Copenhagen K)

21-26. Rubber Technology Congr., annual, London, England. (Secretary, Institution of the Rubber Industry, 4, Kensington Palace Gardens, London, W.8)

22-24. National Microwave Theory and Techniques, symp., Inst. of Radio Engineers, Boulder, Colo. (L. G. Cumming, IRE, 1 E. 79 St., New York 21)

22-24. Self-Organizing Systems, conf., Chicago, Ill. (G. T. Jacobi, Armour Re-search Foundation, 10 W. 35 St., Chicago 16)

22-25. Rationalizing Consumption of Electric Power, intern. symp., Warsaw, Poland. (Ministry of Mines and Power, Krucza 36, Warsaw)

22-25. Rubber Technology Conf., Scarborough, England. (Institution of the Rubber Industry, 4 Kensington Palace Gardens, London, W.8)

22-26. Disposal and Utilization of Solid Domestic and Industrial Wastes, intern. congr., Essen, Germany. (Haus der Technik, Schliessfach 668, Essen)

22-26. International Medico-Athletic Federation, congr., Santiago, Chile. (G. La Cava, Via A. Serra, 104, Rome, Italy)

23-24. Forming and Testing of Sheet Metal, intern. colloquium, Düsseldorf, Germany. (J. Hooper, Intern. Deep Drawing Research Group, John Adam St., Adelphi, London, W.C.2, England)

23-25. American Soc. for Quality Control, annual, Cincinnati, Ohio. (A. W. Wortham, Texas Instruments, Inc., P.O. Box 5474, Dallas 22)

24-26. Institute of Radio Engineers, conf. on space communications, Seattle, Wash. (IRE, 1 E. 79 St., New York 21)

24-26. International Assoc. for Bronchology, Bruges, Belgium. (R. Pannier, c/o Service de Pneumo-Phtisologie, Hôpital Saint-Jean, Bruges)

25-27. Society for Applied Anthropology, annual, Kansas City, Mo. (C. Price, Menninger Foundation, Topeka, Kansas) 26-27. Ukrainian Medical Assoc. of North America, biennial, Detroit, Mich. (R. W. Sochynsky, UMANA, 2 E. 79 St., New York 21)

26-30. International Federation for Hygiene and Preventive Medicine, intern. congr., Vienna, Austria. (E. Musil. IFHPM, Mariahilfer Strasse 177, Vienna) 27-30. Chemical Inst. of Canada, annual conf. and exhibition, Edmonton. (CIC, 48 Rideau St., Ottawa 2, Ont.)

27-30. East-West Diabetic Workshop, Chicago, Ill. (B. R. Hurst, 1646 Pitts-field Building, 55 E. Washington, Chicago 2)

27-2. International Federation of Prestressing, 4th congr., Rome, Italy. (IFP, 6, rue Paul Valéry, Paris, 16°)

28-30. American Assoc. for Contamination Control, 1st annual, San Francisco, Calif. (D. M. Petersen, Central Vacuum Corp., 3008 E. Olympic Blvd., Los Angeles 23, Calif.)

28-30. Biology of the Transuranic Elements, symp., Richland, Wash. (R. C. Thompson, Hanford Biology Laboratory, General Electric Co., Richland)

28-30. Heavy Water Reactors, Canadian Nuclear Assoc., annual conf., Ottawa, Ont., (CNA, 19 Richmond St. West, Toronto 1)

28-30. International Discussion on Heat Treating, Lausanne, Switzerland. (Institut für Härterei-Technik, Postfach 13, Bremen-St. Magnus, Germany)

28-1. Modern Techniques of Computation and Industrial Automation, colloquium, Paris, France. (Assoc. Française de Régulation et d'Automatisme, 19, rue Blanche, Paris 9°)

28-2. International Ophthalmic Optical Congr., Berlin, Germany. (G. H. Giles, Intern. Optical League, 65 Brook St., London, W.1, England)

28-2. United Nations Scientific Committee on the Effects of Atomic Radiation, New York, N.Y. (United Nations, New York)

29-2. American College of Cardiology, Inc., Denver, Colo. (I. Brotman, 1746 K St., NW, Washington, D.C.)

29-3 Latin Oto-Rhino-Laryngology Soc., Madrid, Spain. (M. Calderin, Diego de Leon 62, Madrid)

29-22. World Meteorological Organization, congr., Geneva, Switzerland. (WMO, 41, Avenue Giuseppe Motta, Geneva)

29-31. Tissue Culture Assoc., annual, Washington, D.C. (R. E. Stevenson, Natl. Cancer Inst., Bethesda 14, Md.)

31-3. European Symp. on Fresh Water from the Sea, Athens, Greece. (P.O. Box 1199, Omonoia, Athens)

31-3. German Bunsen Soc. for Physical Chemistry, general assembly, Münster. (F. Vorländer, Varrentrappstr. Frankfurt am Main, Germany) 40-42.

31-7. Television Conf., intern., London, England. (Secretary, Institution of Electrical Engineers, Savoy Place, London, W.C.2)

## COLEMAN



# AUTOMATIC TITRATIONS

The Coleman Titr<u>ion</u>, together with the Compan<u>ion</u> pH Meter, provides an instrumentation package capable of automatically performing virtually any electrometric titration in the analytical laboratory.

Speed-complete automatic titration in 1 to  $1\frac{1}{2}$  minutes.

Accuracy, Sensitivity—routine accuracy well within 0.1 pH; 2 millivolt potential difference operates titrant flow control.

Automation—electronic sensing of end-point approach; electronic control of titrant flow; panel lights for operating and end-point signals.

**Economy**-high-volume output cuts unit cost of titrations; Companion mounts on Titr<u>ion</u> control case to conserve bench space.

Versatility-instrumentation adapts to any titration curve; provision for continuous titration; operates over 0-14 pH and 1400 millivolt range; temperature compensation.

**Convenience**—controls and equipment carefully grouped for greatest operating ease; electrodes positioned in sample with a single motion.

**Practicality**—no special training needed to maintain high levels of accuracy.

Find out how to save time and effort in your titrations—write for Bulletin SB-275



COLEMAN INSTRUMENTS, INC. MAYWOOD, ILLINOIS June

1-2. European Acad. of Allergy, Prague, Czechoslovakia. (C. Herscheimer, Theyss-Str. 23, Berlin, Germany)

3-8. American Soc. for Testing and Materials, Committee on Mass Spectrometry, annual, New Orleans, La. (G. Crable, Geneva College, Beaver Falls, Pa.)

4-6. Association of Iron and Steel Engineers, Colorado Springs, Colo. (T. J. Ess, AISE, 1010 Empire Bldg., Pittsburgh 22, Pa.)

4-6. Chemistry and Technology of Chloring and Chloroderivatives, mtg., Szczecin. Polish Chemical Soc. (A. Z. Zielinski, Politechnika Szczecinska, U1. Putaskiego 10, Szczecin 3)

4-6. Edison Electric Inst., annual. Atlantic City, N.J. (A. B. Morgan, EEI, 750 Third Ave., New York 17)

4-6. International Water Study Sessions, Liége, Belgium. (CEBEDEAU, 2, rue Armand Stévart, Liége)

4-7. Nuclear Congr. and Intern. Atomic Exposition, biennial, New York, N.Y. (Engineers Joint Council, 29 W. 39 St., New York 18)

4-8. Medical Library Assoc., annual, Chicago, Ill. (D. Washburn, American Dental Assoc., 222 E. Superior St., Chicago 11)

4-8. Modern Thermal and Hydraulic Power Plants, intern. study days, Liége, Belgium. (Secretary, Assoc. des Ingénieurs Electriciens sortis de l'Institut Electrotechnique Montefiore, rue Saint-Gilles, 31, Liége)

4-8. Society of Chemical Industry, overseas section, annual, Stockholm, Sweden.
(G. P. Armstrong, c/o Distillers Co. Ltd., 21 St. James Sq., London, England)
4-8. Society of Physical Chemistry, an-

4-8. Society of Physical Chemistry, annual, Paris, France. (O. Emschwiller, Ecole Supérieure de Physique et de Chimie, 10 rue Vauquelin, Paris 5°)

4-10. Corrosion of Reactor Materials, conf., Intern. Atomic Energy Agency, Salzburg, Austria. (IAEA, 11 Kaerntnerring, Vienna 1, Austria)

5-6. International Neurological Meeting, Paris, France. (J. Sigwald, Société Française de Neurologie, 68, Boulevard de Courcelles, Paris 17°)

5-7. Fuels Symp., American Soc. of Mechanical Engineers, New Brunswick, N.J. (C. R. G. Dougherty, College of Engineering, Rutgers Univ., New Brunswick)

5-8. Microwave Communication, Budapest, Hungary. (G. Bognár, Hungarian Acad. of Sciences, Akadémia utca 2, Budapest V)

5-8. Group for the Advancement of Spectrographic Methods, annual congr., Paris, France. (Groupement pour l'Advancement des Méthodes Spectrographiques, 1, rue Gaston-Boissier, Paris  $15^{\circ}$ )

6-8. American Scientific Glassblowers Soc., annual symp. and exposition, Washington, D.C. (G. A. Sites, ASGS, 309 Georgetown Ave., Wilmington 3, Del.)

6-8. Canadian Federation of Biological Societies, annual, Quebec. (A. H. Neufeld, Dept. of Pathological Chemistry, Univ. of Western Ontario, London, Ont., Canada)

6-9. International Assoc. for Cereal Chemistry, Vienna, Austria. (F. Schweitzer, Maurer, Heudöfelgasse 41, Vienna 23) 6-9. Union of Textile Chemists and





Now! A precision recorder-5 ways more versatile, easier to operate!

multiple chart speeds

- push-button controls
- positive paper drive
- mounts on wall or bench
- wide application range

Here's the Beckman Potentiometric Strip-Chart Recorder. Its standard 1" per minute chart speed is supplemented by any of 12 internal or plugin external accessory drive units-for speeds from 4" per minute to 6" per hour. Positive chart paper drive is assured by the recorder's flexible belt chart drive mechanism. Pen response is 1.0 second full-scale. Pen zero can be set to any point throughout its 5" pen travel. An input voltage span continuously adjustable between 10 and 100 mv permits a wide range of applications: transmittance, absorbance, temperature, pH, frequency, heat, solution conductivity, pressure, strain, speed, light sensitivity. Accessories include circular chart drive and external circuit controller. For full details, see your Beckman laboratory apparatus dealer or write direct for Data File 38-20-21.



SCIENTIFIC AND PROCESS

Fullerton, California

657

Colorists, annual, Baden-Baden, Germany. (Verein der Textilchemiker und Coloristen, Blauenstr. 17, Badenweiler, Germany)

7-9. Manufacturing Chemists' Assoc., Inc., White Sulphur Springs, W.Va. (R. D. Lambert, MCA, 1825 Connecticut Ave., NW, Washington 9)

7-9. U.N. Food and Agriculture Organization-Intern. Union of Forest Research Organizations, Joint Committee on Bibliography, Freiburg, Switzerland. (Intern. Agency Liaison Branch Office of Director General, FAO, Viale delle Terme di Caracalla, Rome, Italy)

7-13. Quantitative Biology, symp., Cold Spring Harbor, N.Y. (Long Island Bio-logical Assoc., Cold Spring Harbor)

8-9. Nutrition Soc. of Canada, annual, Quebec City. (E. V. Evans, Dept. of Nutrition, Ontario Agricultural College, Guelph, Ont., Canada)

9. Community Air Pollution, conf., Austin, Tex. (J. O. Ledbetter, 305 Engineering Laboratories Bldg., Univ. of Texas, Austin 12)

10-14. Institute of Food Technologists, Miami Beach, Fla. (C. L. Willey, 176 W. Adams St., Chicago 3, Ill.) 10-15. International Alliance for Dif-

fusion by Wire, annual general assembly, Lausanne, Belgium. (T. C. De Vynck, Van Stopenberghestr. 3, Ghent, Belgium)

10-16. International Congr. of Sani-tary Engineering, Washington, D.C. (E. E. Wagner, Engineering & Sanitation Branch, Office of Public Health, Intern. Cooperation Administration, Washington 25)

11. International Soc. of Neurovegetative Research, symp., Marseilles, France. (Prof. Mosinger, Institut de Médecine Légale, Faculté de Médecine, Marseilles)

11-13. Chemical Physics in the Onsager Reciprocal Relations, intern. conf., Providence, R.I. (J. Ross, Dept. of Chemistry, Brown Univ., Providence)

11-13. Microscopy, symp., Chicago, Ill. (McCrone Research Inst., 451 E. 31 St., Chicago 16)

11-14. Health Physics Soc., Inc., annual, Chicago, Ill. (C. C. Palmiter, c/o Federal Radiation Council, Rm. 597, Executive Office Bldg., Washington 25)

11-14. Instrument Soc. of America, instrument-automation conf. and exhibit, Seattle, Wash. (W. H. Kushnick, ISA, 313 Sixth Ave., Pittsburgh 22, Pa.)

11-15. American Medical Assoc., annual, Chicago, Ill. (F. J. Blasingame, AMA, 535 N. Dearborn St., Chicago 10)

11-15. International Congr. on Rehabilitation, Dresden, Germany. (K. Werner, Intern. Congr., Harz 42-44, Halle an der Saale, Germany)

11-15. International Council for Bird Preservation, intern. conf., New York, N.Y., (British Museum of Natural History, Cromwell Rd., London, S.W.7, England)

11-15. Molecular Structure and Spectroscopy, symp., Columbus, Ohio. (R. A. Oetjen, Dept. of Physics and Astronomy, Ohio State Univ., 174 W. 18 Ave., Columbus 10) 11-18. Industrial Statistics and Quality

Control for Chemical and Processing In-



dustries, seminar, Rochester, N.Y. (Extended Services Div., Rochester Inst. of Technology, Rochester 8)

11-22. All-European Inst. of Scientific Studies for the Prevention of Alcoholism, Warsaw, Poland. (A. Tongue, Intern. Bureau against Alcoholism, Case Gare 49, Lausanne, Switzerland)

11-22. Geophysics, summer seminar, Cloudcroft, N.M. (J. R. Foote, P.O. Box 1053, Holloman AFB, N.M.)

11-24. Electronics, Nuclear Energy, Wireless, Television, and Cinema, intern. exhibition, Rome, Italy. (Secretariat, Rassegna Internazionale Elettronica, Nucleare Via della Teleradiocinematografica, Scrofa 14, Rome)

11-24. Stratigraphy and Structure of the Appalachians, summer conf., Washington, D.C. (M. F. Norton, Dept. of Earth Sciences, American Univ., Massachusetts and Nebraska Aves., NW, Washington, D.C.)

12. Society of Plastics Engineers, technical conf., Boston, Mass. (H. C. Cookingham, c/o D. H. Litter Co., Inc., P.O. Box 247, Ballardvale, Mass.)

12-15. American Soc. of Mammalogists, annual, Middlebury, Vt. (B. P. Glass, Dept. of Zoology, Oklahoma State

Univ., Stillwater) 12-15. Globes, 1st intern. congr., Vienna, Austria. (Coronelli-Weltbund der Globusfreunde, Gusshaustrasse 20, Vienna IV)

12–15. Immune Pathology, mtg., Ger-man Soc. of Pathology, Dortmund, Ger-many. (A. Terbrüggen, Deutsche Gesell-schaft für Pathologie, c/o Pathologisches Inst., Bielefeld, Germany)

12-15. Organic Chemistry of Natural Products, intern. symp., Brussels, Belgium. (Secrétariat du Symposium Internationale de Chimie Organique, c/o Fédération des Industries Chimiques de Belgique, 32, rue Joseph II, Bruxelles 4)

12-15. Textile Inst., intern. meeting, Eastbourne, England. (D. Moore, 10 Blackfriars St., Manchester 3, England)

12-16. American Soc. of Parasitolo-gists, Washington, D.C. (F. J. Kruidenier, Dept. of Zoology, Univ. of Illinois, Urbana)

13. International Commission for the Prevention of Alcoholism, annual, Warsaw, Poland. (ICPA, 6840 Eastern Ave., NW, Washington 12)

13-16. American Assoc. of Bioanalysts, Philadelphia, Pa. (L. D. Hertert, 490 Post St., Rm. 1049, San Francisco 2, Calif.)

13-16. Gas Chromatography, intern. symp., Hamburg, Germany. (W. Fritsche, Gesellschaft Deutscher Chemiker, Frankfurt am Main, Postfach 9075, Germany)

13-29. International Radio Consultative Committee, Bad Kreuznach, Germany. (Villa Bartholoni, 128, rue de Lausanne, Geneva, Switzerland)

14-15. DECHEMA Annual Meeting, Frankfurt am Main, Germany. (DECH-EMA, Postfach 7746, Frankfurt am Main

14-16. American Assoc. of Feed Mi-croscopists, annual, Chicago, Ill. (T. G. Campbell, AAFM, 1825 N. Laramie Ave., Chicago 39)

14-16. German Soc. for Rocket Technology and Space Travel, annual, Bruns-wick, Germany. (GSRTST, Neuensteiner Str. 19, Stuttgart-Zuffenhausen, Germany)



### A QUESTION FOR INVESTIGATORS: What is your idea of an ideal dog diet?

• Suppose you had tried various dog diets, but they were not satisfactory. One diet fell short in one area. Others fell short in other areas. Each diet had its strong points, but every-one had some shortcoming.

Let's theorize further. Suppose that you have been given the assignment of formulating one dog diet that will eliminate the problems caused by these shortcomings. A dog diet developed especially to help the dog withstand the stresses and demands of biological research.

• Possibly your first consideration would be to provide an adequate dietary regimen. But equally important is the selection of dietary components with known origin and constant composition. As you know, only with constant uniformity can experiments be conducted day after day, week after week, and month after month with a minimum of variation.

Another consideration is that the ingredients selected provide a balanced diet. Can they be scientifically compounded to meet such exacting requirements and demands of biological research as pre-conditioning, post-operative and convalescing stress?

Still another consideration is: palatability. The best formula possible cannot attain maximum effectiveness if feed intake varies. So you want to take extra steps to insure that your dog diet possesses this most influential factor.

• Now you have established a "profile" of the dog diet you would like. We suggest you compare ROCKLAND DOG DIET with your idea of an ideal dog diet. We're sure you'll agree with other investigators in leading biological research laboratories all over the country...when analyzed and compared point for point, ROCKLAND DOG DIET has no peer.

For further information on how ROCK-LAND DOG DIET can contribute greatly to laboratory productivity and efficiency, see your Rockland Dealer, or write: A. E. Staley Mfg. Co., Rockland Diets, Decatur, Illinois.

Other Rockland Diets include:

RAT DIET (complete) • LABORATORY PRIMATE DIET • RAT DIET (D-Free) • GUINEA PIG DIET MOUSE DIET • RABBIT DIET • MOUSE BREEDER DIET • MONKEY DIET

Rockland Diets are available throughout the world through Staley International—Cable: STACOR



14-17. American Soc. of Ichthyologists and Herpetologists, Washington, D.C. (J. A. Peters, Biology Dept., San Fernando Valley State College, Northridge, Calif.)

15-17. Congress of Scientists on Survival, natl. conf., annual, New York, N.Y. (H. H. Lerner, SOS, 51 E. 90 St., New York 28)

15-19. European Orthodontic Soc., congr., Groningen, Netherlands. (K. G. Bijlstra, Kamplaan 5, Groningen)

Bijlstra, Kamplaan 5, Groningen) 16-17. Society for Economic Botany, annual, Washington, D.C. (Q Jones, New Crops Research Branch, Plant Industry Station, Beltsville, Md.)

17–20. American Dairy Science Assoc., College Park, Md. (H. F. Judkins, 32 Ridgeway Circle, White Plains, N.Y.)

17-20. American Soc. of Agricultural Engineers, Washington, D.C. (J. L. Butt, ASAE, 420 Main St., St. Joseph, Mich.)

17-20. Botanical Soc. of America, field meeting, Newark, Del. (G. F. Somers, Dept. of Biological Sciences, Univ. of Delaware, Newark)

17-21. American Nuclear Soc., annual, Boston, Mass. (O. J. DuTemple, ANS, 86 E. Randolph St., Chicago 1, Ill.)

17-21. Enzymic Action of the Central Nervous System, intern. symp., Göteborg, Sweden. (A. Lowenthal, Institut Bunge, 59, rue Philippe Williot, Berchem-Antwerp, Belgium)

17-21. International Ornithological Congr., Ithaca, N.Y. (G. Sibley, Cornell Univ., Fernow Hall, Ithaca)

17-22. American Inst. of Electrical Engineers, summer meeting, Denver, Colo. (R. S. Gardner, AIEE, 33 W. 39 St., New York 18)

17-22. American Soc. of Medical Technologists, Washington, D.C. (S. Saarnijoki, R.R. #2, Hill Rd., c/o W. C. Maine, Harwinton, Conn.)

17-23. American Library Assoc., Miami Beach, Fla. (D. H. Clift, ALA, 50 E. Huron St., Chicago 11, Ill.)

18–19. Broadcast and Television Receivers, conf., Institute of Radio Engineers, Chicago, Ill. (IRE, 1 E. 79 St., New York 21)

18–20. American Neurological Assoc., annual, Atlantic City, N.J. (M. D. Yahr, Neurological Inst., 710 W. 168 St., New York 32)

18-21. Agricultural Inst. of Canada, annual conf., Ottawa, Ont. (AIC, Univ. of Ottawa, Ottawa, Ont.)

18-21. U.S. Congress on Theoretical and Applied Mechanics, Berkeley, Calif. (W. Goldsmith, Dept. of Applied Mechanics, Univ. of California, Berkeley 4)

18-22. American Soc. for Engineering Education, Colorado Springs, Colo. (W. L. Collins, Univ. of Illinois, Urbana)

18-22. Combustion Engines, intern. congr., Copenhagen, Denmark. (R. L. Stanley, U.S. Natl. Committee for ICCE, 2000 K St., NW, Washington 6)

18-22. Mathematical Programming, symp., Chicago, Ill. (R. L. Graves, Graduate School of Business, Univ. of Chicago, Chicago 37)

18-22. Research and Development of Technical Devices for the Blind, intern. congr., New York, N.Y. (N. C. Holopigian, American Foundation for the Blind, 15 W. 16 St., New York 11)

18-22. Spectroscopy, intern. conf., Col-

### SYMPOSIUM ON BASIC RESEARCH

Editor: Dael Wolfle 1959

### AAAS Symposium Volume

#### No. 56

\$3.00

328 pages, cloth

AAAS members' cash order, price \$2.50

Sponsored by the National Academy of Sciences, the American Association for the Advancement of Science, and the Alfred P. Sloan Foundation.

### CONTENTS

J. Robert Oppenheimer, The Need for New Knowledge

Alan T. Waterman, Basic Research in the United States

W. O. Baker, The Paradox of Choice

Laurence M. Gould, Basic Research and the Liberal Arts College

C. A. Elvehjem, Basic Research and the State University

Lee A. DuBridge, Basic Research and the Private University

James R. Killian, Jr., Capsule Conclusions

Crawford H. Greenewalt, Basic Research: A Technological Savings Account

Dwight D. Eisenhower, Science: Handmaiden of Freedom

Allen V. Astin, Basic Research in Government Laboratories

James B. Fisk, Basic Research in Industrial Laboratories

Merle A. Tuve, Basic Research in Private Research Institutes

Paul E. Klopsteg, Support of Basic Research from Government

Robert E. Wilson, Support of Basic Research by Industry

Robert S. Morison, Support of Basic Research from Private Philanthropy

Dael Wolfle, The Support of Basic Research: Summary of the Symposium

British Agents: Bailey Bros. & Swinfen, Ltd. Hyde House, W. Central Street,

nyue nouse, w. Central Stree

London, W.C.1

American Association for the Advancement of Science

1515 Massachusetts Avenue, NW Washington 5, D.C. lege Park, Md. (B. F. Scribner, Natl. Bureau of Standards, Washington 25, D.C.) 18-23. American Soc. for Horticultural Science, Caribbean region, annual, Anti-

gua, Guatemala. (E. H. Cásseres, Londres 40, México 6, D.F.)

18-23. Continuous Culture of Microorganisms, intern. symp., Prague, Czechoslovakia. (I. Málek, Czechoslovak Acad. of Science, Inst. of Biology, Na cvičišti 2, Prague 6)

18-23. International Scientific Congr. on Electronics, Rome, Italy. (Rassegna Eletronica, Nucleare e della, Cinematografia, Via della Scrofa 14, Rome)

18-23. Space, intern. technical-scientific mtg., Rome, Italy. (Rassegna Inter-nazionale Elettronica, Nucleare e Tele-radiocinematografica, Via della Scrofa 14, Rome)

18-23. U.N. Educational Scientific and Cultural Organization, Youth Inst., Study Seminar on Natural Sciences in Youth Science Clubs, Munich, Germany (UNESCO, Germeringerstrasse 30, Munich/Gauting, Germany)

Aug. Institute of Theoretical 18-24 Physics, annual, Boulder, Colo. (W. E. Brittin, Dept. of Physics, Univ. of Colorado, Boulder)

19-20. Applications of Quality Control in Chemical and Processing Industries, seminar, Rochester, N.Y. (Extended Services Div., Rochester Inst. of Technology, Rochester 8)

19-21. American Physical Soc., Evanston, Ill. (K. K. Darrow, Pupin Physics Lab., Columbia Univ., New York 27)

19-21. Biomedical Engineering Symp. and Exhibit, annual, San Diego, Calif. (Program Committee, Inter-Science, Inc., 8484 La Jolla Shores Dr., La Jolla, Calif.)

19-22. Institute of the Aerospace Sciences, natl. summer meeting, Los Angeles, Calif. (H. S. Hansen, Halex, Inc., P.O. Box 546, El Segundo, Calif.)

19-22. Data Processing, intern. conf., New York, N.Y. (Conf. Registrar, Natl. Machine Accountants Assoc., 507 Fifth Ave., New York 17)

20-24. European Center of Federations of the Chemical Industry, congr., Vienna, Austria. (ECFCI, Bauernmarkt 13, Vienna)

20-24. Long-Term Climatic Variations, conf., Aspen, Colo. (F. Ward, CRZH, AFCRL, Hanscom Field, Mass.)

20-29. European Federation of Chemical Engineering, annual congr., Olympia, London, England. (Congr. Secretary, Institution of Chemical Engineers, 16 Belgrave Square, London, S.W.1)

21-22. American Rheumatism Assoc., annual, Chicago, Ill. (F. E. Demartini, 622 W. 168 St., New York 32)

21-23. Astronomical Soc. of the Pacific, summer meeting, Victoria, B.C. (H. A. Abt, Kitt Peak National Observatory, Kitt Peak, Ariz.)

21-23. Endocrine Soc., annual, Chicago, Ill. (N. L. Mattox, 1200 N. Walker, Oklahoma City, Okla.)

21-23. Interaction Between Fluids and Particles, London, England. (Soc. of Chemical Industry, 14 Belgrave Sq., London) 21-25. American College of Chest Physicians, annual, Chicago, Ill. (M. Kornfeld, ACCP, 112 E. Chestnut St., Chicago 11)

21-28. Design of Experiments for

18 MAY 1962

#### ADVANCES IN INSTRUMENTATION FOR PROTEIN ANALYSIS



The new Porath Column is capable of handling from 30 to 200 ml of sample, corresponding to 20 grams of dry substance. Utilizing countercurrent elution during electrophoresis, this apparatus will provide particularly high separation power even for slowly moving components. While these components are being separated, faster moving components are continuously eluted from the bottom of the column into a fraction collector. Stabilized and well defined experimental conditions are achieved since there is no flow of buffer through the separation column during electrophoresis. Munktell ethanolyzed cellulose powder (LKB Cat. No. 5871), PVC powder, or other stabilizing media suitable for zone electrophoresis may be used with the Porath Column.

Typical applications include fractionation and purification of such compounds as proteins, peptides, nucleic acids, nucleotides, enzymes, hormones and other natural or synthetic polyelectrolytes with high molecular weight.

For complete information on the Porath Column, and the special 1200 volt, 1 amp power supply, write for literature file 5800S5.

\*Designed by Dr. J. Porath at the Institute of Biochemistry, Uppsala University, Sweden.

LKB Instruments Inc., 4840 Rugby Ave., Washington 14, D. C. International Headquarters: LKB-Produkter AB, P.O.B. 12220, Stockholm 12, Sweden Chemical and Processing Industries, seminar, Rochester, N.Y. (Extended Services Div., Rochester Inst. of Technology, Rochester 8)

22-24. International College of Angiology, mtg., Chicago, Ill. (H. E. Shaftel, 3301 Newkirk Ave., Brooklyn 3, N.Y.)

22-3. International Conf. on Chemical Arts—Chemistry Exhibition, Paris, France. (Société de Chimie Industrielle, 28, rue Saint Dominique, Paris, 7°)

24-27. Cytodifferentiation and Macromolecular Synthesis, symp., Soc. for the Study of Development and Growth, Monterey Peninsula, Calif. (A. C. Braun, Rockefeller Inst., New York 21)

24-28. Association of Official Seed

Analysts, Miami, Fla. (E. W. Sundermeyer, 325 U.S. Court House, 8th and Grand Ave., Kansas City 6, Mo.)

24-29. American Soc. for Testing and Materials, annual meeting and exhibit, New York, N.Y. (ASTM, 1916 Race St., Philadelphia 3, Pa.)

25–27. American Soc. of Heating, Refrigerating and Air-Conditioning Engineers, Inc., annual, Miami Beach, Fla. (ASHRAE, United Engineering Center, 345 E. 47 St., New York 17)

25-27. National Convention on Military Electronics, annual, Washington, D.C. (J. J. Slattery, Electronics Div., Martin Co., Baltimore, Md.)

25-28. Society for Investigative Derma-



#### BRANCHES \*

CLEVELAND 6, OHIO 1945 East 97th Street Tel. RAndolph 1-8300 CINCINNATI 37, OHIO 6265 Wiehe Rd. Tel. REdwood 1-9100 DETROIT 28, MICHIGAN 9240 Hubbell Avenue Tel. VErmont 6-6300 HOUSTON 11, TEXAS

6622 Supply Row Tel. WAInut 3-1627 LOS ANGELES 22, CALIF.

3237 So. Garfield Ave. Tel. OVerbrook 5-8060 OAKLAND 1, CALIF.

5321 E. 8th Street Tel. KEllog 3-9169 PHILADELPHIA 48, PA. Jackson & Swanson Sts. Tel. HOward 2-4700 Our Branch Warehouses and Sales Offices are strategically located to serve you. Select the one nearest you and contact them today. Our combined stock, which is probably the largest in the country, is at your disposal regardless of where it is located. Tell us what you need. We'll get it to you, *when* you need it.

Harshaw Scientific, Division of The Harshaw Chemical Company is unique among laboratory supply houses. We know what laboratories require since our company employs several hundred chemists, scientists, engineers and technicians in its many research, development and control laboratories and we stock accordingly. — Glassware -Apparatus - Equipment - Furniture - Chemicals.

### HARSHAW SCIENTIFIC Division of The Harshaw Chemical Company Cleveland 6, Ohio

SALES OFFICES • BATON ROUGE 6, LOUISIANA, 3160 Florida Street, Doherty Building, Room 103, Tel. Dickens 3-1933 • BUFFALO 2, NEW YORK, 260 Delaware Avenue, Tel. GArfield 9-2000 • HASTINGS-ON-HUDSON 6, NEW YORK, Tel. HAstings 5-8250 • PITTSBURGH 22, PENNSYLVANIA, 504 Bessemer Building, 6th St. & Fort Duquesne Boulevard, Tel. ATlantic 1-7930. tology, Chicago, Ill. (H. Beerman, SID, 255 S. 17 St., Philadelphia 3, Pa.)

25-29. Coordination Chemistry, intern. conf., Stockholm, Sweden. (L. G. Sillen, Dept. of Inorganic Chemistry, Royal Inst. of Technology, Stockholm 70)

25-29. Gordon Research Conf. on Nuclear Chemistry, New London, N.H. (W. G. Parks, Univ. of Rhode Island, Kingston)

25–29. Nobel Physicists, Lindau im Bodensee, Germany. (Ständiger Arbeitsausschuss für die Tagungen der Nobelpreisträger in Lindau, Postfach 11, Lindau im Bodensee)

. 25-29. Theoretical Interpretation of Upper Atmosphere Emissions, intern. symp., Paris, France. (J. W. Chamberlain, Yerkes Observatory, Williams Bay, Wis.)

25-30. Alpine Tundra Ecology, seminar. Estes Park, Colo. (M. Potts, Rocky Mountain Natl. Park, P.O. Box 1080, Estes Park)

25-30. Electromagnetic Theory and Antennas, symp., Copenhagen, Denmark. (Symp. Secretary, Øster Voldgade 10G, Copenhagen K.)

25-20 July. National Science Foundation, Summer Conf. for College Teachers of the History of Mathematics, Ann Arbor, Mich. (P. S. Jones, Dept. of Mathematics, Univ. of Michigan, Ann Arbor)

26-28. American Assoc. of Physics Teachers, Northfield, Minn. (R. P. Winch, Dept. of Physics, Williams College, Williamstown, Mass.)

26-28. American Meteorological Soc., general meeting, Fairbanks, Alaska. (J. E. Miller, Dept. of Meteorology and Oceanography, New York Univ., University Heights, New York 53)

26-29. American Home Economics Assoc., Miami Beach, Fla. (D. S. Miller, 3705 Van Buren Ave., Corvallis, Ore.)

26-29. Poultry Science Assoc., Urbana, Ill. (C. B. Ryan, Texas A & M College, College Station)

26-30. Rarefied Gas Dynamics, intern. symp., Paris, France. (L. Talbot, Dept. of Aeronautical Sciences, Univ. of California, Berkeley)

26-4. German Chemical Engineering Congr. and Exposition, Frankfurt am Main. (J. J. Doheny, American Chemical Soc., 86 E. Randolph St., Chicago 1, Ill.) 27-28. Computers and Data Processing,

27-28. Computers and Data Processing, symp. annual, Estes Park, Colo. (W. H. Eichelberger, Denver Research Inst., Univ. of Denver, Denver 10, Colo.)

27-30. Society of Nuclear Medicine, annual, Dallas, Tex. (S. N. Turiel, SNM, 430 N. Michigan Ave., Chicago 11, Ill.)

28–29. Radio Frequency Interference, natl. symp., San Francisco, Calif. (R. G. Davis, Dept. 58–25, Lockheed Missile & Space Co., P.O. Box 504, Sunnyvale, Calif.)

28-30. Joint Automatic Control Conf., annual, New York, N.Y. (A. S. Robinson, Kollsman Instrument Corp., 80-08 45th Ave., Elmhurst 73, N.Y.)

28-30. Secondary Fungus Infections, intern. conf., Durham, N.C. (E. W. Chick, Veterans Administration Hospital, Durham)

30-7. International Conf. on Health and Health Education, Philadelphia, Pa. (Conf. Secretariat, ICHHE, 800 Second Ave., New York 17)