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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL ... decisions and trends

JULY, 1958
(Vol. 19, No. 7)

INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
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11 206 2735



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.

Volume 17

July, 1955

No. 7

ANNOTATED NOISE BIBLIOGRAPHY PUBLISHED BY I-H-F

Months of painstaking search and review went into the preparation of An Annotated Bibliography on Noise, Its Measurement, Effects and Control, publication of which was recently completed by Industrial Hygiene Foundation. The 364-page bibliography covers 2,336 articles and other literature, and is intended as a useful reference for engineers, physicians, executives and others who may be concerned with problems resulting from excessive noise.

The proper approach to an understanding of the problem of noise and its solution necessitated a systematic survey of the knowledge of the subject. The preparation and printing of this issue of the Bibliography was made possible by funds contributed by various organizations. Therefore it was possible to distribute a limited number of copies to member companies of Industrial Hygiene Foundation. If requests for additional copies indicate that a second printing is necessary, they can be furnished to members at \$5.00 each.

CLOSE ASSOCIATE OF FOUNDATION DIES

Death claimed a long-time associate of Industrial Hygiene Foundation, Dr. R. E. Zimmerman, on June 20 in Summit, N. J. Dr. Zimmerman had been a member of the Foundation's Board of Trustees from 1939 until 1953, when he resigned from the Board at the time of his retirement from active service in the United States Steel Corporation. He was also a member of the Foundation's Research Advisory Council.

NEW COMMITTEE MEMBERS

Recent additions to the Medical Committee of the Foundation are: Dr. Melvin N. Newquist, Medical Director, The Texas Company; Dr. Norbert J. Roberts, Medical Director, The Pennsylvania Railroad; and Dr. Kenneth Smith, Medical Director, Johns-Manville Corporation.

Added to the Legal Committee is James Hill, Compensation Department, Ford Motor Company.

PATHOLOGY YEAR BOOK INCLUDES FOUNDATION LITERATURE

The Year Book of Pathology and Clinical Pathology for 1954-55 contains an abstract of the paper on "Permeability of Lung Parenchyma to Particulate Matter," by Dr. Paul Gross and Dr. Marian Westrick of the Foundation's toxicology laboratory. The year book outlines the significant advances in path-

11 206 2736 (Cont. on next page)

ology which have been reported in the world literature. This marks the third year of the last four in which work conducted in the Foundation's toxicology laboratory has been so recognized.

SHARING INFORMATION

Copies of a translation of an article on "TCP Poisoning and Blood Cholinesterase" from the Clinic of Nerve Diseases of Masaryk University in Brno, Czechoslovakia, are available upon request. (The original article was abstracted in Industrial Hygiene Digest in January, 1955, Abst. No. 81). The translation was made available to I-H-F through the courtesy of Mr. G. G. Fleming, Safety Director of the Celanese Corporation of America, and the Foundation is passing the information along to other member companies who may be interested in the subject. We would be pleased to follow the same procedure in the event that other representatives of member companies would like to share translations they have made of important articles on industrial health.

REPRINTS AVAILABLE

Reprints of two technical papers are available for distribution:

"Permissible Dustiness," by Theodore Hatch, Research Adviser of the Foundation, reprinted from American Industrial Hygiene Association Quarterly 16:1 March, 1955.

"Partitional Respirometry," by Theodore Hatch and Kenneth M. Cook, reprinted from the A. M. A. Archives of Industrial Health, Vol. 11, March, 1955.

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THRESHOLD LIMIT VALUES FOR 1955¹

Adopted at the Seventeenth Annual Meeting of the American Conference of Governmental Industrial Hygienists, Buffalo, April 24-28, 1955

Values are given in the following tabulation for the maximum average atmospheric concentration of contaminants to which workers may be exposed for an eight-hour working day without injury to health.

These values are based on the best available information from industrial experience, from experimental studies, and, when possible, from a combination of the two. They are not fixed values but are reviewed annually by the Committee on Threshold Limits for changes, revisions, or additions as further information becomes available. Threshold limits should be used as guides in the control of health hazards and should not be regarded as fine lines between safe and dangerous concentrations. They represent conditions only within which it is felt that workers may be repeatedly exposed, day after day, without their health being adversely affected. It is felt, at the present time, that workers should not be exposed to a working environment containing any of these substances in excess of the value indicated.

These values are not intended for use, or for modification for use, in the evaluation or control of community air pollution or air pollution nuisances.

Established Values²

Gases and Vapors

Substance	PPM	Substance	PPM
Acetaldehyde	200	Butanone (methyl ethyl ketone)	250
Acetic acid	10	Butyl acetate (n-butyl acetate)	200
Acetic anhydride	5	Butyl alcohol (n-butanol)	100
Acetone	1000	Butyl cellosolve (2-butoxyethanol)	200
Acrolein	0.5	Carbon dioxide	5000
Acrylonitrile	20	Carbon disulfide	20
Ammonia	100	Carbon monoxide	100
Amyl acetate	200	Carbon tetrachloride	25
Amyl alcohol (isoamyl alcohol)	100	Cellosolve (2-ethoxyethanol)	200
Azoline	5	Cellosolve acetate (hydroxyethyl acetate)	100
Arsine	0.05	Chlorine	1
Benzene (benzol)	35	Chlorobenzene (monochlorobenzene)	75
Bromine	1		
Butadiene (1,3-butadiene)	1000		

1. Copied from A.M.A. Archives of Industrial Health, June 1955.

2. No additions or changes have been made in the established list.

Gases and Vapors (cont.)

Substance	PPM	Substance	PPM
Chloroform (trichloromethane)	100	Hydrogen chloride	5
1-Chloro-1-nitropropane	20	Hydrogen cyanide	10
Chloroprene (2-chlorobutadiene)	25	Hydrogen fluoride	3
Cresol (all isomers)	5	Hydrogen selenide	0.05
Cyclohexane	400	Hydrogen sulfide	20
Cyclohexanol	100	Iodine	1
Cyclohexanone	100	Isophorone	25
Cyclohexene	400	Mesityl oxide	50
Cyclopropane	400	Methyl acetate	200
o-Dichlorobenzene	50	Methyl alcohol (methanol)	200
Dichlorodifluoromethane	1000	Methyl bromide	20
1,1-Dichloroethane	100	Methyl cellosolve (methoxy-ethanol)	25
1,2-Dichloroethylene	200	Methyl cellosolve acetate (ethylene glycol monomethyl ether acetate)	25
Dichloroethyl ether	15	Methyl chloride	100
Dichloromonofluoromethane	1000	Methylal (dimethoxymethane)	1000
1,1-Dichloro-1-nitroethane	10	Methyl chloroform (1,1,1-trichloroethane)	500
Dichlorotetrafluoroethane	1000	Methylcyclohexane	500
Diethylamine	25	Methylcyclohexanol	100
Dimethylaniline (N-dimethylaniline)	5	Methylcyclohexanone	100
Dimethylsulfate	1	Methyl formate	100
Dioxane(diethylene dioxide)	100	Methylene chloride (dichloromethane)	500
Ethyl acetate	400	Naphtha (coal tar)	200
Ethyl alcohol (ethanol)	1000	Naphtha (petroleum)	500
Ethylamine	25	Nickel carbonyl	0.001
Ethyl benzene	200	Nitrobenzene	1
Ethyl bromide	200	Nitroethane	100
Ethyl chloride	1000	Nitrogen dioxide	5
Ethyl ether	400	Nitroglycerin	0.5
Ethyl formate	100	Nitromethane	100
Ethyl silicate	100	2-Nitropropane	50
Ethylene chlorohydrin	5	Nitrotoluene	5
Ethylene dibromide (1,2-dibromoethane)	25	Octane	500
Ethylene dichloride (1,2-dichloroethane)	100	Ozone	0.1
Ethylene oxide	100	Pentane	1000
Fluorine	0.1	Pentanone (methyl propyl ketone)	200
Fluorotrichloromethane	1000	Perchloroethylene (tetrachloroethylene)	200
Formaldehyde	5	Phenol	5
Gasoline	500	Phosgene (carbonyl chloride)	1
Heptane (n-heptane)	500	Phosphine	5
Hexane (n-hexane)	500		
Hexanone (methyl butyl ketone)	100		
Hexone (methyl isobutyl ketone)	100		

Gases and Vapors (cont.)

Substance	PPM	Substance	PPM
Phosphorus trichloride	0.5	Sulfur monochloride	1
Propyl acetate	200	Sulfur dioxide	10
Propyl alcohol (isopropyl alcohol)	400	1,1,2,2-Tetrachloroethane	5
Propyl ether (isopropyl ether)	500	Toluene	200
Propylene dichloride (1,2-dichloro- propane)	75	o-Toluidine	5
Stibine	0.1	Trichloroethylene	200
Stoddard solvent	500	Turpentine	100
Styrene monomer (phenyl ethylene)	200	Vinyl chloride (chloroethene)	500
		Xylene	200

Toxic Dusts, Fumes, and Mists

Substance	Mg. per cu. m.	Substance	Mg. pe cu. m.
Antimony	0.5	Pentachloronaphthalene	0.
Arsenic	0.5	Pentachlorophenol	0.
Barium (soluble compounds)	0.5	Phosphorus (yellow)	0.
Cadmium	0.1	Phosphorus pentachloride	1
Chlorodiphenyl	1	Phosphorus pentasulfide	1
Chromic acid and Chromates as CrO ₃	0.1	Selenium compounds (as Se)	0.
Cyanide as CN	5	Sulfuric acid	1
Dinitrotoluene	1.5	Tellurium	0.
Dinitro-o-cresol	0.2	Tetryl (2,4,6-trinitrophenyl- methylnitramine)	1.
Fluoride	2.5	Trichloronaphthalene	5
Iron oxide fume	15	Trinitrotoluene	1.
Lead	0.15	Uranium (soluble compounds)	0.
Magnesium oxide fume	15	Uranium (insoluble compounds)	0.
Manganese	6	Zinc oxide fumes	15
Mercury	0.1		
Parathion (O,O-Diethyl-O-p- nitrophenyl thiophosphate)	0.1		

Radioactivity: For permissible concentrations of radioisotopes in air see "Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water," Handbook 52, U. S. Department of Commerce, National Bureau of Standards, March, 1953. In addition, see "Permissible Dose for External Sources of Ionizing Radiation," Handbook 59, Department of Commerce, National Bureau of Standards, Sept. 24, 1954.

Mineral Dusts

Substance	MPPCF	Substance	MPPCF
Alundum (aluminum oxide)	50	Silica	
Asbestos	5	high (above 50% free SiO ₂)	5
Carborundum (silicon carbide)	50	medium (5 to 50% free SiO ₂)	20
Dust (nuisance, no free silica)	50	low (below 5% free SiO ₂)	50
Mica (below 5% free silica)	20	Slate (below 5% free SiO ₂)	50
Portland cement	50	Soapstone (below 5% free SiO ₂)	20
Talc	20	Total dust (below 5% free SiO ₂)	50

Tentative Thresho...

The following values are suggested for further consideration before being presented for adoption as established values. (*marks materials added this year and for which bibliographic material has been prepared. The other materials appeared in last year's report.) It is proposed that the entire list will be presented for adoption at the meeting of the American Conference of Governmental Industrial Hygienists in 1956, if no reason to the contrary is forthcoming.

Aldrin (1, 2, 3, 4, 10, 10-hexachloro-1, 4, 4a, 5, 8, 8a-hexahydro-1, 4, 5, 8-dimethanonaphthalene)	0.25	mg/M ³
Allyl alcohol	5	ppm
Allyl propyl disulfide	2	ppm
Ammate (ammonium amidosulfate)	15	mg/M ³
Benzyl chloride	1	ppm
* Butyl amine	5	ppm
Butyl mercaptan	10	ppm
Calcium arsenate	0.3	mg/M ³
Chlordane (1, 2, 4, 5, 6, 7, 8, 8-octachloro-3a, 4, 7, 7a-tetrahydro-4, 7-methanoindane)	2.0	mg/M ³
* Chlorine trifluoride	0.1	ppm
* Chlorinated diphenyl oxide	0.5	mg/M ³
Crag Herbicide (sodium-2, 4, dichlorophenoxy ethyl sulfate)	15	mg/M ³
2, 4-D(2, 4-dichlorophenoxyacetic acid)	10	mg/M ³
D. D. T. (2, 2-bis-(p-chlorophenyl)-1, 1, 1-trichlorethane)	2.0	mg/M ³
Diacetone alcohol (4-hydroxy-4-methyl pentanone-2)	50	ppm
* Diborane	0.1	ppm
Dieldrin (1, 2, 3, 4, 10, 10-hexachloro-6, 7, epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octahydro-1, 4, 5, 8-dimethanonaphthalene)	0.25	mg/M ³
* Difluorodibromomethane	100	ppm
Diisobutyl ketone	50	ppm
EPN (ethyl-p-nitrophenyl thiono benzene phosphonate)	0.5	mg/M ³
Ethyl mercaptan	250	ppm
* Ethylene diamine	10	ppm
* Ethylene imine	5	ppm
Ferro vanadium dust	1	ppm
Furfural	5	ppm
* Furfuryl alcohol	200	ppm

Tentative Threshold Limit Values (cont.)

* Hydrazine	1	ppm
* Hydrogen bromide	5	ppm
* Hydrogen peroxide, 90%	1	ppm
* Hydroquinone	2	mg/M ³
* Isopropylamine	5	ppm
Lead arsenate	0.2	mg/M ³
Lindane (hexachlorocyclohexane, gamma isomer)	0.5	mg/M ³
Malathion (0,0-dimethyl dithio phosphate of diethyl mercaptosuccinate)	15	mg/M ³
Methoxychlor (2,2-diparamethoxyphenyl-1,1,1, trichloroethane)	15	mg/M ³
* Methyl acetylene	1000	ppm
Methyl isobutyl carbinol (methyl amyl alcohol)	25	ppm
Methyl mercaptan	50	ppm
Molybdenum		
* (soluble compounds)	5	mg/M ³
* (insoluble compounds)	15	mg/M ³
p-Nitroaniline	1	ppm
Organo mercurials (as mercury)	0.01	mg/M ³
Perchloromethyl mercaptan	0.1	ppm
Phenylhydrazine	5	ppm
Picric acid	0.1	mg/M ³
* Propylene imine	25	ppm
Pyridine	10	ppm
* Quinone	0.1	ppm
Sodium hydroxide	2	mg/M ³
Sulfur hexafluoride	1000	ppm
Sulfur pentafluoride	0.025	ppm
TEDP (tetraethyl dithiono pyrophosphate)	0.2	mg/M ³
TEPP (tetraethyl pyrophosphate)	0.05	mg/M ³
* p-Tertiary butyl toluene	10	ppm
* Tetrahydrofuran	75	ppm
* Tetranitromethane	1	ppm
Titanium dioxide	15	mg/M ³
* Trifluoromonobromomethane	1000	ppm
Vanadium		
(V ₂ O ₅ dust)	0.5	mg/M ³
(V ₂ O ₅ fume)	0.1	mg/M ³
* Zirconium	5	mg/M ³

Beryllium: During the past few years, several papers have appeared in the literature which report a limit of 2 gamma per cubic meter of air for beryllium. Among these is the paper by Van Ordstrand, H. S.: "Berylliosis," A.M.A. Arch. Ind. Hyg. and Occ. Med. 10, 232,234 (Sept. 1954), and one by Sterner J. H., and Eisenbud, M.: "Epidemiology of Beryllium Intoxication," A.M.A. Arch. Ind. Hyg. and Occ. Med. 4, 123-151 (Aug. 1951). Conflicting data from industrial experience has caused the Committee to postpone the suggestion of a Threshold Limit for this material. It is apparent that more epidemiologic work is needed for the establishment of a definite value.

11 206 2743

Reference material has been prepared on each of the above substances and, though in some instances rather meager, is available for distribution. The committee would welcome suggestions of substances to be added and also comments, additional references, or reports of experience with these materials.

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Industrial Hygiene Foundation
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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

761 At Last! Specialty Certification.

The American Board of Preventive Medicine, accepting as a fait accompli the certification of qualified industrial physicians as specialists, has issued an informative bulletin for the guidance of those who have made application for consideration. The portion of the bulletin descriptive of occupational medicine certification is quoted.

-- Editorial, Ind. Med. & Surg., June 1955

COMING EVENTS

- | | | |
|-----|------------------|---|
| 762 | Aug. 15-18 | Fourth Annual Health Conference, Public Health Association, Penna. Health Council, and Penna. Medical Society, State University, University Park, Pa. |
| | Aug. 15-26 | Noise Reduction, Special Summer Program, Massachusetts Institute of Technology, Cambridge, Mass. |
| | Sept. 11-16 | American Chemical Society, Minneapolis, Minn. |
| | Sept. 12-15 | International College of Surgeons, Convention Hall, Philadelphia, Pa. |
| | Sept. 12-16 | Instrument Society Conference, Los Angeles, Calif. |
| | Sept. 20-26 | World Medical Association, Vienna, Austria. |
| | Sept. 25-29 | International Association of Industrial Accident Boards and Commissions, Chicago, Ill. |
| | Sept. 26-30 | Atomic Industry Trade Fair, Washington, D. C. |
| | Sept. 26-Nov. 18 | Institute of Industrial Medicine, two-months course in Industrial Medicine and Occupational Health, New York University Postgraduate Medical School. |
| | Oct. 13-17 | International Academy of Legal and Social Medicine, Genes, Italy. |
| | Oct. 18 | American Society of Safety Engineers, Chicago, Ill. |
| | Oct. 18-26 | National Safety Council, Chicago, Ill. |
| | Oct. 24-26 | American Standards Association, Washington, D. C. |
| | Oct. 30-Nov. 4 | American College of Surgeons, Chicago, Ill. |

OCCUPATIONAL DISEASE STATISTICS

763 Occupational Disease Statistics.

	Ind. ¹ June 1955	Wisc. ¹ April 1955	Total
Allergy		1	1
Carbon Monoxide Poisoning		3	3
Carbon Tetrachloride Poisoning		1	1
Dermatitis	3*	40	48
Eczema		1	1
Fumes		1	1
Lead Poisoning	1		1
Silico-Tuberculosis	2		2
Skin Infection		8	8
Skin Irritation		6	6
Stomach Trouble (Gas and dust)		1	1
Total	11	62	73

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

* Alkalies, cement, detergent, plastics, and rubber caused one each; and the cause of three other cases was not stated.

LEGAL DEVELOPMENTS

764 New Legislation.

New legislation and changes since the last announcement (IHF Abst. 625, June 1955) have been reported. In Maine compensation benefits have been increased and special occupational disease compensation has been provided for firemen, effective November 30, 1955. Massachusetts extends coverage to telephone company employees. North Carolina increases compensation benefits and extends compensation to bursitis. Oregon raises permanent and temporary total disability payments and provides compensation for civil defense volunteers. South Carolina increases burial expenses and exempts non-salaried county officials from coverage. -- Cond. from CCH

765 Longshoremen's and Harbor Workers' Compensation Act—Alleged Poisoning by Fumes of Carbon Disulfide—Seaworthiness of Ship—Negligence.

Two longshoremen who were exposed to carbon disulfide fumes in the hold of a ship as they were loading loose grain were denied recovery against the ship and its owners since the court found that the ship was not unseaworthy and the owners were not negligent. The court found that carbon disulfide might be present in grain recently fumigated. However, it was the custom at the port where the incident occurred to give notice if the grain had been recently treated and no notice was given in this case. The court found that the owners, in the exercise of reasonable care, would not have discovered that there was likely to be a dangerous concentration of carbon disulfide in the grain. Therefore, there was no negligence. The court further found that the warranty of seaworthiness does not extend to the condition or ingredients of the cargo. The court held that there was no valid reason to shift the burden from the compensation carrier to the ship. Action dismissed. McMahan v. Steamship Panamolga. United States District Court, District of Maryland. No. 3505. January 20, 1955. -- CCH

- 766 Common-Law Action—Employee of Subcontractor v. General Contractor—Right of Employee Covered by Missouri Compensation Act to Recover Under the Law of Arkansas Where Injury Occurred—Full Faith and Credit Clause Not Applicable.

A Missouri subcontractor's employee who was injured in Arkansas and who received compensation payments under the Missouri Compensation Act was improperly denied recovery in a common-law action against the prime contractor in Arkansas when the lower court ruled that it must give full faith and credit to the Missouri Compensation Act which barred third-party actions for employees who had been awarded compensation under the Missouri Act. The court ruled that Missouri can make its compensation act exclusive, and enforce it within its borders. Arkansas could displace Missouri's policy with another. The court further ruled that were it otherwise, the state where the injury occurred would be powerless to provide any remedies or safeguards to non-resident employees working within its borders. The full faith and credit clause does not demand that type of subserviency from the state of the injury. Reversed. Carroll v. Lanza. United States Supreme Court. Docket No. 375. October Term, 1954. June 6, 1955. -- CCH

BOOKS, PAMPHLETS AND NOTICES

- 767 Dust is Dangerous. C. N. Davies. Faber and Faber, Ltd., 24 Russell Square, London W. C. 1, England. 116 pp. (1954). \$3.15.

The book begins with a foreword by Sir George Barnett, H. M. Chief Inspector of Factories, calling attention to some of its prominent features. The author is a well known industrial hygienist. The first chapter deals with the dust hazards of the industrial worker, including toxic dusts, those that cause skin and eye injuries, dental erosion and cancer and especially silica, coal, and asbestos dusts. The various methods of dust sampling are described. Special attention is given to preventive measures, in the order of decreasing importance: (1) avoiding processes that produce dust; (2) suppression of dust at the source; (3) local exhaust of dusty air; (4) general ventilation of the workshop; and (5) personal protection. A chapter deals with radioactive dusts, and another with house and non-industrial dusts. In the final chapter on dust explosions it is emphasized that a very thin uniform layer of fine dust can, if dispersed in the air of a workroom, form a dangerously explosive cloud. If there is any possibility of a dust causing an explo-

sion, the workrooms should be scrupulously clean and free from collections of dust. The book is well illustrated. It is a worth-while contribution to the literature of industrial hygiene. -- FFR

- 768 Symposium on Odor. Presented at the Fifty-Seventh Annual Meeting, American Society for Testing Materials, Chicago, Ill., June 15, 1954. ASTM Special Technical Publication No. 164. 81 pp. (Nov. 1954). Obtainable from the ASTM, 1916 Race St., Philadelphia 3, Pa.

The following papers were presented: "Odor, a Proposal for Some Basic Definitions", by E. Sagarin; "Catalytic Method of Measuring Hydrocarbon Concentrations in Industrial Exhaust Fumes", by R. J. Ruff; "The Design, Construction, and Use of an Odor Test Room", by N. Deininger and R. W. McKinley; "Organoleptic Appraisal of Three-Component Mixtures", by A. H. Gee; "Odor Pollution from the Official's Viewpoint", by C. W. Gruber; and "Odor Control Methods, a Critical Review", by A. Turk, who also presented a brief introduction to the Symposium. Discussion of each of the papers is reported in full. -- FFR

- 769 Workmen's Compensation Problems. Proceedings of 40th Annual Convention of the International Association of Industrial Accident Boards and Commissions, Quebec, Canada, Oct. 3-7, 1954. U. S. Department of Labor, Bureau of Labor Standards, Bull. 180. 238 pp. (1955). For sale by Supt. of Documents, U. S. Govt. Printing Office, Washington, D. C. 65 cents. Limited free supply available from Paul E. Gurske, Director, Bureau of Standards, U. S. Dept. of Labor, Washington 25, D. C.

The program included panels on rehabilitation of injured workers, adequacy of workmen's compensation, noise in industry, and expedition of claims in contested cases. Among the individual papers were: "The Future of Workmen's Compensation", by A. Larson, Under Secretary, U. S. Department of Labor; "Occupational Cancer Hazards", by W. C. Hueper; and "Heart Disease and Employment", by L. J. Goldwater. Reports were given on accident prevention and administration of workmen's compensation in various localities, and a number of reports of committees are included. -- FFR

- 770 Annual Report of the Chief Inspector of Factories for the Year 1952. G. P. Barnett. Ministry of Labor and National Service. 239 pp. (1954). H. M. Stationery Office, London. 6s. 6d.

Plant mechanization has received increasing attention in all types of industry. Less manual handling decreases accidents and fatigue. The general adoption of fluidized processes contributes to the

solution of some dust problems. The increasing use of instruments has developed some safety problems in making them flame-proof and avoiding danger from gas or electrical connections. Problems of exposure to ionizing radiations are discussed. Accidents of various types and origin are discussed extensively and suggestions are given for organization of accident prevention. Problems in heating, ventilating, and dust removal are discussed. Statistics on occupational diseases are presented.

-- Cond. from Bull. Hyg.

INDUSTRIAL MEDICAL PRACTICE

- 771 Industrial Medicine on the Washington Scene. H. N. Doyle. Arch. Ind. Health 11, 393-396 (May 1955).

The growth of official occupational health programs is traced and their current status is described. In spite of limited staffs, the contributions of state and local agencies to the entire field have been extensive. Some unsolved problems are discussed. The Occupational Health Program of the Public Health Service gives assistance to the local organizations, (1) by furnishing a large amount of data that has been collected and (2) by technical consultation, assistance in training personnel, and temporary loan of experts. The second type of service has been dwindling on account of limited budgets, and a third resource, financial support, given for a short time, is no longer existent. The continued operation of these programs depends in large degree on lay and professional support.

- 772 Administrative Medicine—Necessary Component of Industrial Health. The C. O. Sappington Memorial Lecture. E. D. Barnett. Ind. Med. & Surg. 24, 247-250 (June 1955).

Administrative medicine was first recognized as a specialty three years ago with the establishment of the Institute of Administrative Medicine at Columbia University. The need of administrative medicine in various fields, including industrial medicine, is discussed, and its functions are outlined. The author expresses the hope that there will be an interest in the inclusion of administrative medicine as an essential part of industrial and occupational medicine, and that a high degree of coordination of the occupational health field with the total health problems of the nation can be achieved.

- 773 The American Academy of Compensation Medicine in Workmen's Compensation. A. W. Duryee. Compens. Med. 6, 1-3 (Dec. 1954 - Feb. 1955).

The aims of the American Academy of Compensation Medicine are outlined. The problems of free choice of physician, cardiovascular disease, rehabilitation, and medical ethics are discussed briefly. The Academy advocates: (1) educating the physician, surgeon, student, and intern in better care of the injured worker; (2) obtaining a spirit of co-operation between administrator, lawyer, legislator, and doctor; (3) establishing basic criteria for specific problems; (4) joining with organized medicine to root out bad medical practice; and (5) interest in new developments in these fields.

- 774 Instruction in Occupational Medicine at the Undergraduate Level. Report of the University of Oklahoma Workshop. J. S. Felton. Ind. Med. & Surg. 24, 251-256 (June 1955).

This paper presents the collective opinions of a number of medical educators who attended a conference on instruction in occupational medicine. Fifteen reasons are given why occupational medicine should be taught. Among them are the needs for: a greater knowledge of occupational health problems; correction of erroneous concepts held by students; provision of better medical service to industry; a more skilled assumption of medicolegal responsibilities; furthering both a holistic and a preventive approach to medicine; and the creation of a research service for industry. Other questions discussed were: what subjects should be taught, who does the teaching, and where the teaching should be accomplished, and in what year or years the instruction should be given. A number of valuable suggestions are given under each of these headings.

- 775 Scientific Medicolegal Investigation in the Undergraduate Medical Curriculum. A. R. Moritz. J. Am. Med. Assn. 158, 243-244 (May 13, 1955).

Because of the millions of disabling injuries and the hundreds of thousands of deaths from violent or obscure causes that occur each year in the United States, practitioners of medicine are frequently called upon to supply medical facts and opinions that are essential to the administration of justice and to the enforcement of the law. In general, physicians discharge these responsibilities unwillingly and with a degree of competence that is commensurate with their lack of interest and information about medicolegal problems. In contrast to British and European schools of medicine, little or no provision is made in the undergraduate curriculum of most American schools for consideration of medicolegal problems. It is, therefore, not surprising that medicine serves

justice less effectively in the United States than it does elsewhere in the world. The ultimate responsibility for this situation lies with medical educators.

-- Author's summary

- 776 The Physician and the Law. G. E. Hall. J. Am. Med. Assn. 158, 257-260 (May 28, 1955).

The author gives reasons why the following subjects should be included in a medicolegal curriculum as part of medical education: workmen's compensation, reporting wounds and diseases, keeping of records, narcotic laws, adoption, maintaining an office, giving testimony, artificial insemination, and sterilization. The law schools are teaching lawyers how to utilize to their advantage everything that medicine, and science in general, has to offer them. Medical schools can do no less. Medical graduates and licentiates must be given an adequate background in legal medicine.

- 777 Future of Postgraduate Medical Education. D. D. Vollan. J. Am. Med. Assn. 158, 395-399 (June 4, 1955).

This is the last of a series constituting the report of a Survey of Postgraduate Medical Education by the Council on Medical Education and Hospitals of the American Medical Association. The author says in conclusion: "The future of postgraduate medical education is indeed bright, though it may be necessary to discard much of what exists in order to build anew on solid foundations. The problems are complex. The goal is worthy of the efforts it will require. The challenge will require the wholehearted cooperation of medical educators and practicing physicians."

- 778 Comparative Methods of Artificial Respiration. Study of Living and Dead Subjects with and without Gas Mask. A. S. Gordon, C. W. Frye, R. D. Miller, and G. M. Wyant. U. S. Armed Forces Med. J. 6, 781-793 (June 1955).

Tests on totally apneic, anesthetized-curarized normal adults and warm, nonrigid corpses indicate that all push-pull manual methods of artificial respiration are effective for ventilating casualties wearing a standard M-9 gas mask equipped with an M-11 cannister. The hip-lift back-pressure method creates the greatest intra-mask pressure differential and should be most effective when there is increased airway resistance, such as occurs with bronchoconstriction or excessive airway secretions resulting from anticholinesterase poisoning. If the airway is clear, the back-pressure arm-lift method provides almost as much ventilation and is easier to perform. The Silvester method

(arm-lift chest-pressure) produces as much ventilation and should be used when it is necessary to keep the patient in the supine position. Mouth-to-mouth (or mask-to-mask) insufflations may be effective in ventilating casualties with increased airway resistance. The prone Eve method gives about one half as much ventilation as do the push-pull manual methods. In addition it requires a rocker, either provided or improvised. For resuscitation of many persons by a few operators it may be necessary to fasten together several stretchers for simultaneous rocking by a single operator. Maintenance of a clear airway is of paramount importance for adequate ventilation with any of these methods.

-- Authors' summary

- 779 Resuscitation and Other Methods of Artificial Respiration. J. L. Whittenberger. *New Engl. J. Med.* 251, 816-820 (Nov. 11, 1954).

The subject of artificial respiration, both in resuscitation and in therapy is reviewed, with emphasis on principles rather than on particular methods. Subjects that have received little study include alveolar ventilation rates, ventilation distribution, diffusion capacity, and ventilation-perfusion relations. The limits of safe pressure levels in the lungs are not precisely known. For several reasons inflation of the lungs is difficult, and in all forms of external respiration, an effective inspiratory phase appears to be of prime importance. Various methods of manual and mechanical respiration are discussed with regard to their efficiency. The circulatory effects of artificial respiration encompass a spectrum from the circulation-promoting action of natural respiration to the potentially severe impairment that may be due to a fluctuating positive-pressure device. In the normal patient the effects on respiration are temporary, but in the impaired patient, deleterious consequences can be minimized by general supportive measures and reduction of the mean mask pressure. The success of any method of artificial respiration is favored by knowledge of the underlying physiologic mechanisms and their interactions with the methods used.

-- Cond. from author's summary (*Arch. Ind. Health*)

- 780 A Limited Survey of 768 Registered Disabled Persons. V. V. Brown and others. *Trans. Assn. Ind. Med. Officers* 4, 114-116 (Jan. 1955).

The results of a limited survey of 768 registered disabled persons employed by a (British) steel company are given. It is shown that less than 10% of the disabled were severely handicapped and 45% had only minor or trivial disabilities. It was noted that the accident rate for the disabled was below the average for all workers and their sickness absence was only slightly higher. It is concluded that this group of registered disabled persons are useful members of their working community, but it is pointed out that in our experience the problems associated with the disabled arise more often in connection with those not registered as such.

-- Authors' summary

- 781 Rehabilitation. Marion Pearson. Trans. Assn. Ind. Med. Officers 4, 117-118 (Jan. 1955).

Leading a discussion of rehabilitation by the Yorkshire group of the Association, the author first warned her audience that her views are "a bit unorthodox". The term rehabilitation, as applied to resettlement of the injured, is new, but rehabilitation itself is not. With the exception of the very few who are entirely incapacitated, suitable employment can be found for the man who wants work. The author gives several examples from her own experience. The difficulty is with the man who does not want to work, because: (1) he has a grievance; (2) he is afraid; or (3) he is bone lazy. "Rehabilitation centers, industrial training centers, and industrial rehabilitation units are all bad and should be abolished." True rehabilitation depends, first, on proper treatment with adequate physiotherapy in the beginning, cooperation with the patient, and later cooperation with industry. The later stages must be taken over by industry itself. Observation and assessment of the worker's ability is one of the industrial medical officer's most important duties. If a man with a non-functional disability can be convinced that his disability, though a nuisance, is of no real importance, his rehabilitation is complete. The paper aroused much discussion, some of it in the form of adverse criticism, but a number of cases were cited where rehabilitation could have been more rapid had the industrial medical officer been utilized more fully.

- 782 Trauma and the Psychiatrist. J. R. Adams. Ind. Med. & Surg. 24, 257-260 (June 1955).

Traumatic neurosis is discussed and explained, with a history of a typical case as an illustration. The case history points to important aspects in the management of traumata: (1) even a minor physical ailment may, in a vulnerable personality, be experienced as a considerable threat of stress; (2) there must be awareness of the potential importance of the initial medical contact; (3) the industrial physician must frequently contend with the attitude that he works for the company more than for the patient; (4) such cases touch one of the problem areas in matters of compensation adjudication that must be given full consideration; and (5) although industrial psychiatry is in its infancy, and the psychiatrist cannot be successful in all cases, he can shed some light and broaden understanding, especially in the field of prevention.

- 783 Psychiatry in Industry—Tomorrow. W. R. Poindexter. Ind. Med. & Surg. 24, 261-263 (June 1955).

The industrial psychiatrist fails to achieve his maximum value to the company because he works alone and deals only with individuals.

The increasing importance of group therapy leads to the concept of the company as the patient of the psychiatrist. Instead of working alone, he should be a member of a team including the medical staff. This aim involves concessions on the part of both the psychiatrist and management. While still dealing largely with individuals, the psychiatrist should be fully familiar with the practices and problems of the company.

- 784 The Alcoholic in Industry and His Rehabilitation. J. I. Roberts and E. A. Russo. Ind. Med. & Surg. 24, 269-272 (June 1955).

Problem drinkers are classified as: (1) chronic excessive drinkers; (2) reactive drinkers; and (3) neurotic or psychotic drinkers. The terms are defined. The value of statistics on problem drinkers, necessarily obtained from surveys, is questioned because the replies from the drinkers themselves or from supervisors involve no objective tests. Sources of gross inaccuracy are pointed out in four of the most publicized surveys. In a survey made in one industry, restricted to alcoholism as a cause of accidents, and admittedly too limited to give conclusive deductions, no case of injury was found to be caused either directly or indirectly by alcoholism. No reliable estimate of the cost of alcoholism can be obtained from surveys.

Rehabilitation of the alcoholic in industry is a complex, co-operative procedure. Its cost and the monetary gain derived cannot be calculated. The rehabilitation program should be sold more as a humanitarian issue. From a psychiatric point of view alcoholics are sick people, but the view should be qualified. The program of the New England Electric System for the detection and handling of problem drinkers is described. One feature of the program is that when a problem drinker is detected he is suspended and his salary is stopped, but if he cooperates with the analysis, treatment, and rehabilitation his benefits are automatically restored and he is put on sick leave. After he returns to work, his absences are carefully checked and if he has a relapse he is referred to the AA or an alcoholic clinic and is reinstated on sick leave and returned to the job as before, so long as he cooperates, but with the warning that next time he will be dropped from the payroll. The program is still in its infancy but some gratifying rehabilitations have occurred.

- 785 Occupational and Non-Occupational Stress in Relation to Employee Health. E. P. Luongo. Ind. Med. & Surg. 24, 242-246 (June 1955).

By looking at the employee with the "whole man" concept, and by giving as much consideration to environmental stress as to organic health, industrial physicians and nurses can improve relations in a plant, reduce the number of disabilities characterized first by functional and later by organic disorders, and decrease the number of accidents

due to emotional disorders. These are real contributions to the betterment of plant and community health and of labor relations in industry. Examples are given of these results in the author's experience: the number of "nervous breakdowns" has diminished by 25% during a six-year period, and a reduction in explosive human relations due to emotional upsets has been attained. -- Cond. from author's summary

- 786 "Coin" Lesion Patients and Their Need for Follow-Up. C. D. McClure. Bull. Allegheny Co. Med. Soc. 44, 512-515 (May 28, 1955).

Three case reports from the local mass chest x-ray survey of 1953 are described in order to illustrate the potentially malignant nature of the "coin" lesion of the lung. In all three cases cancer was found after the x-ray had disclosed a coin lesion. Close follow-up of a patient with a non-calcified coin lesion is recommended.

- 787 Syphilis in Industry. J. G. Downing. J. Am. Med. Assn. 158, 468-472 (June 11, 1955).

With a reservoir of about two million persons in the community needing treatment, and with 156,099 patients reported in 1953, syphilis will remain with us for some time to come. In industries employing highly skilled workers, the cost of finding even the few that may be diseased is worth while to the industry, because it will not only retain the services of a highly trained individual, but also eliminate unjustifiable claims that are not due to occupation but rather to syphilis. For industries employing less skilled laborers or in a high prevalence group, the blood test becomes even more important as a part of the routine pre-employment examination. Management needs to be educated regarding the employment of syphilitics or persons who give a positive serologic test who have no medical defect that would prohibit them from carrying out assigned duties. The advisability of employing such persons should be decided by competent physicians. The new antibiotics have done a tremendous job in speeding up the cure of syphilis, but there is much more to be done. Any attempt to reduce the control efforts by public health authorities is foolhardy. -- Cond. from author's summary

- 788 Newer Studies on the Epidemiology of Fungous Infections of the Feet. R. L. Baer, S. A. Rosenthal, H. Rogachefsky, and J. L. Zitt. Am. J. Public Health 45, 784-790 (June 1955).

The results of the experiments described agree with those of earlier investigations in demonstrating that exogenous exposure to fungi in swimming pools, shower stalls, bathrooms, etc., plays a minor or negligible role in eliciting acute attacks of fungous infections of the feet.

Therefore the numerous measures used for prevention of athlete's foot, some harmful in themselves, are of little value. Suggestions are submitted for a few simple measures designed to maintain and raise the local resistance of the feet and thus to prevent acute attacks of tinea pedis (athlete's foot). -- Cond. from authors' summary

- 789 The "Writhlington" Stretcher Carrier. J. H. Bulleid. Trans. Assn. Ind. Med. Officers 4, 125-127 (Jan. 1955). Reproduced from Coll. Guard.

A hand-propelled stretcher carrier is described. It was designed primarily for use in mines, where it may be necessary to carry a stretcher over long distances, inclines, or rough ground. Its construction is simple and involves relatively little expense, since it consists only of a light superstructure on two axles. Four men can push a patient up an incline of one in five without difficulty, and two men can lift and maneuver the unloaded carrier. Details of construction are described and illustrated.

- 790 Metallic Transfer in Screwing and Bolting and Its Significance in Bone Surgery. F. P. Bowden, J. B. P. Williamson, and P. G. Laing. Proc. 2nd Radioisotope Conf. Oxford 1, Med. and Physiol. Applications 112-122 (1954).

Experiments with surgical tools made radioactive by irradiation have shown that it is almost impossible to insert a screw or bolt without leaving some fragments of the tool metal adherent to it. An appreciable difference in electrode potential can be set up between the steel of the tool and the steel used for the screws, so that an electrolytic couple will be formed which may have harmful effects on the healing of the tissue and will act as a corrosion center. Tissues surrounding the handled parts of buried metals contain up to five times the concentration of the ions of those metals found in normal tissue and in tissues adjacent to parts of buried metals which have not been handled with tools.

-- Chem. Absts.

- 791 The Occupational Medical Foundation, Institute of Occupational Health, Annual Report, 1954. L. Noro, Director, Helsinki, Finland. 48 pp. (1955).

The organization and functions of the Institute are described, and its accomplishments for the year are reported. The work of all departments has increased and their activities are tabulated. A list of 173 publications by members of the Institute during the year is appended, and some are abstracted.

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SKIN DISEASES AND BURNS

- 792 The Preventive Aspects of Dermatitis and Allied Disorders. E. Collier. Trans. Assn. Ind. Med. Officers 4, 120-121 (Jan. 1955).

The general principle of prevention of dermatitis is minimal contact with dermatitis-producing agents. Application of the principle includes: (1) removal of dust, liquid and vapor; (2) protective clothing; (3) adequate washing facilities; (4) provision of special cleaning agents for dirty jobs; (5) good housekeeping; and (6) control of temperature and humidity. The employee's responsibilities are: (1) personal cleanliness; (2) frequent changes of protective clothing; (3) wearing any additional protective clothing required; and (4) consulting the industrial medical officer when rashes develop. When these methods fail, barrier creams should be used. Barrier creams must have a specific neutralizing action on the particular irritant, must be harmless to the skin, and should be easily applied and removed. The manufacturers should make known the constituents of the barrier cream, in confidence if necessary. Following the paper are four provisional formulas of barrier creams suggested for inclusion in the British Pharmaceutical Codex.

- 793 Some Dermatologic Aspects of the Chromate Problem. M. H. Samitz. Arch. Ind. Health 11, 361-367 (May 1955).

This survey was restricted to a threefold objective: (1) to review recent information on the dermatologic aspects of the chromate problem; (2) to correlate surface lesions due to chromates with other organ disorders; and (3) to present several facets of dermatologic research dealing with chromates. The list of occupations involving chromate exposure, published by Dublin and Vane in 1941 is reproduced. Two recent findings must now be added: cement workers and railroad employees working with diesel locomotives. Several papers on these subjects are reviewed and the author's observations are reported. Another source on which the author has made an investigation is the use of chromated zinc chloride in preserving wood.

- 794 Chromate Dermatitis from Chrome Glue and Other Aspects of the Chrome Problem. G. E. Morris. Arch. Ind. Health 11, 368-371 (May 1955).

Dermatitis from chrome is seen in many industries; dermatitis from chrome glue is reported here for the first time. Dermatitis from

chrome glue can be seen in those making the glue and in those using it. Chrome dermatitis of the hands may be seen with chrome dermatitis from shoe leather, and the secondary sensitization of the feet can cause persistence of the chrome dermatitis of the hands. In my practice, the avoidance of chrome-tanned shoes has facilitated the clearing up of eruptions and has not permitted the persistence of the cases, as Guy and others report. As a rule in my office, a patient sensitized to chrome either wears plastic linings between his feet and the leather or is told to change to other types of shoes. -- Author's summary

- 795 Occupational Contact Dermatitis under the Ontario Workmen's Compensation Act. Majorie W. Grigsby. Arch. Ind. Health 11, 372-374 (May 1955).

In Ontario, as in the United States, occupational dermatitis is the major industrial disease for which compensation and medical care are claimed. The general order of the Ontario Board of Health regarding claims for dermatitis is quoted in full.

- 796 Chloracne from an Unusual Exposure to Aroclor. J. W. Meigs, J. J. Albom, and B. L. Kartin. J. Am. Med. Assn. 154, 1417-1418 (Apr. 24, 1954).

Seven cases of mild to moderate chloracne of the face and head occurred among 14 chemical operators exposed from five to 19 months intermittently to small concentrations of the vapors of a chlorinated diphenyl (Aroclor). Leakage of these vapors from a heat exchange system occurred chiefly outdoors, but chloracne was observed among men working in the adjacent building. In all cases the condition cleared up after treatment. Control of vapors by welding all joints in the heat exchange system prevented recurrences. -- Authors' summary

- 797 Effects of Chlorinated Diphenyl (Sovol) on the Skin and Its Resorption. V. P. Paribok. Farmakol. i Toksikol. 17, No. 5, 51-54 (1954). Russian.

As an occupational poisoning in the electrical industry, mixed tetra- and pentachlorodiphenyl (sovol or savol) causes folliculitis, comedo, pyoderma, and other skin affections. Single local applications on rabbit ears cause prolonged inflammation. Resorbed through the skin of rabbits, its principal toxic effect is fatty degeneration of the liver. -- Chem. Absts.

- 798 Cases of Hand Dermatitis Caused by Cloth Gloves. S. Nomura. Repts. of Inst. for Science of Labor, Ann. Report, 1953 (Tokyo, Japan) 47, 55 (Aug. 1954).

Cases of hand dermatitis were found among the industrial workers wearing cloth gloves for protection in an electric manufacturing company. Some workers who wore such gloves suffered from severe inflammation with unbearable itch and pain in the areas covered by the gloves. By chemical analysis the agent causing the dermatitis was considered to be probably dimethyl sulfate. The pathogenesis of the hazard is discussed in some detail. -- Public Health Eng. Absts.

CHEMICAL HAZARDS

- 799 Problem of Nutrition for Workers Exposed to the Action of Toxic Substances. E. C. Vigliani. Med. lavoro 45, 423-430 (1954). Italian.

The relation of diet to industrial toxicology is reviewed. Diet is no substitute for personal hygiene and toxicological control and prevention. Diet cannot affect lead poisoning, and lime has no specific action on lead or other poisons. For those exposed to benzene or aromatic amines, sulfur-containing amino acids and high fluids are indicated. Chlorinated hydrocarbons require foods rich in protein. Low fat, high protein, and high carbohydrate diet will help prevent toxicity to trinitrotoluene. Alcohol should be avoided by workers with nitroglycerin, nitroglycols, and calcium cyanamide. Methanol toxicity can be decreased by the use of ethyl alcohol or pectin. Workers are more susceptible to carbon monoxide just after eating. Thiamine, niacin, and vitamin P prevent black tongue in workers with penicillin.

-- Chem. Absts.

- 800 Investigations on the Alleged Value of Whole Milk as a Prophylactic Agent in Industrial Poisonings. H. Wittgens and D. Niederstadt. Zentralbl. Arbeitsmed. u. Arbeitsschutz 4, 185-191 (Nov. 1954). German.

The extensive literature on the prophylactic value of milk in industrial poisonings is reviewed and discussed. Full details of the authors' experiments with rats are reported, including variations in

weight, hemoglobin, and blood pictures during a period of 15 weeks. The conclusion is reached that whole milk has no protective effect against lead poisoning and that it is highly probable that it makes the poisoning more severe. This finding, which is in accord with the results obtained by other workers, suggests that partaking of whole milk by workers with lead and other poisonous materials is not to be recommended. Reliance should be placed rather on known technical and hygienic precautions. -- Cond. from Bull. Hyg.

- 801 Fluoride Intoxication in the Guinea Pig and the Rabbit. A. J. Held and E. Grasset. Bull. Schweiz. Akad. med. Wiss. 10, 260-275 (1954). German.

Pregnant guinea pigs and rabbits given ten to 29 daily injections of 1 to 1.5 mg. sodium fluoride per kg. had normal gestation periods and bore young free of anomalies or lesions. Livers, kidneys, and adrenals of the parents showed no histopathology but bone tissue showed variable changes, as did actively growing teeth.

-- Chem. Absts.

- 802 Chlorine Dioxide—A Dangerous Irritant Gas. H. Petry. Arch. Gewerbepathol. Gewerbehyg. 13, 363-369 (1954). German.

Chlorine dioxide has achieved considerable industrial importance in the bleaching of various materials. It is more poisonous than chlorine and may have a specific action on the central nervous system. This paper describes the method of preparation, physical and chemical properties, and effects on experimental animals. There is little in the literature about its toxicity to man but several authors have expressed the view that it is very toxic. A case investigated by the author is described, involving a research worker exposed on several occasions to unknown concentrations of the gas. He suffered from an acute irritation of the respiratory passages which ultimately developed into chronic emphysema and bronchitis. The precautions necessary in the use of the gas are discussed and it is pointed out that more study is needed to discover the biological action of the poison. In another possible case of poisoning an ocular muscular paralysis was noted; so it may have some action on the central nervous system. -- Cond. from Bull. Hyg.

- 803 Observations on the Subacute Toxicity of Hydrazine. J. H. Weatherby and A. S. Yard. Arch. Ind. Health 11, 413-419 (May 1955).

White rats given drinking water containing hydrazine in concentrations of 0.1 mg. per ml. or higher restricted their fluid intake, the higher the concentration the greater the degree of restriction. Both

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rate of growth and survival were adversely affected. Apparently rats will not ingest voluntarily sufficient hydrazine in drinking water to bring about pathological changes usually associated with hydrazine poisoning. Exposure of guinea pigs to an atmosphere containing 5 to 6 mg. per cu. m. during a period of 69 days caused little evidence of illness or distress; although at autopsy the lungs of such animals indicated pneumonitis and atelectasis. Dogs were much less tolerant of hydrazine than were guinea pigs. They exhibited marked muscular weakness within one to five days, and pathological changes mainly involved the liver, and to a smaller extent the kidneys and lungs.

-- Cond. from authors' summary

- 804 Distribution, Retention, and Elimination of Beryllium 7 in the Rat after Intratracheal Injection. C. D. Van Cleve and C. T. Kaylor. Arch. Ind. Health 11, 375-392 (May 1955).

Experiments are reported in which rats were injected intratracheally with beryllium-7 sulfate and citrate and the retention and distribution of the isotope were traced. Citrated Be⁷ was almost completely mobilized from the lung in four days. Results with different preparations of the sulfate varied greatly. Some were retained in the lung in appreciable amounts at 315 days. Excretion by the kidneys was always very high in the first 24 hours, then dropped to a low level which became undetectable after 75 days. Elimination of Be⁷ in feces was persistent for a known period of 40 days and during this period surpassed kidney excretion in total amount. The relation of these data to lung clearance and anatomical routes of mobilization from the lung is discussed.

-- Cond. from authors' summary

- 805 An Unusual Case of Joint Pains and Fever. Berylliosis and Pulmonary Hypertension Mistaken for Rheumatic Fever. H. B. Sprague and Harriet L. Hardy. Circulation 10, 129-132 (1954).

A case of berylliosis is described in which a woman had been exposed to beryllium in a fluorescent lamp factory for two years, ten years before the onset of symptoms. The symptoms, which are described, at first indicated rheumatic fever and rheumatic heart disease. The x-ray changes in the lungs were characteristic of berylliosis, and skin biopsy showed the changes characteristic of beryllium granuloma. The patient improved with the use of cortisone.

-- Cond. from authors' summary (Biol. Absta.)

- 806 Experimental Diabetes by Poisoning with Neutral Potassium Chromate. M. Mosinger, H. Fiorentini, and Jacqueline Quicke. Compt. rend. soc. biol. 148, 1453-1455 (1954). French.

Adult rabbits were given 100 mg. of potassium chromate orally on alternate days for four to nine months. They showed some loss in

weight, a constant hyperglucemia, and reduced blood cholesterol content. Blood nonprotein nitrogen was normal or slightly elevated. The urine contained 6 to 22 g. per l. of glucose but no acetone. Effects on the pancreas, adrenal cortex and medulla, thyroid, and liver are described.

-- Cond. from Chem. Absts.

- 807 Some Hemodynamic Shifts in Lead Intoxication. B. A. Atchabarov and S. S. Sabdenova. Vestnik. Akad. Nauk Kazakh. S. S. R. 11, No. 12, 77-82 (1954). Russian.

In a majority of the lead intoxication cases there is a disturbance of venous and arterial blood pressure, expressed as arterial hypotension and venous hypertension. The former increases with the gravity of intoxication. Lead colic is not always accompanied by arterial hypertension. The rate of blood circulation generally remains normal.

-- Chem. Absts.

- 808 The Frequency of Hypertension in Lead Exposure with Previous Colic. A. Mazzoleni. Med. lavoro 45, 482-487 (1954). Italian.

A relation was found between hypertension and lead colic existing for ten years or more. All the 27 workers with lead exposure had normal blood pressure for their age at the time of their first lead colic. In the 11 workers who had had colic for ten years or more, there were five hypertensives, but none in those with shorter experience of lead colic. In 11 selected workers in the dye industry with no lead exposure, the incidence of hypertension there was only one case of hypertension, which corresponds with the 10% incidence in the general population. In all the five cases of hypertension albuminuria was present. All 11 were making an alloy of two parts copper to one part lead.

-- Cond. from Chem. Absts.

- 809 Treatment of Acute and Chronic Lead Poisoning with Disodium Calcium Versenate. J. F. Wade, Jr., and J. F. Burnum. Ann. Internal Med. 42, 251-259 (Feb. 1955).

The principles of disodium calcium EDTA treatment are reviewed. Five cases are reported in detail. The authors conclude that this drug affords a safe and effective means of treating acute and chronic lead poisoning.

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

- 810 Treatment of Lead Poisoning with Ethylenediaminetetraacetate. P. Eilersen, P. Astrup, B. Fallentin, and J. Frost. Ugeskrift Laeger 117, 124-127 (Feb. 3, 1955). Danish.

Four patients, of whom three had clinical signs of chronic lead poisoning, and the fourth had recent characteristic symptoms, were

treated with intravenous infusion of disodium calcium EDTA. The patients were subjectively free from symptoms on discharge. In spite of the manifold increase in lead excretion, the total amount excreted was small in comparison with the total amount presumably accumulated in the tissues during long exposure. The greatest value of the treatment is therefore in acute intoxication. -- Cond. from J. Am. Med. Assn.

- 811 Acute Lead Intoxication Treated with Ethylenediaminetetraacetate. K. Mellengard and G. Sorensen. Ugeskrift Laeger 117, 127-129 (Feb. 3, 1955). Danish.

Disodium calcium EDTA was administered intravenously in an acute case of lead poisoning following ingestion of lead oxide. The treatment continued for six days. During the first two days the urinary lead excretion was greatly increased and thereafter moderately increased, but ended a month after the treatment ended. Persisting anemia showed that not all the lead had been excreted. EDTA can apparently combine with only a certain mobile lead fraction, probably the circulating lead. The treatment is thus first and foremost indicated in acute cases. Intermittent treatment may perhaps be useful in chronic cases.

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

- 812 Elimination of Lead in Sweat. D. O. Shields. Australian Ann. Med. 3, 225 (Aug. 1954).

Earlier investigators have generally agreed that insignificant amounts of lead occur in perspiration. The author undertook an investigation of the subject because: (1) present analytical methods are more sensitive, and (2) the volume of fluid eliminated by the skin may equal that of the urine and under hot conditions may exceed it. Sweat was collected by attaching a piece of cotton wool approximately 6 by 8 cm. to the chest wall in the axilla. The cotton wool was covered with a thin sheet of plastic to prevent contamination by adhesive tape. Several patients under treatment were so tested, and appreciable amounts of lead were collected in the pads over several days. In an experiment on himself, the author ingested 5 to 10 mg. of lead per day, and found that the amounts collected by the method described paralleled the amounts ingested. The amount of sweat collected was determined and calculated to be about 1/130 of the total sweat produced by the body. The amount of lead collected on the axillary pad varied from 1/7 to 1/10 of that excreted at the same time in the urine. From these facts the author concludes that the amount of lead eliminated through the skin may be of the same order as, or may even exceed, the amount eliminated in the urine.

-- Cond. from Arch. Ind. Health

- 813 Corneal Changes in the Silver Industry. A Contribution to the Industrial Hygiene of the Eye. W. Buttner-Wobst and H. Opitz. Arch. Gewerbe-pathol. Gewerbehyg. 13, 374-381 (1954). German.

The subject of ocular changes in workers with silver compounds is discussed. In three workers recovering silver from photographic film, ocular changes were noted although full examination disclosed no other sign of definite argyrosis. The changes consisted in a grayness or bluish iridescence of the ocular conjunctiva with discoloration or blackening of the caruncle. On examination with the slit lamp deposits of silver were visible particularly in the region of Descemet's membrane. No other abnormalities were found and vision was unimpaired. The effect, then, is one of appearance, which may be particularly important in young women workers.

-- Cond. from Bull. Hyg.

- 814 Tin as a Poison. Annotation, Brit. Med. J. 2, 693-694 (Sept. 18, 1954).

The tin can has been used successfully for food preservation on a vast scale for a century. Tin is present in most canned food (presumably in uncoated cans - ed.) in concentrations of 20 to 50 ppm., but no ill effects have ever been attributed to tin so consumed. It is generally assumed that tin is nontoxic, but the evidence rests on only a few animal experiments. Simple tin salts have been used in the treatment of furunculosis without untoward results, and are listed in pharmacopoeias and textbooks. Their value, however, has been questioned by a number of investigators. Recently an organic tin compound (diethyl tin diiodide combined with linoleic acid or "vitamin F") was put on sale and widely prescribed for furunculosis in France. So far it is believed that over 50 people have died before the cause of their fatal illness was traced to this new therapeutic preparation. The fatal cases are said to have suffered from encephalopathy. Although there is practically no evidence for toxicity of tin from cans or the simple salts, the French experience emphasizes the need of further work on the organic compounds of tin. (For recent work on toxicity of such compounds see IHF Absts. 428, 429 April 1955 and 541 May 1955).

- 815 Note on the Importance to Industrial Medicine of Dusts Containing Vanadium. W. Massmann and H. Opitz. Arch. Gewerbepathol. Gewerbehyg. 13, 353-362 (1954). German.

The authors report on the results of examinations of 64 workers exposed to dusts containing vanadium over periods of a month to 13 years. Over half the workers complained of coryza, especially from slag dust and metavanadate and vanadium pentoxide dusts; conjunctivitis was found among the cleaners of vessels. The symptoms were not severe at the time of the examinations. Irritation and dryness of the throat, cough,

bronchitis, headache, weakness, and giddiness were among the complaints. Radiographic examination showed no signs of lung fibrosis or chronic bronchitis. The conclusion was that dust containing vanadium had no substantially toxic action under the conditions found. Exhaust ventilation and respiratory protection may be responsible for the absence of toxicity. (Particle counts and chemical composition of the dust are given in the original paper but not in the abstract at hand).

-- Cond. from Bull. Hyg.

- 816 Industrial Hazards of Acetone: Clinical Signs, Work Conditions, and Toxicology. L. Parmeggiani and C. Sassi. *Med. lavoro* 45, 431-468 (1954). Italian.

A survey was made of three plants using acetone and carbon disulfide as a solvent for polyvinyl chloride textiles, using acetone lacquer for bottles, and spinning acetone-rayon acetate, respectively. Acetone concentrations in the first two plants ranged from 0.03 to 0.35 mg. acetone per liter of air; in the third plant, 0.06 to 2.18 mg. per liter. In the third plant five workers had acute narcosis, but many others complained of itchy eyes, burning throat, gastric pain, nervousness, and insomnia, which are attributed to chronic toxicity. Acetoneuria of 5.0 to 175 mg. per l. was found. It is believed that the tolerance limit of 1000 ppm (2.3 mg. per l.) of acetone in air is too high and should be lowered to 500 ppm. Detailed accounts of experimental studies in man are given (see Chem. Absts. 49, 6509, May 10, 1955). They include determinations of acetone in blood, urine, and tissues, and their correlation with air concentrations. Expired air should be analyzed to determine the time a worker should be exposed at a given job, acetone should be kept from the skin, and fluids should be given to promote excretion. Blood acetone or urine excretion of acetone per minute are also better than air analysis to detect intoxication.

-- Cond. from Chem. Absts.

(Also abstracted in *Arch. Ind. Health* 11, May 1955, with the reviewer's note that the statements in the paper do not accord with American experience in the large-scale use of acetone, especially in the cellulose acetate rayon industry.)

- 817 Toxicologic Considerations in Direct Process Spirit Duplicating Machines. W. H. Kingsley and F. G. Hirsch. *Compens. Med.* 6, 7-8 (Dec. 1954-Feb. 1955).

The use of spirit duplicating machines constitutes an often overlooked hazard to office workers. Workers with such machines and those in the vicinity frequently complained of recurring and persistent headaches. Five of six solutions commonly used with these machines contain 60 to 98% methanol, and air concentrations of meth-

anol during their use with closed windows varied from 90 to 300 ppm. These concentrations constitute a definite hazard. The sixth contains 5% methanol and its air concentration was 15 ppm. When windows are open the concentrations drop to fractions of values given. The remedial measures consisted in removal of the machines to places where ventilation was better or use of exhaust devices, and the selection of fluids low in methanol.

- 818 The Chronic Toxicity of Trichloroethylene. W. K. Nowill, C. R. Stephen, and G. Margolis. Anesthesiology 15, 462-465 (1954).

In one dog, three rabbits, and three rats kept for 90 days in an atmosphere of 0.05 to 0.1 volume % of trichloroethylene for 18 hours per day, growth rate, renal, liver, and hematopoietic functions remained normal. Autopsy revealed no gross or microscopic lesions attributable to the prolonged trichloroethylene exposure. -- Chem. Absts.

- 819 Mode of Action of Carbon Disulfide. T. Uenishi. Kobe J. Med. Sci. 1, 233-250 (1954).

Effects of carbon disulfide on the potential of the isolated sciatic nerve and on the sartorius muscle of the toad are described. In acute carbon disulfide poisoning in humans the serum cholinesterase was depressed but tributyrinase was not affected. Depression of cholinesterase activity in serum and in the brain of animals was demonstrated and measured. -- Cond. from Chem. Absts.

- 820 Pharmacological Studies on Silicones. C. Gloxhuber and G. Hecht. Arzneimittel-Forsch. 5, 10-12 (1955). German.

Dimethylpolysiloxane oils of various polymerization grades were tested pharmacologically on rats. Silicone oil "50" consisting of approximately 50 dimethylsiloxane units, silicone "100", and anti-foam Bayer were given orally in doses of 10 to 20 mg. per kg. to rats, and the antifoam also to cats, rabbits, and dogs. A phenylmethylsiloxane resin was given in doses up to 10 g. per kg. orally. In no case was any toxic action observed. The first two were also given undiluted and as aqueous emulsions intraperitoneally at 1 to 5 g. per kg.; they are stored in the body in the form of fine drops without causing serious damage to the tissue. Inhalation of the two products as sprays in various animal species proved to be harmless in subchronic tests. Local application to the skin caused no sensitization. -- Chem. Absts.

- 821 Benzene Hazard in Factories Making Gasoline. P. Poulain and Thomas. Arch. maladies profess. 15, 408-411 (1954).

The state of health of men employed in an old refinery where crude oil was rectified in the making of gasoline is compared with their state after the plant had been reconstructed. The symptoms, which are described, are attributed to benzene poisoning. Considerable improvement followed administration of ascorbic acid. The symptoms were no longer evident in the new refinery, in which precautions were taken for escape of the vapors. Workers in such plants should be under medical supervision and have frequent blood examinations.

-- Cond. from Arch. Ind. Health

- 822 Hemorrhagic Diathesis Attributed to "Warfarin" Poisoning. P. Green. Can. Med. Assn. J. 72, 769-770 (May 15, 1955).

Warfarin, or 3-(α -acetylbenzyl)-4-hydroxycoumarin, is a dicoumarol-like substance with a prolonged and hence cumulative action. It has been used in clinical medicine, but is mainly used as a rodenticide under a variety of trade names. A few human poisoning cases have been reported. The author describes a case of hemorrhagic diathesis associated with hypotherbinemia. Circumstantially, the condition was attributed to warfarin.

- 823 The Effect of 3:5-Dinitro-ortho-Cresol on Phosphocreatine and the Adenosine Phosphate Compounds of Rat Tissues. V. H. Parker. Biochem. J. 57, 381-386 (July 1954).

The extreme muscular rigidity which develops at or very soon after death by DNOC poisoning is attributed on the basis of animal experiments to depletion of energy-rich phosphate compounds in skeletal muscle, brain, heart, and diaphragm.

-- Cond. from Bull. Hyg.

- 824 Aplastic Anemia Due to Trinitrotoluene Intoxication. M. A. D. Crawford. Brit. Med. J. 2, 430-437 (Aug. 21, 1954).

A few persons out of many thousands exposed to TNT develop aplastic anemia. A report is presented on 27 cases, with 15 deaths, that occurred in Great Britain during the last war. The case histories of eight patients are given. Particular attention is paid to the effect of TNT on the bone marrow. TNT can gain access to the body through the skin, by inhalation, or by ingestion. The first effect is deprivation of hemoglobin. At first the bone marrow reacts by increasing its normal action to replace erythrocytes. Later the marrow fails and becomes hypocellular. Then follows a profound normocytic anemia, with agranulocytosis and a low platelet count. Toxic anemia has a most insidious

onset and may become well established before being recognized; pallor is the most certain indication that blood examination is needed. A decrease in hemoglobin of more than 10% is a danger signal. Lack of cleanliness at work is an important factor. Removal from exposure is the first essential in treatment. Blood transfusions are not always successful. Once the anemic state was established it was not reversible but advanced to a fatal end. -- Cond. from Arch. Ind. Health

- 825 Insecticide Safety. Editorial. J. Agr. Food Chem. 3, 373-374 (May 1955).

This editorial discusses the problems of insecticide manufacturers and federal and state agencies in preventing insecticide poisoning. Some of the largest manufacturers have taken elaborate precautions in labeling and controlling distribution, and the smaller formulators must lean heavily on basic producers and others for large scale safety promotion. Governmental agencies have added greatly to the program. Fatality records differ greatly among different states, and safety regulations also differ. Carelessness and ignorance cause nearly all insecticide mishaps, some of which are incredible. The good labels go about as far as a label can go, and labels are read widely, but this, unfortunately, is no guarantee of effectiveness. Complete or partial illiteracy and unfamiliarity with English is a problem. At least one manufacturer prints labels in Spanish and Portuguese as well as English. Color is not a safe remedy as many people are color blind. Another problem is physician's unfamiliarity with proper treatment. The easy way out of this safety maze is the use of less hazardous insecticides, and there is a trend in that direction.

- 826 Toxicity Criteria Used in Judging the Labeling of Pesticides. J. C. Ward. Am. J. Public Health 45, 723-727 (June 1955).

The history of governmental regulation of the labeling and sale of pesticides is presented, and the provisions of the present laws and the procedures used in their enforcement are described. The procedures differ according to the uses of the products. Sprays intended for use in the home, and materials that may leave residues on food, call for tests and regulations in addition to those involved in general agricultural use. There are no simple, fixed procedures which may be followed by a manufacturer and, will always insure acceptance of a pesticide for interstate sale when results are favorable. On account of variations in scientific opinions, a flexible procedure is maintained whereby each poison may be studied individually and on its own merits. The amendment adopted in July, 1954, defines the responsibilities of the Department of Agriculture and of the Food and Drug Administration in establishing tolerances.

- 827 Interaction of the Isomers of Benzene Hexachloride in Mice. K. van Asperen. Arch. intern. pharmacodynamie 99, 368-377 (1954).

The toxicity of the gamma isomer of benzene hexachloride is much greater for mice than that of the alpha or delta isomers, but the two latter decrease the toxicity of the former. This is believed to be competitive inhibition. -- Chem. Absts.

- 828 Cyathothrin, a Readily Synergizable Pyrethrinlike Insecticide. H. L. Haynes, H. R. Guest, and H. A. Stansbury. Proc. Chem. Specialties Mfrs. Assn. pp. 109-111, (May 1954).

Cyathothrin has some advantages over allethrin as an insecticide. It is no more toxic than allethrin and pyrethrins to warm-blooded animals. -- Cond. from Chem. Absts.

- 829 The Mechanism of Action of Anticholinesterase Compounds on the Patellar Reflex. E. M. Robinson and others. J. Pharmacol. Exptl. Therap 110, 385-391 (Apr. 1954).

The Part Played by Inhibition of Cholinesterases of the CNS in Producing Paralysis in Chickens. L. Austin and D. R. Davies. Brit. J. Pharmacol. 9, 145-152 (June 1954).

Cholinesterase Inhibition at the Myocardial Junction. F. A. Denz. Brit. J. Exptl. Pathol. 35, 459-471 (Oct. 1954).

The Inhibition of Cholinesterases by 3-(Diethyloxyphosphinyloxy)-N-Methylquinolinium Methylsulfate and Its Tertiary Base. F. Hobbiger. Brit. J. Pharmacol. 9, 159-165 (June 1954).

The first three of these papers deal in detail with various systemic effects of various anticholinesterase compounds. The fourth discusses the anticholinesterase effects of a class of newly synthesized compounds. The papers will be of interest to persons making a thorough study of anticholinesterase compounds, including organic phosphorus insecticides. -- Abstracted in Bull. Hyg.

- 830 Acetylcholine Production in Animals Poisoned by Diethyl-p-Nitrophenyl Phosphate (Paraoxon). J. M. Barnes and Janet I. Duff. Brit. J. Pharmacol. 9, 153-158 (June 1954).

Paraoxon is a powerful cholinesterase inhibitor. Anesthetized rabbits given a lethal dose of paraoxon can be revived by artificial respiration provided they have been given full doses of atropine beforehand.

They then become insensitive to further injections of the same dose of paraoxon. They remain very sensitive, however, to the effects of acetylcholine. Experiments on blood levels of acetylcholine in various animals poisoned by paraoxon but kept alive with atropine and artificial respiration are reported in detail. The findings are discussed and an explanation is offered for them. -- Cond. from Bull. Hyg.

- 831 Health Hazards of Drifting Parathion Dust Cloud. P. E. Braid, J. P. Windish, and C. R. Ross. Arch. Ind. Health 11, 403-407 (May 1955).

Dusting of a vegetable crop was carried out with a commercial insecticide consisting of 1% parathion in a clay diluent applied at 40 lb. per acre. For wind speeds in the range three to eight miles per hour, parathion was found at breathing height sufficient to constitute a respiratory hazard (0.1 microgram per liter) at a distance of approximately 260 feet. Parathion was found on vegetation exceeding the limit for safe handling (65 micrograms per 100 sq. in.), for dusting periods of 30 to 60 minutes, to distances of 280 and 390 feet respectively. An equation is given for the relation of distance to time.

-- Cond. from authors' summary

- 832 Parathion Spray Concentrations and Residues in Quebec Apple Orchards. P. E. Braid, J. P. Windish, and C. R. Ross. Arch. Ind. Health 11, 408-412 (May 1955).

Values are given for average spray concentrations of parathion in the operator's breathing zone, and concentrations on apple foliage immediately following spraying, and at intervals thereafter, for specified application of 15% parathion wettable powder. Under conditions of very light wind no significant concentration was found within an hour or more after spraying. The data reported indicate that with concentrate sprayers symptoms of severe poisoning are not likely to occur, provided that elementary precautions are observed in the handling and use of the insecticide. Several severe cases of parathion in the area proved on investigation to be caused by negligence. Typical of such exposures are direct skin exposure during nozzle cleaning, wearing of nonwaterproof clothing drenched with spray, and excessive skin contact with the concentrated parathion during tank cleaning. Thus it appears that many users have not been sufficiently impressed with the need for proper handling.

-- Cond. from authors' summary

- 833 Parathion Residuals on Immature Peaches and the Hazard in Spraying and Thinning Operations. P. E. Braid and G. G. Dustan. J. Econ. Entomol. 48, 44-46 (Feb. 1955).

In the peach orchards of the Niagara district of Ontario, ill effects supposedly due to residual parathion during thinning operations have emphasized the need for an evaluation of the dangers associated with orchard procedures. Therefore, measures of the parathion residue loss have been followed in order to estimate the duration of the exposure hazard. For parathion spray application rates of 1 and 2 lbs. of 15% wettable powder per 1000 lbs. of water, initial residues on immature peaches were 30 to 70 micrograms per 100 cc., respectively. Initial rates of decay of residue on the fruit for the above application rates were 2.2 and 4.2 micrograms per 100 cc. per day. The initial rate of decay persisted for approximately 12 to 14 days, and subsequently leveled off to a lower value. The 14 day waiting period (7, if protective clothing is worn) between spraying and thinning of peaches recommended by the Canadian Department of Agriculture should be retained for the present.

-- Cond. from authors' summary (Public Health Eng. Absts.)

- 834 An Attempt at Suicide by Means of Parathion Treatment with an Allyl Derivative of the Morphinian Group. M. P. Engelmeier. Med. Klin. 49, 1996-1998 (Dec. 10, 1954). German.

A case of poisoning by ingestion of parathion is described. The significant feature of the case was the immediately successful treatment of the neurological condition by an allyl derivative of the group of morphinians, which is stated to be a specific antidote in morphine poisoning. The allyl derivative has no specific protective effect against parathion in animal experiments but it is probable that it acts synergically with atropine (which was previously administered) or increases the potency of atropine.

-- Cond. from Bull. Hyg.

- 835 Mortality among Workers in Cigarette Factories. H. F. Dorn and W. S. Baum. Ind. Med. & Surg. 24, 239-241 (June 1955).

A study made in England and Wales over the period 1921-1932 showed higher mortality rates from cancer of the lung and larynx in the tobacco industries than in the general population. In view of those results and the reported association between smoking and lung cancer, a study was made of the mortality rates of employees engaged in processing cigarettes for the American Tobacco Company. The results of the study show that the total mortality rate of these employees is definitely lower than that for the general population of Virginia and North Carolina. This is true for all causes, for cancer, and for car-

diovascular diseases. The death rates for respiratory cancer and for coronary disease among employees of the company do not differ appreciably from those of the general population. Credit is given to the medical care program of the company, which has been in operation since 1946.

- 836 Dyes. Queries and Minor Notes, J. Am. Med. Assn. 158, 519 (June 11, 1955).

The question is whether methylosaniline, used in hectographs and other duplicating machines, produces any toxic effects when splashed into the eye. This dye, which is a mixture, and several others of similar composition, are used in mixtures in treating skin affections and to a slight degree in otology and ophthalmology. Nevertheless, it is widely believed that these dyes in some variations are harmful in connection with surface injuries and that all may be harmful on ingestion in substantial quantity. It has been reported that indelible pencils are more harmful when they penetrate the skin or eye than ordinary lead pencils. It is possible that the injury may be caused by another constituent than the dye. The same may be true of hectograph ink. All things considered, it appears likely that some members of the group of dyes loosely termed "methyl violet", including methylosaniline, can be harmful.

- 837 Control of Ragweed and Poison Ivy. L. W. Van Kleeck. Conn. Health Bull. 69, 138-146 (June 1955).

Literature on ragweed and poison ivy control is summarized. In the section on poison ivy, the subjects include nature of the plant, treatment of poisoning, and control of the plant. The best control method is the use of modern herbicides, of which several are recommended.

INDUSTRIAL DUSTS

- 838 Studies on Dust Respirators. Report No. 3. Y. Oki. Reports of The Institute for Science of Labor, Annual Report for 1953 (Tokyo, Japan) 47, 63 (Aug. 1954).

A study was made to estimate the duration of dust respirators used by rock drillers in a metal mine. The main cause of inefficiency

of the respirators was the increase in breathing resistance of filter layers. Therefore the most important measure to prolong their life span is to keep them clean and tidy. Dust particles are filtered mostly by the outer layer. Therefore the outer layer should be kept clean or renewed. Fluffiness of the outer layer is preferable to smoothness, because the accumulated dust would cause less increase in breathing resistance.

-- Cond. from Public Health Eng. Absts.

- 839 Quantitative Results of Dust Coagulation when Using Aerosols Underground in a Coal Mine. L. Dautrebande, H. Beckmann, and W. Walkenhorst. Beitr. Silikose-Forsch. No. 31, 1-27 (1954). German.

The method of dust coagulation by a salt aerosol previously used in the laboratory (IHF Abst. 88, Jan. 1955) was applied in a coal mine. The aerosol consisted of 2 to 5% sodium chloride solution, released at 800 to 900 cc. per hour from each of ten generators. Several methods were used in sampling the dust before and after treatment. Although a slight increase in total dust often occurred, the dust was coarser after treatment. The peak in particle number was shifted from 1 to about 3 microns. By use of a lung retention curve, the authors conclude that more than two-thirds of all respirable particles present are converted to non-respirable aggregates by the process.

-- Cond. from Bull. Hyg.

- 840 On the Dust Contamination of Air in Underground Railway. K. Kimura, Y. Murayama, and T. Taguchi. Reports of the Inst. for Science and Labor, Annual Report for 1953 (Tokyo, Japan) 47, 57 (Aug. 1954).

Dust contaminations of air in subway trains in summer were measured with the Roken dust counter and the electrostatic precipitator. In the morning and evening rush hours the dust concentration was sometimes over 1,000 particles per cc. in the exits and station platform. The greater part of the suspended dust was organic, and iron particles were below 1% of the total by weight. The number of dust particles in the car in the morning rush period closely paralleled the number of passengers. In the accumulated dust on the wall of the subway, iron particles were over 50% of the total by weight.

-- Cond. from Public Health Eng. Absts.

- 841 Contribution to the Knowledge of the Electrical Properties of Coarse Colloidal Aerosols. W. Jutzi. Staub, No. 36, 165-212 (June 15, 1954). German.

The literature on electrical charges on aerosols and methods for their determination is reviewed. The author's method consisted of a modified ultramicroscopical procedure, in which the particles fall

under gravity and are deflected sideways by a vertical electrical field. From photographic registration records the size and charge of individual particles were determined. The materials examined had a size range of 0.3 to 3 microns. All materials were suspended in normal, dry laboratory air. Quartz powder was found to carry equal amounts of positive and negative charges and 95% of the particles were charged. The number of charges was proportional to the surface and corresponded to 10^8 electrostatic units per sq. cm. In anatase (titanium dioxide) powder there were more positive than negative particles irrespective of size. With hexadecane 93% of the droplets were uncharged and the remainder were bipolar. Most of the charged droplets carried only one charge each irrespective of their size. Ammonium chloride produced by gaseous reaction was at first uncharged but rapidly acquired a symmetrical bipolar charge.

-- Cond. from Bull. Hyg.

- 842 Early Bagassosis. S. K. Ganguly and S. C. Pal. J. Indian Med. Assn. 24, 253-254 (Jan. 1, 1955).

The course of bagassosis is described and three cases in a paper mill are reported. Hemoptysis and breathlessness were the symptoms. One was cured by rest and freedom from exposure; a second had the symptoms immediately on returning to work and was treated with penicillin, as was also the third patient. All recovered with complete resolution of the x-ray findings which consisted of mottlings over both lungs. Tubercle bacilli were not found in these cases, but a number of cases of tuberculosis occurred in the mill. Bagassosis is a serious condition calling for immediate withdrawal from exposure.

-- Cond. from Bull. Hyg.

- 843 Grain-Dust Pneumoconiosis. J. R. Ruttner and A. Stofer. Schweiz. med. Wochschr. 84, 1433-1436 (Dec. 25, 1954). German.

A case of pneumoconiosis in a grain miller is described. His principal exposure was to dust in the grain mill, although he had occasionally dressed the grindstones. The symptoms and course of the disease resembled those of silicosis. He died of increasing heart failure, with widespread edema, ascites, and congestion of the liver and lungs. Autopsy and histological examination showed fibrotic changes resembling those of silicosis but no evidence of mineral particles was found; the particles in the nodules were of vegetable origin and could be identified botanically as grain dust. The condition was therefore classed as grain-dust pneumoconiosis. Radiographic appearances and histological sections are illustrated.

-- Cond. from Bull. Hyg.

11 206 2775

- 844 Management and Treatment of Patients with Coal-Workers' Pneumoconiosis. J. C. Gilson and G. S. Kilpatrick. Brit. Med. J. 1, 994-999 (Apr. 23, 1955).

Coal workers' pneumoconiosis has two forms: simple pneumoconiosis, which is rarely disabling except in elderly men; and complicated pneumoconiosis, which may cause severe disability after the age of 35 and is a modified form of tuberculosis. Under the present British regulations, men with either form are eligible for compensation. The benefit paid is determined by the severity of the disability and not by the degree of abnormality of the chest film. Miners receiving compensation may continue to work underground under dust-approved conditions. The nature of the disease, compensation, and re-employment are discussed in some detail. There is need for more exchange of information between the doctors with whom a miner with pneumoconiosis is likely to consult. Treatment of the acute pulmonary infections, bronchospasm, and cor pulmonale, and some of the principal symptoms in these cases, is briefly described.

-- Cond. from authors' summary

- 845 Silicosis Hazard in the Working of Clays. L. Peretti and E. Occella. Med. lavoro 45, 700-714 (Dec. 1954). Italian.

A list is given of the main mineralogical constituents of clays and of their association in the various lithological types, in relation to their genesis and evolution. Particular attention is devoted to the detection of free silica in the most common raw materials. The origin of free silica in igneous and sedimentary rocks is discussed. The usual fine structure and complex mineralogical composition of clays present difficulties in their analytical study. The chemical and petrographic analysis must often be supplemented by other methods, such as thermal, x-rays, and electrodialysis. By such means it is possible to find in many materials used in industry the conditions for a potential silicosis hazard, besides the hazard of generical aspecific pneumoconiosis. The association of free silica with some hydrosilicates may, according to recent views, accentuate their silicosis hazard. This consideration finds support in clinical literature.

-- Cond. from authors' summary (Public Health Eng. Absts.)

- 846 Dust Hazards in the Enamel Industry. K. Meures. Staub. No. 36, 260-263 (June 15, 1954). German.

Vitreous enamels may contain between 20 and 80% of free or total silica, according to purpose. Fine dust may arise during the mixing of the enamel and its application to metal surfaces, and in the preparation of these by sand-blasting. Enamel-spraying appears to be particularly hazardous. Improvements in conditions may be achieved by

better ventilation and dust-extraction equipment, by use of respirators, and by segregation of dust-producing processes. Investigations of the silicosis hazard are made difficult because few workers remain for long in one employment. -- Bull. Hyg.

- 847 Can Chewing Prevent Silicosis? F. Breidenbach. Beitr. Silikose-Forsch. No. 29, 53-64 (1954). German.

The theory that people who chew tobacco or gum do not develop silicosis is based on the argument that chewing forces them to breathe through the nose and that the increased production of saliva binds the dust. The author investigated the subject by questions in the course of radiological surveys of about 7,000 coal miners, 10% of whom chewed tobacco. The statistics showed no correlation when age differences were considered. Dust isolated from chewing gum after its use by working miners showed a peak at 8 microns, and only 17% by number of particles were below 5 microns. Most of such dust is too coarse to enter the alveoli. It is concluded that chewing of tobacco or gum affords no protection against silicosis. -- Cond. from Bull. Hyg.

- 848 Critical Comments on the Assessment of Silicosis and Silico-Tuberculosis by Clinical, X-Ray, and Autopsy Findings. G. Worth and W. Nereiter. Beitr. Silikose-Forsch. No. 30, 1-30 (1954). German.

Discrepancies sometimes occur between the results of clinical and x-ray examinations, on which silicosis compensation awards are made, and the findings on the same cases at autopsy. An extensive investigation of the correlation of these findings was conducted. The most frequent cause was complication by tuberculosis. Clinical underestimates were also in several cases due to emphysema, which may mask lung fibrosis on x-ray films. Comparisons on 207 cases showed that in 32% silicotuberculosis diagnosed clinically was not confirmed post mortem, in 4% it had not been found clinically, and in 64% there was agreement. In a group of 401 cases, silicotuberculosis was found at autopsy in 43%; of these 80% were actively progressive. Most of them had silicosis stage two or three. Silicosis of the hilar lymph nodes, usually not diagnosed clinically, was found in one-third of the cases. Bronchitis also tended to be underestimated clinically. It was found in 80% of the cases at autopsy, and was chiefly present in stage three silicosis. Some degree of bronchiectasis was found in nearly half the cases at autopsy although it was rarely found clinically.

By selective bronchography it can be demonstrated that in advanced silicosis bronchial deformity is the most frequent complication. A few notes and x-rays illustrate incorrect clinical diagnoses caused by mitral stenosis or other complications. -- Cond. from Bull. Hyg.

11 206 2777

- 849 Oxygen Pressure in Relation to Oxygen Saturation in Chronic Lung Disease with Special Reference to Silicosis. F. Friehoff and K. Karrasch. Beitr. Silikose-Forsch. No. 26, 1-79 (1954). German.

The research described is the first of a series on the pathophysiology of silicosis, sponsored by the Silicosis Research Institute of the German Mining Association. The results of research on 228 persons are described and presented in tables, diagrams, and x-ray photographs. Among the conclusions are: (1) in severe silicosis there is frequently a lowering of oxygen pressure and saturation which is due to the shrinking of the lung and the compensatory emphysema which follows; (2) oxygen inhalation experiments enable differentiation to be made between hypoxemia of short duration and that due to difficulties in oxygen absorption; and (3) oxymetric-ergometric experimental results permit distinction between left-heart lesions in which there is a lowering of oxygen saturation and pure primary respiratory insufficiency in which no such diminution occurs. -- Cond. from Bull. Hyg.

- 850 Lung Biopsy in Diffuse Pulmonary Disease. P. A. Theodos, F. F. Allibritten, Jr., and R. L. Breckenridge. Diseases of Chest 27, 637-648 (June 1955).

The use of lung biopsy under local anesthesia for investigation of diffuse pulmonary lesions in 50 patients is reported. A specific diagnosis of the pulmonary lesion was made in 27 of the 50 by histologic study of the biopsy tissue. The procedure was well tolerated and produced minimal complications except in one case which ended fatally. It has its greatest applicability in those cases where a specific pathological entity is present. (Of the 50 cases, 17 were of the pneumoconioses, including silicosis, asbestosis, berylliosis, anthracosis, and anthracosilicosis; the method was 100% applicable in the first three and would be nearly 100% in the last two if they were not distinguished). In general lung biopsy affords a rapid accurate method for the determination of the medico-legal status, and determining the prognosis of diffuse pulmonary lesions. Eight cases illustrating the value of this procedure are described in detail. -- Adapted from authors' summary

- 851 The Treatment of Compensable Silicotuberculosis with Chemotherapeutic Drugs and Antibiotics. W. Neef. Beitr. Silikose-Forsch. No. 30, 31-47 (1954). German.

Several chemotherapeutic drugs and antibiotics were used experimentally in the treatment of 286 patients in a large miners' hospital in the Ruhr during the past three years. The drugs used included Conteben (thiosemicarbazone), PAS (4-aminosalicylic acid), streptomycin, and isoniazid. Some degree of success in delaying progression of the

disease was obtained with each of these materials, but there was no significant reduction in x-ray appearances in advanced silicotuberculosis. Isoniazid was much less effective in silicotuberculosis than in uncomplicated tuberculosis. Periodic changes from streptomycin to thiocarbazone and isoniazid is considered the best for prolonged treatment. The extent and degree of tuberculous and silicotic lung changes influences both the progression and the effectiveness of such treatment.

-- Cond. from Bull. Hyg.

- 852 Investigations on the Acute Effects of Oligo- and Polysilicic Acids in Animal Experiments. H. Antweiler. Beitr. Silikose-Forsch. No. 29, 17-52 (1954). German.

This paper describes at length a number of observations on the pharmacologic effects of silicic acids, a subject neglected by experimentation in the past. The object was to study the intermediate stages between dust inhalation and the occurrence of fibrosis in the lung tissue, but no close parallel was attempted. Colloidal silica solutions were used in all the experiments. The relative proportions of colloidal and ammonium-molybdate reactive silica were not always known. The subjects investigated included: lethal dose of silica solution, mobility of the pseudopodia of frog leucocytes; human erythrocyte sedimentation rate; effects on the ciliated epithelium of the mouth of frogs; effects on venules, arterioles, and capillaries; perfusion effects on isolated legs of guinea pigs and frogs; effects on isolated hearts; effects on blood pressure; and contraction of smooth muscles. All the observations are considered to be due to an irreversible astringent action of the silica on the collagenous portion of the interstitial tissues.

The author considers it likely that quartz dust in the lungs can by dissolving build up silica concentrations above 25 micrograms silica per ml., the lowest he found to have any effect at all, and this should initiate fibrosis of the lungs, especially if removal of the dissolved silica is inhibited by lymph blocking and compression of capillaries.

-- Cond. from Bull. Hyg.

- 853 The Action of Dissolved Silica on the Phagocytic Activity of Leucocytes. K. Schimpf. Beitr. Silikose-Forsch. No. 31, 41-53 (1954). German.

In continuation of the work of Luhnig (IHF Abst. 570, May 1955) the effects of mono- and poly-silicic acids at a concentration of 100 micrograms of silica per ml. were compared. The test object was leucocytes prepared from rabbit blood. Their capacity to ingest rice-starch grains was tested by a technique which is described in full detail. The test involved counting many hundreds of cells with and without ingested starch on microscopic slides, and between 30 and 40 slides, including the controls, were counted in this work. It was found that "aged" poly-

silicic acid with a high degree of polymerization distinctly inhibited mobility and phagocytosis; that freshly prepared polysilicic acid had very little effect, and that monosilicic acid had no effect at all on phagocytosis.
-- Bull. Hyg.

- 854 The Reactivity of Finely Ground Quartz. C. Claeys and E. Quinot. Staub, No. 37, 393-403 (Sept. 15, 1954). German.

The surface layers of finely ground quartz and of silica were dissolved in distilled water. Optical, electrical, and chemical properties of the solutions were investigated, and their visible and ultraviolet absorption spectra were examined. Anomalies in the quartz spectra are attributed to carbon dioxide. The carbon dioxide content of the solution, estimated by Van Slyke's method, was greater than could be accounted for by carbon dioxide dissolved in the distilled and degassed water used in the experiments. The abnormal reactivity of finely ground quartz particles is ascribed to the presence of carbon dioxide, in the shape of carboxyl groups forming a complex with the silica. It is claimed that several biological effects of fine quartz may be explained by means of this hypothesis.
-- Cond. from Bull. Hyg.

- 855 Primary Cortical-Cell Tumor of the Peritoneum in a Case of Asbestosis. F. Leicher. Arch. Gewerbepath. Gewerbehyg. 13, 382-392 (1954). German.

A case of asbestosis following long exposure to asbestos is described. In addition to typical symptoms and findings, leptomenigitis was present and tubercle bacilli were found in the spinal fluid. The patient died with cachexia. Autopsy showed tuberculosis of the lumbar spine with bilateral psoas abscess and mixed infection in both lungs. Asbestosis, stage two, was found in the lungs with definite fibrosis; there was slight asbestosis in the lymphatic glands, and asbestos bodies were found in the spleen. On the peritoneum of the mesentery and over the peritoneal cavity there were thickened patches and many small nodules; a flat tumor, half the size of a hand and 1 cm. in thickness, was attached to the peritoneum on the under side of the diaphragm. The results of the examination of the tumor are fully described and illustrated. Asbestos was found in the tumor tissues by x-ray diffraction. It is uncertain how the asbestos reached the peritoneal cavity; the most probable route was thought to be by direct penetration of the asbestos fibers from the lung through the pleura and thence through the diaphragm.

- 856 Respiratory Diseases among Welders. R. Charr. *Am. Rev. Tuberc.* 71, 877-884 (June 1955).

In two cases of siderosis due to welding, there was evidence of localized fibrosis within the areas of deposits of iron oxide, as shown by the histologic studies of the tissues. The extent of fibrosis was minimal and caused no respiratory insufficiency. In four cases, pulmonary function studies were carried out. The findings were consistent with mild emphysema. Among 250 welders examined roentgenographically, approximately 5% showed pulmonary changes such as exaggerated linear shadows, particularly about the hilar regions, and scattered nodular shadows indistinguishable from silicosis in some of them.

-- Author's summary

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 857 Proposed Program in Ergonomics: Human Engineering. T. F. Hatch. *Mech. Eng.* 77, 394-395 (May 1955).

Ergonomics is the basic area of applied science which is concerned with the study of human behavior in response to external stress, with particular reference to the stress-strain problems of man at work. The author proposes that the American Society of Mechanical Engineers set up a program for the development of a branch of engineering, called human engineering, which deals primarily with the human factor in engineering design. As the first step in this development it is necessary, in cooperation with specialists from the biological and social sciences, to expand the parent field of ergonomics, on which human engineering rests.

- 858 The Hearing Problem in Workmen's Compensation. O. C. Risch. *Compens. Med.* 6, 4-6 (Dec. 1954 - Feb. 1955).

The author reviews and discusses the various methods that have been used for the establishment of degree of hearing loss, including: the Bell Telephone Laboratory (Fletcher) method, first used in 1920; the AMA binaural method and its modifications; the New York compromise; the Wisconsin principle of weighted values; and the Missouri method. The Fletcher and AMA methods gave widely varying results, and often the two methods were used in presenting opposite

sides of court cases. There is as yet no satisfactory and final method. The Subcommittee on Noise in Industry of the Academy of Ophthalmology and Otolaryngology is studying the problem and hopes to have some definite data in order to correlate percentage loss of hearing in different parts of the country. The committee is also re-evaluating the AMA method.

- 859 Desirable Temperatures in Offices: Study of Occupant Reaction to the Heating Provided. Flora W. Black. J. Inst. Heat. Vent. Engrs. (London) 22, 319-328 (Nov. 1954).

Office workers' assessments of conditions of heating and ventilation in their offices during a heating season are examined and compared for two office blocks, one heated by low-temperature ceiling panels and the other by hot-water radiators. In the range of temperatures considered acceptable, there was no consistent difference between reactions to the two types of heating. Graphs are presented, showing for men and women the variation in assessment of warmth with room temperatures over the range of 60 to 72 F. The findings are discussed in relation to previous work in the field and the currently recommended practice.

-- Cond. from author's summary (Arch. Ind. Health)

- 860 This Is the Age of Purposeful Color. Part 1. Work Production. F. Birren. Natl. Safety News 71, 32, 33, 78-86 (June 1955).

The author reviews the progress made in this country in the use of color in industry, and presents the results of basic research conducted over the past 30 years. Twelve basic principles are outlined, dealing with illumination, directional light, chromatic quality of the light source, brightness ratios, and the centrifugal and centripetal principles (direction of attention outward or inward). Recommended standards for the use of various colors are presented. In discussing the monetary value of the use of color, the author is skeptical of much data presented by some commercial interests. On the other hand, some reliable data has been obtained. One survey discloses that 75% of the companies questioned were well satisfied with their color programs, and listed various benefits. In another survey, an average increase of 5.5% in worker efficiency was found as a conservative estimate. A future paper will discuss color in relation to accident prevention.

- 861 Bursitis in Miners' Ankles. T. A. Hunt. Trans. Assn. Ind. Med. Officers 4, 122-124 (Jan. 1955).

Cases of bursitis of the ankles of miners working in restricted spaces are described and a suggestion is made as to the cause of this condition. Miners often work in a sitting position resting on their feet and the pressure on the ankles is largely responsible for the bursitis.

RADIOACTIVITY AND X-RADIATION

- 862 A Cobalt 60 Beam Unit with a Source-Skin Distance of 20 Cm. F. W. Spiers and M. T. Morrison. Brit. J. Radiol. 28, 2-7 (Jan. 1955).

The authors converted a radium beam unit to one that would operate with a 50 curie cobalt-60 source at a skin distance of 20 cm. The conversion, which was relatively simple, provided well-collimated beams of high-energy gamma rays having percentage depth doses approximately equivalent to those obtained with x-rays of high voltage 2-3 mm. Cu, at a focus skin distance of 50 cm. The unit has been in clinical use for more than a year, and the protection of the operator and reliability of the pneumatic transference mechanism have proved to be such as to justify the increase in source strength to over 100 curies, which has recently been made. The surface dose is 55 r per minute and the performance of the unit is therefore equal to that of the commonly used "deep" x-ray apparatus, with the added advantage that it provides high-energy gamma rays that are so desirable for the irradiation of the heterogeneous structures of the human body.

-- J. Am. Med. Assn.

- 863 Cerebral Complications Following Cardioangiography. S. N. Chou, L. A. French, and W. T. Peyton. Am. J. Roentgenol. 73, 208-210 (Feb. 1955).

The authors present the histories of two patients in whom severe neurological complication resulted from cardioangiography using retrograde injections of 70% diodrast. Death resulted in one case. Several possible causes of the complications are discussed. It is reasonably certain that the contrast medium caused at least temporary damage to the central nervous system.

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

- 864 Late Clinical Changes Following the Internal Deposition of Radioactive Materials. W. B. Looney. Ann. Internal Med. 42, 378-387 (1955).

Almost all the radium is eliminated when taken into the body. The retained radium is deposited irregularly in the skeleton in small areas of high radium concentration. Roentgenographic changes characteristic of radioelement deposition develop many years after deposition. Areas of decreased density occur in compact bone as a result of

bone destruction. Areas of increased density occur in cancellous bone as a result of atypical osseous tissue formation. Areas of decreased density on skeletal roentgenographic examination may be the first clinical evidence of malignancy. Almost all of administered thorium is indefinitely retained. The primary sites are liver, spleen, and bone marrow, with less in the lungs, adrenals, etc. No relation can yet be shown between thorium and malignancies. -- Chem. Absts.

- 865 The Handling of Radioactive Materials. K. W. Bagnall and W. T. Spragg. Atomics 6, 71-77 (Mar. 1955); 125-129, 133 (May 1955).

This paper describes the various techniques used in the handling of radioactive materials, with particular attention to the needs of the small uses with limited finances. Among the subjects included are laboratory design, the counting room, office facilities, general behavior in the laboratory, glove boxes, trash disposal, transfer of liquids, and work with high level radiations. In conclusion the authors say that the reader may consider that the techniques are somewhat complicated, but simplification may follow as experience increases. Standardization of equipment would encourage development by the scientific instrument industry and thus reduce the expense of the techniques.

- 866 Risks from Chronic Irradiation and Their Hematological Control. R. H. Mole. J. Clin. Pathol. 7, 267-274 (Nov. 1954).

Periodic blood counts have been considered an essential part of the radiation protection program in Great Britain, and have practically always been made during the past 30 years. The author questions the present value of the procedure. The normal periodic variations in a single person is often too great to permit the determination of incipient variations due to exposure, and when a large change occurs it may be too late for detection to be of value. Moreover, the present-day monitoring methods are much more sensitive than the use of blood counts. -- Cond. from Bull. Hyg.

- 867 Disposing of Radioactive Wastes. A. Wolman and A. E. Gorman. Mech. Eng. 77, 321-324 (Apr. 1955).

The following problems connected with disposal of radioactive wastes are discussed in detail: (1) design of equipment for removing radioactive dusts, fumes, and gases from working areas; (2) research in disposal of combustible wastes by incineration and related processes; (3) development of sensitive remote-control equipment for handling and transporting highly radioactive materials; and (4) improving methods of heat exchange where extraordinary temperature conditions exist.

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In most other states such assistance is severely limited by the lack of specific financial support for the work. In a number of these states air pollution legislation has been considered recently. There is a trend toward increasing activity by state agencies in this field.

-- Cond. from author's summary

- 887 APCA Abstracts, Vol. 1, No. 1. W. L. Nelson, editor. Air Pollution Control Assn., 4400 Fifth Ave. Pittsburgh 13, Pa. 12 pp. (June 1955). 25 cents.

The first issue of APCA Abstracts contains a serially numbered list (not abstracts) of articles and papers published in the Association Proceedings and Air Repair for the years 1950 through 1954, with an author index. The second issue, to be published later, will give an index of the Association publications classified by subject matter. Subsequent issues will provide indexed abstracts of 1953 Air Repair articles and significant papers from other sources.

MANAGEMENT ASPECTS

- 888 Group Insurance During Strikes. H. Fox. Mgmt. Rec. (Natl. Ind. Conference Board) 17, 186-188 (May 1955).

A survey showed that 402 of 900 companies have definite policies concerning continuance of group insurance during a strike. Of 29% that continue insurance, 36% continue for duration of the strike, 19% continue for definite periods, and the remaining 45% have no policy on the time continued. In general, a company can choose its policy, but state insurance laws may place limitations on management policy. Several court decisions are reported, involving different types of insurance and other details. The major limitation imposed by insurance companies is that disability insurance, as distinct from other insurance coverage, will not be continued during a strike.

ACCIDENTS AND PREVENTION

- 889 The Problem of Accident Prevention. E. D. Heath. Compens. Med. 6, 14-16 (Dec. 1954 - Feb. 1955).

Accidents are coming to be viewed by a greater number of persons as a form of social illness. All too frequently the symptom is being treated rather than the cause of the accident. Another fallacy is that statements that 15% of drivers are responsible for 85% of the accidents, are taken to mean that it is always the same 15%. The following techniques are used in various businesses and industries to reduce accidents: (1) carefully conducted pre-employment interviews; (2) comprehensive pre-employment medical examinations; (3) an unhurried orientation program; (4) careful pre-service training; (5) intelligent supervision; (6) "operation precaution"; (7) a good industrial relations program; (8) cooperation by organized labor; (9) special training programs; (10) recreation programs; and (11) periodic individual inventories.

- 890 Explosions Nipped by Exploded Extinguishant. E. D. Reddan. Safety Maint. & Prod. 109, 53-54 (June 1955).

The device described is now used mostly for preventing explosion and fire on a combat plane after an incendiary bullet makes a direct hit on a fuel tank. However, the device has been released for commercial production and will be marketed on a broad scale. The infrared radiation occurring at the inception of a fire actuates a photocell which detonates a fire extinguisher fluid contained in a small plastic capsule so that it very quickly fills the space and extinguishes the fire. About 2 cc. of extinguishing fluid is required for each gallon of space. Tests under simulated battle conditions have been successful.

11 206 2792

- 880 Light-Scattering Studies in Aerosols with a New Counter Photometer.
C. T. O'Konski and G. J. Doyle. Anal. Chem. 27, 693-701 (May 1955).

The functions of a recording light-scattering photometer and electronic particle counter were united in a single instrument, employing an improved right-angle optical system and a single electron multiplier phototube. Procedures were developed for producing uniform aerosols from uniform hydrosols. Measurements of intensities from several materials gave results in accordance with theory. Pulse amplitudes of test aerosols were found proportional to the square of the particle diameters. Limits of sensitivity and resolving power are given.

- 881 Microdetermination of Sulfuric Acid Aerosol. E. R. Gerhard and H. F. Johnstone. Anal. Chem. 27, 702-703 (May 1955).

An analytical technique for the microdetermination of sulfuric acid aerosol was developed in which the aerosol particles were collected by a high velocity impactor on a film impregnated with thymol blue. The color change from yellow to red was measured by a photometric colorimeter attached to a low-power microscope. The method was used to determine 0.01 to 0.2 microgram of sulfuric acid. It was reliable when the quantity of acid collected was controlled. The method detects the presence of any acid aerosol, but is not sensitive to acidic gases. Alkaline gases which tend to neutralize the droplets affect the accuracy of the results.

- 882 Gas Chamber Microapparatus in Identification of Air-Borne Pollutants.
J. L. Monkman. Anal. Chem. 27, 704-708 (May 1955).

An apparatus is described by means of which samples of air pollutants on microslides, glass wool, or other holders are exposed to reagents in the vapor phase. During the vapor treatment, microslides may be withdrawn at intervals for microscopic examination and photomicrographing. The composition of the effluent gas may be investigated by various methods which are described.

- 883 Instrumental Measurements of Visibility in Air Pollution Studies.
G. D. Clayton and P. M. Giever. Anal. Chem. 27, 708-713 (May 1955).

An instrument which measures transmittance (the Transmissometer) was found useful in measuring visibility in an urban atmosphere. No correlation was found among the data obtained with the instrument, the soiling power of the atmosphere, and the mass weight of the airborne particulates. Rain removed from the atmosphere some aerosols which cause discoloration, while snow had no such effect.

- 884 Water-Containing Jars and Greased Plates for Dustfall Measurements. R. L. Pond and R. R. Paxton. Anal. Chem. 27, 714-716 (May 1955).

The water-jar and greased-plates methods for determining dustfall are described. The standard deviation between concurrently exposed water jars was 12.6%. The comparable value between greased plates was 6.8%. Thus the greased plate procedure gave more reproducible results, and, with but one exception, slightly higher dustfall rates.

- 885 The Estimation of Health Hazards from Air Pollution. W. C. L. Hemeon. Arch. Ind. Health 11, 397-402 (May 1955). Reprints obtainable from the Foundation.

In a consideration of aerosol sampling in research on atmospheric pollution and health, the principal problem is in obtaining samples of significant particle size undiluted by the omnipresent large particles of irrespirable sizes. Significant data on atmospheric concentrations apart from composition can be obtained by light scattering measurements either on filter paper or in atmospheric suspension. There is not in existence sufficient scientific data adequately to illuminate the question of chronic health hazards from air pollution. There is however, no question concerning the effects of acute air-pollution exposures. Fatalities and illnesses in acute smog episodes appear to be a result of simple irritation of the respiratory tract as distinct from systemic poisoning. There is considerable evidence to support the hypothesis that the irritant is particulate matter, whether liquid or solid, rather than gaseous. It is my opinion that only the water-soluble fraction in acute smog episodes contributes to the irritant effect, and a study of the composition of this fraction can be expected to yield more clear-cut information on the identity of the irritants. Furthermore, an examination of the water-soluble fraction of two smog samples, Donora (1948) and London (1952), strongly suggests that the irritant substances may be acidic salts, in particular, metal ammonium sulfates. -- Author's summary

- 886 State Air Pollution Control Activities. R. L. Woodward. Public Health Repts. 70, 433-436 (May 1955).

Since the end of World War II there has been a marked increase in interest in air pollution and in activities aimed at its control. Although the problem has been traditionally considered one for local action, the need for state assistance has often become apparent. State assistance is also needed when local control agencies are nonexistent or have no jurisdiction. Three states have recently established air pollution agencies with control power, and three others have provided funds for investigation of air pollution problems and assistance to local agencies.

- 875 A Rapid General Purpose Method Centrifuge Sedimentation Method for Measurement of Size Distribution of Small Particles. Part 2. Procedures and Applications. K. T. Whitby. *Heat, Pip. Air Cond.* 27, 139-145 (June 1955).

Data are included illustrating the reproducibility, comparative accuracy, and principal applications of the method. Tables show chief sedimentation liquids and dispersing agents found useful and the dispersion systems used when various materials are analyzed. Graphs show results of analyses on many finely divided materials, including flours, pigments, albumin, industrial dusts, fly ash, and an atmospheric dust sample. The method has proved useful and rapid. It is hoped that its use will permit analysis of atmospheric dusts containing particles as small as 0.2 micron. (For first part see IHF Abst. 481, Apr. 1955).

-- Author's summary

- 876 Analysis of Lung Dusts. 1. Microanalysis of Silica in Dust Samples Containing Quartz and Silicates. H. Stegemann and J. Fitzek. *Beitr. Silikose-Forsch.* No. 31, 29-40 (1954). German.

The colorimetric method of (total) silica determination in lung dusts is comparable in accuracy to the gravimetric method. The molybdate blue technique with 1:2:4 amino naphthal sulfonic acid as reducing agent is used, and, in routine operation, hydrofluoric and boric acids are added to keep all silica in a reactive form. Purity of reagents is essential; directions are given for their purification. Removal of iron and phosphate by ion exchange is described.-- Cond. from Bull. Hyg.

- 877 The Use of Sound in Analytical Chemistry. Anon. (J. R. N.). *Analyst* 80, 81 (Feb. 1955).

Sound has rarely been used directly in analytical chemistry, on account of obvious limitations, but methods have been developed in gas analysis. They make use of the fact that the velocity of sound in a particular gas is constant under standard conditions. The general formula is given. The ultrasonic interferometer gives an accuracy within 0.1%. Another method consists of determining a relative phase shift. When foreign gases (possibly dangerous) are likely to be present in the atmosphere of mines, ships, and enclosed ships, a continuous monitoring can be obtained without sampling and a warning system can be arranged when the gas mixture varies too much from the normal. No delay is necessary, no gas is destroyed, the method can be used with flammable gases, it can be applied to static or fast moving gas streams, and relatively little gas is needed. The method is only slightly sensitive to temperature changes and to the presence of water vapor in air. (No experimental results are given, and the precision for any particular gas is not calculated).

PREVENTIVE ENGINEERING

- 878 Performance Characteristics of Centrifugal Scrubbers. G. A. Johnson, S. K. Friedlander, R. Dennis, M. W. First, and L. Silverman. *Chem. Eng. Progr.* 51, 176-188 (Apr. 1955).

The purpose of the investigation was to determine whether a simple, inexpensive, but efficient wet collector could be developed for use at Atomic Energy Commission sites. An additional objective was to obtain information on the fundamental principles of wet collection to develop criteria for predicting and improving the performance of practical devices. Two wet separating devices were used: (1) an experimental cyclonic scrubber, and (2) a commercial dynamic scrubber. The discussion is quite extensive and includes: theoretical considerations, description of equipment, and test results, including collection efficiency, power requirements, and air flow pattern and dust distribution in cyclone scrubber. The general conclusion is that wetting produces a significant increase in performance through two distinct mechanisms, but that the optimum efficiency for the wet process is achieved only by careful design. Among the factors discussed include optimum amount of water, optimum air volume, optimum spray drop-let size, and proper application of the sprays.

COMMUNITY AIR HYGIENE

- 879 Analytical Methods and Instrumentation in Air Pollution. Introduction to Symposium. M. Katz. *Anal. Chem.* 27, 692-693 (May 1955).

This paper and several following, dealing with analytical methods, were presented at a joint symposium at the American Chemical Society meeting, in addition to those reported in the June Digest. The author summarizes progress during the past five years in analytical methods and instrumentation in air pollution, including brief reports of other symposiums.

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- 868 Civil Defense Planning Guide for Industrial Physicians. R. R. Bresler. J. Am. Med. Assn. 158, 390-395 (June 4, 1955).

This guide for establishing the medical portion of a company civil defense plan emphasizes that a specific program for an individual company must be tailored to the particular needs of that company and its place in the over-all community defense plan. The topics included are: basic principles of defense; organization of medical defense plan; recruitment and training of personnel; auxiliary first-aid stations; stock piling of drugs, supplies, and equipment; communications; and evacuation and transportation. This guide should be of use to industrial physicians in their civil defense planning.

ENVIRONMENTAL MEASUREMENTS

- 869 Microdetermination of Chromium in Small Samples of Various Biological Media. C. H. Grogan, H. J. Cahnmann, and Elizabeth Lethco. Anal. Chem. 27, 983-986 (June 1955).

During studies of the metabolism of chromium it became necessary to develop a rapid routine method for the microassay of chromium in plasma, urine, and other biological materials. The method described is based on the spectrophotometric determination of chromium as the colored reaction complex of hexavalent chromium with 1,5-diphenylcarbohydrazide. The method employs rapid ashing procedures applicable to small samples relatively free of interfering materials such as iron. All steps in the analysis are performed with only a single transfer at the point of color development. Recoveries of 95% or better were obtained in most cases under a variety of conditions.

-- Cond. from editor's summary

- 870 A Rapid Technique for Estimating Benzidine in Industrial Exposure. L. J. Sciarini and J. A. Mahew. Arch. Ind. Health 11, 420-421 (May 1955).

A rapid technique for measuring benzidine and some of its 3,3'-disubstituted analogues has been developed. As an index of exposure, this procedure is simple and easily adaptable for use in a chemical plant where as many as 24 analyses may be made simultaneously. A number of possible uses of the chloramine-T reagent have been pointed out.

-- Authors' summary

- 871 Electrostatic Sampler for Dust-Laden Gases. G. L. Rounds and H. J. Matoi. Anal. Chem. 27, 829-830 (May 1955).

An electrostatic sampler has been designed, which will collect up to five times the weight of dust collected by conventional electrostatic samplers. The device uses a commercially high voltage source. The collecting surface is in the form of a truncated cone for more uniform dust deposition. The unit can be disassembled in a few seconds for cleaning.

-- Editor's summary

- 872 Dust Sampling with a Soluble and Volatile Filter Paper. A. P. Avy. Staub. No. 37, 372-381 (Sept. 15, 1954). German.

The filter material is a mixture of tri- and tetrachloronaphthalene, which melts at 85-90°C, boils at about 300°C, is easily soluble in benzene, carbon tetrachloride, ether, and acetone, but is completely insoluble in and unwetted by water. In commercial form it may contain up to 25 ppm of dust and must be distilled before use. Techniques are described for its distillation and for the preparation of filters. Brief details are given of a suitable routine sampling instrument. Samples may be evaluated gravimetrically, chemically, or by direct particle counting. The filters are mechanically strong, and have a high and quantitative efficiency of dust collection for particle sizes greater than 0.5 micron.

-- Bull. Hyg.

- 873 A Sampling Technique for Small Air-Borne Particles. J. D. Wilcox and W. R. Van Antwerp. Arch. Ind. Health 11, 422-424 (May 1955).

The authors describe a method for measuring particle-size distribution by the combined use of light and electron microscopes. A special five-stage cascade impactor is used for sampling, and the particulate matter from each jet of the impactor is deposited directly on an electron-microscope projection film. The respective fractions are examined by light or electron microscopy and the total count and size distribution are calculated from the data for each fraction. Detailed methods are described and the apparatus is illustrated.

- 874 Determination of Quartz of Various Particle Sizes in Quartz-Silicate Mixtures. C. M. Jephcott and H. F. V. Wall. Arch. Ind. Health 11, 425-430 (May 1955).

The phosphoric acid method for the determination of quartz in the presence of silicates has been modified to give a simple and rapid procedure which is applicable to a wide variety of siliceous materials. In the method outlined, quartz can be estimated in coarse and fine dusts with an absolute error of less than 1%.

-- Authors' summary