

Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL --- decisions and trends

SEPTEMBER, 1955
(Vol. 19, No. 9)

INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
4400 FIFTH AVENUE -- PITTSBURGH 13, PA.

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I-H-F
GENERAL MEETING

Thursday, November [illegible], 1955 — Auditorium, Mell[illegible]

MORNING SESSION (9:30 A.M.)

Chairman: Andrew Fletcher
President, St. Joseph Lead Company
Board Chairman, Industrial Hygiene Foundation

ADDRESS OF WELCOME..... Dr. E. R. Weis...
President, Me...

FOUNDATION FACTS..... Dr. C. Richard W...
Managing ...
Industrial Hygiene Foundation

THE ECONOMICS OF INDUSTRIAL HEALTH



A. R. FISHER, President and Director of Johns-Manville Corporation, has devoted his career since 1922 to familiarizing himself with every phase of Johns-Manville production and is an outstanding authority on the manufacturing technology of asbestos. In November 1937 Mr. Fisher became Vice President of Johns-Manville Products Corporation. Eight years later he was elected a Vice President of Johns-Manville Corporation, and in 1951 was elected Director and named President. He is a member of the board of Trustees of Industrial Hygiene Foundation.

GRADUATE EDUCATION FOR INDUSTRY'S PROFESSIONAL PERSONNEL



DR. J. ROSCOE MILLER, Northwestern University's twelfth president, is a physician who rose through the faculty ranks to achieve the top administrative post of the University at the age of 44. Prior to his appointment, he was dean of the Northwestern University Medical School from 1941 to 1948. During World War II, Dr. Miller was head of the medical branch, professional division of the Bureau of Medicine and Surgery, with headquarters in Washington. He held the rank of Commander in the U. S. Naval Reserve.

AN APPRAISAL OF INDUSTRIAL MEDICAL DEPARTMENTS



DR. DANIEL C. BRAUN, Medical Director of Industrial Hygiene Foundation since 1952, was formerly medical director of the Pittsburgh Coal Company. He served as adviser to Westinghouse Electric Corporation in its supervisory health program and as consultant in occupational medicine to various companies before joining the Foundation staff. He is on the faculty of the University of Pittsburgh School of Medicine and Lecturer in occupational health in the Graduate School of Public Health. He is Co-Chairman of the Commission on Industrial Health and Hygiene of the Medical Society of Pennsylvania.

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AFTERNOON SESSION (2:00 P.M.)

Chairman: Dr. J. C. Warner
President, Carnegie Institute of Technology

INDUSTRIAL APPLICATION OF ATOMIC ENERGY



DR. W. E. SHOUPP is assistant manager of the Atomic Power Division of Westinghouse Electric Corporation. He was formerly director of development for the Division and is noted for his outstanding organizational ability in the fields of electronics and nuclear energy research and development and particularly in the development of the first submarine atomic power plant. He is co-discoverer of photofission--splitting of uranium atoms by high-speed gamma rays, with a commensurate release of large amounts of energy. Dr. Shoupp joined Westinghouse as a Research Fellow in 1938 at the Westinghouse Research Laboratories, where he held various posts until his appointment to the Atomic Power Division in 1949.

AIR-POLLUTION CONTROL IN THE CHEMICAL INDUSTRIES



M. F. CRASS, JR., Secretary-Treasurer of Manufacturing Chemists' Association, Inc. since 1953, joined the Association as Assistant Secretary. Prior to that time he had been assistant to the general superintendent of Goodyear Tire & Rubber Company; instructor in chemical engineering at Case Institute of Technology; and chief chemist for Palmer Match Company. He has written numerous articles relating to statistics, economics and transportation in the match and chemical industries, and is the author of "Chemical Facts and Figures", editions of which were published in 1940 and 1946.

MAN, MEASUREMENT, AND MACHINE



DR. WILTON M. KROGMAN is Professor of Physical Anthropology in the University of Pennsylvania's Graduate School of Medicine and the Evans Institute of Dentistry and is Director of the Philadelphia Center for Research in Child Growth, having held both posts since 1947. His educational career in the field of physical anthropology began in 1929 at the University of Chicago, and he subsequently taught at Western Reserve University. Dr. Krogman is an authoritative writer on the subjects of evolution, growth, race and forensic medicine, and author of the book "Growth of Man."

CURRENT TRENDS IN WORKMEN'S COMPENSATION



DR. ARTHUR LARSON, Under Secretary of Labor, appointed to the position by President Eisenhower on April 12, 1954, had been Dean of the University of Pittsburgh School of Law. His background includes college administration, government service, law practice, and the authorship of books and articles on labor legislation, social security, and education. Dr. Larson's best-known work is a two-volume treatise on "The Law of Workmen's Compensation," published in 1952, which is the leading treatise in the field and is regularly cited in the appellate courts.

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A Résumé of the

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TECHNICAL CONFERENCES PROGRAMS

Wednesday, November 16, 1955 Mellon Institute

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No.

The MEDICAL CONFERENCE will bring management representatives together with industrial physicians for a frank discussion of the problems that arise between the two groups through misunderstandings of their respective functions and through poor communication and lack of sympathy with the other's problems. The subject before the panel is "Intra-Company Communication Between the Medical Department and the Operating Department." Mental health and the industrial physician's approach to the problem in industry will also be featured on the program.

A JOINT MEDICAL AND CHEMICAL-TOXICOLOGICAL CONFERENCE is an innovation at this year's meeting. The interdependence of the two fields in any truly effective preventive medical program will be demonstrated. Two toxicologists and two industrial physicians will discuss research developments for detecting early functional changes caused by excessive exposures to toxic materials and their application by the medical profession. Management personnel are invited to participate in this session also.

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The CHEMICAL-TOXICOLOGICAL CONFERENCE will include industrial hygiene aspects of ultrasonics, along with papers on analytical methods. Part of the afternoon session will be devoted to answering specific questions raised by member companies.

The LEGAL CONFERENCE will take up the legal aspects of current industrial health problems. Topics will include a legislative review of workmen's compensation and a discussion of the Federal Employers' Liability Act and the effect upon industry of litigation arising under the Act. An attorney and an industrial physician will discuss from their respective standpoints the presentation of medical testimony in compensation cases.

A JOINT ENGINEERING-LEGAL CONFERENCE will be held for the first time this year, featuring a panel discussion on "The Engineering and Legal Aspects of Management's Responsibility for the Control of Industrial Hazards." Three broad phases will be management's responsibility for air pollution control and prevention of occupational injuries, and its obligations under workmen's compensation laws. Included will be the question of public liability in preparing the marketing products that might be injurious to health; proper labeling of products sold by industry; regulations for the control of industrial hazards, and the role that the medical and industrial hygiene departments play in this respect; and the responsibility of State Industrial Accident Commissions for the prevention of industrial injuries, administration of the law, and rehabilitation of injured employees. Representatives of management, medicine, industrial hygiene and engineering, insurance, labor and workmen's compensation will participate in the panel discussion.

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The ENGINEERING CONFERENCE will bring to the attention of plant engineers new information and ideas on engineering measures that may have effects on the working environment. Included will be a discussion of developments in air and gas cleaning.

Detailed information on speakers and subject material will appear in the October issue of Industrial Hygiene Digest on these pages. Preliminary programs will be mailed as soon as possible.

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Industrial Hygiene Foundation
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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1030 Air Pollution.

A broad federal program of research and technical assistance in air pollution problems is urged by a Federal interdepartmental committee on air pollution. The committee recommends legislation authorizing such a program and suggests that it be administered by the Department of Health, Education, and Welfare, with the assistance of a permanent interdepartmental committee on community air pollution. The committee report reaffirms the principle of state and local responsibility for air pollution by: (1) recommending Federal aid by conducting research and serving as an information and demonstration center; (2) providing technical assistance; and (3) calling attention to the need for "exemplary practices" in factories and other sites operated or controlled by the Federal government. The specific chemicals and their concentrations which have ill effects ranging from annoyance to death have yet to be determined.

-- J. Am. Med. Assn.

1031 Symposium on Health Hazards of Chemicals.

A feature of the meeting of the American Association for the Advancement of Science, at Atlanta, Georgia, Dec. 29, will be a symposium on toxic chemicals and their hazards, sponsored by the Committee on Toxicology of the American Medical Association. Dr. Bernard Conley, secretary of the A.M.A. Committee on Pesticides, which is co-sponsoring the discussion, will be moderator. Other authorities in the field will participate.

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1032 "Air Repair" Changes Name.

The quarterly publication of the Air Pollution Control Association, now in its fifth volume, and heretofore called Air Repair, will now be known as the Journal of the Air Pollution Control Association. The address of the Association is 4400 Fifth Ave., Pittsburgh 13, Pa. The August number contains a number of papers referring to automobile exhausts as a source of air pollution. Those papers are abstracted in the Community Air Hygiene section of this issue of the Digest.

1033 Grants for Rehabilitation.

Grants totaling $209,517 have been made to public agencies in 19 states by the Office of Vocational Rehabilitation to expand services for the handicapped. Under the matching plan, each state provides $1 for each $2 in federal funds. The grants supplement the basic federal vocational rehabilitation allotments to the states. Projects to be aided include: a model citrus grove to help the blind learn how to raise citrus fruit and to demonstrate how their abilities can be adapted to a specific agricultural pursuit; a machine that helps to determine the nature and amount of work that people with heart ailments can safely do; and an obstacle course that prepares the blind for the obstacles they are likely to encounter during a normal day's travel. The Adjustment Center for the Blind in Daytona Beach, Florida, will operate the citrus grove and the obstacle course, and the District of Columbia Cardiovascular Diagnostic Center will conduct the project to measure the work tolerances of patients with heart disease.

-- J. Am. Med. Assn.

DIFFICULTIES OF ATOMIC PHYSICISTS-- At an open meeting on Nuclear Radiation Hazards and their Political Implications, in Washington D. C., April 28, W. S. Livingston, presiding, described the difficulties the planning committee encountered in finding a physicist to speak on the program. Refusals were made for various reasons. Two physicists employed in the Defense Department accepted the invitation, but later withdrew when the Department imposed new restrictions on statements by its employees. The experience illustrates the political dilemma: those who know won't speak, and those who don't know cannot speak with authority. A Senator and a Representative who appeared on the program, as well as scientists, expressed concern over the needless secrecy restrictions. -- Cond. from Science

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COMING EVENTS

1034	Oct. 6-7	National Foundry Association, Chicago, Ill.
	Oct. 10-12	Association of Official Agricultural Chemists, Washington, D. C.
	Oct. 10-14	Course in Occupational Skin Problems, Kettering Laboratory, University of Cincinnati, Cincinnati, O.
	Oct. 13-17	International Academy of Legal and Social Medicine, Genes, Italy.
	Oct. 17-20	National Pest Control Association, Denver, Colo.
	Oct. 18	American Society of Safety Engineers, Chicago, Ill.
	Oct. 18-26	National Safety Council, Chicago, Ill.
	Oct. 19-21	Gray Iron Founders' Society of America, Milwaukee, Wis.
	Oct. 24-25	Steel Founders' Society of America, White Sulfur Springs, W. Va.
	Oct. 24-26	American Standards Association, Washington, D. C.
	Oct. 30-Nov. 4	American College of Surgeons, Chicago, Ill.
	Oct.-Jan.	American Management Association Workshop and Orientation Seminars, mostly New York.
	Nov. 13	American Society of Mechanical Engineers, annual meeting, Chicago, Ill.
	Nov. 13-20	Third American Congress on Industrial Medicine, Caracas, Venezuela.
	Nov. 14-18	American Public Health Association, Kansas City, Mo.
	Nov. 21-Feb. 3	Short Course in Occupational Medicine, Graduate School of Public Health, University of Pittsburgh.
	Nov. 27-30	American Institute of Chemical Engineers, annual meeting, Detroit, Mich.
	Nov. 28-Dec. 1	Ninth Exposition of Air Conditioning and Refrigeration Industry, Atlantic City, N. J.
	Nov. 29-Dec. 2	American Medical Association, Clinical Meeting, Boston, Mass.
	Dec. 1-3	American Society of Refrigerating Engineers, annual meeting, New York, N. Y.
	Dec. 5-7	Chemical Specialty Manufacturers Association, annual meeting, Rochester, N. Y.
	Dec. 5-9	Exposition of Chemical Industries, Philadelphia, Pa.
	Dec. 10-16	Atomic Exposition, American Institute of Chemical Engineers, Detroit, Mich.
	Dec. 10-17	Nuclear Congress and Atomic Exposition, and Nuclear Engineering and Science Congress, New York, N. Y.
	Dec. 12-16	Nuclear Engineering and Science Congress, Cleveland, O.
	Dec. 15-17	Acoustical Society of America, semiannual meeting, Providence, R. I.

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OCCUPATIONAL DISEASE STATISTICS

1035 Occupational Disease Statistics.

	Conn.[1] July 1955	Conn.[1] Aug. 1955	Ind.[1] Aug. 1955	Total
Chronic Berylliosis	1			1
Dermatitis	51*	58**	9***	116
Pneumoconiosis (Dust, inorganic)	1			1
Pulmonary Silicosis	1			1
Silico-Anthracosis	1			1
Silicosis (Dust, free silica)	1	1		2
Silico-Tuberculosis	2			2
Undulant Fever	2			2
Total	60	59	9	128

1. Occupational disease cases reported to the State Board of Health.

* Acids, alkalies, chromium and compounds, cyanides, dust-inorganic, dust-organic, mechanical irritations, nitro and amino compounds, rubber chemicals, soap solutions, glue, etc., and ultra violet caused one each; carbon tetrachloride and synthetic resins and chemicals caused two; poisonous plants caused three; solvents (N.O.C.) caused six; and oils, fats and waxes caused twenty-seven.

** Abnormalities of temperature, cyanides, dust-organic, formaldehyde, lead and compounds, mechanical irritations, and poisonous plants caused one each; dust-inorganic, infections, and N.O.C. (undetermined) caused two; acids and soap solutions, glue, etc., caused four; rubber chemicals caused six; solvents (N.O.C.) caused seven; synthetic resins and chemicals caused eight; and oils, fats and waxes caused sixteen.

*** Grinding compound and tomatoes caused one each; oil caused three; and the cause of four other cases was not stated.

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LEGAL DEVELOPMENTS

1036 New Legislation.

In Delaware, compensation will be paid for chiropratic services rendered to an employee who has a compensable injury or occupational disease. Hawaii has increased compensation and occupational disease benefits. Certain benefits have been increased in Illinois and Michigan. In Missouri, changes have been made in payments to second injury funds. Slight changes have been made in the Oklahoma compensation law. Vermont has raised some benefits, changed medical and surgical benefits, and extended coverage. In Wisconsin the most important change is the addition of a new section dealing with occupational deafness and the deletion of all earlier provisions relating to loss of hearing due to industrial noise. The new section provides that compensation be paid only when wage loss is incurred and clears the confusion that has led to much controversy. Some benefits have been increased.

-- Cond. from CCH

BOOKS, PAMPHLETS AND NOTICES

1037 Radiation Biology. Vol. I. High Energy Radiation. A. Hollaender, editor. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y. Two parts, total 1265 pp. (1954). $17.00.

This book was prepared under the auspices of the Committee on Radiation Biology of the National Research Council. Four additional collaborating editors and a number of others have contributed to this work. It is the first of three volumes dealing with the biological effects of radiations throughout the energy spectrum. This volume is confined to high energy or ionizing radiation. The first chapters present the principles of radiological physics, measurement of ionizing radiations for biological purposes, physical principles underlying the various biological

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reactions, and basic radiation biochemistry. The effect of x-rays on biological systems is discussed. Several chapters deal with various aspects of genetic and prenatal effects. The pathology of direct effects are next considered, including histological and hematological effects and carcinogenesis. References are numerous, and the book constitutes a thorough summary of the knowledge of the effects of ionizing radiations. -- FFR

1038 Radiation Biology. Vol. 2. Ultraviolet and Related Radiations. A. Hollaender, editor. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. 593 pp. (1955). $8.00.

This volume, also the work of a number of collaborators, and under the same auspices, describes the effect of the ultraviolet part of the spectrum and of ionizing radiations not covered in the first volume. In addition, this volume is of special interest to investigators in food preservations, industrial application of ultraviolet in general, and the use of ultraviolet as an analytical tool. Microbiology is discussed in both volumes but occupies a more prominent place in this volume. Among the chapters of special interest are those on practical applications and sources of ultraviolet energy, sunlight as a source of radiation, the effects of ultraviolet radiation on genes and chromosomes, protozoa, viruses, bacteria, and fungi, and the role of ultraviolet in causing sunburn and cancer. This volume also is a valuable compendium on the subject. -- FFR

1039 Industrial Recreation. A Guide to Its Organization and Administration. J. M. Anderson. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. 304 pp. (1955). $5.00.

The growing importance of industrial recreation is attested by publication of this book. The first part of the book defines industrial recreation, calls attention to its need and benefits, summarizes its growth and development in the United States, and lays down the general recommended principles and policies. In Part 2, procedures are given for planning and initiating a program, and the various recreation activities are discussed. One point emphasized is that the employee should have free selection of his type of recreation. The third and longest part deals with administration of recreation, including selection of leaders, preparation for leadership, financing the program, and evaluation of its results. A chapter deals with intercompany recreation associations. Facilities and equipment, records and reports, publicity and public relations, and liability for accidents are discussed. Model constitutions and bylaws for company and intercompany recreation associations are presented in appendixes. The plan of the Purdue industrial recreation interest survey, a list of national organizations providing recreation services, and a rating scale for evaluation are subjects of other appendixes. Altogether the book is a comprehensive discussion of the subject. -- FFR

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1040 Methods for Determining Lead in Air and in Biological Materials. American Public Health Association, Inc., 1790 Broadway, New York 19, N. Y. 69 pp. (1955). $1.25.

The original report published in 1944 has been completely revised and rewritten by the Committee on Chemical Procedures of the Occupational Health Section of the A.P.H.A., with the cooperation of other committees. The general organization of the original report has been followed. The seven major sections are: introduction, collection of samples, preparation of samples for analysis, recommended procedures, dithizone methods, physical methods, and bibliography. The section on collection of samples has been appreciably expanded. In the dithizone section some methods have been replaced by improved procedures. A new rapid screening test for urinary lead has been added.

-- FFR

1041 Statistics of Therapeutic Trials. G. Herdan. Elsevier Publishing Co., 2330 Holcombe Blvd., Houston, Texas. 367 pp. (1955). $10.50.

This book is a guide for physicians who wish to apply the appropriate statistical techniques in the evaluation of data resulting from therapeutic trials. Although mathematics is necessarily involved to a considerable extent, the essential mathematics is greatly simplified, and the treatment is primarily clinical rather than mathematical. The most suitable statistical methods are presented for acute and chronic diseases. Complete details are given concerning the best sampling procedures for each disease discussed and the design of therapeutic trials. The diseases considered include pneumonia, poliomyelitis, cancer, pulmonary tuberculosis, and a number of other common diseases. Occupational diseases and the effects of industrial poisons are not considered specifically, but it can be judged that there would be no great difficulty in applying the general principles to such studies as the various effects of air pollutants. -- FFR

1042 Analysis of Insecticides and Acaricides. F. A. Gunther and R. C. Blinn. Interscience Publishers, Inc., 250 Fifth Ave., New York 1, N. Y. 696 pp. (1955). $14.00.

The analysis of insecticides and related materials has become important from the public health standpoint, especially since many of these substances leave residues in vegetation used as foods by persons and animals, and may be toxic when ingested in sufficient quantities. This volume, which is No. 6 in the series of monographs on chemical analysis, throughly treats the analysis of foods and other materials for each of the insecticides and acaricides commonly used in agriculture. The first chapters deal with the problems in securing quantitative residue

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data and in analyzing technical grade materials and formulated products. The remainder of the book describes sampling, measuring, processing, cleanup, and analytical methods. Detailed methods are given for about 90 insecticides and acaricides. Fungicides, rodenticides, and herbicides are not included, but the principles outlined in the first part of the book apply to those materials as well as to insecticides. -- FFR

1043 Human Factors in Highway Transport Safety. R. A. McFarland and A. L. Moseley. Harvard School of Public Health, 695 Huntington Ave., Boston, Mass. 295 pp. (1954). Obtainable at above address.

This report presents the results of the various phases of a research project on human factors in transport safety, conducted during the past few years. The many aspects of safety, with which the human factor is related are treated. The subjects discussed include: selection of drivers by means of psychological testing and studies of driving records; studies of accident repeaters; medical problems in the industry and medical requirements for drivers; effects of alcohol, drugs, and fatigue; human aspects of vehicle design; studies of driver activities, critical incidents, and errors; and analysis of accidents in the trucking industry. -- FFR

1044 Proceedings of the Governor's Conference and Exhibit on Atmospheric Pollution, New Jersey State Department of Health, February 19 and 20, 1952, Trenton, N. J. 87 pp. (1955). Obtainable from New Jersey State Department of Health, Bureau of Adult and Industrial Health, 17 West State St., Trenton, N. J.

The following papers were presented at this Conference and are presented in full: "Air Pollution—Its Status Today," A. D. Brandt; "Measuring the Intensity of Air Pollution," W. C. L. Hemeon; "Chemicals Involved in Air Pollution and Their Effects on Vegetation," P. W. Zimmerman; "Performance of Inertial Collectors," L. Silverman; "Filters and Cloth Collectors," A. C. Stern; "Air Pollution Control Equipment Scrubbers," C. H. Nichols; "Electrical Precipitation as Applied to Air Pollution Reduction," R. L. Chamberlin; "Plantwide Air Pollution Control," R. J. Jenny; "Fly Ash Disposal—Problems and Costs," G. F. Jenkins; "Atmospheric Pollution in Tetryl Manufacture," E. W. Schneider; "Some Air Pollution Problems of a Fire Chemical Manufacturing Plant," I. R. Lewis and D. J. Cestoni; and "Controlling Fluoride Emissions from Phosphate Rock Acidulation," A. B. Pettit. -- FFR

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INDUSTRIAL MEDICAL PRACTICE

1045 Occupational Health Publications in the United States Prior to 1900. C. P. McCord. Ind. Med. & Surg. 24, 363-368 (Aug. 1955).

It is often stated that less than 20 scientific articles on occupational health were published in the United States before 1900. Actually the number was greatly in excess of 20. The author lists 200 publications on the subject, mostly taken from the Proceedings of the Second National Conference on Industrial Diseases in 1912. It is not claimed that the list is exhaustive.

1046 Medical Research in the United States Navy. H. T. Karsner. U. S. Armed Forces Med. J. 6, 1093-1102 (Aug. 1955).

Medical research in the Navy is essential to the "combat readiness" of the service. The organization and work of the various research laboratories are described. Uniformed and civilian personnel at different levels of rank, under the management or technical control of the Bureau of Medicine and Surgery, in the United States and overseas, participate in the work. The studies may be operational, supporting, or basic, and contributions are made in dental science and preventive medicine. Coordination is assured by bodies in the Department of Defense and by quasi-governmental and civilian agencies. With full recognition of the significant contributions of civilian scientists, the maintenance of a strong corps in uniform is of utmost importance to the over-all morale of the Naval Medical Department.

-- Cond. from author's summary

1047 Fundamentals of Human Behavior in Industrial Medicine. C. Leggo. Ind. Med. & Surg. 24, 348-351 (Aug. 1955).

The question is often asked whether the industrial physician owes loyalty to the employer or to the employee. The author accepts the view that he is "ambivalent", although that is an oversimplified answer to an oversimplified question. Several typical situations are described illustrating the difficulties of the physician in applying the principle. What he can do for the patient must be his central aim, and in following that principle he also indirectly benefits the employer.

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Psychiatry and non-directive therapy should be part of the industrial physician's functions. The author predicts a much greater use of industrial psychiatry than is employed at present. The physician must adapt himself to the present patterns of social benefits, which are still in a formative stage.

1048 Training in Occupational Medicine—The In-Plant Year. Report of the Committee on Education and Training, Industrial Medical Association, 1955. Ind. Med. & Surg. 24, 373-377 (Aug. 1955).

The general program of in-plant training is described, and schools and companies participating in the program are listed. The areas of training and number of physicians training at various establishments are tabulated as percentages of the totals.

1049 Laudable Absenteeism. Editorial, Ind. Med. & Surg. 24, 382 (Aug. 1955).

The claim that medical departments reduce absenteeism is justified. But at times, and justly so, the medical department creates absenteeism. When the plant physician in his good judgment sends home a worker with an early virulent upper respiratory tract infection, not only is he serving the individual's interest but he is protecting others. This is not always apparent to the keeper of absentee records who thinks only in terms of digits and percentage symbols. At times the plant physician may face with pride the charge of being a fomentor of absenteeism although he may have no pride in the appearance of those affections that caused his preservative action.

1050 Nutrition Education in Industry. Mildred D. Thomas. Nursing World 129, 15-16 (Aug. 1955).

A random survey of 610 male workers in New Jersey showed that about half the men observed normal eating requirements. A publicity campaign by Merck & Co., designed to acquaint employees and their families with proper nutrition, is described. Follow-up of the project included interviews with individual employees, and advice on special corrective diets.

1051 Blood Examinations in Industry: A Comparison of Blood Cell Counts from Ear Lobe and Thumb Pulp. A. Butterworth and N. Goodman. Brit. J. Ind. Med. 12, 172-173 (Apr. 1955).

Samples of blood from two peripheral sites, the ear lobe and the thumb pulp, were taken in the course of routine examinations of

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workmen. The total white cell and differential counts showed no statistically significant difference for the two sites. Red cell counts are consistently a little higher in the ear. The hemoglobin estimations showed a similar but insignificant tendency. The difference is so small that there seems to be no reason to forego the practical advantages of using the ear lobe as a source of blood in industrial medical practice.

-- Cond. from authors' summary

1052 The Allergic Employee--Occurrence of Constitutional Reactions Following Injections. Margaret S. Tenbrinck. Ind. Med. & Surg. 24, 340-342 (Aug. 1955).

A study was made of 56 constitutional reactions occurring in 30 individuals over a five-year period (1949-1953). The incidence was about 9% among those treated and in about 0.06% of all injections. The reactions occurred only in pollenosis cases. Reasons for these reactions are reviewed: change to new extracts and injections during the pollen season are most important. Repeated constitutional reactions were also important if the doses of extracts were not markedly reduced following a severe reaction. Results of retesting of 74 pollenosis cases are reviewed. Almost one-half of the maxima of the dosage schedules were reduced and only one-third were retained. Precautions for prevention of constitutional reactions are outlined. By following the precautionary measures the occurrence of constitutional reactions was greatly reduced in the next year (1954). -- Cond. from author's summary

1053 Leptospiral Serology in Scottish Coal Miners. R. S. F. Adam and P. N. Edmunds. Brit. J. Ind. Med. 12, 100-102 (Apr. 1955).

Sera were examined for leptospiral agglutinine from 201 normal coal miners working in a Scottish pit in which 11 cases of Weil's disease had occurred during 1940-1952. Sera from two of these miners agglutinated L. icterohemorrhagiae to a titer of 1 in 90 and an additional 2 gave doubtful results. At least 1% of the sample population had had unrecoguized infection with L. icterohemorrhagiae.

-- Authors' summary

1054 The Electrocardiogram in Industry. J. M. Trapnell and E. K. Linder. Ind. Med. & Surg. 24, 335-339 (Aug. 1955).

A number of cases are presented which demonstrate the value of the electrocardiogram in industrial medicine. The authors show that it is a practical procedure for any industry large enough to warrant a full-time medical staff. The initial cost of equipment, the operating expense, and the upkeep are not unreasonable for the benefits derived.

-- Adapted from authors' summary

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1055 Total Rehabilitation of the Rheumatoid Arthritic Cripple. E. W. Lowman and H. A. Rusk. J. Am. Med. Assn. 158, 1335-1344 (Aug. 13, 1955).

The treatment and rehabilitation of 38 patients with chronic rheumatoid arthritis is described in detail. Of the 20 less severely disabled persons, all have been discharged from the hospital. Fifteen are totally self-sufficient, and seven have been placed in full-time jobs. Of the 18 severely disabled persons, 14 have been discharged, seven are totally self-sufficient, and one has been placed in a job. The others have 20 to 29% increase in function. With the concentrated teamwork attack used in this study, it would seem that the patient with chronic rheumatoid arthritis does not have an insoluble problem and that many such people could be salvaged from their invalidism and brought back to the dignity of living. The patients in this study are being followed for an additional three-year period to verify the validity of this inference. -- Cond. from authors' summary

1056 A Positive-Negative Pressure Respirator. G. T. Smith-Clarke and J. F. Galpine. Lancet 278, 1299-1300 (June 25, 1955).

Under some conditions artificial respiration by intermittent positive pressure respiration may contribute to the development of shock by lowering cardiac output. The literature on that subject is reviewed. The performance of respirators of positive-negative pressure and combined types is discussed. A respirator designed to provide either positive-negative or intermittent positive pressure is described. Its performance has proved satisfactory.

1057 Administrative Practice in Relation to the Quality of Medical Care Provided under the Ontario Workmen's Compensation Board. H. G. Curry, J. E. F. Hastings, G. H. M. Hatcher, and Mary A. Ross. Am. J. Public Health 45, 1011-1016 (Aug. 1955).

For nearly 40 years comprehensive medical care has been provided for workmen's compensation patients by the private medical practitioners of Canada's largest province on a fee-for-service basis under the supervision of a government commission. The law courts and private insurance carriers have been excluded from the administration. The program is strongly supported by employers, workmen, and organized medicine and has been adopted by every other Canadian province. The benefits are more generous and the costs to employers less than in most American jurisdictions. There is no direct cost to the workman or to the taxpayer under this program.

-- Authors' summary

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SKIN DISEASES AND BURNS

1058 Survival of Bacteria in Cutting Oil. E. O. Bennett and H. O. Wheeler. Appl. Microbiol. 2, 368-371 (Nov. 1954).

Eighteen Gram-negative and 12 Gram-positive organisms were tested for their ability to survive in heavy cutting oils and in oil-in-water lubricating emulsions used in machine shops. The Gram-positive organisms hardly survived at all either in oil or in the emulsion, and no organisms survived more than a very few days in the heavy oils.

-- Cond. from Bull. Hyg.

1059 An Etiologic Appraisal of Hand Dermatitis. 1. The Role of Soap and Detergents as Sensitizers. J. J. Jambor and R. R. Suskind. J. Invest. Dermatol. 24, 379-385 (Apr. 1955).

Fifty-seven cases of hand dermatitis which were attributed by the patient to soaps and detergents were appraised etiologically. A systematic effort was made to determine the role played by the soaps and detergents as sensitizing agents. It was evident from the results that soaps and synthetic detergents did not act as sensitizers in any of the cases. In this series, no attempt was made to determine whether they acted as primary irritants. Factorial analysis of the cases resulted in the detection of the principal or primary etiologic factor in 30% of the cases. These included chromate, nickel, lathe coolants, petroleum fractions, FD and C dyes, lanolin, etc. The influential role of pre-existing cutaneous problems, such as hyperhidrosis, atopy, ichthyosis, and seborrheic dermatitis as well as psychogenic factors is discussed.

-- Authors' summary

1060 An Etiologic Appraisal of Hand Dermatitis. 2. The Role of Soaps and Detergents as Primary Irritants. J. J. Jambor. J. Invest. Dermatol. 24, 387-396 (Apr. 1955).

A detailed technic is described for the study of the irritant potential of soaps and synthetic detergents. Under the limited conditions of the experiment (single, short, passive immersion) it was not possible to produce evidence of persistent irritation from the soaps and detergents used.

-- Author's summary

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1061 Aspects of Skin Disease in Electroplaters. M. C. Battigelli and C. L. Meneghini. Rass. med. ind. 23, 417-423 (Nov.-Dec. 1954). Italian.

Electroplating processes with various metals are outlined and their effects on the skin are discussed. The effects vary from direct action to sensitization. Chromium solutions can exert a primary action and produce irritation and toxic lesions. In an investigation of 331 electroplaters the authors found the following incidence of dermatitis: (1) in 134 handling both chromium and nickel, the hands of 25 showed a contact dermatitis of the ulcerative type, eight an eczematous dermatitis, and two others had ulcers of the nasal septum; (2) in 97 handling only nickel, 15 had eczematous dermatitis; (3) 49 of 55 working with only chromium suffered from ulcerative and four from eczematous dermatitis and seven had ulcers of the nasal septum; (4) eczematous dermatitis was present in three of the remaining 45 who worked with copper, cadmium, zinc, or gold. Patch tests demonstrated sensitivity to nickel but not to chromium. -- Cond. from Bull. Hyg.

1062 Occupational Dermatitis Caused by Ethylene Oxide. A. Royce and W. K. S. Moore. Brit. J. Ind. Med. 12, 169-171 (Apr. 1955).

Rashes occurred on the hands and arms of several workers performing aseptic operations in a hermetically sealed box equipped with rubber gloves. It was found that rubber absorbs ethylene oxide to a marked degree, and patch tests confirmed the belief that the rash was caused by ethylene oxide in the gloves. Further exposures were avoided by allowing the gloves to remain outside the box after each use and by ventilating the gloves during the operations.

CHEMICAL HAZARDS

1063 Toxicity Studies on Selenium Disulfide Suspension. E. M. Shapiro, C. M. Pomerat, and J. F. Mullins. J. Invest. Dermatol. 24, 423-428 (Apr. 1955).

The uses of selenium in industry and medicine, which are more extensive than generally considered, have been reviewed. The toxicity of selenium-containing compounds for animals and humans with relation to selenium disulfide suspension as a therapeutic agent for seborrheic dermatitis has been discussed. An experiment has been described using tissue

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culture technics on chick spleen, then on human skin, to show that 2.5% selenium disulfide suspension is no more toxic than the vehicle alone. -- Authors' summary

1064 Injury and Death from Red Fuming Nitric Acid. A. J. McAdams and S. Krop. J. Am. Med. Assn. 158, 1022-1024 (July 23, 1955).

Red fuming nitric acid is a dangerous material to handle and may cause serious injury by direct contact or through inhalation of its fumes. In one of two cases representing various features of injury due to red fuming nitric acid, there were serious acid burns of the body, damage to the cornea, and acute pulmonary edema. The other case ended fatally due to bronchiolitis obliterans. -- Authors' summary

1065 Chronic Pulmonary Beryllosis. P. A. Theodos, H. Brieger, and R. T. Cathcart. J. Am. Med. Assn. 158, 1428-1429 (Aug. 20, 1955).

In a case of chronic pulmonary beryllosis, with onset of disease eight years after exposure to beryllium had ceased, a definitive diagnosis was established through the medium of a lung biopsy. Treatment with cortisone appears to have produced temporary arrest of the disease. -- Authors' summary

1066 The Modification of Beryllium-Induced Tissue Damage in Mice by Therapy with Aurintricarboxylic Acid. H. Lisco and Marcia R. White. Brit. J. Exptl. Pathol. 36, 27-34 (Feb. 1955).

Experiments on three groups of mice showed that ATA (aurintricarboxylic acid) diminished damage to the liver and spleen in the early stages of beryllium poisoning. Repair of bone marrow became complete with ATA treatment, but damage to the kidneys was temporarily intensified by ATA, although ATA without beryllium had no effect on the kidneys. -- Cond. from Bull. Hyg.

1067 Cobaltous Chloride and Iodine Metabolism of Normal and Tumor-Bearing Rats. K. G. Scott and W. A. Reilly. J. Am. Med. Assn. 158, 1355-1357 (Aug. 13, 1955).

The addition of cobaltous chloride to the drinking water of rats in order to maintain a daily intake of 60 mg. per kg. of body weight had no appreciable effect on their iodine metabolism. Similar results were obtained with a mixture of cobaltous chloride (60 mg. per kg.) and ferrous sulfate (57 mg. per kg.). At the dosage levels described above, a pronounced polycythemia was observed after 44 days of cobalt administration. No deleterious effect was observed upon thyroid function or

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growth. The administration of cobaltous chloride at the dosages used in this study significantly retarded the growth of a transmissible fibrosarcoma. -- Authors' summary
(Three other papers in the same issue of J. Am. Med. Assn. derive the same general conclusion, namely that cobaltous chloride has no effect on iodine metabolism or on thyroid activity. The results are discussed briefly in an editorial.)

1068 Coproporphyrin and Lead in the Urine and Erythrocytes with Basophil Stippling as Signs of Lead Poisoning in the Laboratory and in the Clinic. M. Salvini and U. Vidali. Folia med. 38, 221-233 (1955). Italian.

Accurate evaluation requires that coproporphyrin and lead in the urine are related to the diuresis in 24 hours, and the stippled red cells must be given in percentages of the total erythrocyte count. The value of coproporphyrinuria as a diagnostic means is confirmed.
-- Chem. Absts.

1069 A Clinical and Statistical Study of 89 Cases of Lead Poisoning. F. Gobbato and G. Monarca. Rass. med. ind. 23, 232-242 (July-Aug. 1954). Italian.

The incidence of lead poisoning is decreasing in Italy and only 45 cases occurred among 5,767 exposed workers in Naples during 1948-50. The risk, however, has not been completely eliminated. The paper presents a study of 89 lead workers who suffered from lead anemia. The anemia was normochronic in type and of medium severity. The degree of anemia bore no relation to exposure to the hazard, but the 45 workers engaged in filing developed anemia after an average exposure of 2.7 years, while founders required 7.2 years and others 12.1 years on the average to develop the condition. The severity of the disease showed no relation to age; in fact older workers tended to improve more rapidly after removal from the hazard. A red cell content under four million was found in 89% of the subjects. Lead anemia is one of the important manifestations to be sought early in the medical examination of exposed workers. -- Cond. from Bull. Hyg.

1070 The Preventive and Diagnostic Value of Measuring the Blood Lead. P. Zeglio and P. Z. Vercellesi. Rass. med. ind. 23, 406-410 (Nov.-Dec. 1954). Italian.

Spectrographic examination was made of the blood of heavily exposed, slightly exposed, and non-exposed workers in the lead industries. The average blood lead content in non-exposed persons was 20 micrograms per 100 cc. Those working with lead show higher values, and when they rise above 70 micrograms they reflect an occupational

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hazard, but not necessarily actual intoxication. A high blood lead content is confirmatory in the diagnosis of lead poisoning, especially when associated with other characteristic signs and symptoms. The time within which the lead content of the blood returns to normal after removal from risk varies with individuals, and a low blood lead finding does not necessarily exclude lead poisoning if other clinical and laboratory evidence persists after exposure has ceased. The authors advocate mass spectrography of the blood of exposed workers as a means of judging the success of prophylactic measures.

-- Cond. from Bull. Hyg.

1071 Action of Lead on the Succinic Dehydrase Activity. M. Fusco and A. Guarino. Folia med. 38, 234-237 (1955). Italian.

Histochemical investigation showed that lead inhibits the succinic dehydrase activity at strong concentrations. The action was not diminished in the tissues of dead animals poisoned with lead.

-- Chem. Absts.

1072 The Influence of Chronic Poisoning by Manganese Dioxide on the Performance of the Higher Nervous System in Animals. L. I. Kotlyarevskii. Zhur. Vysshei Nervnoi Deyatel. im. I. P. Pavlova 4, 662-673 (1954). Russian.

The method of conditioned reflexes revealed that long before the appearance of any symptoms of intoxication by manganese dioxide, there is an interruption or alteration in the interrelation between brain function and development of protective inhibition, the latter being the earliest manifestation of protective reaction of the central nervous system to the entry into the organism of a toxic agent. Manganese dioxide intoxication appears to affect the locomotive centers of the nervous system, governing the regulation of a complex system of skeletal musculature and locomotion activity of the animal. Manganese dioxide intoxication does not affect the animal permanently, since the interruption of manganese dioxide administration, followed by rest, completely restores the functions to normal. -- Chem. Absts.

1073 Molybdenum in Biology. N. Castellino. Folia med. 38, 201-220 (1955). Italian.

The paper is largely a review supplemented by the author's own experiments. Rabbits given 0.2 g. molybdenum metal orally per day developed intestinal disturbances and became cachectic, dying at an average after two months. The liver showed degeneration, the kidneys severe changes of the convoluted tubules; there were gastric ulcers and

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disseminated intestinal lesions. Sodium molybdate produced essentially the same results. Intravenous injection of 5 cc. of a 0.4% solution caused severe diarrheas. Reduced doses of 0.15 g. caused death after 40 days. Autopsy showed liver degeneration, intense renal damage, pulmonary stasis, and deposits of molybdenum in the spleen. Molydenum sulfide orally caused more intensive diarrheas but permitted longer survival.
-- Chem. Absts.

1074 Responses of the Liver to Injury. Effects of Acute Carbon Tetrachloride Poisoning. J. Hoffman and others. Arch. Pathol. 59, 429-438 (1955).

Rats were injected with a single dose of carbon tetrachloride, and the livers were studied at different stages by histological, spectrophotometric, cytochemical, and chemical techniques for changes in the nucleic acid content. During the first two days there was cell necrosis and, thereafter, with the start of regeneration, the values for deoxyribo and ribonucleic acids increased though tissue nitrogen levels remained unchanged. The nucleic acids were normal when restoration of cell architecture was complete. -- Chem. Absts.

1075 Investigations into the Effects of Exposure to Trichloroethylene in Mechanical Engineering. E. Grandjean, R. Munchinger, V. Turrian, P. A. Haas, H. K. Knoepfel, and H. Rosenmund. Brit. J. Ind. Med. 12, 131-142 (Apr. 1955).

The concentrations of trichloroethylene vapors were measured in the air of 24 workshops, and the eliminations of trichloroacetic acid were determined in the urine of 73 workers. The 96 air analyses gave values between 1 and 335 ppm, most of them lying between 20 and 40 ppm. The values fluctuated greatly over a period of three to four hours. The concentration of trichloroacetic acid varied between eight and 444 mg. per liter of urine, with a mean value of 8.4 mg. per l. The mean ratio of trichloroacetic acid excretion to trichloroethylene concentration was 3:1. Younger workers have an average of 6:1, and elderly subjects 2:1. The eliminated trichloroacetic acid averages 13% of the trichloroethylene inhaled during a work period of eight hours. The clinical examinations showed a relatively high frequency of subjective complaints, of alterations in the vegetative nervous system, and of neurological and psychiatric symptoms. Their frequency is related to degree of exposure. The determinations of air concentration and acid elimination show a great discrepancy between the accepted mean allowable value for trichloroethylene and that for trichloroacetic acid. The authors conclude that the threshold limit for trichloroethylene should be fixed below 40 ppm, and that for trichloroacetic acid should be fixed below 96 mg. per l.
-- Cond. from authors' summary

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1076 Distribution Coefficients of Trichloroacetic Acid. B. Soucek. Pracovni Lekarstvi 7, 89-90 (1955). Bohemian.

Trichloroacetic acid was not bound by human red blood corpuscles in a measurable degree. Concentrations rising above 50 micrograms per ml. caused hemolysis. Trichloroacetic acid did not dissolve in olive and sesame oils. The results obtained failed to explain the slow elimination of the acid from the organism by its combination with the blood constituents or by dissolving in the fatty phases.-- Chem. Absts.

1077 The Hazards of Fluon (Polytetrafluoroethylene). R. J. Sherwood. Trans. Assn. Ind. Med. Officers 5, 10-12 (Apr. 1955).

Fluon is the trade name of polytetrafluoroethylene, and corresponds to the American product known as Teflon. At normal temperatures it is extremely inert and appears to be non-toxic. Above 300°C, it disintegrates into unknown fluorine compounds, at a rate dependent on the temperature. If sufficiently high concentrations of these products are inhaled, they give rise to fever symptoms, a number of cases of which are described. Symptoms may also occur among workers machining the material, and it is believed that one case originated from the sieving ground material. Urine samples showed a fluorine content above normal. Dust samples after some factory improvements showed 1000 particles per cc., nearly all smaller than 0.5 micron. Apparently the most likely cause of individual cases is the habit of smoking in the workshop, whereby dust particles are disintegrated. Improvements in space and ventilation have greatly decreased the incidence of the fever. Additional exhaust ventilation is being installed and smoking is now strictly forbidden.

1078 Urinary Metabolites of Trichloroethylene Capable of Positive Fujiwara's Reaction. Z. Bardodej and Marie Krivucova. Pracovni Lekarstvi 7, 97-98 (1955). Bohemian.

Extension of acid hydrolysis of urine containing trichloroethylene and of aqueous solutions of trichloroacetic acid from 15 minutes to eight and 16 hours resulted in a decrease of the Fujiwara-positive material by 70 and 83%, respectively, owing to decomposition of chloroform formed during the reaction. Trichloroacetic acid splits off chloroform by mere standing in neutral solution at normal temperature, thus causing errors in the analysis of old samples of urine (of Soucek and Frankova, IHF Abst. 758, July 1953). -- Chem. Absts.

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1079 Chronic Benzene Intoxication. M. E. Vorenkamp, D. E. Mendes de Leon, and W. B. Geritsen. Ned. Tijdschr. Geneesk. 99, 803-808 (Mar. 12, 1955). Dutch.

The authors discuss the manifestations of acute and chronic benzene poisoning, also its diagnosis, prognosis, and therapy. They report the case of a 19-year-old girl who was employed in a factory producing rubber goods intermittently for 15 months. She had a severe, somewhat hyperchronic anemia, accompanied by leukopenia and thrombopenia. The condition of her bone marrow suggested panmyelopathy. She recovered spontaneously during three months of hospitalization. An investigation of working conditions showed that another but milder case occurred at the same factory and that the benzene concentration in the air was twice the threshold limit. The amount of organic sulfate in the urine of 11 other exposed women employees was found to be considerably increased, but only one had a moderate anemia.
-- Cond. from J. Am. Med. Assn.

1080 Adenine in Experimental Benzene Poisoning. R. de Rosa. Folia med. 38, 249-265 (1955). Italian.

Adenine, administered to guinea pigs from the beginning of experimental benzene poisoning, assuages the drop in erythrocytes and neutrophils which was quite intensive in the controls. It increases the platelet count. A beneficial effect is observed also if adenine is given after the development of symptoms. -- Chem. Absts.

1081 On the Metabolism of Some Aromatic Nitro-Compounds by Different Species of Animals. 2. D. J. Lawford, E. King, and D. G. Harvey. J. Pharm. & Pharmacol. 6, 619-624 (1954).

Four aromatic nitro-compounds were found to be eliminated from four species of laboratory animals in the following descending order: p-nitrophenol, 2:4-dinitrophenol, 2:4-dinitro-alpha-phenol, 4:6-dinitro-o-cresol. In the four species of animals the eliminating effeciency in descending order of speed was: mouse, rabbit, guinea pig, rat (and monkey in a few experiments). The evidence presented emphasizes that it is essential to include elimination experiments in any survey of a toxic substance, particularly in determining whether the substance will accumulate in man as the result of small but repeated exposures. -- Cond. from Biol. Absts.

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1082 On the Metabolism of Some Aromatic Nitro-Compounds by Different Species of Animals. 1. E. King and D. G. Harvey. J. Pharm. & Pharmacol. 6, 529-533 (1954).

Elimination rates of dinitro-o-cresol from the blood of hooded rats were determined under normal conditions and the influence of various factors was investigated. It was shown that an initial blood level of about 60 micrograms of dinitro-o-cresol per gram will be almost completely eliminated from the blood in 82 to 182 hours. Elimination rates are faster after intraperitoneal injection than after oral administration or inhalation. Sudden environmental heating of the poisoned animals slows the elimination rate slightly, but the rate increases after seven days' acclimitization. -- Cond. from Biol. Absts.

1083 The Toxicology of m-Aminophenol. A. Ukleja. Acta Polon. Pharm. 11, 177-182 (1954). Polish.

The LD_{50} of m-aminophenol in white mice was 0.144 g. per kg. and in rats 1 g. per kg. At concentrations of 0.1 to 0.2 g. per kg. toxic reactions were similar to those of phenol and aniline.
-- Chem. Absts.

1084 Chlorinated Hydrocarbon Insecticides. Queries and Minor Notes, J. Am. Med. Assn. 158, 1237 (July 30, 1955).

The chief action of chlorinated hydrocarbon insecticides is on the neuromuscular system. The basis of this action is unknown, but studies have shown that it does not depend on alteration of cholinesterase activity. The effect on enzyme activity, which is the main subject of the inquiry, is too slight to cause any significant physiological activity.

1085 Insect Repellants. A. J. Lehman. Assn. Food & Drug Officials U. S. Quart. Bull. 19, 87-99 (July 1955). Reprints available from Association of Food and Drug Officials of the U. S., c/o Evan Wright, State Board of Health, Topeka, Kansas, at 30 cents, payable to above Association. Discount for quantities.

More than 4000 compounds for use as insect repellants have been tested, and 17 compounds were acceptable as safe at the time of the first report in 1947. Some of these have since been eliminated and others have been added. The present report gives information on 16 compounds, including in most cases oral and dermal toxicity, symptoms of poisoning, topical effects, dermal absorption, hematology, sensitization, pathology, and in all cases estimation of safety. The methods of determining toxicity, irritation, sensitization, and pathology are described briefly.

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1086 Toxicity of Aldrin, Dieldrin, and Toxaphene to Rabbits by Skin Absorption. B. L. Johnston and W. G. Eden. J. Econ. Entomol. 48, 702-703 (1953).

The toxicity of aldrin, dieldrin, and toxaphene to rabbits by skin absorption was determined by dipping rabbits in water suspensions of wettable powders. The LD_{50} of aldrin was 0.015 to 0.025 g.; of dieldrin, 0.40 to 0.45 g.; and of toxaphene, 1.025 to 1.075 g. per kg. Other symptoms of poisoning were evident. -- Chem. Abstr.

1087 The Present Status of Chlordane. American Medical Association, Council on Pharmacy and Chemistry, Report. J. Am. Med. Assn. 158, 1364-1367 (Aug. 13, 1955).

This report includes an extensive review of the properties, uses, pharmacology, and toxicity of this insecticide, and a summary of clinical experience. In general, chlordane acts substantially like other chlorinated insecticides whose sites of action are on the higher motor cortex and the cerebellum. It is one of the more hazardous of the chlorinated hydrocarbon insecticides. It is readily absorbed by the skin, alone and even from dry formulations, as well as in the presence of solvents. Assessment of its toxicity by any route is difficult because the technical preparation is still an uncharacterized mixture of chlorinated hydrocarbons whose toxic properties and metabolic fates are poorly understood. Although more uniform mixtures with lower toxicity are now being produced, their analysis presents some unsolved problems. Little is known about the inhalation toxicity of chlordane. Treatment of chlordane poisoning as with similar materials, depends upon the use of symptomatic measures. Dermatological therapy should be instituted for control of inflammatory or other irritant skin conditions. Recommended treatment for systemic poisoning is described. Fifteen reported cases, of which four were fatal, are tabulated. The deaths attributed to chlordane have all been complicated by the presence of other agents. The recorded nonfatal systemic poisonings were largely the result of carelessness in handling and storage.

1088 Fatal Chlordane Poisoning. V. J. Derbes, J. H. Dent, W. W. Forrest, and M. F. Johnson. J. Am. Med. Assn. 158, 1367-1369 (Aug. 13, 1955).

Two fatalities presumably caused by chlordane are reported. The first patient became confused, started having convulsions, and died within a few minutes after an accident in which a suspension of chlordane was spilled on her dress. Nonspecific pathological changes were found in the brain, lungs, and kidneys. The second patient died nine and one-half days after swallowing 6 gm. of chlordane (104 mg. per kg. of body

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weight). Clinical features included chemical burns of the mouth, a severe hemorrhagic gastritis, shock, anuria, convulsions, and death. The pathological features were cerebral congestion and edema, lower nephron nephrosis, confluent bronchopneumonia, chemical burns of the mouth, and uremia. -- Authors' summary

1089 Chlorophenothane (DDT)—A Blessing or a Menace? Editorial. J. Am. Med. Assn. 158, 1370-1371 (Aug. 13, 1955).

Chlorophenothane (DDT) is produced in greater tonnage than any other insecticide, and some observers have been alarmed by the possibility of long-term systemic effects. The literature, however, shows that normally skin absorption is negligible, and that no authenticated case of poisoning following respiratory or dermal exposure has been reported. The amount ingested in food sprayed with DDT (rarely over 0.0026 mg. per kg. body weight per day) has been greatly exceeded in experiments, and the fatal oral dose for man is 0.5 g. per kg. Chlorophenothane is detoxified in the liver and excreted slowly in the urine over a period of two weeks or more. When a large dose is ingested much of it is eliminated by vomiting, and little of the remainder is absorbed. Directions are given for cases of ingestion. In the house, chlorophenothane should not be kept in the medicine chest, and spraying on food, utensils, table tops, toys, cribs, nurseries, and sickrooms should be avoided.

1090 Blood Cholinesterase Values in Early Diagnosis of Excessive Exposure to Phosphorus Insecticides. J. C. Gage. Brit. Med. J. 1, 1370-1372 (June 4, 1955).

The red-cell and plasma cholinesterase values of 19 normal individuals have been measured at monthly intervals for a period of one year. The distribution of the monthly values on each individual is not entirely random, there being some measure of serial correlation. There is no clear evidence of any seasonal variation in the values. The distribution of all the values on all the individuals has a coefficient of variation of 12.8 and 21.3 for red cell and plasma respectively. The contributory factors to this variation are discussed, and it is shown to be compounded of a basic individual variation, increased by the experimental error of measurement, and individual temporal value of unknown origin. The establishment of limits of cholinesterase activity, whereby excessive exposure to phosphorus insecticides may be recognized, is discussed. -- Author's summary

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1091 Occupational Risk and Pathology in the Production and Manipulation of Some Plasti Material. L. Parmeggiani and C. Sassi. Med. lavoro 46, 14-24 (1955). Italian with English summary.

In the manufacture of polyvinyl chloride only slight signs of irritation were observed in workers engaged in packing. In skinning operations the workers are exposed to acetone vapors and carbon disulfide at concentrations of 25 to 200 ppm which caused irritation of the mucosa and excitation of the central nervous system after one year. Polystyrene workers exposed to ethylbenzene showed signs of nervous excitation, leucopenia, and occasionally dermatitis. Exposure to styrene at concentrations slightly below 200 ppm caused dermatitis but did not affect the blood picture. Aluminum chloride caused spastic bronchitis and delay in healing wounds. The maximum allowable concentrations are 100 ppm for ethylbenzene and 150 for styrene. (Ed. note—The accepted American values are 200 ppm for both substances.) Concentrations of 0.1 to 1.9 ppm diphenyl and diphenyl oxide did not cause intoxication, but were irritating to the mucosa. In the manufacture of cellulose acetate the acetic acid content of the air up to 75-260 ppm caused mucosal irritation, blackening of the skin, and erosion of the teeth. The concentration of acetone should not exceed 500 ppm.

-- Chem. Absts.

1092 Industrial Hygiene in the Petroleum Industry. A. C. Pabst. Petroleum Engr. 27, E2-8 (May 1955).

The potentially toxic materials encountered in petroleum refinery operations are listed. The known threshold limits are tabulated. Proper labeling of dangerous products is stressed. The progress made in industrial hygiene in the petroleum industry is reviewed.

1093 Potential Dangers from Exposure to Diesel Locomotive Exhaust. R. L. Straub. Ind. Med. & Surg. 24, 353-358 (Aug. 1955).

The potential dangers from exposure to diesel exhaust fumes are discussed from the lawyer's standpoint. The more important materials in the fumes are: (1) carbon monoxide; (2) oxides of nitrogen; (3) oxides of sulfur (when the fuel contains sulfur); (4) aldehydes and similar chemicals; (5) allergens; and (6) carcinogens. The occurrence and effects of each of these classes of materials are discussed. In addition to the possible physiological effects of these materials, neurosis is one of the greatest sources of difficulty confronting claim agents. The legal aspects of effects of diesel exhaust exposure are discussed, with reference to several illustrative court cases. In conclusion, exposure to diesel exhaust in excess of the established acceptable maximums for the individual constituents is not indicated. This, however, will not help a great deal from a law claim standpoint when an employee

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experiences serious physical ailments similar to those produced by exposure to the constituents of diesel exhaust. The prevailing law and state of medical knowledge will not give ample protection in defense of these claims. Except in unusual cases, plaintiff's testimony, plus medical testimony, will permit the jury to dictate the results.

INDUSTRIAL DUSTS

1094 The Dust-Proofing of Concrete with Sodium Silicate. Anon. Chem. Age 73, 25-26 (July 2, 1955).

Treatment with sodium silicate is the cheapest and most effective method of dust-proofing concrete. The best grades for the purpose are those with a silica to sodium oxide ratio of 3.3 or 3.4 to 1 and specific gravity of 79 to 84° Twaddell (1.395 to 1.42). Three applications 24 hours apart are effective, at dilutions of 1 to 4, 1 to 3, and 1 to 2, by volume, respectively. Magnesium silicofluoride and linseed oil mixtures have been used for the purpose, but sodium silicate has the advantages of cheapness, non-toxicity, stability, and non-flammability.

1095 Deposition of Airborne Dust in a Wind Tunnel. (Interim Report). J. G. Dawes and A. Slack. Research Report No. 105, Safety in Mines Research Establishment, Portobello St., Sheffield, England. 41 pp. (Sept. 1954). 3 s.

The deposition of airborne coal dust from a turbulent air stream on the floor, roof, and sides of an airway and on the vertical surfaces of a roof prop has been investigated, both on a laboratory scale and in an underground airway. At any point the floor deposition of particles of a given size is proportional to their terminal velocity and concentration in the air stream; it decays exponentially with distance from the dust source at a rate dependent on the air velocity and the airway dimensions. Deposition on the roof and sides of the airway is related to the floor deposition, independent of air velocity but dependent on particle size. These results are valid whether the collecting surfaces are clean and dry or sticky. For particle sizes less than 23 microns the deposition on front, sides, and rear of a rectangular support in the middle of the airway is substantially the same; it is also of the same

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order as that on the vertical sides of the airway itself. These results confirm that deposition of small particles on a support takes place mainly by the same mechanisms as on the sides of the airway, rather than by impaction. -- Cond. from Bull. Hyg.

1096 McIntyre-Saranac Conference on Occupational Chest Disease. Arch. Ind. Health 12, 1-106 (July 1955).

The above Conference was held at Saranac Lake, N. Y., February 7 to 9, 1955. The introductory papers included: "Prologue," by C. P. McCord; "The Objectives and Achievements of the McIntyre Research Foundation," by F. B. Trudeau; and "The Contributions of the Saranac Laboratory to Research on Chest Diseases," by E. D. Fox. The remaining papers are abstracted separately.

1097 Accomplishments in the Epidemiologic Study of Silicosis in the United States. H. N. Doyle, Victoria M. Trasko, W. M. Gafafer, and S. E. Miller. Arch. Ind. Health 12, 48-55 (July 1955).

From this review of dust studies of the Public Health Service and the data made available by other sources, it may be concluded that the problem of silicosis in the United States is still far from being solved. Several obstacles yet remain to be hurdled, primarily in the resolution of technical questions. These unresolved questions include: (1) Do the initial exposures in the relatively large number of cases of silicosis date back to pre-dust-control days? (2) How extensive and efficient is dust control in relation to recommended standards? (3) Do our standards need revision? (4) Are there other factors to which we are not giving proper consideration, such as particle size of the dust? and (5) What is the actual toxicity of silica?

1098 Silicosis in Canada. N. F. Parkinson. Arch. Ind. Health 12, 56-63 (July 1955).

A summary of the statistics presented on silicosis in Ontario mines for the period 1951-1953, in comparison with those for 1926-1930 shows the following accomplishments: (1) a rapid rate of decrease in the number of silicosis cases; (2) an increase in the age at which silicosis develops (41.5 to 56.5 years); (3) an increase in the number of years of exposure required to develop silicosis among the few who contract this condition (15.4 to 24.8 years); (4) occurrence of only 45 cases or less than 4% of the 1146 known cases of silicosis in the industry, among those who commenced mining after 1928; (5) increase in the average age at death (44 to 62.2 years); (6) increase in life expectancy after silicosis develops (2 to 11.6 years);

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and (7) decrease in the proportion of cases that died of silicosis or silicosis plus tuberculosis (91.8 to 55.1%). It is difficult to obtain comparable figures for silicosis in other industries in Ontario, or for silicosis in other provinces.

1099 Commentary on References by N. F. Parkinson Concerning the Silicosis Problem in Ontario. A. R. Riddell. Arch. Ind. Health 12, 63-65 (July 1955).

The author discusses the 45 cases of silicosis mentioned in Parkinson's subhead (4). Tuberculosis is an important factor, and the condition is to be considered as tuberculosilicosis rather than silicotuberculosis. Various aspects of the 45 cases are tabulated. Additional tables on incidence and distribution of silicosis, analysis of silicosis claims, and mortality statistics are presented. The following conclusions are derived from the tables: (1) many persons with silicosis can continue working in their accustomed occupation or others; (2) the incidence of silicosis in Ontario is low; (3) exposures of casual laborers are severer than those of skilled labor; (4) silicosis does not in general appreciably decrease life expectancy; (5) silicosis is much more important as a cause of disablement than of death; and (6) tuberculosis is still the most disabling factor and the chief cause of death in silicosis.

1100 The Dust Diseases in Great Britain. A. I. G. McLaughlin. Arch. Ind. Health 12, 83-99 (July 1955).

The history of dust diseases in Great Britain is reviewed. Despite the combined efforts of all concerned, the deaths from pneumoconiosis have continued to rise yearly. The reasons for the increase may be found in more accurate diagnosis and in the publicity given to occupational lung diseases. A more likely cause, however, is the increased speed of production, and the introduction of machines which increase the dustiness and cause a lag in dust-control methods. The Industrial Injuries Act of 1946 removed the responsibility from employers and insurance carriers to the Government. Since then cases under common law against the employers have increased rapidly. Numerous legal provisions and routine inspection of factories and mines have limited the numbers of cases of disability and death from inhalation of dangerous dusts. It is expected that more accurate information about the incidence of dust diseases will be obtained in the near future. Surveys of the population by mass radiography to detect early tuberculosis are bringing to light information about the effect of dust in some heretofore unsuspected occupations. Many problems are still unsolved, but a great deal has already been accomplished.

-- Cond. from author's summary

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1101 Pulmonary Fibrosis in Non-Ferrous Foundry Workers. H. E. Harding and A. I. G. McLaughlin. Brit. J. Ind. Med. 12, 92-99 (Apr. 1955).

Clinical, radiographic, environmental, and pathological details of six non-ferrous foundry workers are described. All six showed varying degrees of occupational pulmonary fibrosis, either whorled silicotic nodulation, linear or stellate fibrosis (mixed-dust fibrosis) or transitional types. Though all cases showed fibrosis, it was a clear factor in the deaths of only two, and doubtfully so in two others. The pathological features of the lungs of non-ferrous foundry workers are similar to those found in iron and steel foundry workers. Both molders and fettlers are liable to contract silicosis and mixed-dust fibrosis which may be complicated by pneumonia, tuberculosis, and chronic bronchitis and emphysema with right-heart failure. -- Cond. from authors' summary

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1102 Significant Case of Pneumoconiosis in a Soft-Coal Worker. L. L. Friedman. Arch. Internal. Med. 95, 328-332 (Feb. 1955).

The paper presents the case history of a soft-coal miner who had been a driller for an unspecified time when he first complained of shortness of breath at the age of 46. His x-ray showed simple pneumoconiosis. He continued to work underground for six years, after which an x-ray showed early progressive massive fibrosis in both lungs and he gave up his work because of dyspnea. When he died at the age of 57 he had developed extensive massive fibrosis with severe emphysema at both bases. All tests for tuberculosis were negative at all times. This case confirms the relentless progress of massive fibrosis and coalminers' pneumoconiosis after exposure to dust has ceased, in the absence of a positive sputum and despite anti-tuberculosis therapy. -- Cond. from Bull. Hyg.

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1103 Dust Hazards in Coal Mine Workings. A. Houberechts, G. Degueldre, F. Lavenne. Institut D'Hygiene des Mines, Hasselt, Belgium, Communication No. 118. 42 pp. (June 1954). French.

The authors have sought an expression of the relative harmfulness of a dusty atmosphere which would agree with experimental results. In different coal mines, at 11 working faces, the air was sampled with Soxhlet filters to ascertain the mass concentration of the dust and to determine silica in the samples, and also by a thermal precipitator for numerical concentration and size distribution. It is concluded that when the airborne dust is rich in silica the health hazard can be evaluated in terms of the surface area of the particles less than 3 microns in diameter, whereas if the atmosphere contains much inert dust, such as coal, the evaluation should be in terms of the total

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volume of dust particles less than 3 microns in size. The relative danger thus estimated has been compared with that calculated on the basis of other criteria. It is concluded that where the silica content of the dust is low, the criterion used in the United Kingdom, i. e., the numerical concentration of particles between 1 and 5 microns in diameter, is a good one. From the standpoint of dust control the air speed should not exceed about 200 feet per minute.

-- Cond. from Bull. Hyg.

104 Occupational Chest Disease in Gold Miners. A Review of Progress in the Union of South Africa. G. W. H. Schepers. Arch. Ind. Health 12, 33-47 (July 1955).

This review of the occupational chest disease problem in the gold mines of South Africa reveals over-all favorable progress. Conquest is, however, by no means yet in sight. Too much dust is still breathed by miners. The "ideal" dust level of 5 mpcf is not yet satisfactory. Regular periodic chest x-rays are now given white miners, and should be extended to all Negro miners, who are exposed to dust to a greater degree than the whites. The rapid elimination of cases of tuberculosis should be the first objective. Although elaborate prescriptions are given concerning financial benefits for affected mine employees, the basic approach of legislation is prophylaxis rather than compensation. It is hoped that precautions will be taken to avoid frustration of this ideal through administrative inadequacies, as is now often the case. -- Cond. from author's conclusions

..35 Pneumoconiosis on the Kolar Gold Fields, South India. G. E. Ffrench. Arch. Ind. Health 12, 73-82 (July 1955).

The type of pneumoconiosis occurring on the Kolar Gold Field is described, together with the clinical, radiological, and pathological criteria for diagnosis. Experimental studies of Kolar Gold Field dusts by other workers have indicated that the relatively high aluminum oxide content of the air-borne dust may account for the relative harmlessness of the condition. The relation to tuberculous infection is stressed. It is only when the two conditions occur together that life expectancy is shortened. -- Author's summary

..45 Comparative Vascular Pathology of Occupational Chest Diseases. G. W. H. Schepers. Arch. Ind. Health 12, 7-24 (July 1955).

The lungs of persons who have been adequately exposed to industrial dusts, show a diversity of lesions of the blood vessels whose prevalence and extent vary according to the nature and quantity of the dusts and associated infection. The most marked effects

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are on the smaller vessels and comprise a number of types of damage. Larger pulmonary vessels may also show various forms of damage. Such vessels may become eroded and rupture. In silicosis the vascular damage is an added lesion over and above the specific collagenous nodules, which may show their own peculiar vascular degeneration phenomena. In anthracosis, siderosis, talcosis, and asbestosis, the perivascular lesion is an integral and indistinguishable component of the pathognomic pulmonary dust lesion. Specific dust particles or fibers and even asbestos and tremolite bodies may, in most instances, be demonstrated within or in relation to these vascular lesions. In the presence of superimposed infection, particularly tuberculosis, the vascular damage may be disproportionately great. This effect is enhanced if there has been associated quartz inhalation. Asbestosis does not follow these rules directly. It is suggested that these vascular changes may be a factor in the genesis of cor pulmonale. The paper is illustrated by a number of photomicrographs. -- Cond. from author's summary

1107 Pulmonary Vascular Changes in Coal-Workers' Pneumoconiosis. A. L. Wells. J. Pathol. & Bacteriol. 68, 573-587 (Oct. 1954).

The anatomical changes observed in the pulmonary vessels at 388 autopsies on coal workers in South Wales are described. Lesions were found of an obstructive and destructive nature, varying in frequency and extent according to the degree of pneumoconiosis and the presence of tuberculosis. Varying degrees of enlargement of the bronchial arterial system were found. Occasionally in severe cases there was a development of a large bronchopulmonary arterial shunt. Changes usually accepted as due to aging were exaggerated in all cases. Changes also included thinning of the walls of the arteries by the adjacent fibrotic process, with resulting ulceration of the intima. Peripheral venous thrombosis, leading to cardiac failure, was seen in many cases. The changes are fully described and the microscopic appearances are illustrated. -- Cond. from Bull. Hyg.

1108 Effect of Salicylates on Granulomas Developed by Silica in Rabbits. J. Vyskocil. Pracovni Lekarstvi 7, 75-78 (1955). Bohemian.

Inflammatory reactions and silicotic granulomas were produced by injecting a 5% suspension of silica into the anterior chamber of rabbit's eye. Animals receiving 0.2 g. sodium salicylate per kg. orally were considerably less affected than the controls. Possible utilization in therapy and prophylaxis especially for miners is discussed. -- Chem. Absts.

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1109 Clearance of Radioactive Dust from the Human Lung. R. E. Albert and L. C. Arnett. Arch. Ind. Health 12, 99-106 (July 1955).

The effective half-life of thoron daughters in the lung following deposition, together with kaolin particles of mass-median diameter 1.1μ - 1.3μ, is about nine hours. This indicates that the pulmonary clearance of radon and thoron daughters under these conditions will not materially reduce the radiation hazard following inhalation. The early bronchial clearance of radioactive iron particles appears to have two phases: The first clearance period ends in two to four hours and the second in about 30 hours. The larger the average inhaled particle size, the greater the fraction removed in two to four hours. -- Authors' summary

1110 The Content of Silica in the Blood and Urine of Workers in Dust-Creating Industries. R. Y. Govorchuk. Bor'ba s Silikozom. Akad. Nauk S.S.S.R., Sbornik Statei. pp. 309-311 (1953). Russian.

The presence of silica up to 10 mg. % in the blood and up to 20 mg. % in the urine is to be regarded as normal. Inhalation of free silica by the lungs increases its content in the blood and urine. No papallelism was discerned between the stages of progressive pulmonary silicosis and the silica content of blood or urine. The erythrocyte sedimentation rate tends to increase as the silica blood content is increased. -- Chem. Absts.

1111 The Value of Lung Biopsy in the Diagnosis of Occupational Pulmonary Diseases. H. S. Van Ordstrand, D. B. Effler, L. J. McCormack, and J. B. Hazard. Arch. Ind. Health 12, 26-32 (July 1955).

Surgical lung biopsy is a direct approach to the diagnosis of diffuse pulmonary disease where routinely used studies fail to arrive at a diagnosis. It is a particularly important procedure in borderline cases where it is otherwise impossible to prove or disprove the presence of an occupational disease. At the Cleveland Clinic, surgical lung biopsy has established a diagnosis of occupational disease in 11 such borderline cases. During the same period of time, surgical lung biopsy has disproved a presumptive diagnosis of occupational disease in 15 cases. -- Authors' summary

1112 Clinical, Pathogenetic, and Diagnostic Problem of Silicotuberculosis. M. Crepet and G. Pescetti. Minerva med. 16, 710-720 (Mar. 17, 1955). Italian

Statistics are presented showing the presence of tuberculosis and of the three stages of silicosis in a series of 124 patients. Active tuberculosis was present in 12 of those with stage 2 silicosis, in which

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the common aspects of tuberculosis were seen instead of the features characteristic of silicotuberculosis. It is suggested that the term "tuberculosilicosis" be used for such patients. Active tuberculosis was found in eight patients with stage 3 silicosis, but most of the patients in that stage did not show signs of tuberculosis or other infection. The authors conclude that the transition from the nodular to the massive stage can take place without the superimposition of infection. -- Cond. from J. Am. Med. Assn.

1113 Mortality from Lung Cancer in Asbestos Workers. R. Doll. Brit. J. Ind. Med. 12, 81-86 (Apr. 1955).

In necropsies of 105 persons who had been employed at an asbestos works, lung cancer was found in 18 instances. In 15 cases asbestosis was also found. These 15 workers were employed at least nine years before 1923, when dust control regulations became effective. An additional 113 men who had been exposed to asbestos dust for 20 years were followed up and their mortality was compared with that of the whole male population. Thirty-nine deaths occurred in the group whereas 15.4 were expected. The excess was entirely due to excess deaths from lung cancer (11 against 0.8 expected) and from other respiratory and cardiovascular diseases (22 against 7.6 expected). All the cases of lung cancer were confirmed histologically and all were associated with asbestosis. From the data it is concluded that lung cancer is a specific hazard of asbestos workers and that the average risk among men employed for 20 years or more has been of the order of ten times that experienced by the general population. The risk has become progressively less as the duration of employment under the old dusty conditions has decreased. -- Cond. from author's summary

1114 Primary Lung Cancer in South Wales Coal Workers with Pneumoconiosis. W. R. L. James. Brit. J. Ind. Med. 12, 87-91 (Apr. 1955).

Primary lung cancer was found at necropsy in 3.3% of 1,827 South Wales coal miners and in 5.4% of 1,531 South Wales non-miners. In 12 cases with massive pneumoconiosis the tumor was in the mass, or touching it, in five. In the other seven the tumor was remote. Lung cancer in South Wales miners is similar to that in non-miners with respect to the ages at death, the distribution of the histological variants of the tumor, and the distribution of metastases. The significance of these findings is discussed. Attention is drawn to the difficulty of diagnosing lung cancer in the presence of massive pneumoconiosis.
-- Author's summary

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1115 Talc Pneumoconiosis. M. Kleinfeld, Jacqueline Messite, and I. R. Tabershaw. Arch. Ind. Health 12, 66-72 (July 1955).

The health status of a group of 32 talc workers, whose roentgenograms and histories were available after 14 years, was restudied. Nineteen of the group had died. Of the living, six are gainfully employed, in spite of the presence of moderate infiltration and pulmonary dysfunction. Clinical features, x-ray appearances, and electrocardiograms are described. Peripheral blood findings are not remarkable. The marked improvement in engineering methods is reflected in an appreciable decrease in dust exposure. The pathological picture, however, did not retrogress with improvement of the industrial environment or upon retirement. -- Cond. from authors' summary

1116 Chronic Rheumatism among Belgian Coal Miners. Caplan's Syndrome. V. Van Mechelen. Arch. maladies profess. 15, 525-530 (1954). French.

The claim has been made that coal miners suffer excessively from rheumatism; but on extensive enquiry in Great Britain and Belgium, the author concludes that rheumatic conditions are not more frequent among Belgian miners than among other workers doing heavy work. The localization of rheumatism in these miners does not differ from that seen in French, English, or German miners. Polyarthritis sometimes occurs in cases of pneumoconiosis. It affects the fingers, wrists, elbows, and other joints, and the lung fields show rather large nodules particularly at the edges of the lobes. Caplan's syndrome was not found in a study of four such cases. Anthraco-silico-tuberculosis may occur in instances of polyrheumatoid arthritis without the nodules being described as rheumatoid nodules or constituting a syndrome, at any rate not among the Belgian miners. -- Cond. from Bull. Hyg.

1117 Occupational Factors in the Incidence of Bronchitis. J. Gregory. Trans. Assn. Ind. Med. Officers 5, 2-9 (Apr. 1955).

An investigation into the incidence of chronic bronchitis and chronic cough in workers in the gas industry is described. The results indicate that the principal occupational factor is dust, rather than temperature, gases and fumes. No relation was discovered between the incidence of bronchitis and smoking habits. A larger and more detailed investigation is recommended.

-- Cond. from author's summary and conclusions

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PHYSICAL ASPECTS OF THE ENVIRONMENT

1118 Proceedings of the First West Coast Noise Symposium. Noise Control 1, 9-40, 52-58 (May); 8-41, 52, 54 (July 1955).

The papers given at the Symposium are presented in full.

Noise, the Bane of Hearing. V. O. Knudsen.

In a general address, the effects of noise and its control are reviewed.

The Physical Properties of Noise. R. W. Leonard.

The jargon of the acoustical engineer and physicist often shrouds the basic physical properties of noise in what appears to those in other fields to be complex terminology. The description of these relatively simple properties is exemplified by some easily performed experiments.

Instrumentation for Noise Measurement. W. B. Snow.

The various modern instruments for measuring noise are described and their range of application is outlined.

Techniques for Noise Measurement and Evaluation of Data. R. S. Gales.

To get the most information from a noise measurement it must be made with care and followed by careful evaluation and clear presentation of the data taken. Effective methods for these three steps are presented.

Noise Sources in Modern Industry. G. L. Bonvallet.

A study of noise in 12 major industries provides pictures of those industries with regard to the ranges of level, loudness, and spectra of their noise sources and permits classification of the ranges of level both by industries and according to the individual machines.

Noise Abatement Comes of Age. C. W. Lemmerman.

The history and present status of noise abatement are briefly reviewed.

Legal Aspects of Noise. R. C. Keck.

A number of illustrations of legal liability resulting from industrial noise are presented.

They Are Doing Something about Noise. Noise Measurements of Motor Vehicles. W. Furrer.

By classing vehicles according to engine type, Switzerland has been able to fix maximum permissible vehicular noise levels on the basis of annoyance.

The Physiology of Hearing Loss. H. P. House.

An understanding of the physiological injuries which cause loss of hearing provides a clear reason for the need for preplacement programs.

Measurement of Industrial Hearing Loss. D. E. Wheeler.

To provide a basis for comparison, treatment, or compensation, an

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individual's hearing must be measured under controlled conditions. The measurements must be made with accurately calibrated, correctly used equipment in a test room or area where the noise background is low.

Psycho-Physical Effects of Noise. E. B. Newman.

Noise may be annoying and may interfere with speech as well as organized activity. Under some conditions it may produce hearing loss and possibly other biological effects. Some facts regarding these effects are presented, with a warning about the methods of their estimation.

Effects of Noise on Man: Problems for Study. W. A. Rosenblith.

The effects of noise on man are not so simple that they may be studied on the basis of stimulus and response. The effective stimulus may occur during the major portion of a lifetime. The response may not become apparent for years. A study program for these problems is outlined.

A Suggested Audiometry Card and IBM Coding System for Hearing Conservation Programs.

A new method for recording and coding audiometry information is described.

The Evaluation and Control of Noise in the Offices of an Industry. W. W. Stalker.

Ceilings of acoustical materials have been used for many years in reducing office noise. Before and after measurements show the effectiveness of a perforated-metal panel backed by an absorbent pad.

A Jet Exhaust Silencer. J. Tyler and G. Towle.

A jet-exhaust silencer is described which reduces low-frequency noise and causes the maximum noise to occur at very high audio frequencies. At these high frequencies sound is rapidly absorbed in the atmosphere.

(Most of the abstracts are taken from the summaries of the respective papers).

1119 Cytological and Cytochemical Changes in the Skin of Hairless Mice Exposed to High Intensity Air-Borne Sound. A. Anthony and P. A. Danner. J. Invest. Dermatol. 24, 435-446 (Apr. 1955).

The results of an investigation of abdominal skin changes in hairless mice following exposure to subthermal and thermal levels of high intensity of air-borne sound are reported. Subthermal sonic vibrations have no observable effect on the histological structure or functional activity of the skin. Tissue damage produced by very high intensity thermogenic sound is the result of local overheating produced by absorption of sound in the skin. Sound-induced erythema is followed by depletion of the skin lipids and diminution of cystic cells in the integument. The pathological features of skin burns produced by intense sound are the same as those following ordinary skin burns.

-- Cond. from authors' summary

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1120 Summary Evaluation of Tooth-Nozzled Attachments as a Jet-Noise-Suppression Device. W. J. North. Technical Note 3516, National Advisory Committee for Aeronautics. Washington, D. C. 19 pp. (July 1955).

Toothed attachments to a full-scale turbojet nozzle were investigated for possible jet-noise reduction and thrust penalty. The attachments caused slight reductions in total sound power that are insignificant when evaluated in terms of engine thrust losses and aircraft payload penalty. At the reduced thrust levels obtained with the toothed nozzles, corresponding sound power reductions could be realized by throttling the standard turbojet engine. Sound pressure levels were reduced behind the engine but were increased elsewhere. A typical resident in the airport neighborhood would hear increased loudness in the middle frequencies; however, the resulting over-all auditory effect is considered to be negligible. -- Author's summary

1121 The Story of Vibration Isolation. W. C. King. Safety Maint. & Prod. 110, 24-28 (Aug. 1955).

Difficulties in the application of compensation laws to hearing loss are discussed. Coupled with the problem of industrial noise is the vibration of constantly moving power machinery. When vibration is reduced, noise volume is abated simultaneously. Excessive vibration can also cause the breakdown of parts of equipment. The use of cork and rubber for isolation of vibration is discussed. Felt pads are recommended as an efficient means of vibration isolation, and applications and advantages are discussed.

1122 Clothing for Protection against Radiant Heat. I. M. Slade. Research 8, 179-182 (May 1955).

Materials consisting of a cotton or woolen base coated with aluminum foil give over 90% protection from radiant heat, and enable intense sources of radiation to be approached. They will not protect against contact with hot bodies or showers of sparks unless the material is a poor conductor such as asbestos cloth. Material coated with fireproof aluminum paint can give up to 50% protection against heat radiation. The paint is cheap and is easily applied and "patched". The advantages of this sort of protection have not been fully explored, but it seems to be of value in exposure to radiant heat which is less severe than that in which the foil-coated materials have been tested and are being used. Perforated metal screens give good protection to eyes against radiant heat, and in some circumstances are preferable to glass windows in masks. They allow ventilation by free circulation of air in the mask. They are particularly suitable when the surrounding air is reasonably cool. -- Author's summary

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1123 Physiological Observations on Men Working in Supposedly Limiting Environments in a West African Gold Mine. W. S. S. Ladell. Brit. J. Ind. Med. 12, 111-125 (Apr. 1955).

The working conditions in a deep West African gold mine were found to be markedly beyond those usually considered, from laboratory experiments, to be tolerable. The severity was due chiefly to high humidity and low air movement; dry-bulb temperatures were not excessive. No illnesses directly attributable to heat had been reported from this mine; observation of the men at work showed that they avoided heat stress (1) by taking frequent rests, and (2) by having a lengthy enforced withdrawal during blasting at mid-shift into cooler, well-ventilated parts. There was no indication that the West African deep miner has an unusually high heat tolerance. The importance of investigating work rhythm as well as the climatic conditions when assessing the tolerablility or otherwise of working places is emphasized.

-- Author's summary

1124 The Influence of Inspired Air Temperatures on Tolerance to Work in the Heat. A. R. Lind. Brit. J. Ind. Med. 12, 126-130 (Apr. 1955).

Two types of self-breathing apparatus, in one of which oxygen was supplied from a cylinder and in the other from liquid air, were worn by men performing two set tasks in various saturated environments. The effects of the two types of apparatus are compared only in so far as the inspired air temperature is concerned. Discomfort was felt at 95°F, which is decidedly lower than found in the results of other investigators, in which the subjects breathed air openly or supplied by a tube. Therefore the figures previously obtained may not apply to wearers of closed-circuit breathing apparatus.

1125 Diurnal Variation in Mental Performance. A Study of Three-Shift Workers. B. Bjerner, A. Holm, and A. Swensson. Brit. J. Ind. Med. 12, 103-110 (Apr. 1955).

Earlier work on diurnal variations in different forms of animal and human activity is reviewed. An extensive investigation is reported in which the number of errors in recording instrument readings at various times of the day were determined and tabulated. The investigation was conducted at two gas works and a paper mill. The greatest number of mistakes was made during the night shift (10 p.m. to 6 a.m.), the next greatest during the afternoon shift, and the lowest during the morning shift. The distribution curve of errors has two distinct peaks, one at 3 a.m. and a lower peak at 3 p.m. The curves for day and night work run a similar course, but the fluctuation is much greater in the night course. The curve is little influenced by the changes

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of shift. The same peaks occur year after year. There were fewer mistakes after the working hours were reduced from 56 to 48 hours per week in 1919-20, but the reduction was not due to the shorter working time in itself. There was little difference between performance in the days of the shift, and no difference between summer and winter performance. Sources of variation other than those due to individual performance are eliminated by the nature of the tests. It is reasonable to suppose that the curve reflects the degree of wakefulness during the day and night. It seems that seven days are not enough for the organism to adapt itself to night work.

1126 Oxygen Bends. K. W. Donald. J. Appl. Physiol. 7, 639-644 (May 1955).

Goats have been exposed to 64% oxygen and 36% nitrogen for one hour at 5.54 atmospheres. On returning to breathing at atmospheric pressure a number of these animals developed grave decompression sickness which, however, remitted rapidly without recompression. The same animals did not develop any signs of separate control exposures to equivalent tensions of oxygen (80% oxygen, 20% nitrogen) or nitrogen (in air). The danger of oxygen supersaturation contributing to the occurrence of decompression sickness in the presence of a relatively safe degree of nitrogen supersaturation is discussed. -- Author's summary

1127 Arthritis of the Elbow of Occupational Origin. M. Ruelle. Arch. maladies profess. 15, 518-523 (1954). French.

Among 12,950 observations of cases of rheumatic affections at a rheumatism clinic only 135 were concerned with arthritis of the elbow. Of those affected, 53 were miners, all of whom had used pneumatic tools. The x-ray pictures were characteristic, but an unusual number of isolated bony particles were present. Arthritis of the elbow must be regarded as of occupational origin, and therefore compensable, but usually the condition is so mild as not to interfere with work. Only in the few cases where elbow movement is seriously impaired should compensation be awarded.

-- Cond. from Bull. Hyg.

1128 Human Problems Associated with High-Speed and High-Altitude Flight. R. A. McFarland. Trans. Am. Soc. Mech. Engrs. 77, 747-758 (July 1955).

Human tolerance for heat and cold is outlined so that aeronautical engineers may have a better understanding of design problems related to cabin atmosphere. The hazards resulting from noxious gases

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and vapors are also considered. The need for air-crew indoctrination in the effective use of equipment is emphasized as well as the need for airmen to understand their own physical limitations while in flight. Finally, the need for more effective collaboration between the biological and engineering sciences is stressed in regard to improving the man-machine systems in high-speed, high-altitude flying.

-- Editor's summary

1129 Personnel and Equipment Cooling in Supersonic Airplanes. J. Makowski and V. L. Whitney. Trans. Am. Soc. Mech. Engrs. 77, 741-745 (July 1955).

Cooling of crew compartments and electronic equipment becomes more important, and, at the same time, more difficult as airplane speeds increase. A sharp increase in capacity required from the cooling system takes place when the surrounding air becomes too hot to be a convenient direct heat sink. The successful use of water vaporization permits the design of compact cooling units which satisfy the requirements of supersonic airplanes. -- Editor's summary

RADIOACTIVITY AND X-RADIATION

1130 Conference of the British Occupational Hygiene Society on Radiation Hazards in Industry. Brit. J. Ind. Med. 12, 143-168 (Apr. 1955).

The papers presented at this Conference deal with various phases of radiation hazards, protection against them, and health of workers industrially exposed. To a large extent they are reviews of existing knowledge, and, taken together, present a comprehensive picture of the present state of radiation safety.

1131 Late Effects of Beta Radiation of the Eye. G. R. Merriam, Jr. Arch. Ophthalmol. 53, 708-717 (May 1955).

Conservatism in the use of beta radiation in superficial ophthalmic lesions is urged, inasmuch as numerous late effects have been observed. These are telangiectasis of the conjunctiva, keratinization of the conjunctival epithelium, atrophy of the sclera, superficial punctate keratitis, corneal vascularization, corneal scarring, iritis, iris

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atrophy, and radiation cataract. It is suggested that the current high-dosage schedules be reduced. It is felt that doses of 2000-3000 rep on the surface would be more judicious and that a surface dose of 5000 rep should seldom be exceeded in the treatment of benign lesions.
-- Author's summary (Nuclear Sci. Absts.)

1132 Metabolism of Radium in Man. W. P. Norris, T. W. Speckman, and P. F. Gustafson. Am. J. Roentgenol. Radium Therapy 73, 785-802 (1955).

The concept of a well-defined biological half-time of radium in bone is inconsistent with the long-term data presented, and an alternative is offered. Previously published information, which shows that the retention and excretion of radium in animals may be represented as power functions, has been extended to the analysis of comparable studies in humans. The data presented are compatible with this form as are existing data in the literature. The use of the power function enables the derivation of the equation of retention from that of the excretion function or vice versa. Since methods are available to determine both total radium burden and daily excretion of radium, it is now possible to use the daily coefficient of elimination as an index of elapsed time since exposure to a single equivalent dose of radium, provided, of course, that soluble salts are known to have been involved and that allowance is made for the possibility of very recent exposures. The retention of intravenously injected radium in the human has been measured as 0.6% of the original dose after 22 years.
-- Chem. Absts.

1133 A Method for Measuring the Rate of Elimination of Radon in Breath. A. F. Stehney, W. P. Norris, H. F. Lucas, Jr., and W. H. Johnston. Am. J. Roentgenol. Radium Therapy 73, 774-784 (May 1955).

Equipment and procedures are described for measuring the time rate of elimination of radon in exhaled air. Methods by which the sensitivity and accuracy have been increased are described. The feasibility of extending radon analyses to normal body burdens of the order of 10^{-10} gram of radium is discussed.
-- Cond. from authors' summary (Nuclear Sci. Absts.)

1134 Assay of Gamma-Radiation from the Human Body. P. R. J. Burch and D. B. Appleby. Atomics 6, 195-201 (July 1955).

This paper gives a detailed account of the instrumentation used in measuring radioactivity of the human body and a discussion of some of the problems presented by measurements of this kind.

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1135 Radioactive Contamination in a Radium Therapy Clinic. R. G. Gallaghar, M. R. Zavon, and H. N. Doyle. Public Health Repts. 70, 617-624 (July 1955).

A radiation survey of a radium clinic showed gross surface contamination by alpha-, beta-, and gamma-emitting substances to be widespread throughout the building and adjacent areas. There was also a high level of gamma radiation from inadequately shielded radium and radon and significant airborne contamination. The exact cause of the extensive contamination was not determined but several causes were obvious, including various sources of leakage, and especially damage to the area by fire and the techniques used in fighting the fires. Evidence of possible minor radiation injury was found in six of the ten employees. It was not possible to correlate contamination and medical findings. A number of recommendations are given for control of the hazard. Most of the recommendations have been put into effect in the new building used by the clinic.

-- Cond. from authors' summary

1136 Some Rules of Thumb in Estimating Radiologic Hazards. R. P. Nadbath. U. S. Armed Forces Med. J. 6, 1117-1130 (Aug. 1955).

In the absence of proper detecting instruments, some rules of thumb may aid in the rapid estimation of radiologic hazards produced by radioactive contamination from an atomic detonation. Six such rules are deduced and explained. They do not replace radiac instruments nor do they solve radiologic problems with pinpoint accuracy. When instruments are not available, however, these rules are useful in making proper decisions. -- Cond. from author's summary

ENVIRONMENTAL MEASUREMENTS

1137 Measurement of Atmospheric Pollution by Ultraviolet Photometry. D. J. Troy. Anal. Chem. 27, 1217-1221 (Aug. 1955).

A sensitive portable ultraviolet photometric analyzer is an extremely convenient device for determining the concentration of toxic gases in the atmosphere, but instruments heretofore described have been limited to one analytical wave length, 254 millimicrons, and data useful for calibration have been scanty. A portable ultraviolet gas and

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vapor analyzer, based on Hanson's design, has been gradually improved through several years' experience. The wave-length range has been extended, thereby enhancing sensitivity and minimizing interference, and therefore increasing the utility of the instrument. A convenient gas-mixing apparatus for calibrating the instrument at concentrations from 20% to 0.1 ppm has been developed.-- Cond. from author's summary

1138 Experimental Methods Used in Determining Chronic Toxicity. J. M. Barnes and F. A. Denz. Pharmacol. Rev. 6, 191-242 (1954).

The methods used in testing safety of chemicals added to foods are examined critically. The conventional type of toxicity test is criticized because it is often an attempt to prove a negative, and large numbers of animals are necessary to derive results that are statistically significant. A more desirable approach is to obtain information on the fate and behavior of compounds after their introduction into the animal. Such work would lead logically to biochemical and physiological studies which are more scientific in contrast to the simple toxicity test.

-- Biol. Absts.

1139 Determination of Sulfur Dioxide and Hydrogen Sulfide in Flue Gases and in the Atmosphere. H. Stratmann. Mitt. Ver. Grosskesselbesitzer pp. 396-400 (1953). German.

Sulfur dioxide in the gases and sodium sulfite and acid sulfite in solution are reduced quantitatively to hydrogen sulfide by means of hydrochloric acid-stannous chloride solutions. The H_2S is passed into a sulfuric acid-ammonium molybdate solution, which, by reduction becomes blue in color. Sulfur trioxide is not reduced, and the process is unaffected by other flue-gas constituents. The analysis gives the sum of SO_2 and H_2S. The gas under test is then passed directly into the acid molybdate solution to get the H_2S volume. The difference between the two analysis values gives the concentration of SO_2. However, since the H_2S usually comprises only 1% of the SO_2 concentration, the sum of both concentrations can be treated as the SO_2 value. The colored molybdate solutions are evaluated colorimetrically or photometrically. By this means it is possible to measure H_2S and SO_2 concentrations down to 0.02 mg. per cu. m., with an average error of 6%.

-- Chem. Absts.

1140 An Automatic Hydrogen Sulfide Analyzer. B. M. Maslennikov and F. A. Kavitskaya. Khim. Prom. pp. 485-487 (1954). Russian.

An appartus is described which indicates a dangerous concentration of hydrogen sulfide in the air, and sounds an alarm when the safety factor is exceeded. It is based on the darkening of a paper strip

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saturated with a solution of 20% lead acetate, 12% glycerol, and 0.2% acetic acid in 67.8% water. The strip is passed in front of a photoelectric cell, and the darkening of the paper causes a variation of the current generated in the cell. -- Chem. Absts.

1141 Polarographic Determination of Lead in Blood. M. Mokranjac and D. Jovanovic. Acta Pharm. Jugoslav. 4, 177-183 (1954). Croatian with French summary.

Five ml. of blood is heated with 10 ml. of nitric acid until the volume becomes about 1 ml. Five ml. of hydrochloric acid is added and heated until the volume is about 1 ml. Five ml. of 6N hydrochloric acid is added and the whole is extracted three times with ether. The extract is discarded and the residue, to which four drops of sulfuric acid and 1 ml. of perchloric acid are added, is evaporated until it becomes dark. This is continued until the solution becomes clear again and it is then evaporated to dryness. Two ml. of water is added and the solution is evaporated to dryness. This is repeated twice. The residue is then dissolved in supporting electrolyte, a solution of sodium citrate in normal sodium hydroxide, thymol blue is added as an indicator, and the solution is examined polarographically. -- Chem. Absts.

1142 Estimation of Mercury in Atmosphere (Correspondence). D. Hunter, P. Lesley Bidstrup, and others. Lancet 268, 672 (Mar. 26, 1955).

The authors state that considerable variation was found in the results of recovery experiments when their previous methods for analyzing air for mercury were adopted. (Method, Buckell, IHF Abst. 1157, Oct. 1951; authors' survey, Abst. 196, Feb. 1952). They have, therefore, devised an improved procedure. After trapping the mercury from the air by a permanganate solution, the permanganate is cleared with hydrogen peroxide solution instead of oxalic acid. The treatment is followed by an extractive titration with a chloroform solution of dithizone. A calibration chart is constructed with known quantities of mercury. The method is fully described. The modified method is recommended, and the figures given for mercury concentration in the air in the earlier paper are not reliable. The accuracy of the method for mercury in the urine, however, is satisfactory.

1143 Notes on the Determination of Formaldehyde in the Air. N. Zurlo and Angela M. Griffini. Med. lavoro 45, 692-694 (Dec. 1954). Italian.

A method is described for the determination of formaldehyde in air based on the reaction of Schryver carried out in alkaline medium according to a modification suggested by Tannenbaum and Bricker (isopropyl alcohol + phenylhydrazine hydrochloride + potassium ferricyanide + sodium

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hydroxide). The stability of the color developed in alkaline conditions permits the determination of 0.5 to 30 micrograms formaldehyde with a precision of ± 2%. -- English summary (Bull. Hyg.)

1144 The Spectrophotometric Identification and Determination of Parathion. A. I. Biggs. Analyst 80, 279-283 (Apr. 1955).

Parathion in amounts as small as 0.1 mg. in 10 ml. can be determined by direct measurement of the characteristic absorption spectrum, and the result can be confirmed by hydrolysis to p-nitrophenol and measurement of its absorption spectrum. A clean extraction of parathion from viscera can be made with n-hexane as solvent, and the amount of parathion present can be determined spectrophotometrically. -- Author's summary

1145 A Contribution to Mineral Identification, by Light Microscopy, in Airborne Dusts, Especially from Coal Mining. A. Thaer. Staub, No. 38, 555-570 (Dec. 15, 1954). German.

The article discusses the various techniques of mineral identification with a polarizing microscope. It is concluded that the usual petrographical methods, in which orthoscopic and conoscopic observation are used, are not applicable for dusts below 5 microns in diameter. Refractive index measurements for identification are also very uncertain and do not distinguish the main mineral components of coal-mine dusts, sericite, kaolin and quartz. Dispersion staining, however, with either dark-field or phase-contrast technique does distinguish these three minerals. In the dark field technique when a mixture of cinnamon and clove oil of refractive index 1.560 is used as an embedding medium, kaolin appears red, quartz green-blue and muscovite (parallel to the base) looks yellow. This allows identification down to a diameter of 2 microns. Phase-contrast technique is still more sensitive, and although the three minerals can only be distinguished by their appearing in different shades of blue (in the same liquid of refractive index 1.560), this method is said to give identification down to a diameter of 1 micron. Examples are given of quantitative analysis of ashes of coal-mine dusts obtained by ashing at 450°C. The paper is illustrated by six color photographs. -- Bull. Hyg.

1146 Determination of Quartz in Minerals and Dusts. N. Zurlo and Angela M. Griffini. Med. lavoro 45, 675-691 (Dec. 1954). Italian.

The problem of the determination of free silica in the presence of silicates by chemical methods is discussed. The authors studied Durkan's method, which employs phosphoric acid and bisulfate, with

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reference to the optimum particle size for most complete separation of silica from silicates. Residues of considerable purity are usually obtained when the mean particle size is reduced to about 5 to 10 microns. The following procedure was adopted: the sample, reduced to 5-10 micron dust, after preliminary treatment with hydrochloric acid, is broken down with phosphoric acid and diluted with water. The silicic acid is dissolved by direct addition of diluted hydrofluoric acid; the action of the acid is arrested with boric acid. It is filtered and calcined at 850° C. The residue is checked for purity by volatilization with a hydrofluoric-sulfuric acid mixture or by petrographic or debyegraphic analysis. Where silicates or minerals resistant to phosphoric acid are present, decomposition is completed by fusing with potassium bisulfate. The hydrochloric acid of the preliminary attack is replaced by nitric acid when sulfides are present.

-- Cond. from English summary (Bull. Hyg.)

1147 A Laboratory Dust-Cloud Producer. R. Hattersley, B. A. McGuire, and D. L. Tye. Research Report No 103, Safety in Mines Research Establishment, Portobello St., Sheffield, England. 15 pp. (Sept. 1954). 1s. 6d.

The apparatus injects a metered flow of dust mixed with air into the air-stream of a wind tunnel. It consists in essence of a slowly rotating horizontal disk, in whose upper surface a circular groove is machined. As the disk rotates the groove is filled with dust by a hopper; the dust is directed into the groove, and surplus dust removed, by two vertical scraper plates. The metered contents of the groove are then extracted by a suction tube. The dust concentration may be altered by the use of a groove of different diameter or cross-section, by varying the speed of rotation of the disk, or by changing the air-stream velocity of the wind tunnel into which the dust is injected. Extensive trials of the machine, and a statistical analysis of the results, are reported. -- Bull. Hyg.

COMMUNITY AIR HYGIENE

1148 Engine Variables and Their Effects on Exhaust Gas Composition. J. M. Chandler, W. A. Cannon, J. C. Neerman, and A. Rudolph. J. Air Pollution Control Assn. 5, 65-70, 108 (Aug. 1955).

A laboratory investigation indicated that hydrocarbon emission from well-tuned engines is lowest during cruising, next lowest at idle,

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and highest during deceleration. Several possible methods for decreasing hydrocarbon emission during deceleration are suggested. The conclusions derived are yet to be tested under actual driving conditions.
-- Cond. from authors' summary

1149 An Inventory of Automobile Gases. D. R. Hutchison and F. R. Holden. J. Air Pollution Control Assn. 5, 71-74, 118 (Aug. 1955).

A review of the literature shows that automobile exhaust gases are a substantial source of the hydrocarbons and nitrogen oxides present in the atmosphere of the Los Angeles area during the intense smogs. An investigation is described in which the nature and amount of hydrocarbons discharged by passenger cars into the atmosphere were determined. Various types of gasolines and of cars were used. Methods of collection and operation are described. The mass spectrometer was used for analysis. The Stanford Institute Report has shown that 5% of the hydrocarbons in the fuel are exhausted as such under conditions of steady driving, and 19% during deceleration. In this paper the amounts of the various hydrocarbons are tabulated for three test localities. It was determined that 700 tons represents the minimum daily emission of hydrocarbons into the Los Angeles atmosphere from automobile exhaust in 1951. For 1953 the daily emission is estimated to be over 1000 tons per day. The results are in accordance with the analyses of hydrocarbons in the air. It is believed that devices can be built that will convert 60% of the unburned or partially burned hydrocarbons to inert gaseous products. Research on such devices is of paramount importance.

1150 Application of Infrared Spectroscopy to Exhaust Gas Analysis. S. B. Twiss, D. M. Teague, J. W. Bozek, and M. V. Sink. J. Air Pollution Control Assn. 5, 75-83 (Aug. 1955).

An infrared spectroscopic method of exhaust analysis has been developed, which has the advantages of speed, wide range of response, accuracy, specificity, moderate cost, and availability of equipment and trained personnel. Disadvantages include low values for hydrocarbons, interference of water in the exhaust, and less detailed analysis. Supplementary procedures and applications are described.
-- Cond. from authors' summary

1151 Study of the Distribution and Effects of Auto Exhaust Gases. G. P. Larson, J. C. Chipman, and E. K. Kauper. J. Air Pollution Control Assn. 5, 84-90 (Aug. 1955).

An extensive study of automobile exhaust gases as a source of air pollution in the Los Angeles area is reported. Samples of exhaust gases from individual cars were taken under conditions of idling,

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acceleration, cruising, and deceleration, and the duration of each stage was determined. The exhaust gas was analyzed for a number of constituents by chemical methods. Particulate matter from the exhaust was also determined. The effects of the exhaust gases oxidized with ozone on vegetation were studied. Damage similar to that caused by smog was found in all cases. Eye irritation was also found. Results of a study of traffic distribution are reported. All the results of this investigation indicate that the principal source of eye irritation, crop damage, and high ozone content of the air in the area is automobile exhaust gases. The hydrocarbons must be removed from the exhaust gases, and the efficiency of removal must be extremely high. Engineering studies should strive for a 90% over-all removal in conditions of heavy traffic.

1152 Flame Photographs of Light Load Combustion Point the Way to Reduction of Hydrocarbons in Exhaust Gas. J. T. Wentworth and W. A. Daniel. J. Air Pollution Control Assn. 5, 91-102 (Aug. 1955).

It was found that the abrupt increase in the concentration of unburned hydrocarbons in the exhaust gas with an increase in intake manifold above about 21 inches of mercury corresponded to the initial failure of the flame to propagate throughout the mixture. As the proportion of the combustion space traversed by flame decreased, the percentage of hydrocarbons in the exhaust increased. The failure of the flame to burn throughout the chamber was not due to too low a concentration of the reactants; it is concluded, therefore, that residual gas dilution is the major factor limiting combustion. Methods of reducing hydrocarbon emission during deceleration are suggested, but the problem of eliminating unburned hydrocarbon emission during all driving conditions remains a challenge.

-- Cond. from authors' summary

1153 The Composition of Exhaust Gases from Diesel, Gasoline, and Propane Powered Motor Coaches. M. A. Elliott, G. J. Nebel, and F. G. Rounds. J. Air Pollution Control Assn. 5, 103-107 (Aug. 1955).

Exhaust-gas samples were obtained from Diesel, gasoline, and propane-powered motor coaches of similar passenger capacity under idling, accelerating, cruising, and decelerating driving conditions. The samples were analyzed for carbon monoxide, oxides of nitrogen, formaldehyde, and hydrocarbons. In addition, the exhaust-gas flow rates were measured to permit calculation of the emission rate for each constituent at each driving condition. Based on a typical city driving pattern, it was concluded that: (1) The carbon monoxide emission from the Diesel coaches was only a small fraction of that from the gasoline and propane coaches; and (2) The differences observed in the emission of oxides of nitrogen, formaldehyde, and hydrocarbons by the three coach types were relatively small. No one coach type discharged either the greatest or least amounts of all of these three con-

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1154 Some Effects of Engine-Fuel Variables on Exhaust Gas Hydrocarbon Content. F. G. Rounds, P. A. Bennett, and G. J. Nebel. J. Air Pollution Control Assn. 5, 109-119 (Aug. 1955).

The investigations reported have shown that reductions in exhaust gas hydrocarbon content can be achieved through proper maintenance and design. The most important engine-fuel variable affecting the hydrocarbon content at idle was mixture ratio, with the highest hydrocarbon contents being observed at rich mixtures. Fuel type has essentially no effect. None of the engine-fuel variables investigated at part throttle affected the hydrocarbon content significantly. The most important variable affecting the hydrocarbon content during simulated deceleration was manifold vacuum. A sharp increase was found at vacuums above 21 inches of mercury. The trend toward automatic transmissions and lower rear axle ratios tends to reduce hydrocarbon losses.
-- Cond. from authors' summary

1155 The Role of Motor Vehicle Exhaust Gases in Contaminating the Atmosphere of Large Cities. A. S. Lykova. Trudy Leningrad. Sanit.-Gigien. Med. Inst. 14, 89-102 (1953). Russian.

A study of air pollution by exhaust gases was made in several large Russian cities and was confined to determinations of carbon monoxide. The concentrations varied consistently with the amount of traffic. Higher concentrations were found in the winter than in the summer. The "average" carbon monoxide content of Soviet cities (17.8 mg. per cu. m.) is much less than that ascribed to Paris and to American cities. Traffic control personnel show higher CO hemoglobin content than unexposed persons, sufficient to account for general complaints of headaches and dizziness. Data for the test personnel are included.
-- Cond. from Chem. Absts.

1156 Carbon Monoxide. Presence in the Air of Cities and the Possibility of Poisoning. V. Giuliani and R. Belli. Folia med. 38, 238-248 (1955). Italian.

The carbon monoxide in the air of streets, squares, tunnels, and places with heavy traffic, in industrial zones, and in the periphery of Naples was studied. Toxic concentrations were not observed. Persons exposed occupationally for many hours to the highest concentrations showed a carbon monoxide content in the blood within physiological limits, and no case of poisoning is on record. -- Chem. Absts.

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1157 Management Aspects of Air Pollution. G. E. Pendray. Mech. Eng. 77, 581-584 (July 1955).

While air pollution control may be basically technological in method, the community problems that arise out of it are principally psychological. Therefore mere abatement of the actual pollution will not solve the community-relation problems; management must cooperate, and must show that it is cooperating, in doing what can be done to alleviate the condition. Examples are given in which companies fought air-pollution agitation, and others in which they cooperated in every way. The latter companies have found that their attitude has proved to be a valuable asset.

1158 A Technique for the Rapid Solution of an Air-Pollution Equation. F. T. Bodurtha, Jr. J. Air Pollution Control Assn. 5, 127-132 (Aug. 1955).

Methods for rapid solution of the Bosanquet and Pearson formula have been developed for use with stack gases at or near atmospheric density. It is emphasized that the present state of knowledge of atmospheric turbulence is not complete, and the equations should be used with their limitations in mind. With that reservation, the present method should materially aid the solution of some air pollution problems.

-- Cond. from author's summary

MANAGEMENT ASPECTS

1159 The Anxieties of Retirement. P. Townsend. Trans. Assn. Ind. Med. Officers 5, 19-24 (Apr. 1955).

The author contends that the predictions of a large increase in the number of persons over the retirement age in the coming years are exaggerated, and that most of the increase has already taken place. Too much prominence has been given to the dubious economics of hypothetical population changes and far too little to the social problems of retirement. The social problems, especially the family problems, are discussed extensively. The discussion is based on a limited study of a working class area in England (and may or may not be fully in accord with American conditions). The evidence suggests that ill health may be the real cause of retirement more often than hitherto supposed; but it also

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suggests that a proportion of fit men are retired against their will and some cannot find alternative employment. Management has a tremendous obligation to avoid decisions leading to early retirement. A deeper understanding of the social and financial consequences of retirement is necessary to develop wise policies for employment in later life or for genuine security in old age.

1160 Aging Men in the Labor Force. F. L. Clark. Trans. Assn. Ind. Med. Officers 5, 24-28 (Apr. 1955).

The author discusses mechanization of industry and the consequent increase in tempo of production in its bearing on the employability or retirement of older workers. Tables show the percentage of men who retire at 65, and of men of that age covered by employers' pension schemes, in relation to the much smaller percentage who said they were retired or discharged. The problem of alternative jobs is considered. The demand for alternative work for retired workers now approaches 20%. This is a problem for full consideration.

1161 Some Medical Problems of Aging Men in Industry. A. W. Borland. Trans. Assn. Ind. Med. Officers 5, 28-31 (Apr. 1955).

A brief survey of the problems facing two factories in dealing with their aging workmen is presented. A study was made of the illnesses chiefly responsible for wastage in the age group 58-64, and of the possible means of preserving the working capacity of the workers concerned and to help them to leave industry with a fair chance of comfortable retirement. The steps taken by the two firms to tackle the problem are outlined. It is evident that a group of people are able and willing to continue in industry after the retirement age, provided the environment is suitable and the hours of work are shortened. It is a case of fitting the job to the man. It is obvious that the problem will become more acute as time goes on. All we can do is mitigate it in our time. -- Cond. from author's summary

1162 Retirement with a Future. L. W. Binger. Factory Mgmt. & Maint. 113, 124-126 (June 1955).

Features of a company's program for preparation for retirement are described. General information on retirement is given to employees in their 40's and 50's. Formal counseling begins about five years before normal retirement age, which averages about 68 for men and 63 for women. The first formal contact is made through the employee's immediate supervisor. The couselor then gives additional interviews on various aspects of retirement, more frequently as retirement

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approaches. All information is recorded. A program of special placement has been adopted which has been satisfactory from the seniority standpoint. On retirement, each worker is given a special identification badge which entitles him to buy at the company store, and other privileges. The counselor visits every retired worker twice a year. Clubrooms for retired workers are maintained.

1163 Human Relations in Industry. Lydia G. Giberson. Mech. Eng. 77, 499-500 (June 1955).

Enlightened management has come to the realization that the success of a business depends upon well-adjusted human relations from the top executive down to the humblest worker in the company. It is management's task to correct the inequities that exist in the ranks of its personnel, to discover and alleviate the maladjustments, to solve the problem of the psychoneurotics who inoculate large groups of otherwise efficient workers with their aberrations. Imponderable as the human factor in industry may be, it is the most important in a free society—and industry will do well to recognize this basic fact.

-- Author's summary

1164 Men, Machines, and Mental Health. W. C. Menninger. Am. Assn. Ind. Nurses J. 3, 14-18 (July 1955). (Originally published by the National Association for Mental Health, Inc., 1790 Broadway, New York 19, N. Y.).

Several cases are cited in which emotional disturbances caused by problems of personal life outside the factory resulted in greatly lowered efficiency. Maladjustment in industry is also a large factor in efficiency. From 60 to 80% of all dismissals in industry are due to social rather than technical incompetence. The factors in successful industrial psychiatry are leadership, motivation, treatment, and value systems. Each of these features is discussed. The author pleads for two methods of action on the part of industry: (1) to make aggressive application of the mental-health principles that we know are applicable to workers; and (2) to give much wider support to mental health as it affects executives, workers, and their families.

1165 No Gripes in This Cafeteria. J. H. Bolton. Factory Mgmt. & Maint. 113, 148-149 (July 1955).

An efficiently managed cafeteria plan in a plant with 125 workers is described. One feature is the use of advance orders for meals. This solves the problem of waste of perishable foods. A self-verifying ticket check system eliminates the need for a cashier. A self-service Lazy Susan

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is used for beverages. The entire operation takes only a little time every day. The plan has resulted in over 90% attendance at the dining room. A committee of three in general charge of the cafeteria is rotated every three months, and employees who make complaints are placed on the committee.

1166 Color, the Second Value in Paint. N. A. Mason. Iron & Steel Engr. 32, 101-103 (June 1955).

The following principles are employed in transforming a machine shop from an ugly duckling into a pleasant enjoyable place to work: (1) color contrast; (2) brightness contrast; (3) camouflage; (4) eye rest surfaces; and (5) morale building surfaces. Each of these principles is discussed.

ACCIDENTS AND PREVENTION

1167 Sulfur Dust Needn't Explode. P. E. Ziemke. Natl. Safety News 72, 56 (Aug. 1955).

Sulfur in powder form requires extreme care in handling, since violent dust explosions can readily result when ignition sources are present. Well-engineered dust evacuation equipment is of paramount importance to keep the exposure level to an acceptable minimum. The dust must not be permitted to accumulate on pipes, fixtures, and equipment, where it can cause a series of violent explosions extending from one department to the next. Sulfur dioxide from burning sulfur causes serious and permanent harm to the respiratory tract. For heavy concentrations, oxygen or air-supplied masks are required, and for lighter exposures masks with canisters are sufficient protection. Water is not desirable for fire fighting, as the steam can cause an explosion in a confined area. A dry powder type of extinguishing agent should be used. Equipment for application of powder is described and recommended.

1168 Molten Plastic Injuries of the Hand (Report of Two Cases). J. M. Baker. Plastic & Reconstr. Surg. 15, 233-240 (Mar. 1955).

Two cases are described in which molten plastic material under high pressure penetrated the hand. Details of treatment are given. Injuries from molten plastic differ from grease gun injuries in that the plastic material immediately solidifies and can be removed in its entirety, whereas oil accumulations remain in the tissues and cause granulomatous reactions. At the time of the injury it is difficult to determine accurately the depth and extent of the injury. The repair of the hand injured by molten plastics, is like that of other hand injuries, once the process of destruction is clearly demarcated. -- Cond. from J. Am. Med. Assn.

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