

IN RE: ABRAMS
November, 1992



HHBB-0016665

Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL - decisions and trends

SEPTEMBER, 1966

(Vol. 20, No. 9)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE - PITTSBURGH 13, PA.

03120237





FOUNDATION FACTS

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a nonprofit association of industries for the advancement of healthful working conditions.

HMBB-0016666

Volume 18

September, 1956

No. 9

21ST ANNUAL MEETING OF INDUSTRIAL HYGIENE FOUNDATION

Detailed program information for the 21st Annual Meeting of Industrial Hygiene Foundation, to be held at Mellon Institute on November 14 and 15, 1956, appears on subsequent pages of this issue of Industrial Hygiene Digest.

The Foundation is proud to present such a distinguished roster of speakers from industry and the professions to discuss the management, medical, legal, engineering, and chemical-toxicological aspects of industrial health problems. All of the groups will come together at the Management Conference and a Joint Technical Conference which is being held for the first time this year.

Member companies of the Foundation are invited to send representatives to the various sessions. Forms for designating those who will be attending the meeting will be mailed shortly, along with printed preliminary programs. REMEMBER THE DATES—NOVEMBER 14-15, 1956.

"PRODUCTS" OF INDUSTRIAL HYGIENE FOUNDATION

.....from the toxicology laboratory

A study of the action of formulations consisting of detergents in white oil, upon corneal epithelium of rabbits has been made in Industrial Hygiene Foundation's toxicological laboratory. Findings are to be reported in an early issue of the A. M. A. Archives of Industrial Health.

The use of detergent additives in lubricating oils raised the question of whether the handling of these formulations constitute a significant hazard to the eye. Animal experiments were conducted in order to provide factual information on which to base an evaluation of the eye hazards that might be associated with the use of detergent additives to lubricating oil. A second purpose was to determine the nature and extent of corneal damage, if any, produced by instillation of the detergent additives into the eye.

The USP white oil was used alone as a control and a 5 per cent solution of soap flakes was included for comparison. The detergent additives apparently did not enhance the action of the USP white oil as indicated by the fact that the degree of response produced by the test substances compared favorably with the response produced by the base oil alone. The instillation of the soap solution caused an immediate irritation which was more severe than that produced by the other test materials. However, the effects were transitory and recovery was complete when dosing was terminated. In general, the corneal response produced by the detergent additives was relatively mild considering the intensity of the experimental procedure. It seems unlikely that any appreciable damage would be incurred by accidental contact provided that adequate first-aid measures are taken.

I-H-F

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Program of
21ST
ANNUAL MEETING

INDUSTRIAL
HYGIENE
FOUNDATION



MELLON INSTITUTE
4400 FIFTH AVENUE, PITTSBURGH, PA.

November 14 and 15, 1956

03120239

MANAGEMENT CONFERENCE

Thursday, November 15, 1956

Auditorium, Mellon Institute

MORNING SESSION (9:30 a.m.)

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

ADDRESS OF WELCOME General Matthew B. Ridgway
Chairman of the Board
Mellon Institute

FOUNDATION FACTS C. Richard Walmer, M.D.
Managing Director
Industrial Hygiene Foundation

REPORTS ON TECHNICAL CONFERENCES - NOVEMBER 14 Conference Chairmen

FORESIGHT IN INDUSTRIAL HEALTH Andrew Fletcher
President
St. Joseph Lead Company

HYGIENE--INDUSTRY'S OPPORTUNITY AND CHALLENGE

George A. Benington
President
Mural Chemical Division
Allied Chemical & Dye Corporation



INTERCOMPANY COMMUNICATIONS AND WORKER HEALTH

Mathew J. Beecher
Division Manager, Manufacturing
American Management Association



THE IMPORTANCE OF AIR POLLUTION CONTROL REGULATIONS TO INDUSTRY

Alexander Macdonald
Macdonald & Halsted
Los Angeles, California



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IN RE: ABRAMS November 1992

WBB-0016668

MANAGEMENT CONFERENCE

Thursday, November 15, 1956

Auditorium, Mellon Institute

AFTERNOON SESSION (2:00 p.m.)

Chairman: Robert A. Moore, M.D.
Vice Chancellor, Schools of the Health Professions
University of Pittsburgh

LOOKING AHEAD IN INDUSTRIAL MEDICAL EDUCATION

Joseph C. Hinsey, Ph.D.
Director, New York Hospital
Cornell Medical Center



EPIDEMIOLOGY IN INDUSTRIAL HEALTH

Paul M. Densen, Sc.D.
Director
Division of Research and Statistics
Health Insurance Plan of Greater New York



AUTOMATION'S EFFECT ON ENVIRONMENT

Merald Luc
Vice President
Reinhold Publishing Company



03120241

OPERATIONS RESEARCH: PROBLEMS IN HEALTH

John D. Dillon
Senior Fellow
Mellon Institute



IN RE: ABRAMS November 1992

HWBB-0016669

MEDICAL CONFERENCE

Wednesday, November 14, 1956 - 9:30 a.m.

Auditorium, Mellon Institute

Chairman: O. A. Sander, M.D.
Associate in Medicine, Marquette University
Chairman, Medical Committee of I-H-F

EFFECTIVE EDUCATIONAL TECHNIQUES IN INDUSTRIAL HEALTH COUNSELING

Raymond J. Murray, M.D.
Medical Director
Sperry Gyroscope Company



R. J. Murray

LEGAL ASPECTS OF INDUSTRIAL MEDICAL PRACTICE

William A. Challener, Jr.
Challener and Challener
Pittsburgh, Pa.



W. A. Challener, Jr.

AN EVALUATION OF PULMONARY EMPHYSEMA

George W. Wright, M.D.
Head, Medical Research Department
Saint Luke's Hospital (Cleveland)

03120242

G. W. Wright

November 1956

IN RE: ABRAMS

HWBB-0016670

LEGAL CONFERENCE

Wednesday, November 14, 1956 - 9:30 a.m.

Georgian Terrace, Webster Hall Hotel

Chairman: Theodore C. Waters
Miles & Stockbridge, Baltimore, Md.
Chairman, Legal Committee of I-H-F

LEGISLATIVE REVIEW—DEVELOPMENTS IN WORKMEN'S COMPENSATION

Andrew Kalmykow
Assistant Manager, Casualty Department
Association of Casualty and Surety Companies



Andrew Kalmykow

AIR POLLUTION LEGISLATION IN NEW JERSEY

Leonard C. Johnson
Executive Secretary
New Jersey Manufacturers' Association



Leonard C. Johnson

HEALTH CONSIDERATIONS IN A WORLD OF EXPANDING ATOMIC POWER

Medical Aspects:

Thomas L. Shipman, M.D.
Health Division Leader
University of California
Los Alamos Scientific Laboratory

Engineering Aspects:

G. Victor Beard
Arco Reactor Site
United States Atomic Energy Commission

Legal and Insurance Aspects:

H. W. Yount
Vice President
Liberty Mutual Insurance Company



H. W. Yount

03120243

November 1956

IN RE: ABRAMS

HWBB-0016671

CHEMICAL-TOXICOLOGICAL CONFERENCE

Wednesday, November 14, 1956 - 9:30 a.m.

Social Room, Mellon Institute

Chairman: Anna M. Baetjer, Sc.D.
School of Hygiene and Public Health, The Johns Hopkins University
Chairman, Chemical-Toxicological Committee of I-H-F

THE RELATIVE ROLES OF CARCINOGENIC AND NONCARCINOGENIC IRRITANTS IN PROBLEMS OF OCCUPATIONAL CANCER

A. Wesley Horton, Ph.D.
The Kettering Laboratory
University of Cincinnati



A. Wesley Horton

PNEUMOCONIOSIS IN THE DIATOMITE INDUSTRY

W. Clark Cooper, M.D.
Occupational Health Field Headquarters
United States Public Health Service



W. Clark Cooper

GAS CHROMATOGRAPHY

C. B. Willingham
Head, Department of Research in Physical Chemistry
Mellon Institute



C. B. Willingham

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November 1993

IN RE: ABRAMS

NWBB-0016672

ENGINEERING CONFERENCE

Wednesday, November 14, 1956 - 9:30 a.m.

Conference Room, Mellon Institute

Chairman: Philip Drinker, Sc.D.
Harvard University School of Public Health
Chairman, Preventive Engineering Committee of I-H-F

INDUSTRIAL AIR CLEANING

PUBLIC HEALTH SERVICE ENGINEERING PROGRAM ON AIR POLLUTION CONTROL

Arthur C. Stern
Chief, Community Air Pollution Program
Robert A. Taft Sanitary Engineering Center
United States Public Health Service



Arthur C. Stern

RESEARCH AND DEVELOPMENT OF EQUIPMENT FOR CLEANING OF HIGH TEMPERATURE GASES

Leslie Silverman, Sc.D.
Associate Professor of Industrial Hygiene Engineering
Harvard University School of Public Health



Leslie Silverman

SPREAD OF PARTICULATE CONTAMINATION FROM STACK

William B. Harris
Chief, Industrial Hygiene Branch
Health and Safety Laboratory
United States Atomic Energy Commission



William B. Harris

PRACTICAL INDUSTRIAL AIR CLEANING PROBLEMS

John M. Kane
Manager, Dust Control Products
American Air Filter Company

Robert T. Pring
Technical Director
Dust and Fume Control Division
Wheelabrator Corporation



John M. Kane



Robert T. Pring

03120245

IN RE: ABRAMS
November 1999

HWBB-0016673

JOINT TECHNICAL CONFERENCE

Wednesday, November 14, 1956 - 2:00 p.m.

Auditorium, Mellon Institute

HEALTH PROBLEMS INVOLVED IN THE MANUFACTURE, SALE, AND USE OF TOXIC MATERIALS (A Panel Discussion)



Moderator: V. P. Ahearn
Executive Secretary
National Industrial Sand Association



P. W. Bachman, Ph.D.
Vice President and
Director of Research & Development
Koppers Company, Inc.



C. R. Oviatt
Legal Department
Union Carbide & Carbon Corporation



John A. Zapp, Jr., Ph.D.
Director, Haskell Laboratory for
Toxicology and Industrial Medicine
E. I. du Pont de Nemours & Co., Inc.



Theodore Hatch
University of Pittsburgh Graduate School of
Public Health; and Research Adviser,
Industrial Hygiene Foundation



L. C. McGee, M.D.
Medical Director
Hercules Powder Company



H. S. Baile
Deputy General Manager and General Counsel
General Accident, Fire and Life
Assurance Corporation, Ltd.

03120246

IN RE: ABRAMS November 1992

HWBB-0016674

IN RE: ABRAMS November 1992

INDUSTRIAL HYGIENE FEATURES

Atomic radiation and genetics—is there cause for alarm? Do atomic explosions have an effect on the weather? What about pathological effects, effects on oceanography and fisheries, agriculture and food supplies? Abstract No. 1101.

Physical fitness—why, how much, and how to acquire. Abstract No. 1112.

Are the effort and expense of periodic physical examinations justified? Abstract No. 1113.

A new method for the study of heart disease in humans—motion pictures of the movements of the heart shadow in slow motion. Abstract No. 1122.

The purpose of patch testing. Abstract No. 1130.

A report of a four-year trial of aluminum inhalations in the treatment of pottery workers' and coal workers' pneumoconiosis. Abstract No. 1185.

New viewpoints on pulmonary cancer in asbestos workers. Abstract No. 1190.

An approach to the problem of occupational hearing loss. Abstract No. 1198.

Problems involved in the transportation of large quantities of radioactive materials. Abstract No. 1205.

Methods of evaluating and abating the odor phase of air pollution. Abstract Nos. 1236 and 1237.

The ups and downs of disability pensions through the years—an analysis of all major pension surveys made since 1925. Abstract No. 1243.

03120247

TABLE OF CONTENTS

	<u>Page</u>
News Items	1
Coming Events	2
Occupational Disease Statistics	3
Legal Developments	4
Books, Pamphlets and Notices	5
Industrial Medical Practice	8
Skin Diseases and Burns	14
Chemical Hazards	16
Industrial Dusts	23
Physical Aspects of the Environment	31
Radioactivity and X-Radiation	33
Environmental Measurements	39
Preventive Engineering	40
Community Air Hygiene	41
Management Aspects	43
Accidents and Prevention	44
Index	45

03120248

IN RE: ABRAMS November 1992

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1087 President's Committee on Employment of the Handicapped.

The following pamphlets are available from The President's Committee on Employment of the Handicapped, Washington, D. C.: Here's What They Say, consisting of quotes from leaders in business, clergy, communications, industry, medicine, and other fields; Community Interest and Organization, A Summary; and Employer Roundtable. The last two summarize the Regional Meeting of the Committee, held at Chicago, Nov. 28, 1955.

1088 Air Pollution Course.

An intensive, two-week course on "Air Pollution" designed for physicians, industrial hygienists, and engineers concerned with the problem of community air pollution will be given by the New York University Post-Graduate Medical School from Nov. 26 through Dec. 7, 1956. The course will review the basic toxicology of the principle air pollutants, micrometeorological factors, the effects of air pollution on agriculture and commerce, and methods for sampling and analyzing the various toxic components. Also described will be the sources of air pollution including power and steam generation, domestic heating, incineration, internal combustion engines, and the chemical industries. Methods of control and the pattern of governmental regulations will be studied. Tuition for the course, which is to be given in cooperation with the New York University College of Engineering, is \$75. For further information: The Dean, N. Y. U. Post-Graduate Medical School, 550 First Ave., New York 16, N. Y.

1089 Postgraduate Courses for Physicians.

A list of postgraduate courses for physicians, compiled by the Council on Medical Education and Hospitals for the period Sept. 1, 1956 to Aug. 31, 1957, is presented in J. Am. Med. Assn. 161, 1277-1324 (July 28, 1956). Under the heading of Occupational Medicine, (pp. 1305-1306), 26 courses given by 13 medical schools in industrial medicine and hygiene and specialized branches are listed. On page 1260 of the same issue a proposed regulation of the Bureau of Internal Revenue allowing income tax deduction for physicians attending refresher courses is reported.

1090 Mobile Laboratory Built to Study High Intensity Noise.

In order to investigate the effects of high-intensity noise on aircraft carriers, the Central Institute of the Deaf and the School of Aviation Medicine at Pensacola are planning to conduct jointly an on-the-site study, using a mobile laboratory. This study will focus on the exposure of flight-line maintenance crews who operate in the immediate vicinity of the exhaust of a modern jet engine. The objectives of the project include measurement of noise and of hearing loss, determination of their relation, evaluation of the effectiveness of ear protectors, determination of possible nonauditory effects, and neuropsychiatric and other medical observations. The assembly of instruments will provide a continuous record of noise levels and of the reactions of the individual workers as they go about their particular duties.

-- U. S. Navy Med. News Letter (Arch. Ind. Health)

IN RE: ABRAMS November 1956

MWB-0016677

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1091 Introduction to Radiological Safety.

Institute of Industrial Medicine, New York University Post-Graduate Medical School and College of Engineering, in cooperation with the United States Atomic Energy Commission, offers a two-week, full-time course entitled "Introduction to Radiological Safety", from Jan. 7 to 18, with an optional two-week laboratory session from Jan. 21 to Feb. 1. The course will be repeated in Wednesday sessions from Jan. 30 to May 22, 1957, including both lecture and laboratory instruction. Tuition for the lecture course will be \$75 and for the laboratory course \$75. Further information and applications can be obtained from Office of the Dean, Post-Graduate Medical School, 550 First Ave., New York 16, N. Y.

COMING EVENTS

- 1092 Oct. 8-12 American Welding Society, Fall Technical Meeting, Cleveland, O.
 Oct. 9-15 World Medical Association, 10th general assembly, Havana, Cuba.
 (See news item Aug. Digest)
 Oct. 11-12 National Foundry Association, Annual Meeting, Detroit, Mich.
 Oct. 11-12 National Noise Abatement Symposium, Chicago, Ill. (See news item Aug. Digest)
 Oct. 14-16 First International Sanitation Maintenance Show and Conference, New York, N. Y.
 Oct. 15-19 Eleventh Annual Postgraduate Course on Diseases of the Chest, Chicago, Ill.
 Oct. 16-17 Agricultural Research Institute, 5th Annual Meeting, Washington, D. C.
 Oct. 22-24 American Standards Association, 38th Annual Meeting and Seventh National Conference on Standards, New York, N. Y.
 Oct. 22-25 National Pest Control Association, 23rd Annual Meeting, Detroit, Mich.
 Oct. 22-26 Forty-Fourth National Safety Congress and Exposition, Chicago, Ill.
 Nov. 8-9 Nineteenth Annual Accident-Prevention Conference, Columbia, So. Carolina.
 Nov. 12-13 Third Annual West Coast Noise Symposium, Los Angeles, Calif.
 Nov. 12-16 American Public Health Association, 84th Annual Meeting, Atlantic City, N. J.
 Nov. 12-16 Ninth Annual Course on Diseases of the Chest, New York, N. Y.
 Nov. 14-15 Industrial Hygiene Foundation, 21st Annual Meeting, Pittsburgh, Pa.
 Nov. 14-17 Acoustical Society of America, Fall Meeting, Los Angeles, Calif.
 Nov. 25-26 American College of Chest Physicians, Interim Session, Seattle, Wash.
 Nov. 25-28 American Society of Refrigerating Engineers, Semiannual Meeting, Boston, Mass.
 Nov. 25-30 American Society of Mechanical Engineers, Annual Meeting, New York, N. Y.
 Nov. 26-30 Third International Automation Exposition, New York, N. Y.
 Nov. 26-Dec. 7 Course in air pollution, New York University. (See news item)
 Nov. 27-30 American Medical Association, Clinical Meeting, Seattle, Wash.
 Dec. 3-5 Chemical Specialties Manufacturers Association, 43rd Annual Meeting, Washington, D. C.
 Dec. 26-31 American Association for the Advancement of Science, 123rd Annual Meeting, New York, N. Y.
- 1957
 Jan. 7-11 Sixteenth International Tuberculosis Conference, New Delhi, India
 Jan. 7-Feb. 1 Course in Introduction to Radiological Safety, New York University.
 (see news item)

03120250

OCCUPATIONAL DISEASE STATISTICS

1093 Occupational Disease Statistics.

	Mass. ¹ Jan.-May 1956	Mich. ² May-July 1956	New Mex. ² Jan.-Mar. 1956	Pa. ^{2,3} May 1956	Tenn. ² May-June 1956	Wis. ² July 1956	Total
Ammonia poisoning			2				2
Anthracosilicosis				2			2
Anthrax				3	3		6
Bell's palsy			1				1
Berylliosis	1						1
Bronchitis, acute				1			1
Brucellosis	1				2	1	4
Burns, concrete					1		1
Bursitis			1				1
Carbon monoxide poisoning			5				5
Conjunctivitis			23*		1		24
Dermatitis (dermatoses)	11	23	23	39	29	17	176***
Fungus disease			1				1
Hernia		9					9
Hydrocarbon (?) poisoning			1				1
Inflammatory condition		1					1
Lead absorption				1			1
Lead poisoning	2			16	2	3	23
Loss of hair (bronze fluoride)						1	1
Lung injury	7						7
Mercury poisoning			1				1
Platinosis, respiratory					1		1
Pneumoconiosis	1	3		34**			38
Pneumonia			1				1
Pneumonitis, chemical				2			2
Respiratory irritation			2	1		1	4
Silicosis	3	20		32	2	3	60
Silicosis, suspected				20	39		59
Silico-tuberculosis	1						1
Skin infection						2	2
Tuberculosis, pulmonary	2			1			3
Tuberculosis, renal					1		1
Zinc fume poisoning			1				1
Miscellaneous		3					3
Total	29	59	62	52	78	26	445***

1 Claims before Compensation Board.

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

3 Statistics for June are in the August Digest.

* Four chemical and thirteen flash burn

** Includes one "possible" case

*** Totals include also: New Hampshire, June 2, one case of dermatitis; Missouri, July (awards by Compensation Board), 28 cases of dermatitis caused by: cement, fiberglass, lime dust, and solvents, one each; poison oak and unspecified, seven; and poison ivy, ten.

03120251

IN RE: ABRAMS November 1992

LEGAL DEVELOPMENTS

1094 Occupational Disease—Causal Connection Between Employment and Injury—Pneumoconiosis Silicosis—Death Benefits.

The executrix of the estate of a granite cutter who died of pneumoconiosis silicosis arising out of and in the course of his employment was properly awarded death benefits where the employer incorrectly contended that the decedent was not covered by the act. The court ruled that the essence of the pertinent provisions of the act is a legislative mandate that if injury is caused an employee by accident or occupational disease arising out of and in the course of his employment, the employee shall have compensation therefor from his employer unless the injury was caused by wilful negligence of the employee; that the employer and the employee are bound by the schedule of compensation contained in the act and such compensation shall be paid for every "injury or death caused by accident or occupational disease" arising out of and in the course of employment and not caused by wilful negligence of the employee; and that the terms "injury" and "personal injuries" include disablement received from occupational disease. Affirmed. Hauff v. Kimball, Nebraska Supreme Court No. 34, 054, June 29, 1956.

-- Commerce Clearing House

1095 Silicosis—Extent of Disability—Pre-existing Conditions—Occupational Disease—Medical Testimony in Conflict with Claimant's Testimony.

Claimant, a stonecutter whose pre-existing silicosis condition was aggravated to the point of total disability when he became a casual employee of a granite company, was properly awarded permanent disability compensation even though he failed to give notice of injury within the statutory period, where such failure was ruled not to be prejudicial to the employer due to actual knowledge of claimant's disease by said employer. The question as to extent of disability where the medical testimony pronounced claimant's condition to be partially disabling and the claimant, in conflict, contended that his condition was totally disabling was ruled on by the commission, which had the benefit of seeing claimant as he testified and then to some degree had an opportunity of noting his condition. The commission decided that he was not as able as the doctors thought he was, thereby finding claimant totally disabled. In view of the evidence presented, there was no doubt that claimant was employed within the employer's business and subject in every way to its direction and control. Affirmed. Leva v. Caron Granite Co. Rhode Island Supreme Court. No. 2395. July 27, 1956.

-- CCH

1096 Employment Relationship—Statute of Limitations—Tuberculosis.

Claimant, a chemical utility operator, was improperly denied compensation for aggravation of tuberculosis where the employer knew through x-rays that the employee had tuberculosis but notified him in writing that nothing was seriously wrong with him and assigned him to tasks involving physical exertion. The employer improperly contended that the applicable three-year statute of limitations had run against the cause of action because the last x-ray of claimant by the company was taken more than three years before the action, but the court ruled that the dates of the x-rays had no significance other than their bearing upon the company's knowledge of the existence of tuberculosis. Reversed. Riste v. General Electric Co. Washington Supreme Court, Department Two. No. 33,360. November 3, 1955.

-- CCH

03120252

1097 Common-Law Action—Berylliosis—Burden of Proof on Manufacturer.

The widow of a deceased bender of glass tubing, prosecuting in a suit for damages begun before her husband's death, was properly awarded damages for the death of her husband. The decedent's work had consisted of blowing into a heated glass tube coated with beryllium. When the tube cooled, the beryllium blew back into his mouth, eventually causing berylliosis, which resulted in his death. He was awarded compensation from his employer and one manufacturer, and when he died, the present suit against another manufacturer was pending. The company claimed that the prior suit established that he had the disease before he started using their tubes. The court ruled that the decedent had been exposed to the disease before but did not know that he had it and that there was sufficient evidence to show that the disease was caused, in part, by the company's glass tubing. The company also said that the manufacturer is liable to a person only when the manufacturer knows, or should know, that his product is, or is likely to be, dangerous, and in this case, the manufacturer did not know this. The court replied that the rule is that every manufacturer is presumed to know the nature and qualities of his products and the burden of proof is on him to show why he should not know that a product is potentially dangerous. Affirmed. Sylvania Electric Products, Inc. v. Barker. United States Court of Appeals for the First Circuit. Appeal from Massachusetts District Court. Nos. 4992, 4993, and 4994. December 20, 1955. -- CCH

1098 Silicosis—Wilful Misconduct—Occupational Disease—Lung Condition.

Claimant was improperly awarded \$2,000 for silicosis in its second stage where the court found that the claimant was guilty of wilful self-exposure because of failure or omission on his part to furnish, in answer to his employer's inquiry, to the best of his knowledge, full information as to the previous state of his health and as to exposure to any condition likely to cause an occupational disease. Claimant had medical advice, obtained prior to his present job, as to the presence of a generalized fine mottling of both lung fields, which was not noted on his application for work for the employer. Reversed. Dickenson v. State Compensation Commissioner. West Virginia Supreme Court of Appeals. No. 10,781. February 14, 1956. -- CCH

1099 Sufficiency of Evidence—Medical Testimony—Silicosis—Mines and Miners—Extent of Disability.

A miner was properly awarded disability compensation where there was no substantial evidence to support the commission's finding that claimant was not totally and permanently disabled. The medical testimony was overwhelming to the effect that the claimant was permanently and totally disabled, and that his disability was due to the condition of his lungs. All of the doctors that examined the claimant over the disability period stated that his condition was due to silicosis. Affirmed. Boyd Excelsior Fuel Company v. McKown. Arkansas Supreme Court. No. 5-865. April 2, 1956. -- CCH

BOOKS, PAMPHLETS AND NOTICES

03120253

1100 Occupational Health Nursing. Mary Louise Brown with J. W. Meigs. Springer Publishing Co., 44 East 23rd St., New York 10, N. Y. 276 pp. (1956). \$4.50.

The aim of this book is to provide standards and plans for the prospective and practicing occupational health nurse. It is based on the authors' experience in teaching and practice. The opening chapters indicate the field and scope of occupational health

nursing. A chapter is given to each of the ten functions: occupational injuries and diseases; non-occupational injuries and illnesses; health evaluation program; health counseling; records and reports; health education; environmental sanitation; nursing administration; official and voluntary agencies; and nursing organizations. The remaining chapters deal with the problems and programs with which the nurse must deal: industrial hygiene, safety, workmen's compensation, labor unions and union health services; special programs, (dental, eye, ear, older workers, problem drinkers, and women workers); first aid, and part-time nursing service. Sample forms are suggested for a policy and procedure manual. The doctor-nurse relationship in industrial health programs is considered throughout the book. -- FFR

- 1101 The Biological Effects of Atomic Radiation. Summary Reports. National Academy of Sciences, National Research Council, Washington, D. C. 108 pp. (1956).

This publication presents the reports of several committees, dealing respectively with genetic effects, pathological effects, meteorological aspects, effects on oceanography and fisheries, effects on agriculture and food supplies, and disposal of atomic wastes. Each report is a comprehensive summary of present knowledge and of problems still to be encountered, and includes a number of recommendations. The recommendations of the genetics committee are: (1) records should be kept for every individual, showing his accumulated lifetime exposure to radiation; (2) the medical use of x-rays should be reduced as much as is consistent with medical necessity; (3) the average exposure of the population's reproductive cells to radiation above the natural background should be limited to ten roentgens from conception to age 30, and this limit should be reconsidered periodically; and (4) no individual should receive a total accumulated dose to the reproductive cells of more than 50 roentgens up to age 30, and not more than 50 roentgens additional to age 40. Other recommendations of general interest are: (1) techniques for monitoring world-wide fall-out should be further improved; (2) a national agency should control and keep records of all dumping of radioactive material in the ocean; (3) an international agency should set up standards for marine and air disposal of radioactive materials as soon as possible, based on current knowledge; and (4) buildings that house reactors located near populous areas should be sealed against the release of radioactive materials in the event of accident. Present lack of knowledge in all these fields is emphasized, and a number of specific recommendations are made for research. One conclusion that seems reasonably established is that atomic explosions have had no effect on the weather. -- FFR

- 1102 The Biological Effects of Atomic Radiation. A Report to the Public. National Academy of Sciences, National Research Council, Washington, D. C. 40 pp. (1956).

This publication presents the same material as the preceding in an abridged form mostly in non-technical language, with the following conclusion: "It is clear that the safe and rational growth of a nuclear power industry involves more than designing individual plants. The presence of a single large installation will be felt, in various ways, over a wide region. Obviously, it will not do to let nuclear plants spring up ad lib, over the earth. The development of atomic energy is a matter for integrated planning. A large part of the information that is needed to make intelligent plans is not yet at hand. There is not much time left to acquire it." -- FFR

- 1103 New Channels for the Golden Years. New York State Joint Legislative Committee on Problems of the Aging, T. C. Desmond, Chairman. Legislative Document No. 33 151 pp. (1956). Obtainable without charge from Senator Thomas C. Desmond, Chairman of above Committee, 94 Broadway, Newburgh, N. Y.

The opening feature of this report consists of the findings and recommendations of the Committee to the Governor and Legislature. Instead of stop-gap solutions to the long-range problem, attention should be focused on basic preventive measures, including: (1) prevention of poverty in old age; (2) prevention of wastage of middle age and old age; (3) prevention of needlessly rapid physical and mental deterioration; and (4) prevention of inter-generational maladjustments. Many recommendations are embodied in this 35-page report, in the fields of old-age assistance, counseling, retraining of older workers, vested pension plans, unemployment insurance, relation of government to private agencies, discrimination in state jobs, adult education, housing, mental hygiene, nursing homes,

recreation, and others. An appendix gives the text of 16 laws on some of these subjects passed by the 1956 Legislature and now in effect, and five others vetoed by the Governor.

The remainder of the report includes a number of papers on various phases of the problems of the aged. Employment of older workers is discussed in two short papers, by Dr. Lillian Galbreath and by Louis Hollaender, and H. Eliot Kaplan considers the civil service aspect. Other papers include: "Aging in the Modern World" by Mrs. Eleanor Roosevelt, and "Basic Needs of Blind, Aging Persons", by Helen Keller. Others deal with specific diseases of the aged, mental illness, social welfare problems, and reports on community programs.

-- FFR

- 1104 Report, Existing Industrial Hygiene and Occupational Disease Problems in Puerto Rico. L. E. Ramos Yordan. Department of Labor, Commonwealth of Puerto Rico. 72 pp. (1956).

Puerto Rico is becoming industrialized rapidly but provision of health protection of workers has not kept pace with the growth of industry. The development of workmen's compensation laws and the activities of several official agencies concerned with accident and occupational disease prevention are described. A report of a survey of occupational disease hazards is summarized. No comprehensive industrial hygiene program as yet exists, and the most extensive and most important part of the report is a suggested industrial health program which the author has developed with the aid of a number of authorities in the United States. The program, which is presented in detail, embodies the best features of practiced and recommended state programs.

-- FFR

- 1105 Annual Report of the Chief Inspector of Factories for the Year 1954. G. P. Barnett. Ministry of Labour and National Service. Cond. 9605. 265 pp. (1955). Obtainable from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.50.

The trends considered in this report include: mechanization of production; increase in shift work and automation; increasing use of gamma ray radiographic sources without a decrease in the application of x-rays; a slight increase in total number of accidents but a decrease in accident rates; a better attitude of workers toward health and safety; an increasing number of industrial physicians and nurses; some progress but not enough on factory cleanliness; some improvement in heating and cooling of factories; and important developments in local exhaust ventilation, especially in the foundry industry. Statistics are given on gassing, lead poisoning, dermatitis, chrome ulceration, asbestosis, and silicosis. The state of health of luminizers was good and there was little evidence of disorders due to the occupation.

-- Cond. from Bull. Hyg.

- 1106 Report of H. M. Chief Inspector of Mines under the Coal Mines Act, 1911 for the Year 1953. H. C. W. Roberts. Ministry of Fuel and Power. 63 pp. (1955). Obtainable from British Information Service, 30 Rockefeller Plaza, New York 20, N. Y. 60 cents.

Accident statistics for mines show the number of persons disabled to be the lowest on record. Of 234,000 accidents disabling workers for more than three days during the year, (involving one out of three workers) the immediately reportable (serious) accidents totaled 2,107 underground and 243 on the surface. Falls of ground, haulage accidents, and explosions, gases, and fires contributed largely to the total number. Of these serious accidents 342 were due to falls of roof on coal faces, and attention to providing support close to the face is urged. Investigation of explosions have in some cases revealed very defective ventilation. Many managements do not appreciate the dangers associated with the operation of air compressors. There is also much room for improvement in the construction, operation, and maintenance of haulage roads. Good progress has been made in the prevention of pneumoconiosis, but there is wide variation in the effectiveness of the measures employed. Possible reasons for differences between localities are discussed. The comment is made that even the establishment of the arbitrary standards of air cleanliness will not ensure that new cases of pneumoconiosis will not arise, and these figures of the lowest concentrations permissible should be regarded as the absolute maxima, to be improved upon wherever practicable.

-- Cond. from Bull. Hyg.

IN RE: ABRAMS November 1992

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- 1107 Report, Occupational Medical Foundation, 1945-1955, Institute of Occupational Health 1951-1955 (Finland). L. Noro, Director. 50 pp. (1956).

The Institute of Occupational Health was founded as a separate organization, but now is closely related to and supervised by the Occupational Medical Foundation. The history of both organizations is related and their fields are described. The facilities of the Institute, comprise medical, physiological, psychological, and industrial hygiene, a counseling section for disabled persons, and a statistical section. The activities of each of these departments in their service to industry in Finland are described and illustrations and floor plans of the headquarters are included. The 150 papers published by staff members are abstracted as part of this report. Altogether the report testifies to commendable growth and progress of the Institute during its brief period of existence. -- FFR

INDUSTRIAL MEDICAL PRACTICE

- 1108 Preventive Aspect of Role of Medicine in Industry. J. H. Sterner. J. Am. Med. Assn. 161, 1353-1356 (Aug. 4, 1956).

The need for a program of practical preventive medicine, with the increasing industrialization of our society, presents a challenge and an opportunity to the physician. Extension of the role of the physician and constructive changes in the method of payment for his services will involve many physicians in private practice as preventive medical care is provided for smaller industrial plants. Improved working conditions have increased the life span of people in industry so that it now equals that of the general population. Personal illness and injury causes 60 or more times absenteeism than is due to direct occupational causes. The cost of workmen's compensation and of employee benefits gives industry a direct and vital interest in medical care. The elements of a preventive medical program are discussed.

- 1109 Protective Measures in the Chemical Industry. A. L. Potter. Trans. Assn. Ind. Med. Officers 6, 32-36 (Apr. 1956).

In practice the problem of protection of workers must be considered under four headings: the nature of the hazard, the design of the plant, the type of personal protection required, and the medical supervision necessary. The problem is discussed with reference to the author's experience in a plant manufacturing hydrofluoric acid. The medical officer can be of much assistance in the design of a plant in regard to the health and safety of workers, and should spend much time in the pilot plant and experimental stages as well as in the design of the full-size factory. In the discussion of personal protection and of medical supervision, emphasis is placed on securing the cooperation of workers. They should be fully informed on the hazards, encouraged to give suggestions, and convinced that medical aid and first aid facilities are always available. At first a maximum of protective clothing should be required, which can be reduced later to essentials for workers whose exposure is limited, when it is evident that the plant design and other safety measures are sufficient safeguards. Workers should be allowed to choose between types of equipment such as safety spectacles, gloves, and barrier creams. Medical supervision now includes: (1) initial clinical and x-ray examination, the latter including chest, spine, jaw, and long bone; (2) weekly urine excretion test for fluorine (on sample cross-sections of workers); (3) biennial clinical and x-ray examination; and (4) semiannual dental inspection. Blood counts were discontinued since they showed no change.

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- 1110 Environmental Problem in the Chemical Industries. Kingsley Kay.
Internatl. Labour Rev. 33, 385-405 (Nov. 1955).

This writer reviews the accident and occupational disease record of the chemical industries in the United Kingdom and the United States for the years 1948-1953. There was a general reduction of the accident rate in the United Kingdom during this period but an increase in the accident rate in the United States chemical industry. The increased rate in the United States has been the result of poor experience in certain types of chemical industries, notably soap and synthetic rubber. To overcome this trend of increased accidents and to assist in reducing the incidence of occupational disease in this country, action at the plant design stage is needed. Advance consideration of the potential problems which might arise at all steps of the process and of waste disposal is needed. Research into the toxicity of newly developed chemicals is necessary if good plant conditions are to be achieved.

-- Arch. Ind. Health

- 1111 One Industrial Health Program in the United States Navy—Growth and Development.
N. B. Walker. Ind. Med. & Surg. 25, 389-394 (Aug. 1956).

This paper describes the procedures developed in planning and implementing an occupational health program in a large warehousing activity, the Oakland, California Naval Supply Center, with approximately 10,000 employees. It covers the three-year period involved in the development of the program, from one totally unacceptable to the management and employees, to a program commended by top management, accepted by all the employees, and meeting the Industrial Medical Association standards for approval and certification. The summary lists 33 features of the final program.

- 1112 Physical Fitness—Why, How Much, and How to Acquire. P. V. Karpovich.
Ind. Med. & Surg. 25, 372-375 (Aug. 1956).

Published reports of fitness tests on children and adults have sometimes shown an alarming degree of unfitness in Americans. The author points out some fallacies in some of these tests. In one case, many persons who did not pass a test easily passed it after warming-up exercises. Many more rejections in Selective Service tests were due to medical conditions than to physical unfitness as such. There is no acceptable standard for physical fitness for living; for recreational physical activities, the degree of fitness depends upon just what activity is in question; for industry, physical fitness is fitness for the job, and the tests simulate the job. Even physically handicapped persons may qualify for some jobs. A margin of safety is required, however; no one can work continuously at the top of his physical capacity. When a worker begins to show signs of unfitness for the job, he may still remain employed if he is given a new job that fits him. This practice has been successful in some progressive industries. The value of a worker cannot be measured in terms of physical fitness or of professional skill alone. It depends also upon his spirit of solidarity, or a realization that by doing his best for the company he does his best for his fellow workers and himself.

- 1113 An Appraisal of the Periodic Health Examination. K. A. Elsom, S. Spoont, and H. P. Potter.
Ind. Med. & Surg. 25, 367-371 (Aug. 1956).

Results of periodic health examinations conducted over a three-year period in the University of Pennsylvania Diagnostic Clinic are reported. The examinees were presumably well persons holding responsible positions in various fields. An individual rather than a routine approach was used. Significant new disease was discovered in one out of three examinees. In many instances it was possible to institute treatment which at best eradicated the disease and at least helped to ameliorate the situation. The authors believe that the results achieved in the early detection and treatment of disease amply justify the expense and effort of the examinations. In half the individuals examined, in whom disease processes were already known to exist, the periodic examination helped to indicate whether such processes are progressive or stationary, and whether they were adequately treated, and thus made a further contribution to the health of those examined.

Cond. from authors' summary

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- 1114 The Half-Second Expiratory Capacity Test: A Convenient Means of Evaluating the Nature and Extent of Pulmonary Ventilatory Insufficiency. W. F. Miller, R. L. Johnson, and Nancy Wu. *Diseases of Chest* 30, 33-42 (July 1956).

A simple method employing single maximum expiratory efforts is presented as a means of defining the nature and extent of ventilatory insufficiency. The method involves the measurement of the 0.5 sec. expiratory capacity and the total vital capacity. Then by relating the 0.5 sec. expiratory capacity to the total vital capacity as a simple ratio, an expression of the maximum velocity of air flow during expiration is obtained. The total vital capacity is a measure of maximum pulmonary stroke volume. Thus in a single test expressions of the velocity of pulmonary air flow as well as pulmonary stroke volume are found. If these functions are plotted against each other in a quadrant graphic system which is based on normal values for these two functions, a convenient and precise clinical method for defining the physiological nature of ventilatory insufficiency is obtained. This test is applicable even to the seriously debilitated patient who cannot perform the maximum breathing capacity test. Serial studies by this method provide a convenient and informative method of studying the nature of the change in ventilatory function during the course of the disease or resulting from therapy.

-- Authors' summary

- 1115 Return to Full Duty Following Surgery. D. S. Wegner. *Ind. Med. & Surg.* 25, 307-309 (July 1956).

A comparison between two large industries, a public health survey, an insurance company's experience, and Air Force experience, reveals that the Air Force is returning men to duty after about one-half to two-thirds as long a convalescent period after surgery or injury as the other groups. Possible reasons for the difference include: better physical condition of the selected Air Force personnel; lower age of the physicians, indoctrinated with the principle of early return; their knowledge of the need of conserving manpower and expense; and limitation of the number of men available for jobs. Age of the workers was not clearly shown to be a factor. In spite of these differences, the figures presented suggest that patients may be returned to work earlier than is usual in many groups. Such earlier return would not adversely affect and would probably benefit the patient, industry would save money, and insurance companies would reduce losses.

- 1116 A Rehabilitation Program for the Industrial Amputee. M. M. Amrich. *Ind. Med. & Surg.* 25, 381-384 (Aug. 1956).

The rehabilitation of an industrial amputee cannot be confined to the fitting of a prosthetic appliance. The best results are obtained from a program which provides a continuous flow of services from the onset of injury to the placement back into gainful employment. With such a coordinated program the amputee is treated as an individual, physically and jobwise. To treat and fit the amputee according to type, e.g. below-knee, above-elbow, will fall short of the ultimate goal of return to industry. To fit him in accordance with future job requirements and individual personality will provide a greater degree of success; this is evident in a number of successfully re-employed industrial amputees. -- Author's conclusion

- 1117 Management of Injuries in the Aged. R. H. Kennedy. *Bull. N. Y. Acad. Med.* 32, 487-489 (July 1956).

The actual definitive treatment of the injury itself varies little in the advanced years from that in younger persons. The whole problem of management of the aged individual who has suffered an injury includes many important, and even critical, factors not usually stressed in younger persons. In the majority, who were active, the aim must be to return them to a condition where they can accomplish as much as before the accident in the shortest time and with the least risk. In treating such persons it should be learned whether they were mentally and emotionally interested, how they spent their time, whether they had jobs, whether the injury may prevent them from returning to work, whether they can do part of their work during convalescence, whether a hobby has kept them alert, whether they can continue the hobby during recovery, whether economic independence can be lost, and whether the psychological reaction is to prefer death to becoming a burden.

From the first day, the physician should insist on exercise of the injured parts and continuation of or introduction to work, social activities, or hobbies. If there is an economic problem or source of worry it is the physician's duty to propose possible plans for the future. If there will be permanent crippling or incapacity the situation must be faced in the early days and possible solutions made known to the patient. Habits should be continued as far as possible. A number of suggestions are given for dealing with particular injuries and infirmities.

- 1118 Management of Surgical Emergencies in the Aged. C. W. Cutler, Jr.
Bull. N. Y. Acad. Med. 32, 495-508 (July 1956).

The author examines the common surgical emergencies which beset elderly people and evaluates the results of surgery in dealing with them. The more frequent emergencies are gangrene of the extremities, diseases of the biliary tract, intestinal obstruction, perforation and hemorrhage from peptic ulceration, mesenteric thrombosis, and appendicitis.

- 1119 Occupational Stress and Emotional Illness. J. A. Smith.
J. Am. Med. Assn. 161, 1038-1040 (July 14, 1956).

In a group of 91 patients, only seven had an emotional illness that apparently resulted from occupational stress. In the remaining 84, either unwise supervision, a severe illness in another employee, a preexisting tension state, or a traumatic injury in a susceptible person was the precipitating factor. In this group the presumption that stress from the work itself caused the emotional illness was unwarranted and, although the tension state had persisted for prolonged periods, no physical illness developed in these patients.

-- Author's summary

- 1120 The Optimum Time for Return to Work Following Various Major Cardiovascular Disabilities. J. J. Thorpe. Ind. Med. & Surg. 25, 329-336 (July 1956).

Evaluation of a person with cardiovascular disability for return to work is a highly individualized matter. However, arbitrary statements about average length of disability can be made with full knowledge of their limitations as applied to the individual case. The recommended periods are: coronary insufficiency, three to four weeks; myocardial infarction, 12 to 16 weeks; congestive heart failure, four to six weeks; cerebral vascular disease, two to six months; symptomatic essential hypertension without major cerebral, cardiac, or renal involvement, two to five weeks; thrombophlebitis, three to four weeks; varicose veins treated medically, about a week, or after surgery about four weeks; and severe peripheral arteriosclerosis, return to full duty unlikely. Except in the obvious case, a carefully observed trial at work is the only sure way to judge the individual's capability. This should be tried in every case where failure will not endanger the employee's life or the safety of his fellows.

-- Cond. from author's summary

- 1121 Evaluation of the Cardiac Worker. D. H. Sparkman and J. L. Wilson.
Northwest Med. 55, 406-409 (Apr. 1956).

In January, 1954, a work evaluation clinic for patients with heart disease was established in Seattle by the Washington State Heart Association. In clinics of this type, a team conference is held in which the internist, psychiatrist, medical social worker, and vocational counselor report their findings. A decision is reached as to job capabilities, and recommendations are made to the referring physician. On his approval, a copy of the recommendations is also sent to the potential employer. Classification data and results are reported on 147 patients referred to the clinic. As of August, 1955, 59 had been told they could return to work, and 41 had done so. Emotional problems in 46% of the patients presented greater difficulty in rehabilitation than did their heart disease. The practicing physician can and does deal satisfactorily with the majority of employment problems of his heart patients. Patients referred to the clinic usually presented problems related to

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IN RE: ABRAMS November 1992

their employability that were not readily solved, and 56% had been out of work six months or more. Experience gained indicates that the great majority of cardiac patients can perform useful work if properly placed. So far, there is no evidence that any patient so placed has harmed himself by working. On the contrary, there is considerable evidence that the patient's return to work has had a beneficial effect upon his morale, not to mention the economic benefit to himself, to industry, and to the community.

-- Cond. from J. Am. Med. Assn.

- 1122 High Speed Cineradiography and Electrocardiography. A New Method for the Study of Heart Disease in Humans. M. Prinzmetal, R. Kennamer, S. M. Weiner, and J. R. Bishop. J. Am. Med. Assn. 161, 1229-1231 (July 28, 1956).

Motion pictures of the heart as it appears in fluoroscopy can be made by using a camera in connection with an image-intensifying tube. The pictures can be greatly slowed for study by various means, so that the events of one second take almost 14 seconds to view on the screen. Detailed analysis of the movements of the heart shadow can be made with reference to other aspects of cardiac function, since the electrocardiogram, ballistocardiogram, phonocardiogram, or any other record transmissible to an oscilloscope, can be photographed in synchronism with the heart shadow.

-- Editor's summary

- 1123 Clinical Evaluation of Saline Solution Therapy in Burn Shock. K. Markley and others. J. Am. Med. Assn. 161, 1465-1473 (Aug. 11, 1956).

A comparison was made between two groups of severely burned patients, in which one group was treated with large volumes of saline solutions mainly by mouth, and the other with colloids, dextrose, and water, with little sodium by vein. The treatment was intended especially to relieve the mortality due to shock during the first 48 hours, after which time there was no further difference in the treatment of the two groups. All accessory therapy was identical in the two groups, which were comparable as to age, sex, severity of burn, and other significant factors. Among the 110 children and 83 adults so studied, no significant difference was found between the two groups as to 48-hour mortality or ultimate total mortality. The patients receiving the saline solution retained the fluid better and vomited less than those who received the colloid treatment. Both groups fared much better than did 133 patients treated by other methods during the three years that preceded the study.

-- Cond. from editor's summary

- 1124 Varicose Veins and Stasis Problems. The Industrial Physician's Interest and Potentialities. F. B. Wagner, Jr., P. H. Fried, and P. K. Perilstein. Ind. Med. & Surg. 25, 337-342 (July 1956).

The industrial physician's understanding of the physiologic disturbances associated with the various types of venous disorders of the lower extremity is basic for individualization of treatment. Stasis complications can be prevented by proper elastic compression. If elastic stockings are elected, they should be made to order according to the physician's prescription. Most stasis complications can be treated while the patient continues at work. The indications and proper application of the modern type of Unna's paste boot should be mastered by all practicing industrial physicians.

-- Authors' conclusions

- 1125 A Treatment Program for the Alcoholic in Industry. A. Z. Pfeffer and others. J. Am. Med. Assn. 161, 827-836 (June 30, 1956).

This paper is a preliminary report on the Consultation Clinic for Alcoholism, a joint clinic established through the cooperation of several companies. It covers administrative arrangement, referral processes, diagnostic and treatment procedures, initial results and impressions of special features of the problem drinker in industry, and implications of the use of probation. Patients are evaluated and assigned to appropriate therapies. Treatment includes individual and group psychotherapy, medical procedures, and occasionally Antabuse therapy. Most of the patients had not reached the terminal stage of alcoholism. Of the 180 alcoholics referred to the clinic, 135 have remained at

their jobs by maintaining sufficient control over their drinking. Of the 148 who accepted treatment, 82% remained at their jobs, and showed a reduction of absenteeism to one-third of the pretreatment figure. The importance of remaining at the job and the imminent threat implied by probation motivate the employee to seek treatment for his alcoholic problem. To a large degree success or failure in therapy is balanced on this point of motivation, and a firm, judicious probation policy unquestionably turns the balance in favor of relatively high motivation for psychotherapy. This firm attitude represents a midpoint between the two earlier positions taken toward alcoholics: (1) harsh, relentless condemnation of the alcoholic as a morally weak person deserving discharge, and (2) pity for him as the unfortunate victim of social and psychological pressures against which he was helpless. In the treatment described the employee is made aware that he plays an important part in the rehabilitation process. This propitious use of probation may be suitable in settings such as the courts or other large institutions and agencies dealing with alcoholism.

-- Cond. from authors' summary

- 1126 Environmental Causes of Cancer of the Lung Other than Tobacco Smoke. W. C. Hueper. Diseases of Chest 30, 141-158 (Aug. 1956).

The evidence presented definitely establishes the fact that some well defined exogenous physical and chemical agents are causally involved in the production of occupational cancer of the respiratory system of members of certain restricted worker groups. It is likely that industry-related factors account for a much larger number of cases of lung cancers than that on record. The demonstration of recognized environmental respiratory carcinogens in the atmosphere especially of urban areas and of the markedly higher lung cancer death rates in those areas strongly suggests that industry-related air pollutants may be a cause of lung cancer and its recent considerable increase in frequency in practically all industrialized countries. It is obvious, however, that they are not the only factors responsible for pulmonary carcinogenesis. Research on the etiology of lung cancer therefore should be conducted on a broad basis, including not only inhalants but also agents entering the body through non-respiratory routes.

-- Cond. from author's summary

- 1127 Environmental Cancer in Connecticut. 2. Differences in Incidence of Cancer among Areas. C. S. Wilder. Conn. Health Bull. 70, 143-150 (June 1956).

Incidence rates for each of the four areas studied for the environmental cancer project have been presented. Higher rates were reported for the urban segment of the textile and paper industries than for the heavy industry area, but further analysis revealed no significant difference in these rates. Real differences are noted between the urban and rural areas, but there are more cases of real differences in rates for males than females. Whether this is a clue to environmental causes of cancer in males in industrial areas and that urban-rural differences in rates result from this will be studied. Fewer differences in rates are reported for females.

-- Author's summary

- 1128 Functions, Standards, and Qualifications for an Industrial Nurse in a One Nurse Service in Industry or Commerce. American Nurses' Association, Industrial Nurses Section, 2 Park Ave., New York 16, N. Y. 12 pp. (1956).

This booklet is intended as a guide for small companies in establishing and maintaining a one-nurse service. The type of industrial or commercial establishment, company policies, and number of persons to which service is given will influence the extent to which these functions and recommendations can be carried out. Functions and standards are classified under the headings: (1) administration and operation of the health service department; (2) nursing care and health maintenance; (3) safety education; (4) health and welfare benefits; and (5) community health and welfare agencies. Qualifications include: (1) professional qualifications; (2) personal competence qualifications; and (3) essential knowledge and skills. Under each of these headings, a number of specific duties or qualifications are listed. The work of the nurse as a member of a team to protect and improve health, safety, and well-being is emphasized.

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- 1129 Major Medical Expense Insurance. Chamber of Commerce of the United States, Washington, D. C. 33 pp. (1956).

This pamphlet includes papers by several authors, describing this newest and broadest of health insurance coverages. It is of interest especially to insurance companies.

SKIN DISEASES AND BURNS

- 1130 Patch Testing. C. D. Calnan. Trans. Assn. Ind. Med. Officers 6, 14-17 (Apr. 1956).

Patch testing is not an attempt to reproduce a patient's dermatitis in miniature experimentally, and it does not try to imitate exactly the condition his skin encounters at work. Its purpose is to detect antibodies which are believed to be concerned in contact dermatitis. It has no other use. Of all cases of industrial dermatitis only about one in five and possibly less are due to allergic sensitivity; but this minority forms an important group for several reasons. The patch test can provide very strong evidence of the relationship to the man's occupation; such allergic cases are usually easily cured; and the precise causative agent may be identified and therefore avoided. A table gives examples of substances which behave as irritants (detergents, trichloroethylene, cutting oils, gasoline, cement, and kerosene), as distinct from allergens or sensitizers (rubber, metol, aniline dyes, nickel, and antibiotics). Another group, including turpentine, resins, formalin, and dichromates, can behave as irritants or sensitizers or both. The sequences of irritant and allergic dermatitis are contrasted and illustrated by diagrams. In cases of irritant dermatitis, patch testing is of no help and in fact may give such confusing results as to bring the test into disrepute. A number of suggestions for application of patch tests for allergens and for their interpretation are given, particularly for distinguishing allergic from irritant reactions.

- 1131 Allergy to Sunlight. Queries & Minor Notes, J. Am. Med. Assn. 161, 1517 (Aug. 11, 1956).

A case of dermatitis on exposure to sunlight is described. The simplest way to prevent allergy to light is to use a screening agent. One of the best of such chemicals is p-aminobenzoic acid or its ester. It can be used in concentrations of 1 to 10%. The weaker strengths are marketed commercially. More concentrated preparations are more effective, if suitably diluted with alcohol and water and combined with an ointment. Recent developments have indicated that certain chemicals taken internally, notably the antimalarial drugs, have a protective action.

- 1132 Dermatology in Industry. H. Wyers. Trans. Assn. Ind. Med. Officers 6, 17-25 (Apr. 1956).

In dermatology as in industrial toxicology the target areas are often multiple. The following principles must be appreciated: (1) the maximum effect may be exerted at the points of contact which may vary anatomically, according to the properties of the substance; (2) the noxious substance may be absorbed through the skin without affecting it and exert its maximum effects on internal organs; (3) a poisonous material may enter by another route than the skin, affect mainly one or more internal structures, and then directly or indirectly cause a skin lesion; (4) the skin may react to disorders of the viscera; (5) more than one factor may be involved, as when a dust is inhaled and the skin becomes sensitive to sunlight; and (6) mixed forms occur. A number of dermatoses from the less common sources are described, including: mercury; sulfur (in which mercury was a factor); selenious acid; hydroquinone; metol; mepacrine; phenothiazine; cyanide holes; vanadium; pilonidal sinus in a hairdresser's hand; and asbestos corns or warts.

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- 1133 Delayed Sensitization of Skin to Phenylmercuric Acetate. F. W. Sunderman, M. F. Hawthorne, and G. L. Baker. Arch. Ind. Health 13, 574-577 (June 1956).

Studies are reported on a patient who developed severe delayed sensitivity of the skin, with formation of bullae, following exposure to a saturated solution of phenylmercuric acetate in benzene. The blister fluid yielded mercury in a concentration of 40 mg. per liter and was high in gamma-globulin. It is proposed that if vesication should develop following contact with organomercuric salts the serous fluid should be aspirated as rapidly as it is formed in order to remove the mercury that may accumulate. -- Authors' summary

- 1134 Phenylmercuric Pesticides. Queries & Minor Notes, J. Am. Med. Assn. 161, 1518 (Aug. 11, 1956).

Orchard workers using a spray containing N-phenylmercuric ethylenediamine developed burns of a vesicular type when splattered by this material. Immediate recommended treatment is to wash the material off with soapy water. The question concerns additional treatment. Some or all of the phenylmercuric pesticides may act both as primary irritants and allergens. After the damage that paves the way for vesiculation has been inaugurated, there is no specific therapy. Treatment instituted for any acute dermatitis of equal severity is in order. In known allergic individuals, the use of judiciously chosen antihistaminics may lessen severity, and sedation is sometimes warranted. In repeated or persistent states, conceivably some of the newer anti-inflammation medications may influence the degree of injury, but no such treatment is desirable for the usual and trivial affair. Some protection may be provided by application of barrier cream, preferably of the silicone type, before exposure. Systemic mercury poisoning is a possibility.

- 1135 Handling Precautions for Epoxide Resins and Amine Catalysts. L. B. Bourne. (Abstract). Chem. & Ind. pp. 758, 759 (July 28, 1956).

This paper was given at a symposium on epoxide (epoxy) resins. In the early part of the handling process of these resins and amine catalysts, the main risk lies in the amines. As a group they are not only primary irritants but can also become generalized sensitizers with whole body reactions. Some, especially pyridine, are known to be toxic to the body generally. In one case where generalized sensitivity toward amines developed, the subject became sensitive to fine dust from the finished resin products. Handling the resins and catalysts in the manufacture of small electronic apparatus presents no difficulty when associated with good hygiene, well ventilated shops, an efficient fume cupboard for mixing, and an efficient barrier cream. A more difficult situation exists where large articles are fabricated, but there also, the same principles apply. Additional precautions include restriction of the amount of toxic materials to the minimum necessary for the work at hand, careful instruction in handling, standardized methods, prohibition of smoking, and the display of cautionary notices.

- 1136 Occupational Eczema from Chlorpromazine. G. Hovding. Tidskr. Norske Laegeforen. 76, 250, 251 (Apr. 15, 1956). Norwegian.

In hospitals where chlorpromazine is extensively used, allergy on exposure to the chemical, leading to contact eczema, should not be underrated. Professional steps to reduce the hazard of contact are the only means of hindering the possibilities of sensitization. The nursing personnel should be informed of the hazard, and work with chlorpromazine should be assigned to a definite personnel. A number of preventive measures are described.

-- Cond. from J. Am. Med. Assn.

- 1137 Wood Dermatitis. Experimental Research on the Allergy Due to Mosses. P. LeCoulant and G. Lopes. J. med. Bordeaux 133, 245-249 (1956). French.

Wood dermatitis is attributed to mosses (*Frullania* spp. and *Radula* spp. living on the barks). The sensitizing compound is of low molecular weight, volatile, diffusible in the wood, and tolerates heating to 100°; its tissue fixation and allergic effect are high.

-- Chem. Absts.

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CHEMICAL HAZARDS

- 1138 Toxicity of Ozone. 1. Acute Toxicity. S. Mittler, Delores Hedrick, M. King, and A. Gaynor. *Ind. Med. & Surg.* 25, 301-306 (July 1956).

Owing to the existence of a layer of ozone in the upper atmosphere and its possible effect on aviation personnel, the acute and subacute toxicity of ozone for several laboratory animals was investigated. The LD₅₀ for a three-hour exposure of ozone was found to be 21 ppm for mice, 21.8 ppm for rats, 34.5 ppm for cats, 36 ppm for rabbits, and 51.7 ppm for guinea pigs. Edema occurred in the lungs of rats exposed to 6 ppm for 18 hours; no damage was caused by 24-hour exposure to concentrations of less than 3 ppm ozone.

-- Authors' summary

- 1139 Mucous Flow and Ciliary Activity in the Trachea of Rats Exposed to Pulmonary Irritant Gas. T. Dalhamn and J. Rhodin. *Brit. J. Ind. Med.* 13, 110-113 (Apr. 1956).

Mucous flow and ciliary beat were studied in rats exposed to sulfur dioxide as a typical irritant gas. The rate of mucous flow was considerably reduced and the amount of secretion was greatly increased after ten weeks' exposure to 10 ppm of sulfur dioxide. The rate and phases of ciliary beat were unaffected. The ciliary structure as shown by electron microscopic studies was also unaffected. It would seem that the functional changes noted are primarily attributable to alterations in the character of the mucosal secretion and not to injury to the ciliary mechanism as such.

-- Cond. from authors' summary

- 1140 Chronic Occupational Bronchitis in Pyrite Miners. M. Barsotti and L. Parmeggiani. *Med. lavoro* 46, 677-698 (Dec. 1955). Italian.

Through wet drilling and the improved conditions of ventilation realized in the past ten years, a remarkable decrease of silicosis has been observed in the pyrite mines of Tuscany. However, respiratory disturbances of probable occupational origin are still frequently found in these mines. Besides the fine dust of the mineral and rock, sulfur dioxide is found in the atmosphere, produced by the slow oxidation of the mineral in the tunnels, by the burning of the pyrite after slides, and by burning of magneto-pyrite during explosions. In some mines sulfur dioxide is found in almost constant concentrations of 1-2 ppm and occasionally reaches peaks above the maximum allowable. After a few years of work miners may show dyspnea after exertion and nightly asthmatic attacks, usually without catarrhal signs; eventually pulmonary emphysema may occur. The roentgenological picture shows an accentuation of the bronchovascular network, at times an enlarged shadow of the hill, less frequently a gross peribronchial-type reticulation and even military-type nodulation, with nodules limited to the basal medial regions. After removal from work in mines, the workers show rapid improvement of the roentgenological picture, but the clinical conditions remain. Pulmonary tuberculosis is seldom associated. Recommendations are made for compensation. Criteria for making differential diagnosis are analyzed, and suggestions are given for prophylaxis and treatment.

-- Cond. from authors' summary (Arch. Ind. Health)

- 1141 Facts and Fallacies of Plumbism and What to Do about Them. R. T. Johnstone. Presented at Annual Meeting, Lead Industries Assn. (7 pp. (Apr. 24, 1956). Obtainable from Lead Industries Association, 420 Lexington Ave., New York 17, N. Y.

It is a fact that serious lead intoxication in industry is rare; but it is a fallacy to believe that the incidence that does occur has no significance. Several instances are given in which large companies refused to consider the evidence of lead poisoning in their plants

and thereby sustained large losses in compensation awards. On the other hand, a number of fantastic claims about lead poisoning were proved to be without foundation. The remedy for this situation lies in more adequate education. Occupational medicine is given little attention in most medical school curriculums. The author suggests greater use of audio-visual education in plants, medical schools, and medical meetings, as an important factor in education.

- 1142 A Lead Hazard in Boiler Cleaning. R. J. Sherwood and Joan Bedford.
Arch. Ind. Health 14, 92-95 (July 1956).

This paper describes an investigation of boiler cleaning operations during which men are exposed to massive concentrations of dust. The ash from creosote-pitch fuel contains about 5% of lead, and this constitutes a hazard to unprotected men working within a boiler. Even when approved filter respirators are worn, lead is present in the urine of the men, and for this reason the use of supplied-air respirators is advocated. The correct fit of these should be tested periodically. For reliable estimation of lead excretion, 24-hour specimens of urine are essential. Contamination of urine specimens can readily be detected by analyzing the contents of separate night and day flasks.

-- Authors' summary

- 1143 Effect of Edathamil Calcium-Disodium on Lead Acetate Intoxication. J. Kubistova.
Arch. Ind. Health 13, 556-560 (June 1956).

From the experiments reported it is clear that cases of severe lead intoxication in experimental animals may be dramatically improved by correct treatment with edathamil calcium-disodium. Failures and successes of variations in the treatment showed that it is of greater importance to continue the administration of edathamil calcium-disodium than to begin early with the treatment. It seems that the drug does not exert its beneficial effect by substantially increasing lead elimination from those stores in the body that cause the symptoms and deaths in acute poisoning, but rather that it is effective predominantly by blocking the lead that is continually released from these stores into the body fluids and by preventing it from reacting with some sensitive tissue structures. Some of the author's observations and those of others tending to substantiate this hypothesis are discussed. Other experiments showed that subcutaneous administration is as effective as intraperitoneal and that the omission of the massive dose at the beginning of the medication or a considerable diminishing of the doses greatly decreases the effectiveness of the treatment. Experiments with chronic lead poisoning are in progress.

-- Cond. from author's conclusion

- 1144 Prophylaxis by Oral Administration of Dicalcium Ethylene Diamine Tetraacetic Acid (Ca₂EDTA) to Workers in Lead. W. Reinl.
Zentr. Arbeitsmed. u. Arbeitsschutz 6, 5-8 (Jan. 1956). German.

Some of the literature on the good effects of EDTA and its salts in lead poisoning is quoted. In the work here described the results of administering Mosatil, which is a calcium salt (Ca₂EDTA), or a calcium disodium salt (CaNa₂EDTA for injection) on 17 lead workers are recorded in some detail. These workers, in whom there was evidence of slight lead poisoning, were given 1 gram of Mosatil by mouth three times a day for six weeks. An impressive decrease of porphyrinuria and lead level in the blood was demonstrated, as well as an improvement in the general feeling of health in the workers. It is considered that EDTA is likely to be of great value in preventing lead poisoning by accelerating the elimination of lead and by combining with any lead which has entered the body to form a non-toxic lead compound.

-- Cond. from Bull. Hyg.

- 1145 Food Components and Their Importance in the Prophylaxis of Industrial Lead Poisoning (Experiments on Rabbits). H. Buckup, H. Böhm, H. Zimmerman, R. Remy, F. Portheine, and C. Voss. Zentr. Arbeitsmed. Arbeitsschutz 6, 1-4, 29-34 (Jan., Feb. 1956). German.

This paper records at some length the experimental details and results of the administration of a variety of food components to a large number of rabbits poisoned with lead acetate. The components tested were methionine, cysteine, ascorbic acid, vitamin B₁₂,

and whole milk. Ascorbic acid and methionine in some instances had a protective effect on erythropoiesis, and both methionine and cysteine had a good effect on the weight of the animals. Whole milk was observed to lessen the amount of lead deposited in the bones. The practical conclusions based on these experiments are that workers exposed to lead in industry should take a diet that is high in biological value, but should avoid an excess of fat and protein, and should also be warned against the misuse of alcohol. It is considered that the opinion held by some that milk is harmful to lead workers (IHF Abst. 800, July 1955) is erroneous, but on the other hand the old view that milk is a real protective foodstuff is merely a superstition.

-- Cond. from Bull. Hyg.

- 1146 A Study of Detoxication in Experimental Acute Poisoning by Manganese. J. Rodier, R. Mallet, and L. Rodi. Bull. inst. hyg. Maroc 14, 143-185 (1954). French.

Details are presented of a number of drugs which gave either negative or feeble effects in protection against acute manganese poisoning; they included BAL, sodium formaldehydesulfoxylate (rongalite), cysteine, methionine and acetylmethionine, penicillin, and vitamin B₁₂. Better results were obtained with calcium versenate (calcium EDTA). Results with this substance have been reported in another paper (IHF Abst. 63, Jan. 1955).

-- Cond. from Bull. Hyg.

- 1147 The Influence of Mercury Vapor on Blood Elements and Hemoglobin. B. Kesic, V. Hausler, L. Purec, and M. Vandekar. Arch. Ind. Health 13, 602-605 (June 1956).

The comparison of blood element counts, including bone marrow and hemoglobin levels, of the experimental group of guinea pigs exposed to mercury vapor and those of a control group did not reveal any statistically significant differences. The investigation also revealed no pathologic alterations in the white or red blood elements or in the bone marrow of guinea pigs chronically exposed to mercury vapor. These results were in agreement with those of an earlier investigation of exposed workers (IHF Abst. 43, Jan. 1952).

- 1148 Studies on the Influence of Sulfur Compounds on Molybdenum Toxicity in Rats. R. VanReen and Mary A. Williams. Arch. Biochem. Biophys. 63, 1-8 (July 1956).

The influence of methionine, cystine, sodium thiosulfate, and sodium sulfate on molybdenum toxicity in rats was studied. When the sulfur-containing compounds were included in the toxic diet, there was a definite improvement of the enzymatic anomaly observed in molybdenum toxicity. Growth was also improved by the incorporation of these compounds in the toxic diet.

-- Authors' summary

- 1149 Vanadium Poisoning in Industry. D. L. G. Thomas and K. Stiebris. Med. J. Australia 1, 607-609 (Apr. 14, 1956).

The authors present data on 14 patients with vanadium poisoning who were reported in a period of ten days. Most of the patients had been cleaning an oil-fired furnace or boiler, and the others had been working near ovens heated by oil fires, all without masks or other protective equipment. Poisoning is characterized by irritation of the nasopharyngeal mucosa and conjunctivas, with greenish black discoloration of the tongue, anemia, dry cough, rhinorrhea, recurrent hemoptyses, digestive and renal disturbances, nervous manifestations, trembling, headaches, psychic derangement, and even blindness. In the one case which is fully described, rash and skin irritation disappeared within 24 hours, and bronchospasm within a week. Sulfur compounds present may increase the severity of the symptoms. The authors describe a modified colorimetric method for the determination of microscopic amounts of vanadium in urine and in the dust of oil-fired boilers. The method is based on the development of a magenta-black color, vanadium and 8-hydroxyquinoline in an alcohol-free chloroform medium. This chemical analysis demonstrated the presence of the dust and in some cases in the urine. Protective measures are recommended. -- Cond. from J. Am. Med. Assn.

03120266

- 1150 Chemical Analysis of Blood Cells of Subjects Exposed to Inhalation of Fumes and Dust of Zinc Oxide. A. Granata. Arch. maladies profess. 16, 537-542 (1955). French.

Workers employed in the recovery of zinc by distillation are exposed to the inhalation of fumes and dust containing zinc oxide. The blood of seven of such workers was subjected to every modern method of testing its chemical reactions. Eleven different methods of examination were employed. The results indicated that the fumes and dust provoked alterations in the polysaccharides and peroxidases. These alterations became manifest in workers exposed to the fumes and dust for at least 12 months. A diminution was noted in the acid phosphatases in certain cases, but this phenomenon was not general. The workers wore more or less effective respirators; one of them, who had been exposed for more than ten years, suffered from pronounced anemia.

-- Bull. Hyg.

- 1151 Ethylene Glycol Poisoning with Meningoencephalitis and Anuria. I. P. Ross. Brit. Med. J. 1, 1340-1342 (June 9, 1956).

The properties, uses, and toxicity of ethylene glycol are stated. A case of poisoning (by ingestion of 1/4 to 1/2 pint of antifreeze solution) is presented in which acute meningoencephalitis was followed by anuria and death from renal failure after 12 days. The morbid anatomical findings are described. The variations in the clinical features are discussed.

-- Author's summary

- 1152 Methyl Bromide Toxicity. Queries & Minor Notes, J. Am. Med. Assn. 161, 929 (June 30, 1956).

The problem of chronic methyl bromide exposure in a company exists in connection with treatment for termites. Information on laboratory tests to be applied in a semi-annual examination for chronic toxicity is requested. The reply states that no control program for methyl bromide damage should be limited to periodic examination at long intervals. A simple halide lamp flame becomes characteristically colored at the 50 ppm level. Any positive test indicates undesirable exposure. The maximum tolerable limit is 20 ppm. All areas being fumigated should be sealed, and prominent warning placards should be exhibited. The first entry should be made by a person wearing a suitable respirator or air-line hose. Skin exposure to the liquid should be avoided. The onset of methyl bromide poisoning is slow. Workers should be alerted to report early symptoms. The first effect of severe gasing is on the respiratory tract, and the second is on the central nervous system. Unlike most chlorinated hydrocarbons, methyl bromide is hardly a narcotic and essentially an excitant. Effects of smaller doses on the nervous system are described. In severe poisoning such fatalities as arise are likely to occur within two days after exposure. Survival beyond that period usually is followed by complete recovery, but the period of disability may be long. So characteristic are the clinical manifestations that laboratory procedures are not always indicated. However, through laboratory examination of blood, some nonfatal cases have been found to present about 7 mg. per 100 ml. of blood during the episode, with disappearance after one month. Yet, in a few fatal cases, the blood level was not much higher, being about 9 mg. per 100 ml. of blood. Urine examination for methyl bromide may be positive, and such tests may be quantitative.

- 1153 Serious Liver and Kidney Inflammation Caused by Inhaling Trichloroethylene-Toluene, Treated by Artificial Elimination of Waste Products. J. Marty and others. Bull. mem. soc. med. hop. Paris, Nos. 29-31, 1232-1236 (1955). French.

A case is described in which a naval air pilot inhaled concentrated vapor containing equal parts of trichloroethylene and toluene. Six days later febrile jaundice appeared with a palpable liver and muco-cutaneous hemorrhages. Oliguria was present with abundant casts. The outstanding features of the case are 18 days of anuria with complete return to health after two exchange transfusions and four peritoneal dialyses. Treatment was well tolerated and no adverse symptoms developed, doubtless because the subject was a healthy young man. Details of the course of the case are given, and the authors consider that they have made a case for removing from the body by the means employed, at least temporarily, the waste products normally eliminated by the kidneys.

-- Cond. from Bull. Hyg.

- 1154 The Problem of Trichloroethylene in Occupational Medicine. Z. Bardodej and J. Vyskocil. Arch. Ind. Health 13, 581-592 (June 1956).

When proper hygienic rules are observed, trichloroethylene appears less dangerous than other solvents. Trichloroethylene is above all a nerve poison. The most important signs and symptoms of chronic intoxication are intolerance to alcohol, tremors, giddiness, neurasthenic syndrome with anxiety states, bradycardia, and conduction disturbances in the heart muscle. The authors consider the highest allowable trichloroethylene concentration in the air (0.4 mg. per liter for Czechoslovakia, 100 or 200 ppm for U.S.A.) too liberal and advocate a lowering to 0.2 mg. per liter* in Czechoslovakia, better still to 0.05 mg. per liter*. The authors believe that the finding of 160 mg. of trichloroacetic acid per liter of urine indicates that the MAC has been exceeded, and that even lower values do not exclude that possibility. Employees subject to exposure should take care to get sufficient exercise in the open air, as this aids exhalation of the noxious vapor and supports oxidation. The administration of vitamins of the B group and of ascorbic acid has proved useful. Food rich in proteins helps persons threatened with intoxication. -- Authors' summary

*40 and 10 ppm respectively.

- 1155 Two Cases of Meta-Dinitrobenzene Poisoning with Unequal Clinical Response. T. Beritic. Brit. J. Ind. Med. 13, 114-118 (Apr. 1956).

Two cases of industrial m-dinitrobenzene poisoning in women are reported. The patients were engaged in the manufacture of m-dinitrobenzene; the process and the potential hazards of the work are briefly described. The differences in clinical features, particularly in regard to the occurrence of Heinz bodies, methemoglobinemia, and liver damage are stressed and discussed. -- Author's summary

- 1156 Dinitroorthocresol Exposure from Apple-Thinning Sprays. G. S. Batchelor, K. C. Walker, and J. W. Elliott. Arch. Ind. Health 13, 493-596 (June 1956).

The sodium salt of dinitroorthocresol (DNOC) is used agriculturally as a fungicide, an insecticide, a weed killer and a thinner of apple blossoms. Although the Food and Drug Administration has set a zero tolerance for DNOC as a residue on raw agricultural produce and insisted on a poison label on its formulations, in this country it is commonly considered as one of the safer materials as compared with the organic phosphorus insecticides. On the other hand in Europe a number of deaths have occurred, most of which resulted from chronic exposure rather than from accidental massive acute exposure. A study was made in the Wenatchee Valley of Washington to determine whether a serious health hazard existed under conditions of use in that area. The study included skin exposure, inhalation exposure, and determination of DNOC in blood and urine. A dermal contamination of 63.2 mg. per hour of exposure was found, but skin absorption is very slight. Respiratory exposure was much lower. Blood and urine levels were low. No symptoms were reported in any of the subjects. In contrast to England, where DNOC has proved to be a hazard, its use in the Wenatchee Valley appears to involve shorter working hours, more dilute stock solutions, more dilute spray solutions, and the application of much less of the compound during the season by any one worker. The measured exposure to DNOC of spray operators in the Wenatchee Valley and their urinary and blood levels indicated that these operators are not subject to a significant hazard in connection with the recommended use of DNOC for thinning blossoms.

- 1157 Safety Factors in Equipment for the Application of Highly Toxic Insecticides. Kingsley Kay. Can. J. Public Health 46, 273-281 (July 1955).

This article begins with a review of the equipment available for dispersing insecticides and of the available literature pertaining to its use. Available equipment includes aircraft, mechanical spray, misting, dusting, and hand-type equipment. The hazard associated with the use of each type of equipment is discussed, and some points of desirable modification are mentioned. There is an obvious need for development and improvement in all the various types of equipment, especially as insecticides become more hazardous. The author believes that safe use of insecticides will not be attained through personal protective measures and medical control. Safe operation must be attained through properly designed equipment, with greater emphasis on automation. -- Arch. Ind. Health

- 1158 A New Miticide, Kelthane. R. D. Garmus and V. H. Unger.
Agr. Chemicals. 11, 41, 42 (July 1956).

Kelthane, a new miticide, has been extensively field tested for two years. The leading attributes of this material are: (1) it has a high level of activity against an unusually broad range of mite species; (2) it has a long effective residual period; (3) it is harmless to other insect forms including bees; (4) preliminary toxicological considerations indicate it is safer to warm blooded animals than DDT; (5) it has rapid killing action; (6) it is ovicidally effective against several mite species; and (7) it has not caused adverse phytotoxic or fruit quality effects when applied at recommended dosage levels. -- Authors' summary

- 1159 Review of Organic Phosphorus Insecticides. Part 4. Biological Methods of Analysis.
R. G. Barradas. Chem. Age 24, 1369-1373 (June 23, 1956).

Biological methods for the analysis of insecticides are not very accurate and are often laborious and expensive, but in some instances they may be the only available methods of obtaining essential data. They are highly sensitive, and can in some cases distinguish between isomers that cannot be separated chemically. Radiochemical methods are more sensitive than biological methods, but do not take into account any chemical change that may take place in the living body. The biological action may be measured in two ways. The first involves the application of regular fixed doses of the insecticide to a number of animals and the measurement of the number of physiologically affected animals. Parallel tests are conducted on similar animals using known doses of the chemically pure insecticide. The second method involves the enzymatic decomposition of the insecticide in vitro. The anticholinesterase activity is the basis of tests of a number of insecticides, but it is not specific. The methods and results of a number of experimenters are reviewed, with references. They involve wide variations of methods in application to particular determinations. The toxicity must always be carefully controlled from the earliest stages in the development of any organic phosphorus compound which shows promising insecticidal properties. Biological screening tests, followed by routine pharmacological and toxicological testing on the usual test animals, decide the subsequent fate of any insecticidal preparation.

- 1160 Review of Organic Phosphorus Insecticides. Part 5. Spectrophotometric Methods of Analysis.
R. G. Barradas. Chem. Age 25, 29-32 (July 7, 1956).

Colorimetric methods for the analysis of insecticides have been reviewed in an earlier paper (IHF Abst 898, July 1956). There is no sharp distinction between colorimetry and spectrophotometry, but ultraviolet and infrared spectrophotometry have proved to be very useful in this field. The bulk of the literature indicates that the present trend is toward ultraviolet spectrophotometric investigations. The work of several authors on parathion and its derivatives, also chlorothion and diazonin, is reviewed with references. Infrared absorption spectra are widely used in many laboratories but this type of work is seldom published.

- 1161 Review of Organic Phosphorus Insecticides. Part 6. Classical Methods of Analysis.
R. G. Barradas. Chem. Age 25, 117-119 (July 21, 1956).

In this final paper, the use of classical analysis is reviewed. In insecticides, classical analysis means determination of phosphorus by any standard method, usually colorimetric. The main objection to those methods is that the material analyzed may contain phosphorus from various sources in addition to that provided by the insecticide. Several methods are reviewed, with references.

- 1162 Toxicity and Mechanism of Action of Some Metabolites of Systox. K. P. DuBois,
S. D. Murphy, and D. R. Thrush. Arch. Ind. Health 13, 606-612 (June 1956).

Commercial systox is a mixture of two isomers, known as true systox or P = S systox, and isosystox or P = O systox. Since the latter is considerably more toxic than the former, the investigation was conducted on purified P = O systox. Measurements of the acute toxicity of P = O systox and its sulfoxide and sulfone to rats, mice, and guinea pigs

were made. By the intraperitoneal route the LD₅₀ values for the three compounds were near 1.5 mg. per kg. for rats, 5.6 to 5.9 mg. per kg. for mice, and for guinea pigs values near those for rats, except that the LD₅₀ of the sulfone was 8.5 mg. per kg. The oral LD₅₀ for rats closely resembled the parenteral values. Acute toxic doses of the compounds produced cholinergic effects in mammals, with both the nicotinic and the muscarinic actions of acetylcholine being prominent. Measurement of the in vitro activity of the three compounds indicated that the systox had an activity ten times that of the two derivatives, but all three compounds were nearly equal in their inhibitory action on cholinesterase in vivo. Thus, the intraperitoneal administration of 1 mg. per kg. of the compounds to rats produced marked inhibition of the cholinesterase activity of brain, submaxillary glands, and serum. Maximum inhibition occurred at three hours after intraperitoneal administration of this sublethal dose of the compounds. Gradual reversal of the enzyme inhibition was observed during the following four days. The results of these studies demonstrated that P = O systox and its sulfoxide and sulfone derivatives have a high toxicity to mammals by virtue of their ability to inhibit the cholinesterase activity of the central nervous system and peripheral tissues. (Ed. note—Systox is a trade-mark of the preparation, but we have followed previous practice in not capitalizing the word).

-- Cond. from authors' summary

- 1163 Tolerances for Heptachlor. Anon. Federal Register 21, 2980 (May 4, 1956).

A tolerance for residues of heptachlor (1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene) of 0.1 ppm previously established under the Federal Food, Drug, and Cosmetic Act is extended to alfalfa, clover, sweet clover, beets (including sugar beets), cabbage, carrots, brussels sprouts, kohlrabi, cauliflower, corn, cotton, pasture and range grass, onions, peanuts, radishes, sugar cane, sweet potatoes, turnips with tops, and rutabagas without tops.

-- Chem. Absts.

- 1164 Tolerances for Residues of Malathion. Anon. Federal Register 21, 3109 (May 10, 1956).

The tolerance of 8 ppm for malathion previously established (IHF Abst. 367, Mar. 1956) for specific raw agricultural products is extended to cover specified citrus fruits.

-- Cond. from Chem. Absts.

- 1165 Tolerances for Residues of Zineb. Anon. Federal Register 21, 3109-3110 (May 10, 1956).

Tolerances for residues of zineb (zinc ethylenebis (dithiocarbamate)) are established under the Federal Food, Drug, and Cosmetic Act as 60 ppm for hops, 7 ppm for mushrooms, and 1 ppm for wheat.

-- Chem. Absts.

- 1166 The Development of Bronchitis among Chemical Workers. W. K. S. Moore. Trans. Assn. Ind. Med. Officers 6, 27-31 (Apr. 1956).

A number of cases of bronchitis occurred in a plant where sulfathiazole is manufactured. The process is described. The attacks occurred during working hours, abated over weekends and holidays, and ceased on transfer to other departments. Early breathlessness and tightness of the chest progressed to attacks of dyspnea which were indistinguishable from asthma. Several of the men developed attacks of chronic bronchitis and in one case bronchopneumonia. Three of the patients developed urticarial rashes in addition to the chest symptoms. No cases requiring transfer were seen after January, 1952, when changes were made in the process. These changes included discontinuance of the use of a hydroextractor which caused the evolution of a fine spray when a slurry was run into the extractor while it was spinning. The materials thought to be responsible are the bis-compound and crude sodium sulfathiazole or associated by-products.

03120270

- 1167 Toxic Ingredients in Metal Parts Cleaner. Queries and Minor Notes,
J. Am. Med. Assn. 161, 930 (June 30, 1956).

Information is requested on the possible toxic effects resulting from use of a metal parts cleaner, of which the principal ingredients are cresylic acid, high-boiling hydrocarbon of high aromatic content, dichloroethane, and an aqueous potassium soap from refined tall oil, and the minor ingredients are tetrachloroethylene, isopropyl alcohol, and sodium dichromate. Considerable quantities of the fluid are used daily by a carburetor repair man. Reply: since the percentages of constituents are unknown, the comment concerned only the toxic properties of the constituents listed. Cresylic acid is a mixture of the three isomers of cresol and is similar in toxicity to phenol. Dermatitis and possible systemic damage through skin penetration are the principal hazards to be considered. The petroleum hydrocarbon may contain a preponderance of toluene. The toxicities of toluene, dichloroethane, and tetrachloroethylene, and the skin effects of sodium dichromate, are discussed briefly. Of the substances enumerated, the cresylic acid and sodium dichromate are most suspect. The inquirer is referred to some of the recent textbooks on toxicology.

INDUSTRIAL DUSTS

- 1168 Dry Dust Suppression and Percussive Drilling. B. G. Fish, D. Maishman, and J. S. Barker.
Colliery Eng. 32, 55-60 (Feb.); 101-106 (Mar.); 157-162 (Apr. 1955).

The dust produced during percussive drilling in British mines is controlled in the vast majority of cases by the application of water. Dry methods have had but limited use or trial in Britain and have been looked upon as poor alternatives to accepted wet methods. The authors investigated, both underground and at the Research Laboratories of the National Coal Board, three of the most promising systems presently recommended for dry drilling with dust suppression, including the Belgian hood, the Hemborn suction head, and the Dryductor drill. These devices are fully described. The first resembles the Kelley trap tried out extensively in the United States and elsewhere around 1935-1945. The Kelley trap and collector accompanying it ultimately failed in practical mining work for several reasons. The authors believe that the second and third methods outlined in the paper have promise for their conditions in Britain. There is no intimation that they might be applicable to United States or Canadian mining. The test rock included one, Pennant rock, with some 94% quartz, on which the device performed nicely. In wet rock the authors expect trouble.

-- Cond. from Arch. Ind. Health

- 1169 Effectiveness and Tolerableness of Two New Devices for the Protection of Workers against Harmful Dust. N. Zurlo and E. Sartorelli. Med. lavoro 46, 335-351 (May 1955).
Italian with English summary.

Two clothing assemblies for the protection of workers exposed to harmful dust are described. One is a complete outfit similar in appearance to a diver's dress, and the other a rubberized jacket closed at the waist and the wrist. Both have a similar hood into which purified air is passed under slight positive pressure. The material used in the filter canisters was tested by passing through it fine quartz dust, silica gel, and lampblack at concentrations varying from 3,000 to 15,000 particles per cc. of air. Dust particles between 0.5 and 1 micron were filtered at an efficiency of 95%, and efficiencies were higher for larger particles. Increase of resistance due to clogging of the filter was slow and the canister could be used for days without renewal or cleaning. The reactions of three subjects wearing the outfits at rest and while walking on a treadmill were tested. The jacket was tolerated at all levels of work from 300 to 600 kgm. per min. When the complete outfit was worn, however, only work levels up to 350 kgm. per min. were well tolerated. Above this level were high pulse rates and the rapid appearance of "anaerobiosis."

-- Cond. from Bull. Hyg.

- 1170 Development of Mechanical Breather for Evaluation of Respiratory Equipment. M. E. Wilson and D. C. Harrod. *Arch. Ind. Health* 13, 561-566 (June 1956).

A cam-driven piston-cylinder type of mechanical breather has been developed which simulates breathing of human subjects in sedentary position and working at rates varying from light to moderately heavy work (208 to 830 kg.-m. per minute). This machine has been designed to overcome the inherent weaknesses in former mechanical breathers. Research laboratories can utilize this mechanical breather to obtain more accurate evaluation of protective respiratory equipment than was possible in the past.

-- Cond. from authors' summary

- 1171 Coal Workers' Pneumoconiosis. L. E. Kerr. *Ind. Med. & Surg.* 25, 355-362 (Aug. 1956).

Coal workers' pneumoconiosis is generally considered by British investigators to be an occupational lung disease separable into two distinct forms, simple and complicated pneumoconiosis. The former is due to pulmonary accumulation of coal dust which produces a mechanical overloading of the lungs while the latter is tentatively assumed to be due to tuberculosis modified by dust. The disease is reported to have characteristic pathological and radiological changes distinct from classical silicosis and to be diagnosable by pulmonary radiographs and occupational history. Exertional dyspnea is rarely disabling in simple pneumoconiosis in workers aged under 55, while complicated pneumoconiosis may cause disability at all ages. Treatment is symptomatic with intermittent positive pressure breathing combined with a bronchodilator aerosol. Prevention is possible with the aid of numerous skills, improvement and enforcement of legislation, and continuing research. Coal workers' pneumoconiosis is recognized legally and medically in Great Britain and medically in some other countries. The disease is reported to occur in the United States but its prevalence is unknown. Some of the fundamental problems which require further study are: the precise etiological role of coal dust; the mechanism modifying the possible tuberculous process; the cause and correct assessment of the respiratory disability; the efficacy of various therapeutic measures; and the safe limit of total dust exposure. Copious references are given.

-- Cond. from author's summary

- 1172 The Question of Pneumoconiosis Caused by Coal Dust. K. W. Jotten and W. Klosterkotter. *Arch. Hyg. u. Bakteriologie* 139, 314-324 (Sept. 1955). German.

Pneumoconiosis of coal miners is generally considered in Germany to be a modified form of silicosis, caused by the quartz which is always present in coal mine dusts. In Great Britain, on the other hand, it is widely believed that coal, especially of high rank, causes simple pneumoconiosis by itself, and that the quartz in the coal dusts is irrelevant. In order to reconcile this difference the authors compared the action of a Welsh steam coal and a German bituminous coal by inhalation experiments in rabbits, intratracheal injection in rats, and intraperitoneal injection in mice. The results showed that neither coal produced any significant fibrosis by any technique. In discussing their findings the authors speculate that a preferential retention of quartz from inhaled coal dust may be possible in man, but they admit that coal dust, when inhaled in large quantities, may by itself lead to lung fibrosis through hypoxia of the tissues, and that coal dust should therefore, pending further experiments, be classed as "possibly pathogenic".

-- Bull. Hyg.

- 1173 Death Rates of Miners and Ex-Miners with and without Coal Workers' Pneumoconiosis in South Wales. R. G. Carpenter and A. L. Cochrane. *Brit. J. Ind. Med.* 13, 102-109 (Apr. 1956).

The deaths from all causes in the Rhondda Fach between the two radiological surveys in 1950-51 and 1953 have been related to the age, sex, and occupation of those in the valley at the time of the first survey and compared with expected values derived from the Registrar General's figures for England and Wales. In the case of miners and ex-miners radiographed during the first survey, the deaths were also related to the category of pneumoconiosis found in their chest radiographs at that time. The results suggest that the more advanced forms of complicated pneumoconiosis, in the higher ages, may be associated with an excessive number of deaths. No such excess was found associated with simple pneumoconiosis, although the possibility of a small excess or deficiency could not be excluded.

-- Authors' summary

- 1174 Chronic Bronchitis, Emphysema, and Bronchial Spasm in Bituminous Coal Workers. J. Pemberton. Arch. Ind. Health 13, 529-544 (June 1956).

Examinations to determine the prevalence of chronic bronchitis, emphysema, and bronchial spasm were carried out on three unselected groups of men aged 45-64 years, including 242 bituminous coal workers, 238 industrial workers in a rural area, and 131 employees of an engineering plant in a medium-sized town, all in England. The prevalence of all three conditions was much higher in the coal workers than in the other two groups, and the high incidence is clearly of occupational origin. Correlation was lacking between the radiological assessment of pneumoconiosis and the incidence of the three conditions. The reactions of the host to the inhalation of dust rather than the simple accumulation of dust in the lungs appear to determine the development of symptoms and the degree of respiratory disability. It is concluded that pneumoconiosis in bituminous coal workers when diagnosed solely on the basis of a chest roentgenogram cannot be regarded as a clinical disease. When signs and symptoms of chronic respiratory disease occur in bituminous coal workers, they are usually due to chronic bronchitis, emphysema, and bronchial spasm or, much less often, to pulmonary tuberculosis. For these reasons, it would probably be more equitable to link industrial compensation to evidence of disability obtained from the clinical examination and from respiratory-function tests than to the results of a roentgenographic examination.

-- Cond. from author's summary

- 1175 Further Clinical and Spirographic Examination of Miners before, during, and after Underground Work. 2. G. Worth, H. Valentin, H. Venrath, L. Gasthaus, and H. Hoffmann. Arch. Gewerbepathol. Gewerbehyg. 14, 269-290 (1956). German.

In an earlier study (IHF Abst. 375, Mar. 1956), no measurable diminution of respiratory function had been found following work in a dusty atmosphere. A similar study was made to investigate transitory effects of the same nature. The findings in this investigation are reported and discussed and the work of others is reviewed. The general conclusion is reached that, while a spastic reaction of the bronchial musculature to the action of dust cannot be excluded with certainty, no definite indication was found, with the methods used, of an acute reduction of respiratory function in healthy miners. How far dust in higher concentrations and of different composition may injure the protective mechanism of the bronchial system calls for further examination.

-- Cond. from Bull. Hyg.

- 1176 Stereophotoroentgenography in the Radiological Study of Silicosis. E. C. Vigliani and E. Zanetti. Med. lavoro 47, 1-4 (Jan. 1956). Italian.

Routine chest x-ray examinations can be easily completed with stereophotoroentgenography. In the early stages of silicosis, the connections between the nodules and the bronchial tree ramifications have been put in better evidence. In nodular forms, the position of the nodules within the lungs has been clearly shown. Equally easy has been topographic localization of conglomerate and large fibrous masses in massive forms. Stereophotoroentgenography cannot be a substitute for tomography or standard radiography, but can bring a contribution to the anatomic and radiologic knowledge of silicosis.

-- English summary (Bull. Hyg.)

- 1177 Results of Polarographic Examination of Sera in Silicosis and Silicotuberculosis. G. Jacob and M. Buchner. Beitr. Silikose-Forsch No. 40, 33-45 (1955). German.

Preliminary results obtained in polarographic examination of serum are given. This technique had previously been used mainly for diagnosing cancer. In the serum test a polarographic record is taken after the serum has been freed from protein with sulfosalicylic acid, and after ammonia, buffered cobalt solution, and zinc chloride have been added. In the paper a series of standard curves is shown which correspond to positive, doubtful, and negative results. A number of sera from patients with silicosis, silicotuberculosis, and tuberculosis were examined and a high correlation between positive or doubtful curves and tuberculosis with silicosis was obtained. Simple silicosis gave mostly negative curves. It is concluded that the polarographic serum test will not replace other methods, but that it is sufficiently promising to warrant further detailed study.

-- Cond. from Bull. Hyg.

- 1178 The Acetylcholine Coughing Reflex and Its Significance in Function Tests in Silicosis and Its Sequelae. W. Koech. Arch. Gewerbepathol. Gewerbehyg. 14, 227-234 (1956). German.

Reference is made to published work on the influence and significance of spiographic tests of the lungs with the use of broncholytic and bronchospastic substances, especially isoprenaline on the one hand and acetylcholine on the other. The author investigated the coughing reflex in healthy and silicotic subjects. The method, which involved inhalation of solutions of acetylcholine through a special mask, is described. The persons examined were in four groups without and with varying degrees of pneumoconiosis. It was found that with a 0.2% aqueous solution of acetylcholine the reflex was produced with certainty. Results from 48 miners with pneumoconiosis in various degrees of severity and eight normal persons are tabulated. The reaction became more and more positive with the increase of lung changes, and was more sensitive than spiographic tests, especially where emphysema or bronchitis was present. Tests were also made with the addition of isoprenaline; when emphysema was present the coughing reflex caused by the acetylcholine was restricted by the isoprenaline, but in the presence of bronchitis it was unaffected. The possible mechanism of the reaction, and the pathological changes in the bronchi and lungs causing or modifying it, are discussed.

-- Cond. from Bull. Hyg.

- 1179 Biochemical Studies on the Hyaline Tissue of Silicosis. 1. Fibrous Proteins Content (Collagen and Elastin). B. Pernis. Med. lavoro 46, 659-667 (Dec. 1955). Italian.

Hyaline tissue from silicotic nodules and masses can be chemically separated into three fractions. The first fraction contains 60% of the protein weight, is water-soluble at 120° C, and contains 70% collagen. The second fraction, 30% of the total protein, includes proteins insoluble in water but soluble in heated 0.1 normal sodium hydroxide. The proteins are mainly globular. The third fraction includes proteins insoluble in water and the alkaline solution and represents a minimal amount of the hyaline tissue. It consists only of elastin, probably derived from residues of the original lung fibers. No significant differences are observed in chemical composition between hyalin from nodules and from masses. There are, however, considerable differences between silicotic hyaline tissue on the one hand and normal lung parenchyma and collagen tissue (from Achilles' tendon) on the other. Differences are also observed between silicotic hyaline tissue and other types of hyaline tissues. Quantitative values of these differences are given.

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

- 1180 Biochemical Studies on the Hyaline Tissue of Silicosis. 2. Ultraviolet Absorption Spectra. B. Pernis. Med. lavoro 46, 668-676 (Dec. 1955). Italian.

Ultraviolet spectrophotometric analysis was conducted on the first two fractions of hyaline tissue described in the previous paper, at pH 13, in 0.1 normal sodium hydroxide, between 260 and 320 millimicrons. Examination of the first fraction indicated that the non-collagenous fraction consists of proteins containing an amount of aromatic aminoacids much higher than that in collagen. Their spectrum is similar to that of alpha-globulins. The proteins in the second fraction are also high in aminoacids, and the spectrum indicates beta and gamma globulins. This fraction from hyalin of masses shows a spectrum nearly identical to that of beta globulins, while that of the fraction derived from nodules indicates a mixture of beta and gamma globulins.

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

- 1181 Silicosis of the Lymphatic Glands with Special Reference to Changes in the Nerves Caused by Fibrotic Glands. W. Herzog and F. W. Conrad. Arch. Gewerbepathol. Gewerbehyg. 14, 117-128 (1955).

Severe silicotic changes in the lymphatic glands at the roots of the lungs can seriously affect respiration and circulation where the silicotic glands encircle the bronchi and blood vessels, causing distortion and narrowing. The authors describe the lesions found at autopsy in cases where severe silicosis has affected the lymphatic glands with serious damage to the surrounding structures. Special attention is given to the injury to the vagus nerve and its branches, and the relation between the nerve lesions and functional changes, such as arrhythmia and the occurrence of high blood pressure; the effect of silicotic glands on the left ventricle is also discussed. Illustrations are given of the paratracheal and bifurcation groups of the lymph glands and the injury caused to the vagus nerves

by pressure and adhesion to the glands; similar changes were seen at the cardiac plexus. These changes were visible to the naked eye; microscopic examination showed dust cells within the nerves, with characteristic silicotic granuloma, the nerve having been destroyed. Several autopsies showing various consequences of injury to the vagus nerve are described. In addition to the respiratory rhythm and heart effects noted, one case involved paralysis of the left vocal cord.

-- Cond. from Bull. Hyg.

- 1182 Serum Mucoproteins in Silicosis. B. Pernis and S. Calo. Med. lavoro 47, 5-12 (Jan. 1956). Italian.

Total serum mucoproteins have been determined in 50 cases of silicosis, some of which were complicated by tuberculosis. In normal subjects the concentration of serum mucoproteins varies within a very narrow range (12.9 mg. $\pm$ 0.7% as carbohydrates). In 48 out of 50 silicotic subjects an increase was observed, which was quite considerable in cases of massive silicosis (up to 33%). These findings are easily explained on the basis of the theory advanced by others, that serum mucoproteins are derived from the basic substance of connective tissues and are therefore originally produced by fibroblasts.

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

- 1183 Determination of Silica in Silicotic Lungs and the Diagnostic Value of the Results. E. Graf and I. Steiff. Beitr. Silikose-Forsch. No. 40, 1-32 (1955). German.

Errors which can arise in determinations of total silica in lungs are discussed, and a method is described which uses 3 g. of average dried lung; this is ashed, and the ash is fused with sodium carbonate; the melt is dissolved in water or sulfuric acid, and silica is determined colorimetrically with molybdate at pH 1.8. Results are given for 108 lungs obtained from a number of pathologists. Working histories, ages, causes of death, and degree of silicosis are given. A group of normal lungs is said to have averaged 0.06% silica. The correlation between total silica and degree of silicosis was unsatisfactory for the whole group, but it was better when different categories of work were separated. In the sandstone and granite industry, there was no agreement in 10% of the cases; in coal workers, in 24%; in the porcelain and clay industry, the agreement was good. It is concluded that the differences are due to the different composition of the dusts and that for defined dust hazards total silica shows satisfactory correlation with the severity of silicosis. (Possible errors in pathological assessment are not considered.)

-- Cond. from Bull. Hyg.

- 1184 The Size Distribution of Dust Particles in the Lungs. An Electron Microscope Study of Dust from Miner's Lungs. G. Zebel. Beitr. Silikose-Forsch. No. 41, 33-52 (1956). German.

Dust extracted with formamide from the lungs of five miners—three silicotic, one non-silicotic, and one with anthracosis and tuberculosis—was examined with an electron microscope. Preparations were made after treatment with 2-normal hydrochloric acid before and after ashing at 450° C. Specimens were prepared by allowing a suspension in alcohol-water to dry on a plastic film. Precautions in preparation are described. In all cases there was no coal dust above 5 microns in diameter and no rock dust above 2 microns. Size frequency distribution curves showed maxima well below 0.5 micron. After ashing the frequency shifted toward smaller sizes. The maxima obtained by the light microscope are broader and at larger sizes. Since the resolving power of the light microscope begins to fail below 0.5 micron and smaller particles appear too large on account of diffraction, it is considered that the light microscope is an unsatisfactory instrument for obtaining size frequency of lung dust. The quantities of dust isolated from the lungs ranged from 9 to 60 g. and contained up to 23% silica. All give the same electron diffraction ring pattern; the identification of differences between minerals in fine particles by electron diffraction is difficult. The pattern may have been characteristic of montmorillonite. Quartz was identifiable by x-rays, but not by electron diffraction, probably because the particle size was too large.

-- Cond. from Bull. Hyg.

03120275

- 1185 Aluminum Powder Inhalations in the Treatment of Silicosis of Pottery Workers and Pneumoconiosis of Coal Miners. M. C. S. Kennedy.
Brit. J. Ind. Med. 13, 85-101 (Apr. 1956).

A four-year trial of aluminum inhalations in the treatment of pottery workers' and coal workers' pneumoconiosis is reported. A group of 60 men received pure aluminum dust, and a second comparable group received pure carbon powder with the addition of 1 ppm aluminum powder by inhalation under specified conditions. A major proportion of both groups claimed symptomatic improvement, but the number was only slightly more than those claiming improvement after breathing (unknown to the patient) pure atmospheric air from the cabinets for six weeks. There was no regression of the radiological picture, nor was there objective evidence of improvement in the functional capacity of patients as judged from the results of the exercise tolerance test, the vital capacity, and the maximum voluntary ventilation. It is concluded that the symptomatic improvement was mainly psychological in origin and that the specific inhalation therapy did not produce either any regression in the established disease or an improvement of the patients' functional capacity. There was no evidence that the aluminum inhalations favored the development of pulmonary tuberculosis in patients with coal workers' or pottery workers' pneumoconiosis.

-- Cond. from author's summary

- 1186 Adsorption of Serum Proteins on Quartz and Other Minerals. Contribution to the Pathogenesis of Silicosis. J. R. Ruttner and K. M. Isler. Schweiz. Med. Wochschr. 86, 63-67 (Jan. 21, 1956). German.

The central problem of silicosis research, the pathogenesis of the tissue changes, is not yet solved. Following up the idea that the initial phase may be the adsorption of protein by silica, the authors carried out experiments on adsorption and "de-adsorption" in human serum with quartz, amorphous silica, and other fibrogenic and non-fibrogenic minerals. The method used was electrophoresis by means of an apparatus and procedure which are described. The materials included: quartz; kaolin; beryllium oxide; corundum; raw and acid-purified kieselguhr; the silica skeleton of the plant *Equisetum palustre*; amorphous silica (Aerosil); and colloidal silica. The conditions of the experiments are fully described and the results are recorded graphically and discussed. It was established that all the materials examined, whatever their chemical or physical structure, when in contact with human serum, adsorb globulins and especially the gamma globulin fraction. Albumins play only a secondary role. Quartz did not show any specific distinction from the other substances in adsorption of serum proteins. In most cases the proteins showed changes after removal from the mineral substances.

-- Cond. from Bull. Hyg.

- 1187 Methods of Analysis of Fine Mineral Dusts and Mineralogical Contributions to the Problem of the Pathogenesis of Pneumoconioses. W. Willy.
Schweiz. mineralog. petrog. Mitt. 34, 409-497 (1954). German.

In the first part of this thesis methods of dust analysis are reviewed with special reference to quartz determinations. The second part deals with a review of literature and a description of the author's work on the surface properties of silica and on the mechanisms of the lung damage caused by dust. A table of silica solubilities of quartz, amorphous silica, and several silicates is given and discussed. This is followed by a review of data on the amorphous surface layer on ground quartz of small size. The author's electron diffraction experiments gave no evidence for an amorphous layer; the initially higher solubility of quartz on repeated extractions is ascribed to corner and edge solubilities, and it is concluded that probably no amorphous layer exists. Electron diffraction did, however, indicate a new crystalline phase, perhaps a silica hydrate, in quartz samples which had been in long contact with water. Adsorption experiments were carried out with chrysotile asbestos. After percolation of human or pig serum, synthetic asbestos bodies were obtained. These are shown in photomicrographs. The following tentative conclusions are drawn, based on human experience and animal experiments: lung damage is caused not only by free silica but also by graphite, talc, and kaolin which are platy minerals, and by fibers such as asbestos. Several isometric materials, such as beryllium oxide, alumina, and diamond, can produce collagen fibrosis. The lung damage from platy and fibrous materials is attributed to their large surface. Solubility and mechanical theories are both unsatisfactory and the most likely mechanism is adsorption on the mineral surface; this leads to an irreversible interference with local biological equilibria.

-- Cond. from Bull. Hyg.

03120276

- 1188 A Study of Respiration in Pulmonary Asbestosis. H. Bastenier, H. Denolin, A. de Coster, and M. Englent. *Arch. maladies profess.* 16, 546-553 (1955). French.

In order to test the respiratory value of lungs affected with asbestosis nine cases were closely studied. The seven men and two women had been exposed to asbestos dust, 1,000 to 2,000 particles per cu. m., for 18 to 30 years. The patients displayed definite symptoms of asbestosis with troublesome cough and dyspnea, and all showed x-ray shadows like ground glass extending over both lungs. No tubercle bacilli were found in any case. A definite reduction was found in vital capacity, but the maximum expiratory volume was satisfactory. Breathing, however, was accelerated by hyperventilation. At rest breathing was sufficient and satisfactory, but on exertion dyspnea appeared, varying considerably according to the pathological lesions in the lungs. These functional changes were in no way different from those seen in other cases of pneumoconiosis. Varying emphysema was found, but no special strain was thrown upon the heart.

-- Cond. from Bull. Hyg.

- 1189 Asbestosis: Report of a Case. E. R. Wiese and W. E. B. Hall. *Diseases of Chest* 30, 229, 230 (Aug. 1956).

The history and autopsy findings in a fatal case of asbestosis are reported. Conditions described include: absence of the middle lobe of the right lung; greatly enlarged heart; wide spread, sharply demarcated development of fibrosis; and degeneration of collagen in extensive irregular fields. These and other conditions are described fully. Fine needles representing the original asbestos fibers were seen. Small asbestos bodies were seen in a few areas of focal fibrosis, although they had not appeared in the sputum.

- 1190 New Viewpoints on Pulmonary Cancer in Asbestos Workers. H. Bohlig and G. Jacob. *Deut. med. Wochschr.* 81, 231-233 (Feb. 17, 1956). German.

The following distinguishing features have been attributed to the lung cancer that has been recognized as an occupational disease of asbestos workers: (1) increased incidence; (2) development at an early age; (3) dependence on duration of exposure to asbestos dust; (4) a latent period between onset of exposure and the appearance of the cancer; (5) the localization; (6) the histological structure; and (7) the multicentral origin. The authors discuss each of these points, and show that there is little clear evidence to support any of these assumptions, with exceptions noted. Women workers in the asbestos industry have lung cancer more often, and at an earlier age than do other women, but the same is not true of men. Malignant growths of the pleura seem to occur more often in asbestos workers than in other persons. The multicentral development is observed also in workers exposed to cobalt and to chromates. The study of the pathogenesis is still in the state of hypotheses, and the theory of mechanical pathogenesis is given most consideration. Microtraumas and asbestos bodies are always found in the pulmonary cancers of asbestos workers, but the authors feel that this does not necessarily prove the mechanical theory. They cite several factors that speak against a purely mechanical pathogenesis of asbestos cancer, but they concede that the development of so-called asbestos warts proves the irritating effect of asbestos on human tissues.

-- Cond. from J. Am. Med. Assn.

- 1191 Nasal Penetration of Particles of Small Inertia in Experimental Animals. Gabrielle Asset, L. E. Gongwer, and Stella Ryan. *Arch. Ind. Health* 13, 597-601 (June 1956).

Experiments were carried out to determine the nasal penetration of particles of small inertia in dead rabbits, dogs, and guinea pigs. The heads of the animals, or the entire bodies, were exposed in a wind tunnel to an aerosol consisting of particles of 1.3 microns with density of 1.2 g. per cc. and moving at a rate of 2.5 mph. The concentrations of the aerosol entering the nasal passages and of that leaving the nasal passages were determined. It was found that there was a significant difference in nasal penetration between the guinea pigs, on the one hand, and the rabbits and the dogs, on the other hand. Wind direction had no influence on the nasal penetration of droplets of low inertia.

-- Authors' summary

- 1192 Action of Dusts and Pharmacodynamic Agents on Respiratory Function. Part 3. Action of Bronchodilatory Aerosols after Work in a Dusty Atmosphere. J. Pestiaux, E. Gielen, G. Degueidre, and F. Lavenne. Institut d'Hygiene des Mines, Hasselt, Belgium, Report No. 131 (10, No. 8) 20 pp. (Oct. 28, 1955). French.

Vital capacity studies on men after exposure to a dusty atmosphere were continued (see IHF Abst. 905, July 1956), including treatment with a bronchodilatory aerosol consisting largely of Aleudrine (isoprenaline). There was no statistically significant difference in the effect of the Aleudrine whether the vital capacity or the maximum respiratory capacity increased or decreased after work. Even in the cases where the respiratory capacity decreased systematically after work, the Aleudrine trial gave no evidence to indicate the existence of bronchial spasm. The administration of Aleudrine caused an increase of approximately 2% in vital capacity and an increase of approximately 5% in maximum expiratory volume over the post-work values. This increase was practically independent of increases or decreases of these factors during work. -- Cond. from Bull. Hyg.

- 1193 Occupational Risks in Cement Workers. V. Giuliani and R. Belli. Med. lavoro 46, 715-724 (Dec. 1955). Italian.

The dust in the air and the health of workers were investigated in a cement factory. The dust concentration, measured by the Owens counter, varied between 140 and 1960 particles per cc. The greatest concentration was found in the packing section. The mean size of the dust particles was 3.5 microns. The finished concrete contained no quartz, but before entering the ovens it contained 2.5%. In examination of 180 workers, no cases of silicosis were found, but 83% had disturbances in the upper respiratory tract or in the lungs; 20.5% showed a strong increase in the linear markings and in the root shadows of the lungs. This is considered to be the result of the deposition of inert dust particles. The most important effect of heating concrete dust seems to be the development of a chronic bronchitis, which in the course of years might lead to emphysema.

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

- 1194 Contribution on Emery-Workers' Pneumoconiosis. P. Meister. Arch. Gewerbepathol. Gewerbehyg. 14, 214-226 (1956). German.

A survey was made of 20 emery grinders in an iron and steel factory who had not been exposed to quartz dust. Dust counts, radiographic examinations, and clinical examinations are reported. Symptoms of pneumoconiosis were generally slight or absent. It is concluded that the clinical, radiographic, and histological picture of emery (corundum, alumina) pneumoconiosis cannot be distinguished from the appearances in slight silicosis.

-- Cond. from Bull. Hyg.

- 1195 A Study of the Effects on the Lung of Industrial Exposure to Zirconium Dusts. C. E. Reed. Arch. Ind. Health 13, 578-580 (June 1956).

The possibility that dusts encountered in the production of zirconium metal might produce pulmonary granulomas was investigated by animal exposure and by clinical and radiographic evaluation of selected employees. No abnormalities attributable to zirconium were found.

-- Author's summary

- 1196 An Outbreak of Bronchial Asthma in South Africa Affecting More than 200 Persons, Caused by Castor-Bean Dust from an Oil-Processing Factory. D. Ordman. Intern. Arch. Allergy & Appl. Immunol. 7, 10-24 (1955).

In the 11 months in which castor beans were handled in the factory 197 cases of asthma occurred, whereas before that time very little asthma was noted. This asthma occurred not only in factory employees but also in individuals living in the vicinity of the factory. That the asthma was actually caused by castor-bean allergy was confirmed by skin tests.

-- Chem. Absts.

03120278

- 1197 The Silicosis Hazard of Sand from the Sahara; A Mineralogical Contribution. M. Landwehr. Beitr. Silikose-Forsch. No. 40, 47-62 (1955). German.

This paper discusses the problem of lack of silicosis in men exposed to Sahara sand. Previous analyses of transported desert sand showed calcium carbonate as the main constituent, accompanied by feldspar, mica, iron ore, and 10 to 15% of quartz. In contrast to sand from another region, with higher quartz content and no material finer than 75 microns, Sahara sand contains particles of respirable size, although they formed only a small proportion of the four samples examined. The respirable fraction of Sahara sand was found to contain 55% of calcium carbonate, clay, iron ore, feldspar, and 10% of quartz. The conclusion is reached that a dust of such composition could produce silicosis if men were exposed to very high concentrations for long periods. If, as is claimed, no silicosis is found, the dust concentrations may not have been sufficiently high or of sufficient duration, or the iron coating of the usually brown quartz may have acted as a protective agent.

-- Cond. from Bull. Hyg.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1198 Occupational Hearing Loss—Wisconsin's Approach to the Problem. M. S. Fox. Ind. Med. & Surg. 25, 310-316 (July 1956).

The provisions of workmen's compensation laws covering occupational hearing loss vary among the states and differ in interpretation even more. The history of compensation laws of Wisconsin in relation to hearing loss is reviewed. No claims for alleged loss of hearing due to excessive noises were filed from 1919, when the Occupational Disease Law became effective, until 1951, but in that year 50 claims were filed, and many more in the following years. Some of the many troublesome medical and legal questions that arose are discussed. The situation came to a climax in the critical case of A. Wojcik vs. Green Bay Drop Forge Company, in which the Wisconsin Supreme Court decided that hearing disability, and not wage loss, should be the criterion for compensation awards. As a result of the recommendations of a Medical Advisory Board appointed to study the subject, an amendment became effective July 1, 1955. Among its principal features are: provision of a schedule for partial and total hearing loss; a delay of six months after termination of exposure before filing claims; a formula for determining hearing disability; and non-liability of an employer for hearing loss incurred before employment. These features, especially the last, place the responsibility for preplacement and routine hearing tests upon the employer. This necessitates provision of equipment and training of nurses or others who are to make the hearing tests. Preplacement examinations in one company revealed a hearing loss in 27% of new employees in one company and in 40% of another. The hearing conservation program in the author's company is described. Audiometric charts, which are illustrated, permit the recording of audiograms over a period of years. These charts enable the otologist to make recommendations for job placement and for the use of ear protectors. The final step in the hearing program consists of noise reduction and control measures. The same problems are present in other states, although the details differ. It is becoming necessary to have audiograms made of all workers in industry. Success in combating other industrial hazards justifies an optimistic view of the eventual solution of the hearing loss problem.

- 1199 How We Hear, and How Noise Affects Our Hearing. L. G. Doerfler. Natl. Safety News 74, 24, 25, 145, 146 (July 1956).

The principles of sound and hearing are explained briefly. Sudden intense sounds are the usual cause of perforation of the ear drum. These tears apparently heal rapidly, and in the absence of infection of the middle ear, do not of themselves cause loss of hearing. War experience suggests that inner ear hearing loss from explosions was not as severe when the

ear drum was ruptured as when it remained intact. An explanation is given. The usual effect of noise on hearing is a temporary or permanent raising of the threshold of hearing, requiring more acoustic energy before a sound is perceived. The structures involved are the hair cells against which the nerve endings terminate on the basilar membrane. The destruction of these hair cells is progressive and incurable. The first signs of hearing loss subsequent to exposure appear as a threshold shift for 4,000 cycles, in addition to a gradual spread to lower frequencies until the loss invades those frequencies concerned with the hearing of ordinary speech. For that reason there is no single over-all noise level of safe exposure, although a number of attempts have been made to determine such a level. The frequency spectrum must also be determined. The effects of noise must be distinguished from loss of hearing due to aging, and a correction must be made for that effect. Individuals whose threshold shift is greater than might be expected are assumed to be more sensitive to noise. Another approach to the problem of susceptibility is based on the phenomenon of "aural overload", in which harmonics of a tone are created by the ear itself, and cause perceptible beats on exposure to a tone several cycles apart from the frequency of the harmonics. The assumption is made that the ear which overloads easily may be a tender or susceptible ear.

- 1200 Industry's Noise Problem. 3. What You Can Do about It. Anon. Occ. Hazards 18, 25-33, 69, 73, 74 (July 1956).

In this third and final paper of the series (see IHF Absts. 523, Apr., and 786, June 1956), the emphasis is on noise prevention and protection of workers. It is impossible to prepare a standard blueprint for industry to follow in reducing noise and hearing loss, but definite steps can be taken in that direction. An anti-noise program includes three parts: (1) evaluation of employees' hearing ability; (2) measurement of plant noise; and (3) reduction of plant noise levels. Evaluation of hearing ability involves many details which are described, including relatively soundproof testing rooms and a number of precautions in the use of audiometers. The necessity of pre-employment hearing tests is emphasized. A number of sound-level meters and their applications are discussed. Specific instances of control measures are described, including mounting of machinery, acoustical baffles, air-exhaust mufflers, partial acoustical closures, sound-absorbing screens, and acoustic stock tubes. Noise-reducing features are now being incorporated in the design of some new buildings. Resilient flooring is one feature of such installations. Some managements are beginning to select new machines on the basis of the noise they make, provided machines of comparable productivity can be tested. Ear protectors have been found to be powerful weapons in the fight against occupational hearing loss, and an educational program followed by compulsory use of protectors has been found effective.

- 1201 Visibility in Mines. Part 1. J. Patigny. Institut d'Hygiene des Mines, Hasselt, Belgium. Report No. 128 (10, No. 5). 19 pp. (May 27, 1955). French.

In the present communication, the term visibility is concerned with the effective visual threshold under working conditions in mines. Two-thirds of the text consists of a general introduction and a summary of previous work on visual thresholds. The author points out that the tests used hitherto are not relevant to mining conditions. A new test was therefore devised which was more appropriate. Miners were asked to distinguish black playing cards (ace to 10) in diminishing illumination at 10 cm. distance, and the threshold was taken as the point immediately before that at which three consecutive cards could not be identified. The results of preliminary trials and conclusions derived are outlined.

-- Cond. from Bull. Hyg.

- 1202 Study of Visibility in Mines. Part 2. J. Patigny and S. Cartigny. Institut d'Hygiene des Mines, Hasselt, Belgium. Report No. 129 (10, No. 6). 30 pp. (Aug. 7, 1955). French.

The method described in the preceding abstract was used to investigate: the advantage of a controlled reduction of light in mines, from the shaft to the coal face; to match the natural adaptation of the eye to darkness; the effect of a source of light directly in the visual field of a worker; and the comparison in a constant light of the playing-cards test with other tests more related to the normal activity of the miner. The authors conclude

that it would be unwise to fix minimum standards of illumination (as in other industries) because resulting visibility would depend to a large extent upon the nature of the work being done and on the physiological and physical reactions of the miners concerned. At present it is impossible to prevent miners from occasionally facing a brilliant light. This prevents to a considerable extent adaptation of the rods of the retina, but the adaptability of the cones must not be overlooked. Illuminations of 0.5 lux allow relatively detailed vision where the contrast is sufficiently great, against a background of concrete or light-colored rocks. Illumination of 0.1 lux is sufficient for non-oxidized metal surfaces. When the background is black, visibility is impossible at 0.5 lux, but for all jobs where detail is not needed visibility is still good except toward or around the source of light. The value of the cap lamp is emphasized by these conclusions. Its drawback is apparent, however, when mine's work less than ten feet apart. Objects close to another lamp would be more easily seen if unpolished reflectors were used. Visibility would be considerably improved by whitewashing dark surfaces, polishing of oxidized metal parts, and by any method which increases brightness contrast where visibility is poor. Since visibility decreases when the light source and the object to be examined are both seen, lights must always be at a sufficient distance from the object and should have deflectors occluding the direct vision of workers. If such conditions cannot be realized, cap lamps would probably be more efficacious than fixed lights.

-- Cond. from Bull. Hyg.

- 1203 Osteoarthropathy of Caisson Workers: Observations During the First Five Years. P. Deak and I. Rozsahegyi. *Fortschr. Gebiete Roentgenstrahlen* 84, 312-320 (Mar. 1956). German.

The authors show that roentgenologic studies play an important role in investigations on the pathogenesis, characteristics, and prognosis of the skeletal changes that result from decompression disease in caisson workers. A number of features are discussed, and the histories are presented of six caisson workers in whom decompression sickness resulted in osteoarthropathy and in whom roentgen studies of the involved joints were carried out. The authors believe that the aseptic necrosis of caisson workers is a typical example of osseous osteoarthritis. It is therefore recommended that active therapy, weight bearing, and activity of the extremities be avoided at the stage when signs of cortical compression are not yet evident. Predisposing dysplasias and other developmental anomalies should be given special consideration in the examination of caisson workers. -- Cond. from J. Am. Med. Assn.

- 1204 Use of Salt Tablets by Industrial Workers. Queries & Minor Notes. *J. Am. Med. Assn.* 165, 928 (June 30, 1956).

The need for salt may be indicated in plants where employees work in an environment of extreme heat and where there is medical control of the use of the salt. The indiscriminate use of salt by laymen in other work classifications is unnecessary and may be harmful. With this in mind, an employer should have the advice of his medical officer as to the need in his particular plant before salt dispensers are permitted on the property. It is this availability of salt to the layman that permits him to use salt whenever he feels like it and too often. If the employee wants to use salt on his own volition, let him provide salt with his lunch. This will avoid a question of legal liability arising from an employee's misuse of a product furnished by the employer that might aggravate a preexisting physical ailment and be the basis of a damage claim.

RADIOACTIVITY AND X-RADIATION

03120281

The following papers from the July issue of *Archives of Industrial Health* were presented at the Symposium on the Peaceful Uses of Atomic Energy at the International Conference held under the auspices of the United Nations at Geneva, Switzerland, Aug. 8-20, 1955. A paper by L. Silverman, on "Air and Gas Cleaning for Nuclear Energy Processes", pp. 32-42, has been abstracted from another source (IHF Abst. 683, May 1956).

- 1205 Transportation of Large Quantities of Radioactive Materials. H. Blatz.
Arch. Ind. Health 14, 1-6 (July 1956).

The transportation of radioactive materials in large quantities is now common and involves problems not heretofore encountered in small shipments. They include protection of transportation and the possibility of the exposure of others arising from wrecks, fires, and other accidents. The regulations for rail and truck shipments are described and discussed. They include: suitable design, shielding, ventilation, and cleaning of cars and trucks; special permits or escort for truck shipments, and in some cases for train shipments; indestructible labels; and specification of limits of radioactivity of a shipment. A few accidents have occurred, but in all cases the material has been salvaged with safety, and the lessons learned have assisted in formulating transportation policy.

- 1206 Health and Safety Activities in Reactor Operations and Chemical Processing. A. J. Cipriani.
Arch. Ind. Health 14, 7-11 (July 1956).

The health and safety precautions in practice at the Chalk River Project of Atomic Energy of Canada are described. Radiation hazards were considered in the early planning of operations. An independent radiation hazards control organization, with well-trained personnel in critical positions, is essential to good control. The absence of significant radiation accidents at Chalk River is attributed to these two factors.

- 1207 Environmental Aspects of the Atomic Energy Industry. A. E. Gorman.
Arch. Ind. Health 14, 23-31 (July 1956).

The most important environmental health problem in the atomic energy industry will be the disposal of radioactive wastes. This problem is the subject of much research and development work in the United States. The cost of safe disposal of radioactive wastes is much higher than for wastes in most other industries. Less expensive methods, therefore, must be developed. Costs can be reduced with safety in the disposal of low- and intermediate-level wastes to the ground, the air, and to surface waterways. Should atomic energy plants be built in remote unpopulated areas, the errors of other industries in damaging natural resources should be avoided. The industry also has environmental problems in the disposal of toxic as well as radioactive wastes, especially in wastes containing fluorides, nitrates, and beryllium. The environmental problems call for a high order of technical competency in many fields and cooperation with governmental agencies having jurisdiction over public health, safety, and natural resources.

-- Cond. from author's summary

- 1208 Industrial Hygiene of Uranium Processing. M. Eisenbud and J. A. Quigley.
Arch. Ind. Health 14, 12-22 (July 1956).

There has been sufficient experience with severe exposures to both soluble and insoluble compounds of uranium to permit the conclusion that uranium has a low order of chemical toxicity in man. Many of the nonradioactive heavy metals, such as lead, arsenic, and mercury, would produce very severe, perhaps fatal, injury in the levels of exposures reported here. The negative findings relative to renal injury among workers exposed to insoluble compounds are particularly significant in view of the high levels of exposure reported. Although some injury has been noted among workers exposed to soluble compounds, the injury has been minimal and disappeared completely when the exposures were reduced. The relatively low concentrations of uranium in the lungs of the two workers autopsied suggest that the safety factor in the maximum permissible dose for insoluble compounds is unnecessarily conservative. However, more data of the type presented are needed before any upward revision of the maximum permissible concentrations could be permitted on this basis alone.

-- Authors' summary

- 1209 Mechanism of Uranium Poisoning. H. C. Hodge.
Arch. Ind. Health 14, 43-47 (July 1956).

More is known about the toxicity of uranium than about the toxicity of any other element. Uranium in the body is highly toxic; providentially, it is hard to absorb into the body.

Once absorbed, uranium is carried partly as a protein complex and partly as a bicarbonate complex. In the bone uranium is deposited principally on the surface of the mineral crystals by exchange with calcium. The kidney is the sole site of the characteristic histological injury. Uranium kills cells by blocking carbohydrate metabolism, apparently inhibiting specifically hexokinase in the cell surface. Finally, a tribute should be paid to the vigilant medical supervision of the Manhattan Project and the Atomic Energy Commission. This supervision has been so successful at all their installations that severe uranium poisoning has never occurred and mild uranium poisoning is so rare that it is practically unknown.

-- Author's summary

- 1210 Health Protection of Uranium Miners and Millers. S. E. Miller, D. A. Holaday, and H. N. Doyle. Arch. Ind. Health 14, 48-55 (July 1956).

Atmospheric concentrations of radon and its degradation products in uranium mines of the Colorado Plateau varied widely. It was determined that radon was of little significance in the mills because of the large volume of air available for dilution. Up to the present more than 1300 miners and millers have been examined medically. No clear-cut etiologic or pathologic patterns have been uncovered, probably because the majority of the workers had been exposed for less than three years. The need for repeating the medical studies is clear. Reference is made to the calculation of dose to the lungs and the effect of removing degradation products. A number of conclusions are presented referring to the control of radon by ventilation. Recommendations are made with regard to certain hazards to which mill workers may be exposed.

-- Authors' summary

- 1211 The Variation of Effluent Concentrations from an Elevated Point Source. M. E. Smith. Arch. Ind. Health 14, 56-68 (July 1956).

Measurements of the dispersion of an oil-fog test effluent from a 355-foot source, an outstanding feature of the meteorological program at Brookhaven National Laboratory, are reported and analyzed. The quantitative data, though incomplete, suffice to show that an orderly gradation of dispersion conditions exists and that a generally acceptable prediction of the ground-level concentrations can be achieved during lapse conditions. The qualitative measurements made under inversions indicate that concentrations can be predicted in this case also. The tests show that the most suitable type of field sampling includes a large number of accurate devices operated simultaneously. The importance of time in such analyses is emphasized by the relationships presented. This program can produce results for only one site, and similar work in other localities is needed for a complete understanding of atmospheric dispersion. More complete and more accurate field data are needed for classification of types of dispersion and for the establishment of new values for dispersion parameters.

-- Cond. from author's summary

- 1212 Evaluation and Control of Health Hazards in the Uranium Mining Industry. E. C. Tsivoglou. Arch. Ind. Health 14, 69-76 (July 1956).

Inhalation of radon and its daughter products constitutes the most important radiation hazard in the mining of uranium ores. This paper discusses methods of evaluation of the hazard and describes two methods of measuring the individual atmospheric concentration of the daughter elements, which are responsible for most of the hazard. The alpha decay analysis gives results which agree with those of alpha pulse amplitude analysis, and was used in field studies in uranium mines. The two methods of control of the hazard are ventilation and air cleaning. They are compared mathematically and practically. Air cleaning is the less expensive and removes the daughter products, but is effective only if it also removes the gaseous radon to some extent. Additional studies on air cleaning will be reported at an early date.

- 1213 Factors Affecting the Insurability of Nuclear Reactors. C. R. Williams. Arch. Ind. Health 14, 77-84 (July 1956).

An excellent safety record has been established under the period of Federal Government responsibility for all liability for injury or damage arising from nuclear

ABRAMS

03120283

energy operations. Under the present licensing program, full liability must be assumed by private industry. Thus new problems have been created, since neither industry nor insurance carriers are prepared to assume full liability for the unknown and possibly extensive damage that may result from a major accident. At present limited liability is provided in insurance policies. Factors to be considered in evaluating the possibility of loss and the potential indemnification for damage include: the use to which the reactor is to be put, the reactor type and design, location, amount of containment, quality of supervision and operating personnel, and safety program and inspection. These factors are discussed extensively. The most serious indemnification problem is that of compensation for injury or damage to the public. The problems of injury to employees and damage to facilities can probably be solved without essential modification of existing laws and practices. The problem of business interruption and several minor problems are discussed. A possible program of cooperation between government and industry in providing insurance is suggested. One of the important contributions of an insurance program is that insurers, as well as industry, will have an active interest in controlling hazards.

- 1214 Protection against Radiations from the Public Health Point of View.
World Health Organization. Arch. Ind. Health 14, 85-91 (July 1956).

The work of the International Commission on Radiological Protection is reviewed. The scope of the public health problems include: dissemination of radioactive products into the air, and disposal of radioactive wastes, both on an increasing scale. The task of public health will be lightened by the provision of adequate protection in new installations at the early design stage, by plant site selections and broader precautions for health protection. A suggested public health program includes: (1) training of public health personnel; (2) dissemination of pertinent public health information; (3) a world-wide scientific study of the somatic effects of low-level radiation on humans in relation to the intensification of the radiation background; and (4) a study of the radiation-induced genetic defects in the human race.

End of symposium.

- 1215 Radiation Injuries in Atomic Attack. F. C. Pace.
Occ. Health Rev. (Canada) 8, 6-11 (Apr. 1956).

Among the subjects discussed are: casualties from the blast effect of an atomic bomb; casualties of the heat effect; ionizing radiations from atomic fallout; clinical phenomena; internal radiation hazard; cross-stress; late somatic effects of radiation; and genetic effects. Only brief consideration is given to biological warfare and chemical warfare, since it appears that if mass destructive weapons are to be used, atomic weapons will be the choice. With smaller atomic weapons one is more concerned with blast and heat casualties, but with larger weapons radiation injury from radioactive fallout becomes an important source of danger. The largest proportion of deaths at Hiroshima and Nagasaki occurred some time after the explosions, and many might have survived if they had been given the most basic type of medical care. Here is a strong argument for pre-planning in relation to mass casualties from atomic attack. Even if no better than Crimean War standards are attained in mass disaster, many lives will be saved.

- 1216 Treatment of Burns in Mass Casualties. A. C. Derby.
Occ. Health Rev. (Canada) 8, 12-17 (Apr. 1956).

In the treatment of burns occurring as a result of mass casualties, shock should take precedence over local care. A rough guide to fluid can be determined by the depth of the burn and the extent of the body surface involved. It is suggested that the one-piece universal protective dressing be used as an emergency dressing to facilitate evacuation but at the first opportunity the burned areas should be exposed. Full thickness burns should be grafted as soon as healthy granulations are present. Knowledge accumulated at burn centers should be widely disseminated among physicians, and detailed plans for treatment of burned patients should be made now, not after disaster has struck.

-- Cond. from author's summary

- 1217 Treatment of Mechanical Injuries in Mass Casualties. A. C. Derby.
Occ. Health Rev. (Canada) 8, 18-24 (Apr. 1956).

Some of the problems to be expected in the treatment of mass trauma are presented. The principles of military surgery are reviewed. It is suggested that with a basic understanding of the practice of military surgery, civilian doctors will be able to deal with large numbers of casualties. The importance of intelligent first aid, organized resuscitation, and fractional surgical care is emphasized. Because of possible overwhelming numbers of injured patients our meager medical potential must be used to the best advantage. It is proposed that to do the greatest good for the greatest number we must ruthlessly exclude all hopeless cases on the one hand and on the other not waste time on minor injuries. Where early surgery is to be delayed or denied, the methods and results of conservative treatment are postulated.

-- Cond. from author's summary

- 1218 The Hazards from the Increasing Use of Ionizing Radiations. Symposium. 1. The Control of Radiological Hazards in the Future Development of Atomic Energy. W. G. Marley.
Brit. J. Radiol. 29, 261-265 (May 1956).

In many nuclear reactors today there are several millions of curies of radioactivity locked up in the uranium metal fuel elements. The prevention of hazard from these large quantities of radioactivity depends on the application of technological developments that have been made as the work has proceeded. Radioactivity hazards can be kept under satisfactory control, but this has been achieved only by a great expenditure of money and manpower. There should be no fundamental difficulty in continuing the present satisfactory record into the future and in keeping at a predetermined level the gonad dose to the population from this development, but it will be necessary to continue to expend large amounts of money and effort on the engineering and design aspects of radiation safety.

-- J. Am. Med. Assn.

- 1219 The Hazards from the Increasing Use of Ionizing Radiations. Symposium. 2. The Dose to Operator and Patient in X-Ray Diagnostic Procedures. G. M. Ardran.
Brit. J. Radiol. 29, 266-269 (May 1956).

The maximum permissible dose of ionizing radiation is one that falls short of causing appreciable bodily injury to a person at any time during his life. A discussion of possible cumulative lifetime doses to various organs leads to the suggestion that permissible doses should be decreased greatly. If existing knowledge is applied, the patient and staff dose levels may all be kept within reasonable limits, but all ranks must be dose conscious. Many small doses add up to large ones. Radiographers should be encouraged to tighten up all precautions, and if it is desirable to reduce radiation dose still further, co-operation must be sought from clinicians in reducing the number of examinations. Unless dose levels can be kept low, it may become necessary to chart the patient's dose from the cradle to the grave. There are other sources of radiation to be taken into account. These are increasing, and should be allowed a share of the "body burden".

-- Cond. from J. Am. Med. Assn.

- 1220 The Hazards from the Increasing Use of Ionizing Radiations. Symposium. 3. An Attempt to Assess the Genetic Changes Resulting from the Irradiation of Human Populations. A. Howard. Brit. J. Radiol. 29, 270-273 (May 1956).

There is no precise information on the number of mutations produced by a given dose of radiation or what effect such mutations will have, but the qualitative effects are undeniable. There is no "safe" genetic dose. The amount of radiation from artificial sources to which the average person is now exposed in Great Britain will increase the mutation rate by a small fraction only; but if artificial radiation continues at its present rate for a generation, it may lead to premature death or sterility of hundreds or possibly thousands of persons in the next generation and to comparable numbers in later generations for hundreds of years. Meanwhile, a much larger section of the population will be living at an additional slight disadvantage. No satisfactory means of curing or alleviating the damage appears to be in sight. Efforts should be made to keep the radiation dose to the gonads as low as possible.

-- Cond. from J. Am. Med. Assn.

03120285

- 1221 Fluorescent Badges for Use During Fluoroscopy. D. K. Bewley.
Acta Radiol. 44, 434-436 (Nov. 1955).

A method is described for utilizing pieces of fluorescent screen as a personal monitor for protection during fluoroscopy. A radium-activated, self-luminous patch is included in the badge to serve as a reference standard of brightness and to aid in judging the degree of dark adaptation. Experience has demonstrated that the badges also provide a convenient method for locating leakages of radiation from diagnostic roentgen ray apparatus.

-- Am. Rev. Tuberc.

- 1222 Routine Exposures to X-Rays. Queries & Minor Notes,
J. Am. Med. Assn. 161, 1518 (Aug. 11, 1956).

Exposure of the patient to x-rays in dentistry varies with the type of machine, type of film, and other factors. With the best techniques of dental radiography, the maximum exposure in the mouth for a full mouth study may be less than 20 r. Some units may deliver as much as 150 r for a full mouth study. The consultant advises against three exposures per year at the higher figure, but believes that if the exposure is less than 20 r, three full mouth studies per year should be perfectly safe.

- 1223 After Effects of Nuclear Radiation. H. J. Muller.
Natl. Safety News (J. Am. Soc. Safety Engrs. Section) 74, 42-48 (Aug. 1956).

The genetic damage produced by radiation has been discussed by the author in another paper (IHF Abst. 930, July 1956). In this paper the earlier and other delayed effects of radiation are also discussed, but emphasis is again placed on genetic effects. The author does not agree with others who minimize the delayed effects of radiation. There is evidence based on published reports of animal experiments, that for each roentgen unit of radiation received by the whole body at a given age, if delivered at a rate of not more than a few roentgens per day, there is on the average a loss of five days to two weeks of life, depending somewhat upon the age. This possible life-shortening effect and the genetic effects call for extreme precautions in protection in the nuclear energy industry. The recommendations of the Genetics Committee of the National Academy of Sciences (IHF Abst. 1101, this issue are reviewed.)

- 1224 The Effect of Adrenocorticotropin (ACTH) and Cortisone on Radiation Pneumonitis.
Florence C. H. Chu, J. J. Nickson, and A. R. Uzel.
Am. J. Roentgenol. Radium Therapy 75, 530-541 (1956).

A study of the effects of ACTH and cortisone on radiation pneumonitis is presented. No definite evidence of protection against development of pneumonitis by the use of ACTH or cortisone was seen in eight cases. No appreciable evidence of improvement in roentgenographic signs of radiation pneumonitis was found in 12 cases of this series. ACTH and cortisone alleviated symptoms caused by radiation pneumonitis in some of the cases.

-- Chem. Absts.

- 1225 Application of the Electrostatic Precipitator to the Measurement of Radioactive Aerosols.
B. A. Bergstedt. J. Sci. Instr. 33, 142-148 (Apr. 1956).

A continuous air monitor and a portable dust sampler are described both using a new type of electrostatic precipitator. In the continuous air monitor the dust is collected on a moving aluminum tape which then passes the radiation detectors. The precipitator is operated at very low efficiency, giving a high sensitivity which is nearly independent of air flow rate. The effective drift velocity of the particles toward the collection surface is more than ten times that in the Cottrell precipitator.

-- Author's summary

03120286

- 1226 Legislating Atomic Health and Safety. M. F. Pofcher.
Natl. Safety News 74, 20, 21, 130-132 (July 1956).

The Atomic Energy Act of 1954 provides generally that all licensees must observe health and safety standards to be issued by the Atomic Energy Commission, but the regulatory pattern and philosophy that it will observe has not yet been made clear. The relative roles of the AEC and of states and local governments in regulation are still an open question. The two most active states, from the legislative and regulatory point of view, have been New York and California. Their regulations are reviewed briefly, and possible shortcomings are pointed out. New Jersey's plan is much simpler and more in accord with the recommendations of the National Committee on Radiation Protection. Several other states are studying the problem. Progress in atomic industrial development will need a regulatory philosophy based on a close working partnership between industry and government. Industry can aid atomic safety if it will: (1) participate actively in consideration of state and local legislation; (2) set up internal training programs for radiation safety and offer to lend qualified men to state agencies for limited assignments; (3) suggest establishment of advisory committees and offer to serve on them; (4) establish and support training programs in colleges; and (5) extend self policing and self regulation.

ENVIRONMENTAL MEASUREMENTS

- 1227 The Determination of Dimethylformamide, Formamide, and Formaldehyde in Air. W. Massmann. Arch.Gewerbepathol. Gewerbehyg. 14, 91-97 (1956).

These three substances, used in the artificial textile and other industries, are known to be harmful to workers when inhaled, even in low concentrations, and analytical control is necessary. The chemical method of determination devised by the author is fully described. The principle consists in the conversion of the formamides by means of hydroxylamine into hydroxamic acid, and in the case of formaldehyde its conversion to aldoxime. When ferric chloride is then added a red color is produced and its intensity is determined photometrically. It is stated that the method has a high degree of accuracy and that with a 10-liter sample of air it is capable of giving good results for concentrations of the substances between 6 and 300 ppm.

-- Cond. from Bull. Hyg.

- 1228 A New Sampling Instrument for Determining the Dust Content of Flowing Gases. E. Walter. Staub. No. 42, 678-683 (Dec. 15, 1955).

Existing gravimetric samplers for measuring the dust load of chimney gases are difficult to handle and they are often unreliable; quantitative recovery of fine dust from paper filters for analysis is also often impossible. A new small cyclone-type sampler was, therefore, developed and is described and illustrated in the paper. In this instrument the gas is sucked into a cone, and a test tube at right angles to the cone acts as collector. The efficiency was found to be better than was suggested by existing theories. Tests with a quartz dust cloud of 78% (particle numbers) below 2 microns and 1.6% above 5 microns showed deposition above 99% and the limit of sizes retained was 0.5 micron. Further development of the instrument with a graded set of cone apertures is in progress and it is claimed that the instrument would be useful because it could be used for quantitative separation and recovery of respirable dust.

-- Bull. Hyg.

- 1229 Aerosol Size for Maximum Penetration through Fiberglass and Sand Filters. J. W. Thomas and R. E. Yoder. Arch. Ind. Health 13, 545-549 (June 1956).

An aerosol size for maximum penetration through FG-50 Fiberglass exists. It varies from 0.25 micron radius for 0.94 cm. per sec. face velocity to 0.35 micron for 0.094 cm. per sec. face velocity through the fiberglass material. The relations are shown

in graphs. Sand filters also show the existence of a size for maximum penetration. For large particles and low velocities, filtration is much higher for downflow than for upflow.
-- Cond. from authors' summary

- 1230 Aerosol Penetration through a Lead-Shot Column. A Method of Particle-Size Estimation. J. W. Thomas and R. E. Yoder. Arch. Ind. Health 13, 550-555 (June 1956).

An aerosol size for maximum penetration exists for a column filled with lead shot. Calibration curves are presented which permit the use of the column for particle-size estimation in the 0.1 micron-1.0 micron radius range. The calibration curves are applicable only to spherical particles of unit density. Homogeneous solid aerosols may be produced by atomization of dilute latexes containing homogeneous solid particles. The charged aerosol so produced may be discharged by ionizing radiation from radioactive sources.
-- Authors' summary

- 1231 Identification of Some Polymer Aromatic Hydrocarbons in the Atmosphere. Violet C. Shore and M. Katz. Anal. Chem. 28, 1399-1402 (Sept. 1956).

The separation and identification of individual aromatic hydrocarbons in a mixture of air contaminants are described for an investigation that was carried out on samples of airborne dust collected in Windsor as part of the Windsor-Detroit air pollution investigation. Samples were collected on fiber glass filters or from the intake of an air-conditioning system, depending on the size of sample required. The separation of single aromatic hydrocarbons from other interfering compounds was effected by extracting the sample with organic solvents and fractionating the extract by chromatographic adsorption analysis. The identification of the hydrocarbons in the small fractions of eluate was made by measuring the ultraviolet absorption. The polynuclear aromatics thus far identified in this way comprise pyrene, fluoranthrene, benz(a)anthracene, chrysene, and benzo(e)pyrene.
-- Editor's summary

PREVENTIVE ENGINEERING

- 1232 Operation and Maintenance of Spray Booths. J. F. McCaslin. Safety Maint. & Prod. 112, 20-24 (Aug. 1956).

The successful operation and maintenance of spray booths depends upon: (1) selection of the right type of booth for the job and taking into consideration the amount and type of materials to be used in painting; (2) correct design of the booth in regard to the size of the article being sprayed, the number of operators, whether it is conveyORIZED, and the necessary rate of exhaust; and (3) a complete understanding of how and why the booth functions, and a preventive maintenance program which insures efficient operation of the booth. Dry, filter, and water booths are described and illustrated. A number of factors contributing to efficient operation are described. Examples are given of inefficient operation and its results and correction.

- 1233 Collection Efficiency of Aerosol Particles and Resistance to Flow through Fiber Mats. J. B. Wong, W. E. Ranz, and H. F. Johnstone. J. Appl. Phys. 27, 161-169 (Feb. 1956).

The collection efficiencies for sulfuric acid aerosols of 0.4 to 1.3 micron particle diameter, and the resistance to flow through glass fiber mats composed of 3.5, 6.2, and 9.6 micron fibers were investigated experimentally. The results agree with the theory that particle collection in this range is a function of the inertia of the particles, the interception by the fibers, and the nature of the flow around the fibers, and that the

pressure drop is a function of the flow characteristics and the fiber interference effect. Theoretical equations for collection efficiency and pressure drop of fiber mats were analyzed in terms of the impaction efficiency and drag coefficient of single fibers. These equations were evaluated by comparing the apparent fiber efficiency and drag with theoretical values.

-- Cond. from Atm. Poll. Bull.

- 1234 Abrasive Blasting. Data Sheet D-433. National Safety Council, 425 North Michigan Ave., Chicago 11, Ill. Natl. Safety News 74, 36-40 (Aug. 1956).

The hazards from abrasive blasting include: danger from flying abrasives, static electricity, noise, toxic dusts (lead, mercury, cadmium, or zinc), and, above all, silica dust. The following preventive measures are discussed: substitution of non-siliceous abrasives for sand; use of wet methods; control of dust by isolation or enclosure; ventilation and exhaust of enclosures; use of respirators and other protective equipment, including their cleaning and maintenance; mechanical precautions; and good housekeeping. The recommendations for exhaust systems include good duct design, collection of dust, abrasive recovery and separation, abrasive handling and storage, and inspection and maintenance.

- 1235 Small and Medium-Size Cyclone Furnace Boilers. W. I. Collins. Coal Utilization 9, 63, 64, 67, 68 (Dec. 1955).

Two general types of gas-cooling boiler furnaces have been developed for use with cyclone furnaces. In one, the boiler furnace is divided into a lower primary section and an upper secondary section by means of a water-cooled screen. In the other, the open-furnace arrangement, the products of combustion from the cyclone furnace discharge into the lower zone of the boiler furnace and do not pass across any convection heat-absorbing surface until they leave the boiler furnace. Flue-gas dust loading is approximately 10% of the coal ash when using the screened boiler-furnace arrangement. Even with elimination of the furnace screen, flue-gas dust loading is only 15% of the coal ash—as compared to 50% with slag-tap pulverized-coal firing and about 85% in dry-ash pulverized-coal-fired units.

-- APCA Absts.

COMMUNITY AIR HYGIENE

- 1236 The Odor Phase of Air Pollution. A. Goldman. Ind. Wastes 1, 217-220 (July-Aug. 1956).

Odor cannot be considered seriously as a health menace, but has a high nuisance value and can cause damage to property or at least to property value. Methods of evaluation and abatement of odors are discussed. The nose is the only satisfactory means for detection of odor. The osmometer is the most used instrument for measurement of odor, but it depends upon perception by the nose. Odor surveys can be made by at least seven persons making and recording independent observations. A distinction is made between masking and counteraction of odors. In masking, strong odors tend to mask weaker ones. Both may be perceived or the stronger odor alone may be observed. In counteraction, certain pairs of odors in proper concentrations are antagonistic and the intensity of each odor is diminished. Principles of odor dispersion are discussed. Location of an odor can be established only by field surveys. The use of counteraction in the gas warning agent problem and in meat rendering plants is discussed, and methods are described.

03120289

- 1237 Treatment of Industrial Malodors. A. Goldman. Paper Presented at 12th East Central Section Meeting, APCA (Sept. 22-23, 1955).

This paper emphasizes the tremendous part that industrial odors play in air pollution, outlines some of the avenues of approach used in the study and measurement of odor, and describes the various engineering and chemical methods for the control of odor problems and nuisances. A considerable number of industries with odor problems are listed. In the odor counteraction method, the counteractant is atomized into the air stream of odorous exhaust by means of a calibrated atomizing nozzle. The counteractant vaporizes and is combined with the air stream by molecular dispersion. It is a balanced combination of a number of so-called odor pairs or opposites and inert materials. These counteraction formulas are designed for specific groups of odors and, therefore, the installation should be made by specialists who can discriminate between odors and estimate the concentration required.

-- Cond. from APCA Absts.

- 1238 The Abatement of Kraft Pulp Mill Odors by Burning. G. G. DeHaas and G. A. Hansen. Tappi 38, 732-738 (Dec. 1955).

The main sources of kraft mill odors and atmospheric sulfur losses are reviewed. Recovery systems for elimination of the major losses and, in particular, an installation to destroy the odor nuisance associated with the digester relief and blow-gases are described. Precautions against the formation of explosive mixtures are described, including: well known devices like flame arresters; design of the gas collection system to avoid the critical amount of air; and dilution of the gases with air before passing the burner. The "pure" digester relief and blow-gases are practically free of oxygen. In order to be well below the limits of flammability, the concentrated gases should not contain more than 5% oxygen, and the air-diluted gases should not contain more than 0.5% total organic compounds. Blowers installed to meter the gases from the vaporsphere to the disposal system were found to be explosion hazards. In one installation the blower was eliminated by taking advantage of the vacuum created in the dilution air duct to draw the gases from the vaporsphere. Once the foul gases are introduced to the dilution air, the explosion problem no longer exists.

-- Cond. from APCA Absts.

- 1239 Dangers in Railway Tunnels from Air Pollution. W. Massmann. Arch. Gewerbepathol. Gewerbehyg. 14, 129-189 (1955). German.

This lengthy paper on air pollution in railway tunnels gives a mass of information on the subject and an account of an investigation of two railway tunnels in Germany. Descriptions are given of accidents which have occurred through carbon monoxide poisoning and the inhalation of accumulated smoke. Studies of gas and solid matter concentrations were made in the two tunnels under a variety of circumstances of traffic, types of fuel used, and of meteorological conditions. The experimental results are presented in detail. It is considered that definite danger exists of acute and chronic carbon monoxide poisoning. Poisoning by hydrogen sulfide and sulfur dioxide is thought not to be a danger, although relatively high concentrations of SO₂ up to 10 ppm were found occasionally. The precautions which should be taken to prevent carbon monoxide poisoning in tunnel workers and the provision of adequate first aid centers are described.

-- Cond. from Bull. Hyg.

- 1240 Susceptibility of Plants to Hydrofluoric Acid and Sulfur Dioxide Gases. P. W. Zimmerman and A. E. Hitchcock. Contrib. Boyce Thompson Inst. 18, 263-279 (Jan.-Mar. 1956).

The effects of hydrofluoric acid and sulfur dioxide gases were determined and compared on 49 species of plants. At given concentrations and periods of exposure some species of plants were resistant to one gas but not to the other. A few species were equally susceptible or resistant to both gases. In tests with hydrofluoric acid alone, gas concentrations ranged from 1 to 100 parts per billion and periods of exposure were usually six to eight days. The sulfur dioxide concentrations ranged from 0.2 to 1.1 ppm at periods of exposure from two to eight hours. Special equipment and methods were developed for fumigating plants in the field and in greenhouses. Stomatal counts for upper and lower epidermis showed no relation between the number of stomata per unit leaf area and relative susceptibility

to either gas. All species of plants grown in pots or under field conditions stored fluorine. There was considerable difference in rate of absorption by different species when the plants were fumigated, and different parts of the plant absorbed different amounts of fluoride. These results should serve as an aid in diagnosing symptoms on vegetation around industrial areas.
-- Cond. from authors' summary (APCA Absts.)

- 1241 Hydrocarbon Synthesis in Combustion. B. D. Tebbens, J. F. Thomas, and M. Mukai. Arch. Ind. Health 13, 567-573 (June 1956).

A review of recent literature pertaining to the presence of polyaromatic compounds, such as benzpyrene, in smoke-contaminated air is accompanied by a preliminary report relating combustion of gaseous fuels to the production of these compounds. Whereas previous evidence has indicated that the multinuclear aromatics are found on incomplete combustion of solid or liquid fuels, current studies demonstrate their presence also in combustion products of hydrocarbon gases. Because the fuels used are all aliphatic, namely, methane (natural gas), butene-1, acetylene, and butadiene, while the products being investigated are polyaromatics of much higher molecular weight, a mechanism for their formation is suggested. The compounds tentatively identified by chromatography and ultraviolet spectrophotometry range from anthracene to material having six or more condensed benzene rings.

-- Authors' summary

- 1242 Hay Fever a Costly Burden to Industry. C. N. Howison. Ind. Wastes 1, 209-211 (July-Aug. 1956).

Many millions of work days are lost by incapacitated hay fever sufferers, and hay fever, untreated, frequently leads to seasonal asthma. Industry can help reduce the pollen pollution menace by leading the effort to eliminate ragweed in the community. This is not only good public relations, but helps employees to be more healthful and efficient during the hay fever season. The most efficient and economical method of eliminating atmospheric ragweed pollen is the control of ragweed by the use of 2,4-D, applied strictly according to the manufacturers' recommendations. Medical means of alleviating hay fever and removal to a pollen-free environment are either expensive or not altogether effective. Control at the source is the simplest and most economical method. The Air Pollution League of Greater Cincinnati is leading the fight for the eradication of ragweed, and a national control plan is recommended.

MANAGEMENT ASPECTS

- 1243 Disability Pensions. H. Fox. Mgmt. Rec. (National Industrial Conference Board) 18, 194-197, 218-221 (June 1956).

This survey of disability pensions in the United States covers their ups and downs from the Twenties to the present. These pensions exclude provision for work-connected disability, because that is covered by compensation laws and practices; but only 5% of all permanent and total disability cases are of occupational origin. This report is based on an analysis of all major pension surveys made since 1925. Although a minority of all pension plans have a disability provision, these are more frequent in the larger companies and the majority of workers covered by pension plans are entitled to disability benefits. Most plans include requirements in age and length of service. The union demands for disability plans have brought major changes in these requirements, but unions do not play a significant part in decisions concerning the extent of an employee's disability. The vast bulk of disability plans define total and permanent disability as inability to do any kind of remunerative or profitable work, but in about 15% of the plans, the emphasis is on inability to handle work in the company.

03120291

Three basic methods of computing the disability benefit in relation to Social Security benefits are described. A minimum monthly benefit is usually specified; \$50 is the most common in recent surveys. In 18 recent disability pension plans, all of which are bargained, provide for deduction of a federal disability benefit in case it is established. (Ed. note—These surveys were made, and the report was written before the enactment of the recent amendment providing for disability benefits at the age of 50, and undoubtedly, many disability plans will be modified in the future). Many details of practices are covered in this report.

ACCIDENTS AND PREVENTION

- 1244 Cleaning Small Containers that Have Held Combustibles. Data Sheet D-432.
National Safety Council, 425 North Michigan Ave., Chicago 11, Ill.
Natl. Safety News 74, 31, 32 (July 1956).

This data sheet covers the cleaning of small containers such as drums, fuel tanks of cars and trucks, cans, barrels, and tanks for domestic storage and heating, and is limited to containers that are not equipped with manholes or cannot otherwise be entered. Explosions and fires may result if welding, cutting, or other hot work is done on containers that are not entirely free of flammable materials. Also, if the containers are to be re-used for other products or purposes, they must be clean and free from contaminants. Before a container is cleaned, it should be determined whether the contents are combustible, are soluble in water, or react with water. The method of cleaning depends on these properties. In addition to the hazards of fire and explosion, there is also the hazard of burns involved when hot solutions or soda ash and steam are used. Recommendations are made for personal protective equipment. Directions are given for emptying, cleaning with water or solutions, steam cleaning, and for inspection to determine whether cleaning has been accomplished. Caution is emphasized throughout the process.

- 1245 Methylene Chloride for Raising Solvent Flash Points and Its Effect in 27 Solvents.
J. J. DeVoldre and M. J. Skrypa. Petroleum Processing 10, 1746-1749 (1955).

Methylene chloride is less toxic than carbon tetrachloride, which makes it more desirable as a flash-point depressant for organic solvents. Flash point-composition relations are given for mixtures of methylene chloride with 27 solvents, including alkanes (pure and mixed), aromatic hydrocarbons, alcohols, ketones, ether, and esters. -- Chem. Absts.

- 1246 Analysis of Accident Statistics. J. H. Mathewson and R. Brenner.
Natl. Safety News (J. Am. Soc. Safety Engrs. Section) 74, 33-38 (Aug. 1956).

The accident rate in an individual company may fluctuate for several reasons without any change in the underlying accident probability. The authors propose a system of accident control charts which have a general similarity to quality control charts. Their mathematical basis and application are fully explained. If properly used, these charts can provide valuable guidance to the direction of the accident prevention effort.

03120292

INDEX

<u>Abrasive blasting, data sheet</u>	1234	<u>Hay fever and industry</u>	1242
<u>Accident statistics, analysis</u>	1246	<u>Health examinations, appraisal</u>	1113
<u>Aerosols, penetration through filters</u>	1229, 1230	<u>Hearing loss, occupational, Wisconsin</u>	1198
<u>Aged</u>		<u>Heart disease study, cineradiography</u>	1122
injuries, management	1117	<u>Heptachlor, tolerance for residues</u>	1163
surgical emergencies, management	1118	<u>Hydrocarbon (s)</u>	
<u>Air pollutants, susceptibility of plants</u>	1240	aromatic, detection in air	1231
<u>Air pollution</u>		synthesis in combustion	1241
dispersion measurements	1211	<u>Industrial health program</u>	
in tunnels, hazards	1239	Navy	1111
<u>Alcoholism in industry</u>		Puerto Rico	1104
treatment program	1125	<u>Industrial hygiene problem</u>	
<u>Asbestos and lung cancer, new views</u>	1190	chemical industry	1110
<u>Asbestosis</u>		<u>Industrial nurse, standards</u>	1128
case	1189	<u>Insecticides</u>	
respiration study	1188	organic phosphorus, review	
<u>Atomic energy industry</u>		analytical methods	1159, 1160, 1161
environmental aspects	1207	safety in application	1157
health and safety	1206	<u>Insurance</u>	
legislation	1226	major medical expense, pamphlet	1129
<u>Atomic warfare</u>		<u>Kelthane, miticide</u>	1158
burns, treatment	1216	<u>Lead hazard in boiler cleaning</u>	1142
mechanical injuries, treatment	1217	<u>Lead poisoning</u>	
radiation injuries	1215	EDTA treatment, experimental	1143
<u>Burn shock, saline solution therapy</u>	1123	facts and fallacies	1141
<u>Caisson disease, bone effects</u>	1203	prophylaxis	
<u>Cancer</u>		by food components	1145
lung, environmental causes	1126	by oral EDTA	1144
survey, Connecticut	1127	<u>Lung capacity test, half second expiration</u>	1114
<u>Cardiac worker, evaluation</u>	1121	<u>Malathion, tolerance for residues</u>	1164
<u>Cardiovascular disability</u>		<u>Manganese poisoning, detoxication</u>	1146
return to work	1120	<u>Mercury, effects, blood</u>	1147
<u>Castor bean dust, asthma from</u>	1196	<u>Methyl bromide toxicity</u>	1152
<u>Cement workers, effect of dust</u>	1193	<u>Methylene chloride, effect on flash points</u>	1245
<u>Chlorpromazine, dermatitis</u>	1136	<u>Mine (s)</u>	
<u>Cleaner for metal parts, toxicity</u>	1167	inspection report, Great Britain	1106
<u>Cleaning containers, safety sheet</u>	1244	lighting and visibility	1201, 1202
<u>Coal workers, bronchial diseases</u>	1174	<u>Molybdenum toxicity</u>	
<u>Cyclone furnace boilers</u>	1235	effect of sulfur compounds	1148
<u>Dermatitis</u>		<u>Nasal penetration, experimental</u>	1191
industrial	1132	<u>New channels for the golden years (Bk.Rev.)</u>	1103
sunlight allergy	1131	<u>Noise</u>	
wood	1137	effects on hearing	1199
<u>Dinitrobenzene poisoning (meta), cases</u>	1155	in industry, problem	1200
<u>Dinitrocresol, ortho, exposure</u>		<u>Nuclear reactors, insurability</u>	1213
in apple thinning	1156	<u>Occupational Health Institute, Finland</u>	
<u>Disability pensions</u>	1243	report	1107
<u>Dust (s)</u>		<u>Occupational health nursing (Bk. Rev.)</u>	1100
effects on respiration	1192	<u>Odor abatement, paper mills</u>	1238
inhalation and respiratory insufficiency	1175	<u>Odors</u>	
in lungs, size distribution	1184	in air pollution	1236
sampling instrument for flowing gases	1228	industrial, treatment	1237
suppression in drilling, dry methods	1168	<u>Ozone, toxicity, acute</u>	1138
<u>Epoxy resins, safe handling</u>	1135	<u>Particle size determination</u>	
<u>Ethylene glycol poisoning, case</u>	1151	lead-shot filters	1230
<u>Factory inspection report, Great Britain</u>	1105	<u>Patch testing</u>	1130
<u>Filters, fiber mat, efficiency</u>	1233	<u>Phenylmercuric</u>	
<u>Formaldehyde and formamides</u>		acetate, skin sensitization	1133
determination	1227	pesticides, burns	1134

<u>Physical fitness and industry</u>	1112	<u>Silicosis</u>	
<u>Pneumoconiosis</u>		effect on vagus nerve	1181
coal miners	1171, 1172	functional tests	
death rates	1173	acetylcholine coughing reflex	1178
emery (alumina)	1194	hazard, Sahara	1197
pathogenesis theory	1187	hyaline tissue studies	1179, 1180
<u>Preventive medicine in industry</u>	1108	serum mucoproteins	1182
<u>Protective measures in chemical industry</u>	1109	and silicotuberculosis	
<u>Pyrite mines, bronchitis in</u>	1140	serum examination	1177
<u>Quartz and other minerals</u>		study, stereophotoroentgenography	1176
protein adsorption	1186	therapy, aluminum	1185
<u>Radioactive</u>		Spray booths, operation and maintenance	1232
aerosols, measurement	1225	<u>Stress, occupational, and emotional illness</u>	1119
materials, transportation	1205	<u>Sulfathiazole manufacture, bronchitis</u>	1166
<u>Radiation</u>		<u>Sulfur dioxide, effect on trachea</u>	1139
atomic		<u>Surgery, early return to work</u>	1115
biological effects, report to public	1102	<u>Systox and metabolites, toxicity</u>	1162
effects, summary reports (Bk. Rev.)	1101	<u>Trichloroethylene</u>	
damage, genetic	1218	problem	1154
dosage in diagnosis	1220	and toluene, liver and kidney effects	
exposure, fluoroscopy, monitoring	1221	treatment	1153
hazards in atomic energy industry	1219	<u>Uranium</u>	
ionizing, late effects	1223	industry, health protection	1210
pneumonitis, ACTH treatment	1224	mining, health hazards	1212
protection, public health view	1214	poisoning, mechanism	1209
<u>Rehabilitation of amputee</u>	1116	processing, industrial hygiene	1208
<u>Respirators</u>		<u>Vanadium poisoning from boiler cleaning</u>	1149
air-supplied	1169	<u>Varicose veins and stasis problems</u>	1124
testing, mechanical breather	1170	<u>X-ray exposure in dentistry</u>	1222
<u>Salt tablets, misuse</u>	1204	<u>Zinc oxide, blood effects</u>	1150
<u>Silica in lungs</u>		<u>Zinc, tolerance for residues</u>	1165
determination and diagnostic value	1183	<u>Zirconium dusts, lung effects</u>	1195

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