

# Genetic Basis of Morphological Variation

## APPLICATION OF A TWIN ANALYSIS

By RICHARD H. OSBORNE and  
FRANCES V. DE GEORGE

An application of the twin method to the detection of genetic variability and including an analysis of genetic-environmental interaction as a basis for further study in genetics and medical science. A COMMONWEALTH FUND BOOK

\$6.00

# The Climate Near the Ground

## SECOND PRINTING, REVISED

By RUDOLPH GEIGER

"It is no exaggeration to call this book a classic treatise . . . The book is written in simple style . . . readily understandable to readers in the biological and ecological disciplines as well as to climatologists and meteorologists. This is accomplished without sacrifice of accuracy. With its many illustrations, it makes an ideal introductory textbook . . . the bibliography [is] very valuable."—HELMUT E. LANDSBERG, *Science*

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of Medicine, Charleston, S.C. (J. B. Blake, c/o Smithsonian Institution, Washington 25.)

24-26. Aviation Education, 4th natl. conf., Denver, Colo. (W. Kinkley, Superintendent of Schools, Aurora, Colo.)

26-27. American Psychosomatic Soc., 17th annual, Montreal, Canada. (E. D. Wittkower, APS, 265 Nassau Rd., Roosevelt, N.Y.)

28-31. Exploitation of Natural Animal Populations, symp., Durham, England. (E. D. Le Cren, British Ecological Soc., The Ferry House, Ambleside, Westmorland, England.)

29-31. American Power Conf., 22nd annual, Chicago, Ill. (R. A. Budenholzer, Mechanical Engineering Dept., Illinois Inst. of Technology, 3300 Federal St., Chicago 16.)

29-2. National Science Teachers Assoc., 8th annual conv., Kansas City, Mo. (Miss M. R. Broom, NSTA, National Education Assoc., 1201 16 St., NW, Washington 4.)

30-31. Adrenergic Mechanisms, Ciba Foundation symp. (by invitation only), London, England. (G. E. W. Wolstenholme, Ciba Foundation, 41 Portland Pl., London, W.1, England.)

31-1. Continuous Culture of Microorganisms, symp., London, England. (R. Elsworth, c/o Ministry of Supply, Microbiological Research Establishment, Porton, Salisbury, Wilts., England.)

31-2. American Gastroenterological Assoc., New Orleans, La. (W. Volwiler, Dept. of Medicine, Univ. of Washington, Seattle.)

## April

1-3. American Soc. of Internal Medicine, San Francisco, Calif. (R. L. Richards, 350 Post St., San Francisco 8.)

1-3. American Soc. for the Study of Sterility, Cincinnati, Ohio. (H. H. Thomas, 920 S. 19 St., Birmingham 5, Ala.)

1-4. Bahamas Medical Conf., Nassau. (B. L. Frank, P.O. Box 4037, Fort Lauderdale, Fla.)

2. Paleontological Research Institution, Ithaca, N.Y. (Miss R. S. Harris, 126 Kelvin Pl., Ithaca.)

2-6. American College of Obstetrics and Gynecologists, Cincinnati, Ohio. (D. F. Richardson, 79 W. Monroe St., Chicago 3, Ill.)

3-6. American Surgical Assoc., White Sulphur Springs, W.Va. (W. A. Altemeier, Cincinnati General Hospital, Cincinnati, Ohio.)

3-7. International Anesthesia Research Soc., Washington, D.C. (A. W. Friend, E. 107 St. and Park Lane, Cleveland 6, Ohio.)

3-8. Nuclear Cong., New York, N.Y. (P. Lange, Engineers Joint Council, 29 W. 39 St., New York.)

4-6. American Inst. of Electrical Engineers, Houston, Tex. (N. S. Hibsham, AIEE, 145 N. High St., Columbus 15, Ohio.)

4-6. American Inst. of Mining, Metallurgical and Petroleum Engineers (43rd Natl. Open Hearth Steel Conf. and Blast Furnace, Coke Oven and Raw Materials Conf.), Chicago, Ill. (E. O. Kirkendall, AIME, 29 W. 39 St., New York 18.)

(See issue of 15 January for comprehensive list)

# New Products

The information reported here is obtained from manufacturers and from other sources considered to be reliable. Neither Science nor the writer assumes responsibility for the accuracy of the information. All inquiries concerning items listed should be addressed to the manufacturer. Include the department number in your inquiry.

■ RECORDING PYROMETER measures brightness temperature at  $0.65\mu$  of small incandescent samples in the range  $1300^{\circ}$  to  $3000^{\circ}\text{C}$ . Accuracy is said to be  $\pm 20^{\circ}\text{C}$ . The instrument consists of an optical system with objective lens, beam splitter, monochromatic filter, and eyepiece. The eyepiece is used for alignment and focusing. Seventy percent of the light is deflected by the beam splitter to a phototube. Time constant is limited only by the recorder or indicator used. A calibration curve relates output voltage to temperature. Focusing range is 40 to 70 in. At 50 in. the pyrometer measures the average temperature of an area  $\frac{3}{8}$  in. in diameter. (Avco Corporation, Dept. Sci332, 201 Lowell St., Wilmington, Mass.)

■ DIGITAL MILLIVOLTMETER is a portable instrument weighing 23 lb. and measuring  $9\frac{3}{4}$  by 10-5/16 by 16-5/32 in. Ranges are 1, 10, and 100 mv full scale. Accuracy is said to be  $\pm 0.1$  percent. The self-contained instrument includes instrument power, standard cell, ratiometer, bridge balance, millivoltmeter, and voltage-level and end-point offset controls. (Technical Industries Corp., Dept. Sci337, 39 North Fair Oaks, Pasadena, Calif.)

■ MAGNETRON PULSE MODULATOR is capable of powering small magnetrons requiring inputs up to 10 kw peak at a duty cycle up to 0.002. Pulse widths from 0.1 to 2  $\mu\text{sec}$  can be supplied. Pulse voltage, average magnetron current, and magnetron filament current are metered. (Bomac Laboratories, Inc., Dept. Sci339, 1 Salem Rd., Beverly, Mass.)

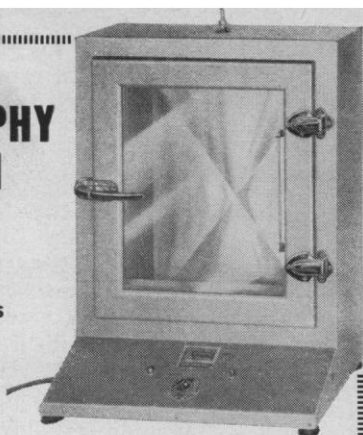
■ PLATINUM RESISTANCE THERMOMETER covers the range  $-100^{\circ}$  to  $+500^{\circ}\text{F}$ . Resistance is 470 ohm at  $32^{\circ}\text{F}$ , and the coefficient is 1 ohm/ $^{\circ}\text{F}$ . The sensitive element, measuring 0.156 in. in diameter by 0.281 in. long, is potted in a stainless-steel case. Calibration accuracies of  $\pm 0.25$ ,  $\pm 0.5$ , and  $\pm 1$  percent are available. (Minco Products, Inc., Dept Sci340, 740 Washington Ave., North, Minneapolis 1, Minn.)

■ VIBRATION TESTING SYSTEM is a random and sine-wave testing system for the range 5 to 10,000 cy/sec. No impedance changing or manual power-factor correction is required over this range. Peak random force is 2500 lb and sine-wave vector force is 1500 lb when used with the manufacturer's

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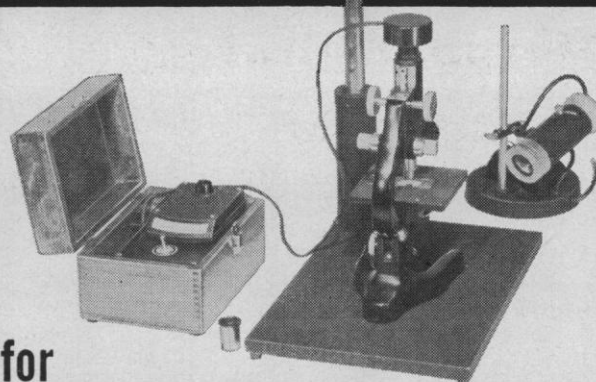
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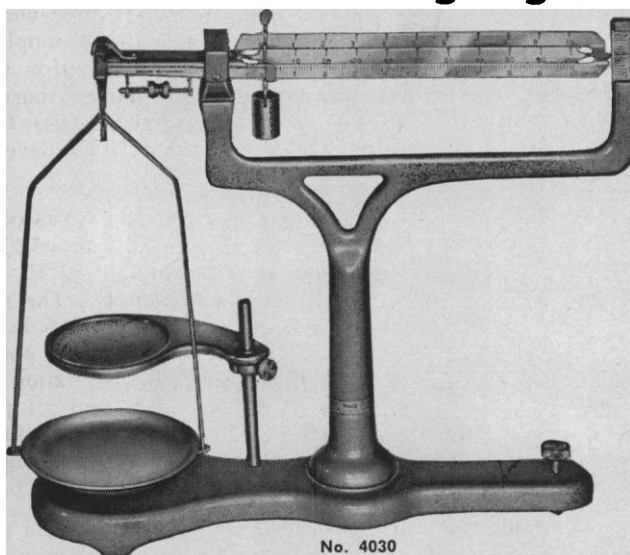
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model A-174 shaker. Power generator, field and degaussing supply, cycling oscillator, servo system, and stop-start controls are housed in a single console with the shaker external. (Ling-Altec Electronics, Inc., Dept. Sci343, Culver City, Calif.)

■ **NULL DETECTOR** has input impedance of 40,000 ohm and will provide high sensitivity with source resistances up to 100 kohm. Circuitry is designed to provide maximum sensitivity at the null point and saturation on large signals. Sensitivities are 0.2  $\mu\text{V}/\text{mm}$  up to 20 kohm source resistance, 0.3  $\mu\text{V}/\text{mm}$  from 20 to 50 kohm, 0.5  $\mu\text{V}/\text{mm}$  from 50 to 100 kohm. Sensitivity may be varied over a 1 to 1000 range. Period varies from less than 2 sec at 1 kohm to 4 sec at 100 kohm. Zero shift is less than 0.5 div/hr after 1 hr of warm-up. The guard circuit connects to the shield of a two-conductor input cable. (Leeds and Northrup Co., Dept Sci345, 4907 Stenton Ave., Philadelphia 44, Pa.)

■ **CLOTTING TIMER** operation is based on photoelectric nephelometry. The change of intensity of scattered light extending over the entire clotting reaction is automatically recorded. To determine prothrombin time, thermo-

stated thromboplastin contained in a microtube is placed in the instrument. The sample is blown into the tube and the recorder is started. The number of divisions between start and end point gives prothrombin time directly. The instrument's optical unit and recorder are separate, permitting use of the latter for other purposes. (Photovolt Corp., Dept. Sci352, 95 Madison Ave., New York 16, N.Y.)

■ **REGULATED POWER SUPPLIES** for heavy-duty applications are designed to handle input voltage up to 15 kv single-phase or three-phase, 25 to 60 cy/sec, and to furnish output current to 100,000 amp, single-phase, two-phase, three-phase, or d-c. Systems are designed to meet customer specifications. (Heavy-Duty Electric Co., Dept. Sci354, Milwaukee, Wis.)

■ **TEMPERATURE MONITOR** simultaneously monitors up to 100 points and sounds an alarm when any of the points reaches the temperature indicated on its control dial. The audible alarm may be turned off manually while an identifying light remains on as long as the temperature remains off normal. Actual temperature at any point may be determined by rotating the appropriate set-point dial until the indicating light

flashes on. Over-all accuracy is  $\pm 3^\circ\text{F}$ . The system is built up of the required number of 10-unit panels. (Fischer & Porter Co., Dept. Sci357, 303 Jacksonville Rd., Hatboro, Pa.)

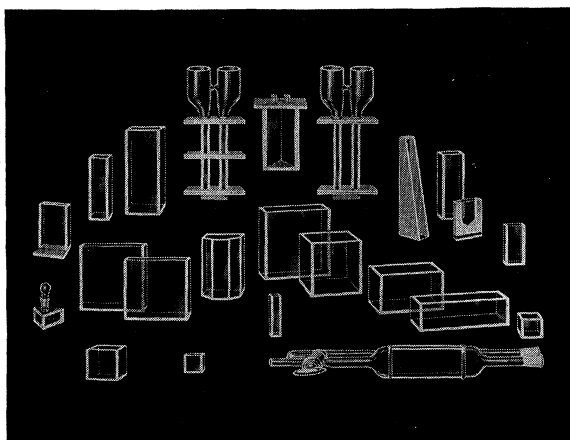
■ **BATTERY PACKS** are potted for shock resistance up to 2000 grav. The packs consist of rechargeable nickel-cadmium battery cells. By using any number of cells, the pack can be custom formed to fill what is often considered dead space and to provide any voltage or current capacity required. (Gulton Industries, Inc., Dept. Sci339, 212 Durham Ave., Metuchen, N.J.)

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JOSHUA STERN

National Bureau of Standards,  
Washington, D.C.

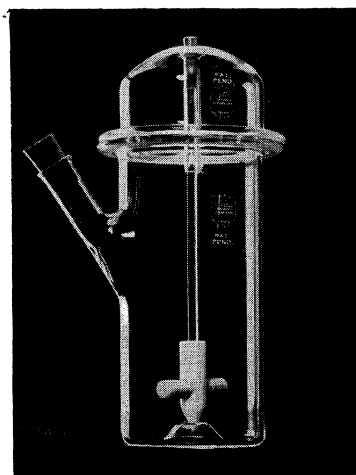
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Research director, outstanding record in ethical drug field, interested in broad scope of opportunity, academic or industrial. Nationally known; contacts, personally developed, in Europe, Russia, the Far East. Two books, many patents, publications. Conversant with FDA, AMA, and BSD of NIH. Ideas plus proven ability to build. Résumé.

Box 25, SCIENCE

**Biologist, Ph.D.,** 11 years' teaching experience. Numerous publications. Box 14, SCIENCE. 1/29; 2/5, 12

**Cytogeneticist, Electronmicroscopist, Ph.D.** Experienced in specialized cytological methods, teaching, research. Microbiology, botany background. Numerous publications. Box 16, SCIENCE. X

(a) **Parasitologist, Ph.D.** from leading university, 7 years of teaching experience; desires biology-zoology teaching or parasitology research appointment. (b) **Biochemist, M.S. degree,** 4 years of clinical experience, available for medical supervising or research position. (c) **Organic Chemist, Ph.D.** with extensive experience as group leader in compound synthesis for pharmaceuticals; interested in pharmaceutical research and administration appointment. S2-1 Medical Bureau, Inc., Science Division, Burneice Larson, President, 900 North Michigan Avenue, Chicago. X

## POSITIONS OPEN

**Anatomy Department, Dalhousie University, Halifax, Nova Scotia.** Applications are invited for two positions at the rank of **Assistant Professor** in the Department of Anatomy. Experience in the teaching of gross anatomy is essential and a willingness to undertake some teaching in neuroanatomy, histology, or embryology desirable. The successful candidates will be expected to participate in the active research program of the department, for which good facilities are available. Applicants with a medical degree will be preferred although those with an honors degree in medical science or biology will receive special consideration. The minimum salary for a medical graduate will be \$6000. The salary will depend upon qualifications and experience. Application should be sent to Professor R. L. deC. H. Saunders at the above address. 3/4; 4/1; 5/6; 6/3

**Biochemist, Research Associate, Ph.D.** To collaborate with research group on isolation and characterization of antigens responsible for the transplant rejection phenomenon. Experience in isolation of natural products desirable. Five-year program. Salary commensurate with experience. Application with full particulars and references to Dr. A. E. Axelrod, Biochemistry Department, School of Medicine, University of Pittsburgh, Pittsburgh 13, Pa. 2/12

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For further information write to Dean Albert D. Graves, Los Angeles State College, 5151 State College Drive, Los Angeles 32, Calif. X

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**Cancer Chemotherapy (Research and Development)**—opening for qualified junior scientist with M.S. or equivalent experience in bacteriology and/or virology. Assist senior scientist in the study of microbial cell systems and bacterial and animal viruses of potential interest to the cancer problem. Submit complete résumé to: Personnel Director, Bristol Laboratories, Syracuse 1, New York.

(a) **Director of Research and Development** for foreign unit of large pharmaceutical firm; Ph.D. or M.D. with background in pharmacology, physiology, biochemistry and clinical research experience for clinical evaluation and liaison duties; \$14,000–\$19,000 year start. (b) **Bacteriologist** for modern 300-bed hospital, East. (c) **Biochemist** for research on new therapeutic agents; also **Pharmacologist/Physiologist** for cardiovascular and coagulation research; around \$10,000 year; Midwest. (d) **Medical Microbiology Instructor or Assistant Professor;** Midwest. (e) **Clinical Biochemist, Ph.D.** or M.S. degree, to supervise unit and conduct research; 400-bed hospital of specialists; North. (f) **Research Associate** with Ph.D. in biological sciences and background in physics or electronics for pulmonary function unit of expanding hospital, \$8000 year up; Chicago. (g) **Anatomist** for university faculty, Southwest. (Please write for details; also many other positions available through our nationwide service.) S2-1 Medical Bureau, Inc., Science Division, Burneice Larson, President, 900 North Michigan Avenue, Chicago. X

(a) **Director, Clinical Research;** M.D. experienced in clinical pharmaceutical research for midwestern division, prominent concern; minimum \$15,000; large university city. (b) **Biochemist;** Ph.D. to direct division, prefer protein experience, administrative ability; rapidly growing pharmaceutical concern, extensive research program, several affiliated; to \$14,000; East. (c) **Virologist;** Ph.D. experienced tissue culture; university-affiliated research institute; to \$11,000; West Coast. (d) **Biochemist;** M.S., Ph.D. to head section, busy laboratory, 300-bed general hospital; \$8000 up; midwestern metropolitan area. (e) **Biochemist;** B.S., M.S.; new, modern laboratory, fully approved 200-bed general hospital, to \$7200; residential city near noted eastern university center. Woodward Medical Bureau, Ann Woodward, Director, 185 North Wabash, Chicago. X

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Ph.D. organic chemistry including training in physical and biochemistry plus experience with analytical procedures and antibiotic isolation and purification techniques.

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**Research Associate, M.S. or Ph.D.** Major in chemistry. Warburg orientation desirable. Departmentalized research laboratory in large general hospital. Immediately available. Write Dr. Robert C. Grauer, Director, Singer Research Laboratory, Allegheny General Hospital, Pittsburgh 12, Pa. 2/12, 19, 26

## POSITIONS OPEN

**Research Biochemist**, male or female, B.S. or M.S. Major chemistry, minor biological sciences. Varied routine animal experiments and enzyme studies. Send résumé to Dr. H. Gordon, St. Barnabas Medical Center, High St., Newark, N.J.

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Prospective applicants should write for further information to Prof. H. Kleerekoper, Chairman, Department of Biology, Hamilton College, McMaster University, Hamilton, Ontario, Canada. Application forms both for scholarships and graduate study are obtainable from the Dean of Graduate Studies and must be returned to him normally by 1 March 1960, accompanied by university transcript and letters of recommendation from two professors.

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142 CNS PATHWAYS

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F. H. Johnson, Ph.D. (Cornell)  
Holling Press, Established 1911  
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## GRASSLANDS

Editor: Howard B. Sprague 1959

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This volume is intended as a review of knowledge on many aspects of grasslands resources. The 44 authors were selected by their own professional colleagues as being particularly competent to present the respective subjects. Thirty-seven papers are arranged under these chapter headings:

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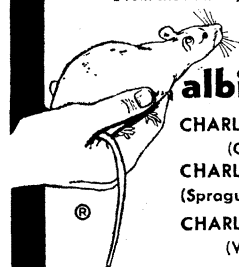
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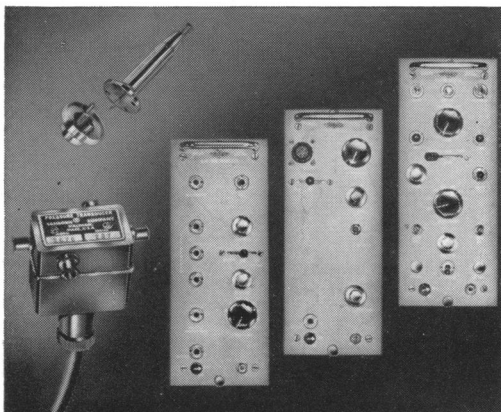
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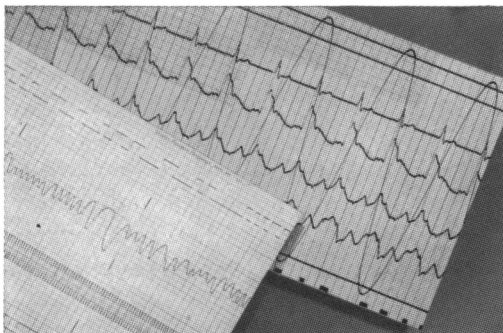
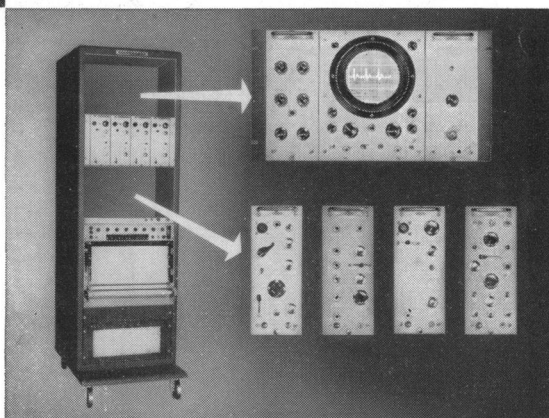


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