

proximately 50 milliroentgens. The γ -dose from *natural* sources is approximately 2 mr/day (4). The integrated exposure to the radiation from deposited fission products, under the worst conditions observed, is thus no greater than the dose received from natural radioactivity in a period of 25 days. The present accepted maximum permissible radiation dose rate is 300 mr/week, so the integrated dose from fallout is one sixth that allowed in a week.

As in the case of radioactivity deposited on the earth's surface, the biological significance of radioactive dust suspended in air can likewise be discussed in relation to the radioactivity that is normally present. The airborne dust associated with fallout remains in a given locality for only a few hours, during which its influence on the background radiation level is of a lower order than the rise in background resulting from material deposited on the surface. However, in the case of airborne dust, we must consider the magnitude of the radiation dose to the lung from inhalation of the radioactive particles.

The natural radioactivity of the atmosphere originates almost entirely from radon, which has diffused from the earth. Unpublished measurements in this laboratory indicate that 5×10^{-14} curies/liter of air is a conservative estimate of the radon concentration in normal air. The concentration varies with both geographical and meteorological factors, and is frequently as high as 5×10^{-13} curies/liter. This radioactive gas is present in equilibrium with its daughter products which, because of their initial charge, characteristically adsorb on inert atmospheric dust (5). When inhaled, a fraction of this dust is temporarily retained in the lung, and some concentration of the naturally occurring radioactive daughter products of radon is thereby effected. Based on calculations made by Bale (6), a radon concentration of 5×10^{-14} curies/liter, in equilibrium with its daughter products, results in a daily lung dose of 10 mrem (assuming a factor of 20 for the relative biological effectiveness of α -particles).

With an approximation of the natural radiation dose to the lung as a basis for comparison, one can now examine the significance of airborne fission prod-

ucts. From Table 3, the highest average concentration of radioactivity observed during a 24-hour period was 53,000 d/m/M³ at Elko, Nevada. The mass median diameter of this dust was approximately 2 μ , which is in the region of optimum particle size for maximum retention in the lung (7). The cumulative dose to the lung was calculated (8), with assumptions that (a) 50 per cent of the dust is retained initially, (b) 50 per cent is eliminated from the lung every 90 days, (c) the lungs weigh 1000 g, (d) the radioactive dust irradiates the lung uniformly, and (e) an individual inhales 10 cubic meters of air in the 24-hour period. The approximation of the cumulative dose thus obtained is 20 mrem, equivalent to the dose from the inhalation of normal atmospheric radon daughter products during a two-day period. As was true for whole body irradiation, the dose to the lung from inhaled fission products for maximum fallout is minute when compared to the exposure received in the course of a lifetime from natural sources of radioactivity.

CONCLUSION

The increases in background radiation sometimes observed at considerable distances from the site of nuclear detonations are due to the deposition of traces of radioactive dust. For brief periods immediately following a detonation, the radioactive background can be markedly increased in some areas, but the cumulative dose from such depositions are minute because of the rapid decay of the activity. The long-lived components of the radioactivity are of a low order compared with the natural radioactivity of the earth's surface and atmosphere.

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News and Notes

Eighth Conference on Iroquois Research

THE eighth annual gathering of Iroquoianists, held at Red House, N. Y., Oct. 10-12, again brought together several dozen scholars and scientists from the disciplines that maintain an interest in the anthropology and history of the Iroquoian-speaking Indians of eastern North America. The theme of this year's conference was "Ethnohistory," a choice dictated by the consideration that the Iroquois Indians appear in

written accounts from the sixteenth century to the present day. Of necessity, Iroquoian studies have traditionally had a historical consciousness that is impossible for investigations of less adequately documented aboriginal populations. Aware of the widespread interest in a *rapprochement* of history and the social sciences, the program committee (Anthony F. C. Wallace, *chairman*; Martha Randle, John Witthoft, and George Snyderman) felt that discussion of problems and opportunities in Iroquois ethnohistory

would contribute to the development of this cross-disciplinary interest.

This year's program, although basically similar in structure to those of preceding years (see *SCIENCE*, 114, 588 [1951] for a more thorough account of the Iroquois conference tradition), featured formally prepared papers and panel discussions. Marius Barbeau, Canadian National Museum at Ottawa, spoke on Indian captivity literature, emphasizing the value of the ethnographic data to be found in this body of early American popular literature. An informal Saturday morning panel, led by John Witthoft, state anthropologist at Pennsylvania Historical and Museum Commission, Harrisburg, provoked discussion of the utility of documentary references in finding "historic" Indian archaeological sites. Although the tediousness of this method, when critically and carefully employed, was recognized as limiting general applicability, it became apparent, nevertheless, from the remarks of several historians and archaeologists present that, without this direct documentation, the sites of several historically known late-contact Indian towns would not have been located at all.

The Saturday afternoon panel presented a set of formal papers on methodological problems of ethnohistory or specific historical events, the adequate investigation of which demanded a blending of historical and ethnological approaches. Wallace (University of Pennsylvania) introduced the session by emphasizing the lesson that anthropologists, sociologists, and psychologists have to learn from historians; that the intensive study of individual events, in which historians are well versed, is a scientific prerequisite to the derivation of general patterns among events, but that a traditional lack of interest in the particular event by social scientists has resulted in the inadequate development both of research techniques and of theory. William N. Fenton (National Research Council) spoke on the problems and promise of a current English translation of Lafitau's *Moeurs des sauvages Amérindiens* (1724) being done under his direction and under the auspices of the American Philosophical Society. Paul A. W. Wallace (Pennsylvania Historical and Museum Commission) presented a careful reanalysis of the vexing problem presented by the Delaware Indians, whom the Iroquois called "women." George Snyderman (anthropologist) discussed general problems of methodology and technique in ethnohistorical work with reference to his survey of historical sources in Philadelphia. Norman Wilkinson (Pennsylvania Historical and Museum Commission) concluded with a careful analysis of the circumstances of the notorious Treaty of Big Tree in 1797, when the Senecas sold most of western New York to Robert Morris. On Saturday evening William J. Mayer-Oakes (Carnegie Museum, Pittsburgh) presented an illustrated lecture on the archaeological survey of the upper Ohio Valley which is being undertaken by his museum.

The meetings ended Sunday morning with statements by *rapporteurs* on current field work and dig-

ging in the Iroquoian area in the United States and Canada. Iroquois archaeology continues to be active. Iroquois ethnology is now carried on by nearly a dozen anthropologists, working independently, who maintain long-term field work interests on one or another of the reservations.

ANTHONY F. C. WALLACE

Behavioral Research Council
University of Pennsylvania

Scientists in the News

John S. Badeau, president of the American University at Cairo, has resigned, effective with the end of the academic year. W. Wendell Cleland, a trustee, will serve as acting president for 1953-54.

Harold S. Black, transmission engineer at Bell Telephone Laboratories, has received the Research Corporation Annual Award for Contribution to Science, in recognition of his invention and development of the negative feedback principle and for contributions to the field of communications.

L. Reed Brantley, head of the Department of Chemistry, Occidental College, will be general chairman of the 123rd national meeting of the American Chemical Society, to be held in Los Angeles Mar. 15-19.

S. Chandrasekhar, University of Chicago astronomer, has been awarded the gold medal of the Royal Astronomical Society of London, for the development of new mathematical tools for the study of astronomy.

Harold E. Cleaves has retired as chief of the Chemical Metallurgy Section, National Bureau of Standards, after 26 years of service in the bureau. He has been chief of the section since 1946.

James Bryant Conant, president of Harvard University, has been selected by President Eisenhower for the post of United States High Commissioner for Germany. Dr. Conant, 23rd president of Harvard, has held that post since 1933, and will become president emeritus Sept. 1.

Harold Eugene Edgerton, professor of electrical engineering, MIT, has received the Franklin L. Burr Prize Award from the National Geographic Society, for his work on stroboscopic lights for use in photography.

Herbert M. Evans, University of California, Berkeley, endocrinologist, has been elected a foreign member of the Swedish Royal Academy of Sciences, in recognition of his researches in endocrinology and vitaminology. Dr. Evans discovered the growth hormone of the pituitary gland and vitamin E.

Herbert S. Fairbank, deputy commissioner of the U. S. Bureau of Public Roads, has been awarded the Roy W. Crum Award for Distinguished Service by the Highway Research Board.

C. M. Ferguson, director of the Ohio Agricultural Extension Service, has succeeded **M. L. Wilson** as director of the Federal Extension Service in the U. S. Department of Agriculture. Mr. Wilson will continue to serve the department as a counselor on extension work in both the U. S. and abroad.

Daniel R. Fisher, of Abingdon, Pa., jet propulsion specialist, and **David S. Blount, Jr.**, of Roanoke, Va., former physicist at the Naval Proving Ground, Va., have been appointed to the Ordnance Engineering Surveillance Team at Duke University.

Hugh W. Gray has been appointed laboratory director of the Du Pont Textile Fibers Department's Pioneering Research Division. Dr. Gray was succeeded by **Allan K. Schneider** as research supervisor in the Chemical Department at the Experimental Station, Wilmington, Del.

Bausch & Lomb Optical Co. has appointed **John D. Hayes** acting head of the Photographic Lens Design Department and named **Erwin Delano** head of the lens design section of the Special Research Department.

Richard A. Howard, who organized and directed the Air Force survival training program in World War II, has been named professor of botany and head of the department at the University of Connecticut. He will succeed **G. Safford Torrey**, who will continue his duties as professor of botany.

John E. Jacobs, manager of the Advanced Development Laboratory, X-Ray Department, General Electric, Milwaukee, has received G-E's Charles A. Coffin Award for 1953. Dr. Jacobs converted cadmium sulfide crystals from a laboratory curiosity into a highly sensitive, automatic detector for inspecting numerous industrial products.

N. A. Khan, government scholar from Pakistan, will join the Chemistry Department, University of Minnesota, as a research fellow under I. M. Kolthoff. Mr. Khan previously completed a project on application of tracer techniques to autoxidation reactions at Ohio State University, and worked on photo-oxidation of fatty materials at the Hormel Institute, University of Minnesota, Austin.

Hazel H. McKay, formerly with the USDA Bureau of Agricultural and Industrial Chemistry, has transferred to the Bureau of Plant Industry, Soils, and Agricultural Engineering, Division of Forest Pathology, Beltsville, Md. She will work with the isolation, culture, and identification of wood-rotting fungi.

Robert James Monroe, associate professor of experimental statistics at North Carolina State College, has accepted appointment as chief of the operations analysis section of the Air Force Missile Test Center, Patrick AFB, Fla.

Raymond J. Nagle has been appointed dean of New York University's College of Dentistry. He was formerly

chairman of the Massachusetts State Board of Dental Examiners.

Ernst Oppenheimer, who retired last month as vice president in charge of research after 16 years of association with Ciba Pharmaceutical Products, Inc., will edit future volumes in the collection of medical illustrations published by Ciba for the medical profession. Each atlas in this series contains color reproductions of anatomical and pathological paintings by Frank H. Netter. Dr. Oppenheimer has played an important role in the compilation and publication of past volumes, and the original collection was dedicated to him.

J. Neal Phillips Jr., University of Texas biochemist, has been appointed associate director of research and development for the United States Movidyn Corporation.

Donald D. Ritchie, chairman of the Botany Department, Barnard College, will take an 18-month leave of absence to direct the Naval Research Laboratory Tropical Exposure Station, Canal Zone, Panama. He will study the effects of tropical exposure, weather, and moisture on the growth of fungi, and will direct research in testing paints, fabrics, and insulating materials.

Vincent J. Schaefer, General Electric Research Laboratory weather scientist, has received the 1952 Robert M. Losey award, given annually by the Institute of the Aeronautical Sciences, in recognition of his research in the field of cloud physics and seeding.

Frazar B. Wilde, president of Connecticut General Life Insurance Company, Hartford, has been elected chairman of the Research and Policy Committee of the Committee for Economic Development. He succeeds **Meyer Kestnbaum**, who has been elected chairman of the CED Board of Trustees.

Education

American College of Physicians spring postgraduate courses are scheduled as follows: Feb. 16-21, Pathology and Pathologic Physiology in Internal Medicine, Frank E. Bunts Educational Institute of the Cleveland Clinic Foundation; Mar. 2-7, Studies in the Clinical Aspects and Diagnostic Procedures in Cardiovascular Disease, University of Southern California School of Medicine, Los Angeles; Mar. 9-13, Internal Medicine, Cornell University Medical College and the New York Hospital; Mar. 23-27, Internal Medicine, Mayo Clinic; May 11-15, Controversial Issues in Internal Medicine, the Pennsylvania Hospital, Philadelphia; May 11-16, Electrocardiography, Massachusetts General Hospital, Boston; May 18-22, Internal Medicine, University of Oregon School of Medicine, Portland. All registrations must be made through the college executive offices, 4200 Pine St., Philadelphia 4.

Hebrew Institute of Technology, Haifa, invites

applications for the position of director of the library. Candidates should apply before *Apr. 15* to the national office, 80 Fifth Ave., New York 11.

The Tissue Culture Program of the **Mount Desert Island Biological Laboratory** at Salisbury Cove, Me., consisting of research and training in the aseptic cultivation of plant and animal tissues, embryos, and organs, will be continued from June 15 to Sept. 15. Applications should be sent before *Mar. 15* to Philip R. White, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me.

New York University will sponsor its fourth European workshop for American teachers during July and August. Organized on a graduate level, the workshop sessions will include more than two weeks in London, eight days in Heidelberg, four days in Paris, and eight days of travel through Belgium, Germany, Switzerland, and France. As accommodations are limited to 60 people, applications should be sent at once to Christian O. Arndt, School of Education, NYU, Washington Square East, New York 3.

The **U. S. Public Health Service** will offer a short course in phenol determination, Feb. 18-20, and advanced training for sanitary engineers in water pollution abatement programs, Mar. 2-13, at the Environmental Health Center, Cincinnati. Field training courses in rodent control will be given Mar. 23-Apr. 3 and Apr. 20-May 1 at the Communicable Disease Center, Atlanta, and in insect control, Apr. 6-17 and May 4-15.

Wayne University's semiannual Frontiers in Chemistry lecture series will begin Feb. 23 with Allen T. Gwathmey as the speaker. Other speakers will be O. Wintersteiner (Apr. 20), Theald Moeller (Apr. 27), Herbert C. Brown (May 4), Philip J. Elving (May 11), and Harold C. Urey (May 15). The series is cosponsored by the International Society of the Friends of the Kresge-Hooker Library.

Grants and Fellowships

The **American Council of Learned Societies** offers grants for summer graduate study in linguistics at Indiana University and the University of Michigan. Applicants must be U. S. citizens who are graduate students, teachers, staff members of libraries or museums, or government research or policy-making personnel. Application forms, which must be completed by *Apr. 1*, and other information, may be obtained from the council, 1219 Sixteenth St., N.W., Washington 6, D. C.

The **Albert and Mary Lasker Foundation** and the **American Heart Association** have established an annual Albert Lasker Award "for distinguished achievement in the field of cardiovascular diseases." Paul D. White, of Boston, was named as the first winner, and the \$1000 prize, a scroll, and a gold statuette of the Winged Victory of Samothrace were presented to him at the 1953 Heart Fund Dinner of the Massachusetts Heart Association in Boston, Feb. 2.

The first three **Louis Lipsky Exchange Fellowships** have been awarded to Charles D. Coryell, of MIT; Gerald Estrin, of the Institute for Advanced Study; and David Ginsburg, of the Weizmann Institute of Science, now on a research fellowship at Harvard. Professor Coryell and Dr. Estrin will go to Rehovoth sometime this year, and Dr. Ginsburg will leave for Oxford later in 1953. The Weizmann Institute established the fellowships in 1951 in celebration of the 75th birthday of Louis Lipsky, American Zionist leader and associate of Dr. Weizmann.

New York University will award research fellowships and assistantships for advanced study in meteorology and oceanography in the College of Engineering. Applicants must have received bachelor's degree by September 1953 and must have had courses in mathematics through differential equations and at least 12 semester hours of physics. Deadline for completed applications is *Apr. 1*.

Oklahoma Medical Research Institute and Hospital is establishing a program of dental research and will offer a fellowship providing a stipend of \$4000-\$5000 per year. Applicants, who should have one to two years of postdoctorate training, should address Charles D. Kochakian, 825 N.E. 13th St., Oklahoma City.

Meetings and Elections

The **American Academy of Dental Medicine** will hold its annual meeting at the Hotel Shoreham, Washington, D. C., June 26-28. Main theme of the meeting will be "Nutrition."

The **American Association of Hospital Consultants** elected the following officers at its annual meeting in Philadelphia: president, E. M. Bluestone; vice president, Basil C. MacLean; secretary and treasurer, Jacques B. Norman.

Scientific Research Society of America, meeting in St. Louis, elected Wallace R. Brode, Alan T. Waterman, and Edward R. Weidlein members of its Board of Governors for three-year terms beginning July 1. The society's \$1000 William Procter Prize for Scientific Achievement was awarded to Shields Warren for his research on the effects of radiation and many other contributions to medical science.

The **Society for Applied Spectroscopy** is seeking papers in any pertinent field for presentation at the annual meeting on May 15. Those who wish to offer papers should get in touch with Van Zandt Williams, Perkin-Elmer Corporation, Norwalk, Conn.

A **Symposium on Molecular Structure and Spectroscopy** will be held at Ohio State University, June 15-19. There will be discussions of the interpretation of molecular spectroscopic data, as well as methods for obtaining such data, and sessions devoted to current developments in spectroscopy. For full information, or a copy of the program, write to Robert A. Oetjen, Department of Physics and Astronomy, OSU, Columbus 10.

Miscellaneous

The American Geographical Society has sent an expedition to the Sierra de Perija, on the border between Venezuela and Colombia. William Phelps, Jr., of Caracas, is leader of the expedition, and he is accompanied by Mrs. Phelps and Charles B. Hitchcock, of AGS. The three explorers will search for the headwaters of the Macoita and Aponcito rivers.

Among recipients of the 1952 Borden Awards were the following: Emerson W. Bird, American Dairy Science Association; Julius H. Hess, American Academy of Pediatrics; John Wm. Hibbs, American Dairy Science Association; Ralph B. Little, III, American Veterinary Medical Association; E. L. Robert Stokstad, Poultry Science Association; Clara A. Storvick, American Home Economics Association; Carrell H. Whitnah, American Chemical Society. The awards, established in 1936, are administered by professional and scientific associations, and are based on research reported in public documents or scientific journals.

Recent Deaths

Arthur W. Ambrose (63), of Bartlesville, Okla., petroleum geologist, Tulsa, Dec. 28; Gustave B. Andreen (72), civil engineer, New York, Dec. 23; Charles Arden-Close (87), cartographer, Winchester, Eng., Dec. 19; Arthur A. Batts (68), of Niagara Falls, N. Y., industrialist, Clearwater, Fla., Jan. 8; Gilbert M. Beck (53), psychiatrist and neurologist, Buffalo, N. Y., Jan. 9; Truman C. Bigham (56), of Gainesville, Fla., economist, Dallas, Tex., Dec. 30; Saul A. Binderman (60), gastroenterologist, New York, Dec. 30; Samuel W. Clausen (64), pediatrician, Rochester, N. Y., Dec. 29; Samuel Cochran (81), medical missionary, Newport, R. I., Dec. 26; Claude C. Coleman (73), neurosurgeon, Richmond, Va., Jan. 9; Maria B. Coolidge (78), physician, Detroit, Dec. 27; Harold A. Dambly (53), electrical engineer, Philadelphia, Jan. 15; Daniel S. Davidson (53), of Seattle, anthropologist, Altamonte Springs, Fla., Dec. 27; Antonio Dormea (—), psychiatrist, Siena, Italy, Dec. 28; Elaine M. Drew (66), ornithologist, Barre, Vt., Dec. 22.

Samuel Eglick (61), of Philadelphia, physician, Atlantic City, Jan. 3; Frederick Fischl (67), dermatologist, Toledo, Ohio, Jan. 15; Berthold Flesch (79), physician, New York, Dec. 28; William L. Foss (60), electrical engineer, Washington, D. C., Jan. 11; Barclay S. Fuhrmann (67), of Flemington, N. J., physician, Trenton, N. J., Jan. 3; Edward B. Gallaher (79), engineer, Norwalk, Conn., Jan. 9; Fletcher Gardner (83), physician, San Antonio, Tex., Dec. 22; Alfred Gordon (92), neuropsychiatrist, Philadelphia, Jan. 12; Henry L. Gowens, Jr. (69), ophthalmologist, Philadelphia, Jan. 2; G. D. Harris (—), paleontologist, Ithaca, N. Y., Dec. 4; John W. Harrison (36), geologist, Casper, Wyo., Nov. 17; Paul J. Hatt (38), of Evanston, Ill., sociologist, Havana, Cuba, Jan. 6;

Earl D. Hay (66), mechanical engineer, Ames, Iowa, Jan. 1; Charles H. Hertzy, Jr. (56), metallurgist, Bethlehem, Pa., Jan. 17; William Herbert Hobbs (88), geologist, Ann Arbor, Mich., Jan. 1; Grant S. Hopkins (87), veterinary, Ithaca, N. Y., Dec. 21; Claude S. Hudson (71), chemist, Washington, D. C., Dec. 27.

Charles H. Iltis, Jr. (41), neurologist, New York, Dec. 21; Clara Israeli (84), pathologist, Philadelphia, Jan. 14; Thomas A. Jaggar (81), volcanologist, Honolulu, Jan. 18; Homer M. Jaquays (—), mechanical engineer, Montreal, Jan. 9; Robert Kreys (36), obstetrician, Pau, France, Jan. 12; John C. Kurtz (65), of Bausch & Lomb, Rochester, N. Y., Dec. 27; W. F. Leech (77), ear, eye, nose, and throat specialist, Williamson, W. Va., Dec. 27; Edward A. Looper (64), eye, nose, and throat specialist, Baltimore, Jan. 14; Ralph A. Loring (56), physicist, Louisville, Ky., Dec. 31; Harold W. Lyall (64), bacteriologist, Albany, N. Y., Jan. 3; Francis S. McCaffrey (64), oral surgeon, New York, Dec. 26; David W. MacKenzie (77), urologist, Charlottetown, P. E. I., Dec. 23; Frank L. McVey (83), educator, Lexington, Ky., Jan. 4; Walter L. Maxson (60), of Duluth, Minn., mining and metallurgical engineer, Bellingham, Wash., Jan. 7; Charles E. Merriam (78), political scientist, Rockville, Md., Jan. 8; Harold Orr (63), of Edmonton, Alta., dermatologist, Toronto, Dec. 26.

John E. Plunkett (52), of Kingston, Ont., internist, Ottawa, Jan. 11; Daniel Poll (65), internist, New York, Dec. 24; William C. Quinby (75), urologist, Boston, Dec. 31; William I. Reardon (75), internist, Tuckahoe, N. Y., Jan. 15; Samuel N. Rhoads (90), of Haddonfield, N. J., ornithologist, Dec. 27; Thurman B. Rice (64), public health expert, Indianapolis, Dec. 27; George W. Rightmire (84), educator, Columbus, Ohio, Dec. 23; Ephraim M. Rosset (39), of Mercon, Pa., obstetrician and gynecologist, Philadelphia, Jan. 1; Rudolph W. Schroeder (66), aviation pioneer, Chicago, Dec. 29; Fred J. Sievers (72), agronomist, Amherst, Mass., Dec. 26; Edward H. Skinner (72), radiologist, Kansas City, Jan. 11; Arthur R. Smith (73), electrical engineer, Schenectady, N. Y., Jan. 1; Albert W. Staub (72), educator, Santa Barbara, Calif., Jan. 5; Emerson L. Stone (57), obstetrician, New Haven, Conn., Jan. 10.

Joseph T. Thwaites (51), of Hamilton, Ont., electronics engineer, enroute from Montreal, Jan. 16; Edward A. Uehling (103), mechanical engineer and inventor, West Allis, Wis., Dec. 21; Harley J. Van Cleave (66), parasitologist, Urbana, Ill., Jan. 2; Mark H. Ward (68), medical missionary, Newton, Mass., Dec. 22; Jervis B. Webb (61), industrialist and mechanical engineer, Birmingham, Mich., Dec. 21; Lewis H. Weed (66), pathologist and neurologist, Reading, Pa., Dec. 21; Heston R. West (92), physician, Phillipsburg, N. J., Jan. 9; William C. West (73), mining and highway engineer, New York, Dec. 24; Francis S. Wilder (49), economist, Easton, Pa., Dec. 20; Leland A. Wooten (52), of Summit, N. J., physical chemist, Williamsburg, Va., Dec. 29.