

The time relation explained why old attempts to potentiate skin carcinogenesis with application of the cocarcinogen croton oil 1 week prior to hydrocarbon had failed. Pound also observed an induction of liver cancer by partial hepatectomy 1 to 6 days before administration of a carcinogenic hydrocarbon or of urethane. The general conclusion was drawn that cell proliferation and DNA synthesis favor the early events required for the action of carcinogens.

Gelboin (NIH, Bethesda), the Franz Bielschowsky Memorial lecturer, also examined the initial stages of the carcinogenic process. Two points illustrated by experimental data were developed. First, interaction of carcinogens with cell receptors results in an alteration of gene expression. Second, at least one cycle of DNA synthesis seems required for carcinogen action. 3-Methylcholanthrene, although not usually carcinogenic to liver, combines with cellular proteins, RNA, and DNA of liver. The DNA level remains invariant but the ratio of RNA to DNA increases and the synthesis of specific proteins measured by their enzyme activity is stimulated. Underlying these findings are raised microsomal protein synthesis and sensitivity to polyuridylic acid, increased nuclear RNA metabolism, and increased RNA polymerase activity. All such reactions are evidence of enhanced gene activity. Continuous feeding of liver carcinogens stimulates, then depresses RNA polymerase. Aflatoxin yields lower nuclear enzyme activity. The formulation of skin tumor is inhibited when actinomycin D, an inhibitor of DNA synthesis and of DNA-dependent RNA synthesis, is given with a carcinogenic hydrocarbon. These and related studies show that early actions of carcinogens probably involve cells in a sensitive state, as during DNA synthesis.

Reports were also made on biochemical activation of chemical carcinogens and the effect of host factors on this process. Boyland (Chester Beatty Research Institute, London) examined the pharmacologic and biochemical effects of urethane and its *N*-hydroxy metabolite. In most animal species the main compound detected is urethane whether it or *N*-hydroxy urethane are administered. On the other hand, specific biochemical and pathological effects such as chromosome anomalies, interferon production, virus inhibition, the regulation of body temperature, and methemoglobin formation are affected much more by the *N*-hydroxy deriva-

tive as compared to urethane itself. Thus, the assignment of biologic activity to either of this pair of compounds remains a challenge. Goodall (New Zealand), continuing the traditions of the late Franz Bielschowsky as director of the Cancer Research Laboratories at the University of Otago Medical School, reported on endocrine effects in liver carcinogenesis. Endocrine ablations such as hypophysectomy or thyroidectomy inhibit liver carcinogenesis with azo dyes, 2-fluorenamine and related carcinogens, and also with aflatoxin. However, the important discovery was recorded that formation of tumors was not reduced in hypophysectomized rats treated with dimethylnitrosamine. Concurrent with this the alkylation of nucleic acids at the 7-position of guanylic acid remained untouched. It was concluded that the major effect of the endocrines in liver carcinogenesis can be traced to the initial stages, with hormones controlling the effective level of proximate carcinogen. Weisburger (NIH, Bethesda) arrived at similar conclusions on the basis of an entirely different approach. He reported acceleration of liver carcinogenesis in animals with an excess of circulating pituitary hormones and treated with *N*-hydroxy-*N*-2-fluorenylacetamide. The underlying mechanism in this case rested on a finding of much higher levels of active carcinogen consequent to the alteration of the level of pituitary hormones. Modification of drug action generally, consequent to endocrine manipulation, may in part rest on alteration by biochemical means of the effective level of drugs.

On the occasion of the symposium, six former associates of Sir Roy Cameron, the late professor of experimental pathology, University of London, were assembled in Dunedin. The influence both of Cameron and of Bielschowsky, whose memory was honored by this assembly, pervaded the proceedings as the data presented and concepts derived therefrom stemmed from the inspiration of these two leaders in studies on the toxic and carcinogenic effect of drugs acting on the liver. The proceedings of the symposium will appear in the *New Zealand Medical Journal*.

J. H. WEISBURGER

National Cancer Institute,
Bethesda, Maryland 20014

C. M. GOODALL

University of Otago,
Medical School,
Dunedin, New Zealand

Calendar of Events

National Meetings

January

15-18. **Environmental Sciences Research Symp.** (Solid Waste Disposal, Air Pollution, Agricultural Pollutants, Water Quality, Corrosion), New Orleans, La. (E. Klein, Director, Physical Chemistry, P.O. Box 26500, New Orleans 70126)

16-18. **Reliability Symp.**, Boston, Mass. (V. R. Monshaw, Astro-Electronics Div., RCA, Box 800, Princeton, N.J. 09540)

17-18. **American Soc. of Cybernetics**, Chicago, Ill. (G. T. Jacobi, IIT Research Institute, 10 W. 35 St., Chicago)

17-19. **Nuclear Medicine**, postgraduate symp., St. Louis, Mo. (E. J. Potchen, Washington Univ. School of Medicine, St. Louis, Mo. 63110)

17-19. **Process Industries**, instrumentation symp., College Station, Tex. (R. G. Anthony, Texas A&M Univ., College Station)

18-20. **Pediatrics: Diagnosis and Treatment of Disorders of Perception, Speech and Learning**, Gainesville, Fla. (Division of Postgraduate Education, P.O. Box 746, J. Hillis Miller Health Center, Gainesville 32601)

19-20. **American Rheumatism Assoc.**, mtg., Baltimore, Md. (M. M. Walsh, ARA Headquarters, 1212 Ave. of the Americas, New York 10036)

19-20. **American Soc. for Surgery of the Hand**, annual mtg., Chicago, Ill. (R. M. Curtis, The Society, 2947 St. Paul St., Baltimore, Md. 21218)

19-20. **Blood**, 16th annual symp., Detroit, Mich. (W. H. Seegers, Chairman, Dept. of Physiology and Pharmacology, Wayne State Univ. College of Medicine, Detroit 48207)

20-25. **American Academy of Orthopaedic Surgeons**, annual mtg., Chicago, Ill. (J. K. Hart, AAOS, 29 E. Madison, Chicago 60602)

22-23. **Industrial Research**, 3rd annual, Chicago, Ill. (V. H. Disney, IIT Research Inst., 10 W. 35 St., Chicago 60616)

22-24. **Aerospace Sciences** mtg., New York, N.Y. (Meetings Manager, American Inst. of Aeronautics and Astronautics, 1290 Ave. of the Americas, New York 10019)

22-24. **Coal and Coke**, Philadelphia, Pa. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia 19103)

22-24. **Radioisotopes and Radiation Effects**, New Orleans, La. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103)

22-26. **Basic Electronics**, Hopatcong, N.J. (Saul Gordon Associates Center for Professional Advancement, P.O. Box 66, Hopatcong 07843)

22-26. **Marine Sciences Instrumentation**, 4th natl. symp., Cocoa Beach, Fla. (M. Reed, Instrument Soc. of America, 530 William Penn Pl., Pittsburgh, Pa. 15219)

22-26. **Powder X-Ray Diffractometry**, Austin, Tex. (D. E. Griffith, Program Director, Taylor Hall 153, College of Engineering, University of Texas, Austin 78712)

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22-27. **Air Conditioning Principles and Practices**, Austin, Tex. (D. E. Griffith, Program Director, Taylor Hall 153, College of Engineering, University of Texas, Austin 78712)

23. **Industrial Associates Research Review**, Houston, Tex. (D. E. Griffith, Program Director, Taylor Hall 153, College of Engineering, University of Texas, Austin 78712)

23. **Preventive and Therapeutic Aspects of Coronary Heart Disease**, conf., New York, N.Y. (Conference Planning Committee, New York Heart Association, 10 Columbus Circle, New York 10019)

23-26. **Council on Social Work Education**, Minneapolis, Minn. (P. Stickney, Council on Social Work Education, 345 E. 46 St., New York 10017)

23-26. **Water**, Technical Committee mtg., West Palm Beach, Fla. (American Soc. for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103)

23-27. **American Mathematical Soc.**, 74th annual, San Francisco, Calif. (G. L. Walker, American Mathematical Soc., Box 6248, Providence, R.I. 02904)

24-25. **Health Physics**, 2nd mid-year symp., Augusta, Ga. (C. M. Patterson, E. I. duPont, Savannah River Lab., Aiken, S.C. 29801)

25-27. **Mathematical Assoc. of America**, 51st annual, San Francisco, Calif. (H. M. Gehman, MAA, Executive Director, c/o SUNY at Buffalo, N.Y. 14214)

25-27. **Symmetry Principles at High Energy**, 4th conf., Coral Gables, Fla. (Conf. on Symmetry Principles at High Energy, Center for Theoretical Studies, University of Miami, Coral Gables)

27-1. **American Group Psychotherapy Assoc.**, conf., Chicago, Ill. (M. Schiff, AGPA, Room 702, 1790 Broadway, New York 10019)

28. **Fourth Mössbauer Symp.**, Chicago, Ill. (P. A. McNulty, New England Nuclear Corp., 575 Albany St., Boston, Mass. 02118)

28-2. **Institute of Electrical and Electronics Engineers**, winter power mtg., New York, N.Y. (J. W. Bean, American Electric Power, 2 Broadway, New York 10008)

28-2. **Testing and Materials**, winter mtg., Atlantic City, N.J. (T. A. Marshall, Jr., American Soc. for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103)

29-31. **National Assoc. of Private Psychiatric Hospitals**, 35th annual mtg., Miami Beach, Fla. (The Association, 353 Broad Ave., Leonia, N.J.)

29-31. **Society of Thoracic Surgeons**, annual mtg., New Orleans, La. (F. X. Byron, Executive Secretary, Society for Thoracic Surgeons, City of Hope Medical Center, 1500 E. Duarte Rd., Duarte, Calif. 91010)

29-1. **American Assoc. of Physics Teachers**, annual mtg., Chicago, Ill. (S. S. Ballard, Univ. of Florida, Gainesville 32603)

29-1. **American Meteorological Soc.**, 48th annual, San Francisco, Calif. (K. C. Spengler, AMS, 45 Beacon St., Boston, Mass. 02108)

29-1. **American Physical Soc.**, annual mtg., Chicago, Ill. (R. G. Sachs, Box 344, Argonne, Ill. 60440)

29-3. **Bio-Physical Techniques**, Hopatcong, N.J. (Center for Professional Advancement, P.O. Box 66, Hopatcong 07843)

February

1-2. **American Chemical Soc.**, 3rd Middle Atlantic regional mtg., Philadelphia, Pa. (H. Reiff, Smith, Kline and French Labs., 15th and Spring Garden St., Philadelphia 19130)

1-3. **Solar Astronomy**, Tucson, Ariz. (N. Sheeley, Kitt Peak National Observatory, 950 North Cherry Ave., P.O. Box 4130, Tucson 85717)

3-7. **American Acad. of Allergy**, annual mtg., Boston, Mass. (J. O. Kelley, Executive Secretary, 756 N. Milwaukee St., Milwaukee, Wis. 53202)

3-9. **National Asphalt Pavement Assoc.**, annual, Los Angeles, Calif. (The Association, 6715 Kenilworth Ave., Riverdale, Md.)

4-7. **American Crystallographic Assoc.**, Tucson, Ariz. (W. L. Kehl, % Gulf R & D Co., P.O. Drawer 2038, Pittsburgh, Pa. 15230)

5-6. **Underwater Photo-Optical Instrumentation Applications**, San Diego, Calif. (Society of Photo-Optical Instrumentation Engineers, P.O. Box 288, Redondo Beach, Calif. 90277)

5-8. **American Soc. of Heating, Refrigerating and Air-Conditioning Engineers**, semiannual mtg., Columbus, Ohio. (J. I. Szabo, 345 E. 47 St., New York, New York 10017)

5-9. **Applied Transducers Workshop for Scientists and Engineers**, Hopatcong, N.J. (Saul Gordon Associates Center for Professional Advancement, P.O. Box 66, Hopatcong 07843)

6-7. **Sanitary Engineering**, 10th conf., Urbana, Ill. (Div. of University Extension, Room 116e, Illini Hall, Champaign, Ill. 61820)

6-8. **American College of Radiology**, annual mtg., Chicago, Ill. (W. C. Stronach, American College of Radiology, 20 N. Wacker Dr., Chicago, Ill. 60606)

6-9. **Reinforced Plastics**, 23rd annual div. conf., Washington, D.C. (L. P. Williams, Soc. of the Plastics Industry, 250 Park Ave., New York 10017)

7. **Medical Library Group of Southern California**, Los Angeles, Calif. (Medical Library Assoc., Inc., 919 N. Michigan Ave., Chicago, Ill.)

7-9. **American Acad. of Occupational Medicine**, Washington, D.C. (B. D. Dinman, Dept. of Industrial Health, University of Michigan, Ann Arbor 48104)

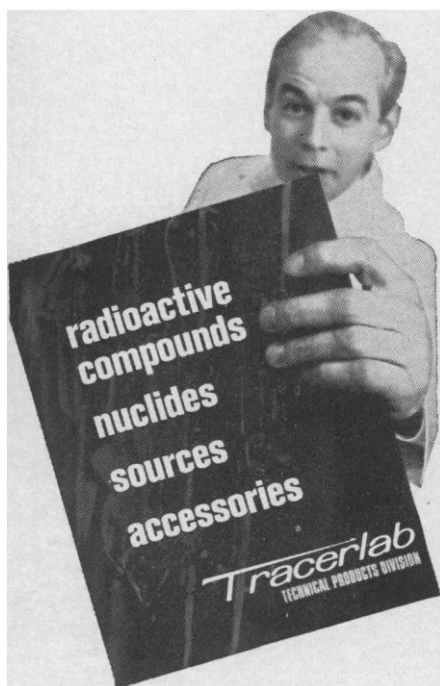
7-9. **American Assoc. of Petroleum Geologists**, Southwestern Section, Wichita Falls, Tex. (E. A. Baldon, % Tom B. Medders, 414 City National Bldg., Wichita Falls 76301)

7-9. **Methods of Air Pollution and Industrial Hygiene Studies**, 9th conf., Pasadena, Calif. (P. K. Mueller, Air and Industrial Hygiene Laboratory, California State Dept. of Public Health, 2151 Berkeley 94704)

7-10. **American Educational Research Assoc.**, Chicago, Ill. (The Association, 1126 16th St., NW, Washington, D.C. 20036)

8-10. **Pacific Northwest Oceanographers**, 17th annual mtg., Seattle, Wash. (L. H.

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Larsen, Dept. of Oceanography, Univ. of Washington, Seattle 98105)

8-10. Society of University Surgeons, annual mtg., Lexington, Ky. (W. G. Austen, The Society, Massachusetts General Hospital, Boston)

10. History of Science, Columbus, Ohio. (R. L. Stuckey, Ohio Acad. of Science, 1735 Neil Ave., Columbus 43210)

12-14. Aircraft Design for 1980, Washington, D.C. (Meetings Manager, 1290 Sixth Ave., New York 10019)

13-15. Aerospace and Electronic Systems, Los Angeles, Calif. (R. M. Emberson, 345 E. 47 St., New York 10017)

13-15. Military Aircraft Systems, Washington, D.C. (Meetings Manager, 1290 Sixth Ave., New York 10019)

13-16. American Public Power Assoc., Sacramento, Calif. (A. Radin, General Manager, Suite 830, 919 18th St., NW, Washington, D.C. 20006)

14-16. Offshore Exploration Conf., New Orleans, La. (M. F. Oberacker, Manager, Administration, OECON, P.O. Box 88, Palos Verdes Estates, Calif.)

15. Commercial Application of Ultrasonics, New York, N.Y. (J. N. Antonevich, Blackstone Corp., 1111 Allen St., Jamestown, N.Y. 14701)

16-17. Neurobiological Aspects of Psychopathology, New York, N.Y. (J. Zubin, 722 W. 168 St., New York 10032)

16. Reliability Symp., 9th annual West Coast, Beverly Hills, Calif. (R. J. Green, TRW Systems, Building E2/6043, One Space Park, Redondo Beach, Calif. 90278)

16-18. Repair and Regeneration, Symp., San Francisco, Calif. (Continuing Education in Health Sciences, University of California, San Francisco Medical Center, Parnassus and Third Ave., San Francisco 94122)

18-21. American Inst. of Chemical Engineers, 63rd natl. mtg., St. Louis, Mo. (L. L. Fellinger, Monsanto Co., 800 N. Lindbergh, St. Louis)

18-22. Society of Economic Geologists, New York, N.Y. (R. A. Laurence, P.O. Box 1549, Knoxville, Tenn. 37901)

18-22. Technical Assoc. of the Pulp and Paper Industry, 53rd annual mtg., New York, N.Y. (K. G. Chesley, TAPPI, 360 Lexington Ave., New York 10017)

19-20. Engineering Project Investment Analysis, Austin, Tex. (D. E. Griffith, Program Director, Taylor Hall 153, College of Engineering, Univ. of Texas, Austin 78712)

19-21. Biophysical Soc., 12th annual mtg., Pittsburgh, Pa. (Local Arrangements Chairman, I. Bendet, Biophysics Dept., Univ. of Pittsburgh, Pittsburgh 15213)

19-23. Transportation Engineering Conf., San Diego, Calif. (W. H. Wisely, 345 E. 47 St., New York, N.Y. 10017)

19-25. American Soc. of Civil Engineers, San Diego, Calif. (W. H. Wisely, ASCE, 345 E. 47th St., New York 10017)

21-22. Industrial Pharmacy, Austin, Tex. (W. L. Guess, Dept. of Pharmacy, College of Pharmacy, University of Texas, Austin 78712)

22-24. Central Surgical Assoc., Cleveland, Ohio. (B. L. Willman, 1402 S. Grand Blvd., St. Louis, Mo. 63104)

25. Psychoanalysis, 6th annual scientific conf., New York, N.Y. (A. Blatt, Chairman Program Committee, 7 W. 96 St., New York 10025)

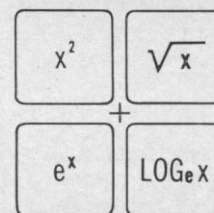
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25-29. American Inst. of Mining, Metallurgical, and Petroleum Engineers, 97th annual mtg., New York, N.Y. (C. Hopkins, 345 E. 47 St., New York 10017)

26-28. American Physical Soc., Boston, Mass. (W. W. Havens, Jr., Columbia Univ., New York 10027)

26-28. Association of Asphalt Paving Technologists, Atlanta, Ga. (L. L. Kole, Box 619, Ann Arbor, Mich. 48107)

26-28. Association of Iron and Steel Engineers, Western mtg., San Francisco, Calif. (T. J. Ess, 1010 Empire Bldg., Pittsburgh, Pa. 15222)

26-1. American Assoc. of Junior Colleges, 48th annual conv., Boston, Mass. (The Association, 1315 16th St., NW, Washington, D.C. 20036)

27. National Multiple Sclerosis Soc., New York, N.Y. (S. Lawry, Executive Director, 257 Park Ave., South, New York 10010)

27-28. National Dairy Engineering Conf., 16th annual, East Lansing, Mich. (D. R. Heldman, Dept. of Agricultural Engineering, Michigan State Univ., East Lansing 28823)

27-3. Scintillation and Semiconductor Counter, 11th symp., Washington, D.C. (R. M. Emberson, 345 E. 47 St., New York, N.Y. 10017)

28-3. American College of Cardiology, annual mtg., San Francisco, Calif. (W. D. Nelligan, 9650 Rockville Pike, Bethesda, Md. 20014)

28-3. Biology Teachers, Anaheim, Calif. (J. P. Lightner, Secretary, 1420 N St., NW, Washington, D.C.)

International and Foreign Meetings

January

19-21. Diseases of Colon, Rectum, and Anus, intern. seminar, Bombay, India. (R. K. Menda, Chairman, P.O. Box 677, Bombay)

23-26. Canadian Pulp and Paper Assoc., 54th annual mtg., Montreal, P.Q., Canada. (The Association, 2280 Sun Life Building, Montreal 2, Quebec)

24-31. Australian and New Zealand Assoc. for the Advancement of Science, 40th Congr., Christchurch, New Zealand. (B. R. Penfold, Univ. of Canterbury, Private Bag, Christchurch 1)

29-30. Canadian Soc. of Chemotherapy, 4th annual mtg., Montreal, Quebec. (L. Tétreault, Service de Recherche, Hôpital Saint-Jean-de-Dieu, Montréal-Gamelin, Québec, Canada)

29-31. Photosensitization in Solids, 2nd intern. conf., Tucson, Ariz. (G. Tollin, Dept. of Chemistry, Univ. of Arizona, Tucson 85721)

February

1-25 Mar. United Nations Conf. on Trade and Development, 2nd session, New Delhi, India. (United Nations, New York, N.Y.)

4-17. Cohesion and Conflict within the East and within the West, conf., Steyning, England. (H. Koeppler, Warden, Wilton Park, Wiston House, Steyning, Sussex)

6-8. Weed Control, Inter-American conf., New Orleans, La. (J. B. Baker, Dept. of Botany and Plant Pathology, Louisiana State Univ., Baton Rouge)



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