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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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IN RE: ABRAMS
November 1992



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.

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MEDICAL ASSOCIATE APPOINTED TO I-H-F STAFF

Dr. B. A. McAleer joined the staff of Industrial Hygiene Foundation as Medical Associate on February 1, 1958. Prominent in industrial medicine, his activities in this field since 1945, when he became medical director of Mine Safety Appliances Company, have provided a broad background of experience for medical studies and other services which he will perform for Industrial Hygiene Foundation. Dr. McAleer will continue to serve as Medical Director of Mine Safety Appliances Company.

Dr. Daniel C. Braun resigned recently from the staff of Industrial Hygiene Foundation to accept the position of Medical Director, Homestead Division, United States Steel Corporation.

FOUNDATION'S EDITOR ELECTED TO NASW

Vivian M. Colonna, the Foundation's editor, has been elected to Associate Membership in the National Association of Science Writers, Inc.

She has also been appointed Editor of AESOP Copy, the monthly newsletter of the Associated Editors' Society of Pittsburgh.

ABSTRACTS AND REFERENCES

The Annual Index to Industrial Hygiene Digest for 1957 is being mailed to members along with this issue of the publication. It provides a quick reference to the 1601 abstracts of literature on industrial health which appeared in the Digest last year.

As many as 100 publications were reviewed by the Foundation's technical abstractors each month, along with special reports, books, and legislative and legal proceedings. This by no means indicates the scope of the Foundation's searching of the current literature. Thousands of abstracts in various scientific fields are also reviewed and those pertinent to the industrial health field are included in the Digest. This means that the members of Industrial Hygiene Foundation are guided to important articles on industrial health which appeared in hundreds of other journals, including foreign publications.

A revision of the Publication Source List, which gives the names and addresses of all the journals from which material has been abstracted, is currently being brought up to date, and copies will be sent to all recipients of the Digest. Information on how to obtain reprints, photostats, reports by government agencies, foreign periodicals, and translations of foreign material will again be included. The Foundation has no copies of the articles for distribution unless specifically stated in the abstract heading.

We trust that the Digest is a valuable aid to you, both in keeping abreast of new developments and trends in the field of industrial health, and as an indexed reference to the published literature through the years.

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I-H-F

IN RE: ABRAMS
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INDUSTRIAL HYGIENE FEATURES

A monograph surveying existing information about hearing loss and noise. Abstract No. 147.

It's time for a fresh look at occupational health activities for the small plant workers. Abstract No. 153.

A discussion of controversial subjects in the field of workmen's compensation and the duties they impose on the physician. Abstract No. 154.

Health under pressure is the unique problem of the executive, and is a joint responsibility of the individual and the company. Abstract No. 164.

Development of protective ointments facilitated by method for measuring permeation of mechanical barriers. Abstract No. 178.

Assessing the toxicity of high energy fuels through extensive experimental animal studies. Abstract No. 182.

Enamel coatings for food cans, as presently manufactured, are non-toxic. Abstract No. 210.

Carbon black is not toxic, and neutralizes the effects of carcinogens in animals. Abstract No. 211.

Two cases of a very infrequently reported association of silicosis and bronchogenic carcinoma. Abstract No. 213.

A major step forward in zoning ordinance requirements limiting noise and vibration taken in Chicago. Abstract No. 224.

General principles of noise reduction in machinery and their application to a number of types of problems. Abstract No. 228.

Weigh the value of x-rays against known and unknown effects of radiation exposure. Abstract No. 236.

Radiation hazards and what is being done about them. Abstract No. 237.

The coal industry's role in achieving air pollution control measures. Abstract No. 253.

To achieve the objective of clean air, administrative practice must keep pace with technical advance. Abstract No. 256.

Safety in the use of solvents in the oil and fat industry. Abstract No. 264.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

134 1958 Industrial Health Conference.

The preliminary program of the 1958 Industrial Health Conference, at Convention Hall, Atlantic City, New Jersey, April 19-25, is now available from Industrial Health Conference, 28 East Jackson Blvd., Chicago 4, Ill. The organizations participating in the Conference include the American Conference of Governmental Industrial Hygienists, the American Industrial Hygiene Association, the American Association of Industrial Dentists, the American Association of Industrial Nurses, Inc., and the Industrial Medical Association. The preliminary programs of these organizations include papers on a wide variety of subjects of interest to industrial hygienists and physicians.

135 American Trudeau Society, Annual Meeting.

Three days of scientific sessions will mark the 53rd annual meeting of the American Trudeau Society, May 19-21, in Philadelphia, Pa. In addition to papers by clinicians and investigators from universities and medical centers throughout the country, there will be panels on the tuberculin test, fungus diseases of the lung, and radiation hazards. The meeting will be held concurrently with that of the National Tuberculosis Association. Preliminary programs will be published in the March issue of the NTA Bulletin.

136 Course on Light and Vision.

The University of Michigan and The Illuminating Engineering Society offer a short course on Light and Vision at the School of Public Health, Ann Arbor, Michigan, March 19-21. It is designed to serve industrial hygienists, public health personnel, school administrators, architects, engineers, and others concerned with design or use of lighting facilities. On the first two days basic information on the use of illumination will be presented. One of two courses on the third day will deal with plant and office lighting for industrial hygienists and others concerned. A number of experts will take part in the program. The enrollment fee is \$10.00. Information may be obtained from the Continued Education Service, School of Public Health, 109 S. Observatory St., Ann Arbor, Michigan.

137 Safer Insecticides Coming.

Department of Agriculture chemists have discovered some new insecticides that are less toxic to warm-blooded animals than any now in general use. The insecticides are derivatives of chrysanthemumic acid, a synthetic material similar to an acid found in flowers of the chrysanthemum family. Acute toxicity tests on warm-blooded animals reveal the new compounds to be only one-eighth as toxic as pyrethrum and one-third as toxic as allethrin, which have for a long time been considered the "safest insecticides". About 200 esters of the acid have been prepared, and five have shown promise. Some of the compounds are as toxic to insects as pyrethrum and allethrin. -- Chem. & Eng. News, Jan. 13, 1958

138 Air Pollution Control Courses.

Robert A. Taft Sanitary Engineering Center will hold courses this spring for chemists and engineers concerned with several phases of air pollution control: March 10-12, Air Pollution Effects on Vegetation; April 7-11, Source Sampling and Analysis; April 14-18, Control of Air Pollution Sources; April 28-30, Organic Chemicals in Water; May 1-2, Detergents in Water; and April 28-May 9, Radiological Health. All courses listed are free. Inquiries should be sent to the Taft center's Chief of Training, Cincinnati 6, Ohio.

-- Chem. & Eng. News, Feb. 3, 1958

COMING EVENTS

- 139 Mar. 3-7 American College of Chest Physicians and Laennec Society of Philadelphia, 11th Annual Postgraduate Course on Diseases of the Chest, Philadelphia, Pa.
- Mar. 6-8 Optical Society of America, Annual Meeting, New York, N. Y.
- Mar. 6-8 Fundamental Cancer Research, 12th Annual Meeting, Houston, Tex.
- Mar. 10-12 Robert A. Taft Engineering Center, Course on Air Pollution Effects on Vegetation, Cincinnati, O. (See news item)
- Mar. 10-15 American College of Chest Physicians, Fourth Southern Postgraduate Course on Diseases of the Chest, Atlanta, Ga.
- Mar. 16-21 Nuclear Engineering and Science Conference, Chicago, Ill.
- Mar. 17-18 Steel Founders' Society of America, Annual Meeting, Chicago, Ill.
- Mar. 17-21 International Atomic Exposition, Inc., Chicago, Ill.
- Mar. 18-20 National Health Forum, Philadelphia, Pa.
- Mar. 19-21 University of Michigan and Illuminating Engineering Society, Course on Light and Vision, Ann Arbor, Mich. (See news item)
- Mar. 20-23 International Association for Dental Research, Annual Meeting, Detroit, Mich.
- Mar. 26-28 National Council on Alcoholism, New York, N. Y.
- Apr. 9-11 University of Florida, Fifth Annual Conference on Accident Prevention Engineering, Gainesville, Fla.
- Apr. 13-18 American Chemical Society, 133rd Meeting, San Francisco, Calif.
- Apr. 13-19 Federation of American Societies for Experimental Biology, Annual Meeting, Philadelphia, Pa.
- Apr. 19-25 Industrial Health Conference, Atlantic City, N. J. (See news item)
- Apr. 21-22 Industrial Accident Prevention Associations, Annual Conference, Toronto, Ont.
- Apr. 21-23 Association of Iron and Steel Engineers, Spring Conference, Birmingham, Ala.
- May 4-7 Air-Conditioning and Refrigeration Institute, Annual Meeting, Hot Springs, Va.
- May 19-23 American Foundrymen's Society, 62nd Annual Convention and Exhibition, Cleveland, O.
- May 19-23 National Fire Protection Association, Annual Meeting, Chicago, Ill.
- May 19-24 National Tuberculosis Association and American Trudeau Society, Annual Meeting, Philadelphia, Pa. (See news item)
- May 19-24 Second World Congress on the Prevention of Occupational Accidents, Brussels, Belgium. (See news item in July 1957 Digest)
- May 21-22 American Iron and Steel Institute, Annual Meeting, New York, N. Y.
- May 25-29 Air Pollution Control Association, 51st Annual Meeting, Philadelphia, Pa.

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OCCUPATIONAL DISEASE STATISTICS

140 Occupational Disease Statistics. (Cases reported to the respective Health Departments.)

	Colo. Nov. 1957	Conn. Dec. 1957	Mich. Sept. -Dec. 1957	Mo. Dec. 1957	Pa. Jan. 1958	Total
Anthrax					1	1
Berylliosis		1				1
Dermatitis	6	47*	24	13*	38	128
Hernia			11			11
Lead	2				2	4
Pneumoconiosis	4		5		6	15
Silicosis	2	1	48		3	54
Silico-tuberculosis		1				1
Solvents	1					1
Tuberculosis					1	1
X-ray burn					1	1
Miscellaneous	1		4			5
Total	16	50	92	13	52	223

* Causes of dermatitis are listed in the following reports:

Connecticut: Oils, fats, and waxes, 19; synthetic resins and chemicals, 8; infections, 4; solvents N. O. C. and undetermined, 3 each; acids and poisonous plants, 2 each; fumigants, insecticides, and disinfectants, questionable, 1; soap solutions, glue, etc., 1; abnormalities of humidity, alkalies, chromium and compounds, and rubber chemicals, 1 case each.

Missouri: Chicken poisoning, cement, metal, and poison ivy, 1 each; unspecified, 9 cases.

LEGAL DEVELOPMENTS

141 Silicosis—Successive Employments—Subsequent Injuries Fund—Reimbursement of Insurance Carriers—Statutes Construed.

Insurance carriers of successive employers of an employee afflicted with silicosis were properly awarded apportioned reimbursement from the state subsequent injuries fund where the silicotic exposures occurred in part prior to the effective date of the Act but the disability occurred subsequent to the said effective date. The court held that disability occasioned by silicosis arises largely because of the exposure of miners to silicosis while employed in mines during years prior to the effective date of the Act. Because of the higher incidence of the disease resulting from past exposures, mining companies must pay higher premiums for compensation insurance. Hence, it can be seen that the insurance companies have taken past exposures into consideration in the determination of premiums. To deny reimbursement to carriers for compensation allocable to exposures

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occurring prior, but for disabilities arising subsequent to the effective date of the Act, would deny to employers who would have to pay higher premiums, the relief contemplated by the Act. Affirmed. State of California Subsequent Injuries Fund v. Industrial Accident Commission. California Supreme Court. No. 24,469. November 12, 1957.

-- Commerce Clearing House

142 Causal Connection—Carcinoma—Silicosis—Evidence—Credibility and Weight.

An employee was not entitled to compensation where he was suffering from an inoperable carcinoma of the lower right lung and also had silicosis where the Board held that the carcinoma was actually the responsible disability factor, and that the employee had failed to satisfactorily demonstrate a causal connection between his disability and the silicosis. The court held that these findings were supported by competent and substantial evidence and cannot be disturbed on appeal. The court further held that the credibility and weight of the employee's medical witness was for the Board to decide, and that there was no capricious disregard of competent evidence. Affirmed. Hollenbach v. North Wales Foundry Co., Inc. Pennsylvania Superior Court. No. 305. November 12, 1957.

-- CCH

143 Silicosis—Causal Connection—Death Due to Diabetes and Kidney Condition.

Where an employee died as a result of diabetes and a kidney condition, the court held that the fact that he had also contracted silicosis did not entitle the employee's widow to an award. The court held that in order to recover under the statute the undisputed evidence must show that the death did result from or was contributed to by the silicosis with which he was suffering. Since the Commission had evidence before it which shows that there was no connection between the silicosis and the subsequent death of the employee, the findings and award against the widow were legally justified. Affirmed. Rodriguez v. Industrial Commission of Arizona. Arizona Supreme Court. No. 6455. November 12, 1957.

-- CCH

144 Occupational Disease—Notice—Failure to Give—Knowledge—Failure to File Claim.

A claimant who was disabled by an occupational disease contracted in employment was properly excused for failure to give written notice under the statute as the board could find that the employer "had knowledge of the accident", here the contraction of the occupational disease. The record showed that the disablement occurred in January 1949 and it was not diagnosed by the claimant's own physician as having been associated with the employment until May, 1951 at which time claim was promptly filed. Shortly after the disease was contracted claimant was examined and treated by a physician provided under the direction of the employer which was a hospital and provided medical care to its employees. Other testimony in the record was to the effect that the employee's supervisor knew of her physical difficulty. The court ruled that from these facts the board could find that the employer "had knowledge of the accident" and could have considered the treatment by the same physician of the occupational disease with some knowledge of its association with the work as an advance payment of compensation excusing the filing of a formal claim under the statute. Affirmed. Way v. Rochester State Hospital. New York Supreme Court, Appellate Division, Third Judicial Department. No. 137. October 19, 1957.

-- CCH

145 Silicosis—Mandamus—Discretion—Evidence.

Where an employee filed a claim for compensation due to silicosis contracted within the course of and arising out of his employment, which was denied by the administrator based on examinations of the employee's x-rays by a Board of Silicosis Referees who were of the opinion that the employee had no silicosis, and upon appeal to the Regional Board the employee's claim was upheld after the introduction of new evidence in the form of a report by a physician stating that the employee was suffering from silicosis, the court held that the statute did not require a personal physical examination, but that x-rays by the

Board of Referees was sufficient to meet the statutory requirement. The court further held that the procedure before the administrator, the Regional Board, and the appeal to the Commission by the employer which upheld the Board's order were in accordance with law. The court rejected the employer's contention that the Commission abused its discretion in allowing the award, and held that even though there was a conflict in the evidence as to whether or not the employee was suffering from silicosis there was sufficient competent medical evidence to sustain the claim, and thus the employer's request for a writ of mandamus to have the Commission's order vacated must be denied. State of Ohio ex rel Fulton Foundry & Machine Co., Inc. v. Industrial Commission. Ohio Court of Appeals, Franklin County. No. 5767. December 6, 1957. -- CCH

146 Occupational Diseases—Statutes Construed—Death Benefits—Silico-Tuberculosis—Death Occurring After Statutory Period.

The dependents of an employee who contracted silico-tuberculosis in the course of his employment but did not die until after the 300 weeks period specified within the statute were properly denied an award as the occurrence of an occupational disease constitutes an "accident" within the meaning of the statute and the 300 weeks period specified in the statute pertains to occupational diseases as well as to death occurring from other "accidents." The court disallowed the claimants' contention that death from occupational disease is not a death from "accident," as that term is defined in the statute and that, therefore, the requirement that the death shall occur within 300 weeks "after the accident" does not apply and that such death occurring at any time is compensable. The court ruled that in so far as it concerns deaths from occupational disease the term "accident" must be construed as including a compensable disability from occupational disease causing death. The court further ruled that since the death did not occur within 300 weeks "after the accident" there can be no recovery. Affirmed. Staples v. A. P. Green Fire Brick Co. Missouri Supreme Court, No. 46,071. December 9, 1957. -- CCH

BOOKS, PAMPHLETS AND NOTICES

- 147 Noise and Your Ear. Aram Glorig, Jr. Modern Monographs in Industrial Medicine, No. 1. Grune & Stratton, 381 Fourth Ave., New York 16, N. Y. 152 pp. (1958). \$6.50.

This monograph is a survey of existing information about hearing loss and noise. It is written primarily for persons who require only a general knowledge of the subject, rather than for experts. The contents, organized for convenient reference, are restricted to topics that are considered basic to the understanding of the hearing problems created by noise exposure. The general section titles include: history of noise and hearing and of the development of compensation laws; anatomy of the ear, theories of hearing, and psychoacoustics; pure tone and speech audiometry and test procedures; hearing loss and its effects on social and working activities; effects of noise exposure; conservation of hearing; and compensation and rating scales. A list of references is given for more detailed study. A list of organizations whose activities are directly related to the problem, and a partial list of manufacturers of the necessary equipment are given in appendices. The author is a well-known authority on noise and hearing loss problems and the monograph should be valuable as a reference work within the limits intended. -- FFR

- 148 The Neuroses and Their Treatment. Edward Podolsky, editor. Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. 555 pp. (1957). \$10.00.

There are almost as many definitions of the neuroses as there are psychiatrists, but under any definition they remain the most common, the most widespread, and the most destructive of contemporary mental illnesses. Some 40 representative papers containing

the latest knowledge of specialists in the handling of all phases of neurosis have been selected in this comprehensive survey of the field. A chapter on occupational neuroses is included; another deals with the process of recovery from severe trauma; and some other chapters contain material of interest to the industrial physician. -- FFR

- 149 Your Family's Health. Stella P. Applebaum. Public Affairs Pamphlet No. 261. Public Affairs Committee, 22 East 38th St., New York 16, N. Y. 28 pp. (1958). 25 cents, discount for quantities.

This booklet covers a health program involving preventive medicine and adequate care in illness. The author points out that much loss of life and health can be avoided if enough attention is given to the upkeep of health. Medical authorities suggest that, as a beginning, every family adopt its own health program. A number of practical suggestions are made for conserving family health, including the keeping of family health records, a careful selection of the family physician and dentist, a program of immunization, home safety measures, suggestions on the care of the family medicine cabinet, and the preparation of the family's food. Especial care is urged in the selection of the family physician, including several don'ts, the first of which is not to wait until illness strikes to find the doctor. Various means are suggested for locating competent doctors. Specialists, prepayment plans, immunization programs, and signs of illness are among the subjects discussed. Although not directed to industry, this booklet may be of assistance in the health education of employees and their families. -- FFR

- 150 Comparative Mortality among Metropolitan Areas of the United States: 102 Causes of Death. N. E. Manos. Public Health Service Publication No. 562. U. S. Public Health Service, Air Pollution Medical Program. 143 pp. (Oct. 1957). For sale by Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C. \$3.25.

This report was prepared by the Air Pollution Medical Program in the course of its investigation of health effects attributable to air pollution. Because of the importance of detailed mortality statistics to other types of research, the contents have been presented in the form of a reference volume for research workers interested in the geographic variation in cause-specific mortality. Numerous tables and graphs are presented on large pages (15 x 18 in.). The data include frequency distribution of mortality ratios in 163 metropolitan areas, and ratios of age-adjusted mortality in those areas to that of the total United States. Similar data are given according to degree of urbanization and to central and noncentral city counties. All these data refer to 102 specific diseases, classified under 10 general headings: (1) diseases of the respiratory system; (2) diseases of the circulatory system; (3) cancer of the respiratory system; (4) cancer of the digestive system; (5) cancer of the genito-urinary system; (7) infections and gastro-intestinal diseases and conditions; (9) accidents, trauma, and diseases of pregnancy and the newborn; and (10) miscellaneous causes of death. Data were prepared for each race-sex group, but, for condensation purposes, figures only for white males and white females are presented in this volume. Total deaths under the same distribution are tabulated in an appendix. -- FFR

- 151 Atomic Energy in Industry, Fifth Annual Conference. National Industrial Conference Board, New York. 283 pp. (1957). \$15.00.

Papers are included on prospects for economic nuclear power, commercial power reactors, natural and enriched fuels, development of better products through radioisotopes, new products through radiation chemistry, chemical processing and waste disposal, new markets created by atomic age metals (zirconium, titanium, hafnium, beryllium, and thorium), refractory metals and ceramics, realization of market potentials in atomic energy, reactor safety, atomic energy legislation, safety and health problems, the long range outlook for nuclear industries, and atomic energy developments abroad. -- Nuclear Sci. Absts.

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INDUSTRIAL MEDICAL PRACTICE

- 152 Health, Production and Morale. H. J. Magnuson. Public Health Repts. 72, 1049 (Dec. 1957).

This introduction precedes a series of papers on various aspects of occupational health. Occupational health work has progressed beyond concentration on specific toxins, particle concentrations, decibels, safety boots, and other details to concern with the general health of each employee and fitting those details into that picture. The dominance of preventive medicine over surgical aspects of this work is another indication of the evolutionary trend. The changed concept of occupational health is also evident in the decision of the American Medical Association that physicians qualifying should be certified by the Board of Preventive Medicine as diplomates in occupational medicine, a subspecialty of preventive medicine.

- 153 Small Plant Health Services and the Health Officer. J. H. Gerber. Public Health Repts. 72, 1050-1052 (Dec. 1957).

Despite notable progress in occupational health services, they are particularly lacking in plants with fewer than 500 employees, which account for 70% of all workers. Three main reasons for this deficiency can be cited: (1) lack of appreciation by management of the many benefits to employer and employee; (2) belief on the part of management that the costs of such programs are excessive; and (3) difficulty in obtaining advice and assistance in developing such services. The health officer can add to his own knowledge of local factors an acquaintance with efforts made elsewhere to provide health service for small plant workers, and thereby can choose the approaches that may seem best in his community. The available types of services are reviewed, including the Hartford and New Haven programs, union health centers, groups of physicians providing part-time services, and mobile health clinics. Insurance companies have also assisted in developing occupational health programs. Many state and local health departments have special units for this purpose, although in some of their programs there is under-emphasis of preventive medical aspects. It may be timely for health officers to take a fresh look at their occupational health activities, particularly from the viewpoint of relating them to their other program activities. A number of questions are given for self-examination in this respect.

- 154 Workers' Compensation and the Physician. T. C. Waters. Public Health Repts. 72, 1053-1059 (Dec. 1957).

The author discusses many controversial subjects in the field of workmen's compensation and the duties they impose on the physician. The various concepts of injury and of disability are reviewed. Courts now construe the term "injury" to mean "harm to any part of the body". The growing tendency to compensate for injury irrespective of wage loss is resulting in increased participation of the physician in settling disability claims and in administration of workmen's compensation statutes as health insurance statutes, which was not their original intent. Doctors are reluctant to become involved in lawsuits or controversial compensation claims. The role of industrial medicine in the evaluation of medical testimony is illustrated by a discussion of problems involved in the settling of claims for heart disease and the pneumoconioses. The laws regarding compensation for pneumoconiosis vary greatly in the different states. Since the primary questions are medical, it is obvious that a board of medical examiners would be most competent to resolve them. Many states now make provision for such boards, but wide differences exist concerning the roles they play in administration of the law. Uniformity can be accomplished only by legislative amendments to make adequate and proper statutory provisions for the establishment of medical boards or examiners. Medical societies should take the initiative in finding a solution to the problem. The experience of members of such boards should be valuable to the administrative agency in its ultimate decision.

- 155 Employment and Retirement of Elderly Workers. W. M. Gafafer.
Public Health Repts. 72, 1060-1066 (Dec. 1957).

This paper presents information on employment and retirement practices based essentially on correspondence with a small sample of industries and on the results of two published surveys. Both sources reveal great variations in practices in hiring of elderly workers, in circumstances of retirement, in preparation of workers for retirement, and in a number of details. These differences indicate not only the complex nature of the problem but also the lack of factual material upon which to base a solution. As the problem becomes increasingly urgent, progress will be forced through the accumulation of experiences, leading eventually to the effective use of the skills of the elderly worker and to a full life in the retirement years.

- 156 Industrial Medicine. Leo Wade. Public Health Repts. 72, 1067-1072 (Dec. 1957).

The techniques of occupational medicine, engineering controls, evaluation of the toxicity of materials used or produced, diagnostic examinations, dispensary services, the treatment of compensable illness, and epidemiology, are all directed toward the provision of a safe and healthful working environment. Certain by-products in the realm of nonoccupational disease, such as the occasional dispensary care of minor illness, the early recognition of disease, the provision of health guidance, often seem of great importance to the employee and to management. There is real danger that these by-products may be confused with the basic commodity of occupational medicine. Such confusion must be avoided lest medicine in industry become merely another variety of institutional medicine or a system of medical economics rather than a highly useful and essential medical specialty.

-- Author's summary

- 157 The Private Physician's Responsibilities in Occupational Medicine. B. D. Holland.
Public Health Repts. 72, 1073, 1074 (Dec. 1957).

The best occupational health services possible should be provided to as many of the country's working population as possible. This goal can be achieved only if a far greater number of private physicians serve industry, part time or on call. This requires, and should accomplish, the closest cooperation and understanding among all physicians in their professional capacity as well as in their capacity as members of the medical society.

-- Author's summary

- 158 Employee Health Services. J. F. McCahan.
Public Health Repts. 72, 1075, 1076 (Dec. 1957).

The essentials of an effective employee health service are discussed. It includes preplacement and periodic examinations, job placement, health counseling, referral of non-occupational injuries and illnesses to the family physician, emergency service, and maintenance of adequate records.

- 159 Occupational Health Information Exchange. D. H. Byers.
Public Health Repts. 72, 1077, 1078 (Dec. 1957).

The work of the Occupational Health Information Exchange is described. It is a new part of the Occupational Health Program of the Public Health Service, with headquarters at Cincinnati, Ohio. It will serve as a central agency for the collection, collation, and dissemination of information pertinent to occupational health programs. Most of the information will fall into three groups: (1) information on the detection, evaluation, and control of health problems of the worker, including data from industrial experience, case histories, results of research, and mortality figures; (2) information on technological developments and trends, including data on the identity and nature of new materials, processes, and industries, and basic figures on employment, production, and consumption of products; and (3) an inventory of research and service facilities active in fields of occupational health.

- 160 Employee Health Benefit Programs. L. S. Reed.
Public Health Repts. 72, 1079-1083 (Dec. 1957).

Two major developments in recent years have had a significant effect on the health status of millions of American workers. One has been the shifting emphasis of in-plant health programs from care of work injuries to concern for the general health of the worker. Through diagnostic and preventive services, these programs are contributing more and more to health conservation and maintenance. The second development, more widespread and far-reaching has been the phenomenal growth of employee health benefit plans providing, or paying the cost of, medical care. These two types of programs can and do stand alone; but where both exist, they are more effective, each drawing strength from the other.

-- Editor's summary

- 161 The Doctor-Employee Relationship in an Industrial Practice as It Affects the Medical Profession. R. F. Schneider. Med. Bull. (Stand. Oil N. J.) 17, 140-145 (July 1957).

The functions and responsibilities of management, labor, the industrial physician, and the community doctor in the field of industrial medicine are discussed. The employee has the responsibility of maintaining himself in optimal health and functional capacity. Management and employees can contribute toward an improved relationship by: (1) acceptance of industrial medicine as an inherent part of the company's operation, and not as an "employee social benefit" subject to bargaining; (2) acknowledgement of the confidential doctor-patient relationship; (3) respect for the restriction in scope of industrial medicine as a specialty and as an ethical practice; (4) proper understanding of job placement, employee attitudes, and motivation in respect to employees' attendance at work and efficiency of performance as factors; and (5) promotion of the understanding of the individual medical program among other employees and the community.

The contribution of the industrial physician include: (1) maintaining the respect of the medical profession as a competent, ethical specialist who is also interested in community medical societies and the problems of the private practicing physician; (2) establishing a liaison with the employee's private physician in the time of health as well as of illness; (3) assisting and encouraging employees in the selection of competent and ethical physicians; and (4) developing and maintaining his technical skills and exercising his inherent ability in the art of human relationships.

The community physician can contribute by: (1) recognizing the maturity of industrial medicine; (2) making accurate certification for disability based on the medical facts; (3) making reasonable charges; and (4) obtaining all the available facts before arbitrarily labeling a disease or injury as industrial in origin.

- 162 Medical Department Layout and Design. W. J. Fulton.
Ind. Med. & Surg. 27, 1-14 (Jan. 1958).

In order to plan a medical department, the following facts should be known: (1) number of persons to be served; (2) number of shifts, and number of employees working on each shift; (3) the scope and type of medical services to be rendered; (4) the character of the employees' occupations; (5) the general layout of buildings and working areas; and (6) the policies of management. The following cardinal points that should be taken into consideration in the planning are quality, quantity, aseptic techniques, working environment, and civilian disaster. Quality includes medical layout, environment, and services pointed toward gaining the respect and confidence of every employee. Quantity means application of the principles of the flow-chart, time and motion study, and job analysis, to insure efficient and economical administration without sacrificing quality. Included under the head of working environment is good working and daily living environment for members of the medical staff. Preparations for civilian disaster include adaptability to emergency conversion and service in the exigencies of civilian defense or disaster. In addition to the above points, the medical department should be as near the center of population of the people it is to serve as is practical, and should be adjacent to the employment department and convenient to the safety and personnel departments.

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- 163 Industrial Nursing and Its Future. Sara P. Wagner.
Med. Bull. (Stand. Oil N. J.) 17, 123-129 (July 1957).

The author reviews the history and present state of industrial nursing, and suggests goals for the future. They include: more attention to industrial nursing in the nursing school curriculum; medical direction for all industrial nurses; greater responsibility on the part of the nurse for mental health; more retirement counseling; and more contribution in the whole area of human relationships. The nurse, as a member of the health team, will be given a greater opportunity for active participation. Industry will need nurses of quality. It will have a real need for the informed and truly productive. The greatest responsibility of the nurse leaders in the industrial health field is to encourage and help every industrial nurse to develop her capacities to the utmost.

- 164 Health under Pressure. D. L. Farnsworth. Harvard Bus. Rev. 35, 48-58 (Nov.-Dec. 1957).

The problem of executive health is rapidly becoming one of the most discussed topics in the country, but too many responsible business men have not fully appreciated three important facts: (1) that the health problem of the executive is unique on account of the pressures arising from his role, and special attention has to be paid to counteracting these pressures; (2) that maintenance of executive health is a joint responsibility of the individual and the company, demanding planning and action from both; and (3) that such action must go far beyond routine physical examinations and good working conditions. These three facts are discussed in detail, and a broad-gauge program is suggested. The new concept of executive health will demand a different orientation from medical personnel, more realism and self-discipline from the individual executive, and an increased measure of flexibility and imagination from the company.

- 165 Preventive Medicine in Naval Aviation Training. The Cooperative Efforts of Psychology and Psychiatry. P. B. Phillips and J. T. Bair. A.M.A. Arch. Ind. Health 17, 53-57 (Jan. 1958).

The roles of psychology and psychiatry in the training of naval aviators are described. Psychological testing is an important part of the first physical examination, and psychological studies of the progress of a student continue throughout his course. Many of the duties of the neuropsychiatric unit are specifically related to flying, but they also involve evaluation of military offenders, marriage counseling, child guidance, vocational and aptitude testing, talks to parent teacher groups, orientation lectures in mental health, training of physicians in aviation medicine, and other activities. The psychologist with his research methods looks at the over-all picture, while the doctor with his patient-centered philosophy works with the individual student. The close cooperation of psychology and psychiatry in the broad picture of naval aviation medicine makes a creditable contribution to preventive medicine.

- 166 Respiratory Emergencies. Esther M. Stephenson. Natl. Safety News 77, 26, 27, 102 (Jan. 1958).

Four specific objectives must be accomplished by artificial respiration: (1) administration of enough oxygen to meet the metabolic demands of the tissues, especially those of the vital organs; (2) adequate ventilation of the lungs; (3) aid to the circulation; and (4) effective and uninterrupted treatment until breathing returns, without causing oxygen toxicity, hyperventilation, or hypoventilation. There are six methods of manual artificial respiration: back pressure only, chest pressure only, back pressure-arm lift, chest pressure-arm lift, hip lift-back pressure, and hip roll-back pressure. Investigations have led to the adoption of the Holger Nelson back pressure-arm lift as the best method. A mechanical resuscitator producing alternating positive-negative pressures has many advantages over manual artificial respiration, including: (1) administration of 100% oxygen or oxygen-air over a long time, maintaining a regular rhythm and a constant volume of gas exchanged; (2) regulation of tidal volume according to the patient's lung capacity at a set positive and negative pressure; (3) improvement of circulation in shock and improvement of blood pressure; and (4) giving warning of an airway obstruction and presence of respiratory effects. Training of non-medical operators of the resuscitator is emphasized.

- 167 The Cardiac in Industry. E. S. Campbell. Tenn. Ind. Hyg. News 14, 1-4 (Oct. 1957).

Matching the patient's functional capacity with the demands of specific jobs can usually be done most efficiently by work classification units or through the cooperation of private and industrial physicians and of management. Patients may return to work following an acute heart illness. Heart failure, infarction, increased chest pain, and cerebral vascular accidents are just as apt to occur in the employed as in the unemployed, but average work should not be blamed for an incident in the natural progress of the disease. In fact, a recent study has shown that energy may be expended at a lower rate when working than when not working. Because of difficulties in retraining, the older cardiac should be returned to former employment as often as possible. This can be facilitated by simplifying the job or making it part-time. In the younger groups, however, the advice of the vocational counselor, in conjunction with that of the physician, may often produce a new job or modification of a former job. The sheltered workshop has been a boon to many patients, particularly the severely disabled cardiacs and the elderly unskilled laborer. An extremely important objective in the over-all program of rehabilitation should be revision of legal aspects involving the entire subject. Another important step is the education of industry. Cardiacs have proved their capabilities in many industries. Education of the industrial physician and his cooperation in job selection and placement is progressing. Industry is learning that the cardiac patient has a considerably longer life expectancy than was formerly believed and may enjoy a productive and fruitful life.

-- Cond. from author's summary

- 168 Diseases of the Heart in a Working Population. L. S. Goerke, J. M. Chapman, and E. Phillips. Calif. Med. 87, 398-402 (Dec. 1957).

A sample consisting of 2,252 persons among 20,199 Los Angeles civil employees disclosed heart disease in 73 per 1,000 persons examined. Reexaminations led to an estimated heart disease incidence of 15 new cases per 1,000 persons per year. The cardiovascular death rate was 11 per 1,000 among persons entering the study with normal heart and 133 per 1,000 persons diagnosed as having heart disease at entry. Among the men with heart disease, the highest death rates are observed among those with sedentary jobs and at light exertion. This may, of course, be an indication of the employee's selection of the job rather than the effect of inactivity. The relative usefulness of minifilm x-ray, electrocardiograms, and questioning as to history are considered.

-- Cond. from authors' summary

- 169 Electrocardiographic Survey of Hotel Employees in New York City. O. LaRotonda and F. P. Guidotti. Ind. Med. & Surg. 27, 18-20 (Jan. 1958).

The electrocardiogram cannot be employed to determine the presence of impaired cardiac function and, in that sense, detect cardiac disease. It follows, therefore, that an abnormal graph is not synonymous with heart disease. However, it is an important ancillary procedure in periodic health appraisal when considered in conjunction with clinical history and the physical findings. The intent of this survey was not that of mass screening for heart disease, but rather to obtain the incidence of abnormal cardiographic patterns encountered in routine physical examinations above the age of 45. Should the incidence of abnormalities have been insignificant, the procedure would be economically impractical. But, with known cardiacs excluded from the series, a 12.2% occurrence is impressive. The authors believe that continued surveillance is the best approach to this silent segment of cardiacs. The plan is to repeat the electrocardiogram annually with the periodic examination and when necessary with whatever frequency the problem demands. Thus, with a serial study, the "baseline" graph will serve as a valuable record for comparison. In this manner, cardiac disease may be uncovered at an early and possibly remedial stage—when preventive measures for maintaining health can be instituted and so prolong the period of productivity in this industry.

-- Authors' conclusions

03120427

- 170 The Common Cold—What is Being Done about It? Y. Kneeland, Jr., and M. N. Newquist. Ind. Med. & Surg. 27, 37-38 (Jan. 1958).

The Common Cold Foundation, a nonprofit service organization receiving funds from about 150 companies, has as its main objectives: (1) to support research into the cause and cure of the common cold; (2) to augurate and disseminate all current information

that will assist in more effective control of respiratory diseases; and (3) to act as a clearing house for the collection and dissemination of information on the common cold. Research projects are now supported at four universities. These are primarily concerned with isolating the viral agents causing colds. As rapidly as funds permit other projects will be started: (1) on basic research into the common cold; and (2) into such areas as the incidence of adenovirus-caused respiratory illnesses in civilian population; the role of hypersensitivity; the influence of local irritants; psychogenic factors; and the relation of colds to chronic irritants. In the light of present knowledge it can be said, (1) that the common cold is without doubt caused by viruses, and the new methods do permit progress to be made in its study; (2) there is need for a concentrated research program, as each day of delay is costing industry millions of dollars. (Literature available from the Common Cold Foundation includes a brochure entitled "The Common Cold—Industry's Most Costly Health Problem", which deals with the objectives of the above Foundation, means by which industry can help conquer the common cold; 20 questions and answers on the common cold; also papers given at a symposium of the Common Cold Foundation, by A. E. Feller, H. A. Wenner, Y. Kneeland, and Dr. Newquist, on various researches that have been conducted; and information on the "Far East" influenza vaccine. These may be obtained from the Common Cold Foundation, Inc., 370 Lexington Ave., New York 17, N. Y.).

- 171 The Value of Early Diabetes Detection. W. N. Sisk, K. Ann Locher and Eleanor I. Titus. Ind. Med. & Surg. 27, 39-42 (Jan. 1958).

The authors present a relatively simple method for the detection of both early diabetes and "pre-diabetes." This method consists of taking a single blood sugar specimen two hours after a meal containing not less than 50 grams of refined sugar, preferably glucose. They have tabulated the results of testing 400 individuals who at the time of their first test had no symptoms suggestive of diabetes. By this method six individuals with mild diabetes and 17 with "pre-diabetes" were discovered. Further testing indicated that in none of these instances would the authors have been likely to discover the metabolic disturbance by the usual examinations. Case histories illustrating the various types of metabolic disturbances which may be uncovered by this method are presented. Some of the factors which might cause a normal person to have a high reading in this test are discussed. The authors also show how the results of these tests may be used to induce an individual to improve his dietary habits.

-- Cond. from authors' summary

- 172 Hypothyroidism in Men in Industry. A Preliminary Report on Chemical Evidence. R. E. Lowrey, A. G. Ware, and P. Starr. Calif. Med. 87, 285-288 (Nov. 1957).

Of 2,807 specimens from blood donors and men in industry, 340 or 12% had serum protein-bound iodine values of 4.0 micrograms or less per 100 cc. In a selected group of 610 "white collar" workers, 52 or 8.5% had similar low values. Careful reexamination of a sample of the latter group indicated that at least 75% of them had hypothyroidism needing treatment. Further analysis of the factors producing hypothyroidism and the validation of the incidence found is warranted. If the incidence observed in this study is confirmed, these findings indicate that 6 to 9%, or more than a million middle-aged American men have hypothyroidism.

-- Editor's summary

- 173 Dietary Fat in Human Nutrition. 5. Summary. R. E. Olson. Am. J. Public Health 47, 1537-1541 (Dec. 1957).

The author summarizes four papers published in the November and December issues of this journal: (1) "Role of Unsaturated Dietary Fat in Infant Nutrition", by A. E. Hansen; (2) "Role of Unsaturated Fat in Adult Nutrition", by J. M. R. Beveridge; (3) "Diet and the Epidemiology of Coronary Heart Disease", by A. Keys and F. Grande; and (4) "Experimental and Clinical Evidence Relating to the Effect of Dietary Fat upon Health in Man", by T. B. VanItallie. (See also a brief report of a symposium on the subject, IHF Abst. 1236, Oct. 1957). It is generally agreed that this is an extremely complex problem which will not have any simple answer. The author emphasizes that this is a time for restraint and research rather than a time for crash programs to modify the American diet. We still do not know enough, but at least we think we know what questions to ask.

03120428

- 174 Pre-Employment X-Ray Survey of the Lumbosacral Spine in Bus Drivers. L. Reiner.
Ind. Med. & Surg. 27, 15-17 (Jan. 1958).

The reasons and the purpose of the pre-employment x-ray examinations of the lumbosacral spine in Israeli bus drivers are given. The standard system of assessment is described and analyzed in relation to the different abnormalities of the spine (anomalies, scoliosis, generalized degenerative disc lesions, traumatic disc lesions, and other vertebral lesions). The results of the examinations in 1030 candidates are described and tabulated in relation to the system of assessment.

-- Cond. from author's summary

- 175 A Review and Study of Illness and Medical Care, with Special Reference to Long-Time Trends. S. D. Collins. Public Health Monograph No. 48, Public Health Service Publication No. 544. 88 pp. (Nov. 1957). For sale by Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D. C. 50 cents.

This study is devoted largely to trends of illness, hospital care, and mortality over periods of 25 to 100 years. Trend data are supplemented by age incidence and mortality from acute and chronic diseases as groups and from important specific diseases in each group. These data are presented in numerous tables and graphs. Briefly, some of the most significant trends are: increase in admission rate to hospitals but decrease per person in days spent in hospitals; much greater percentages of births in hospitals; decrease of tuberculosis deaths in every age group; decrease in mortality and increase in longevity; decrease in illness so far as statistics are available; and increases in hospital admissions for heart diseases and mental diseases. Many other trends which are less definite and comparisons between ages and sexes are discussed.

-- Cond. from author's summary

SKIN DISEASES AND BURNS

- 176 Epoxy Resins. Their Use and Chemical and Dermatological Aspects. G. E. Morris.
A. M. A. Arch. Dermatol. 76, 757-761 (Dec. 1957).

The widespread present-day uses of the epoxy resins are enumerated. Exposure to the skin in any of these industries can cause dermatoses. The epoxies, the curing agents, and some of the additives are skin sensitizers. Workers should be instructed as to the hazards involved in handling these epoxy compounds.

-- Author's summary

- 177 Eczema Caused by Plastics, a Problem of Industrial Hygiene. K. E. Malten.
Ned. Tijdschr. Geneesk. 101, 1319-1325 (1957). Dutch.

A dermatological study of 14 patients in the Fokker aircraft factory proved that skin sensitization had not been caused by any of the auxiliary materials (various kinds of wood, priming, metals, etc.) but was due to certain constituents of the plastics produced by polycondensation, which were used in the industry. Patch testing showed that the following substances acted as allergens: Araldit (Aethoxilin), Hardener 951, Lamellon 23 (polyester), cobalt naphthenate, benzoyl peroxide, cyclohexanon hydroperoxide, methylethyl ketone hydroperoxide, styrene, Aerolite resin and hardener. Redux resin and powder (phenolformaldehyde). Some of the substances mentioned were used in a concentration exceeding that which had been qualified as toxic to the skin under experimental conditions. Precautionary measures were taken to prevent contact of the skin with chemicals, and detailed instructions were given to employees. Success was evident, for no new cases of occupational dermatitis were diagnosed for the year 1955, although for the most part, the same plastics were used as before.

-- Cond. from Bull. Hyg.

03120429

- 178 Investigation and Development of Protective Ointments. 1. Development of a Method for Measuring Permeation of Mechanical Barriers. L. M. Lueck, D. E. Wurster, A. P. Lemberger, and L. W. Busse. J. Am. Pharm Assn., Sci. Ed., 46, 694-698 (Nov. 1957).

A method for measuring penetration by true diffusion has been developed which gives rise to semiquantitative results. The method is relatively simple and can be modified easily to accommodate the study of a wide variety of materials. By applying this technique to the evaluation of protective barriers, the protective capacity of a given ointment material can be represented in terms of a permeability constant. Comparison of the permeability constants obtained for various barrier materials makes it possible to classify these materials according to their relative protective capacities. The data obtained by this technique have been evaluated and shown to follow the theoretical predictions.

-- Authors' summary

- 179 Investigation and Development of Protective Ointments. 2. Influence of Partition Coefficients and Thickness. L. M. Lueck, D. E. Wurster, T. Higuchi, K. F. Finger, A. P. Lemberger, and L. W. Busse. J. Am. Pharm Assn., Sci. Ed., 46, 698-701 (Nov. 1957).

A method is described for studying the permeation of protective ointment films by penetrating agents in the vapor state. Relationships established follow theoretical predictions. It is shown that the permeability constant for the penetration of an ointment film is related to the partition constant in a linear fashion. Thus maximum protection against a given penetrating agent would be afforded by an ointment film in which the penetrating agent is poorly soluble. It has been also verified that the thickness of an ointment film bears an inverse relationship to the permeation constant. The procedures employed in this study may be adapted to the study of protective ointments for a wide variety of chemical penetrating agents.

-- Authors' summary

- 180 Calcium Chloride Necrosis of the Skin. H. L. Zackheim and H. Pinkus. A.M.A. Arch. Dermatol. 76, 244-246 (Aug. 1957).

Two cases of necrosis of the superficial corium due to surface contact with calcium chloride are presented. The contact was with dry calcium chloride rather than in solutions as in cases reported previously.

-- Authors' summary

- 181 Chloracne in the Manufacture of DDT. Shirley S. Bowen and M. P. Moursund. A.M.A. Arch. Dermatol. 75, 743-746 (1957).

The authors were unable to find any reference to the occurrence of chloracne in the manufacture of DDT and therefore considered it worth while to report a number of cases which had come to their attention. Four patients were seen two of whom were severely affected. The patients were working in the trichlorobenzene unit of a chemical firm making DDT and for several weeks they were exposed to benzene hexachloride dust, vapors of trichlorobenzene and benzene hexachloride, or a fine mist of these chemicals while loading, inspecting or sampling the products at various stages of their manufacture. It was reported that there were three or four other men working in the same unit who experienced an identical skin reaction though in lesser degree. The two most severely affected patients were changed from their work with the trichlorobenzene unit to work in the DDT packing and storage unit where their exposed skin was daily covered with DDT powder. Their chloracne did not clear up until they moved to other work in the factory. Preventive measures adopted by the company include thorough bathing after exposure to vented fumes; new Dynel protective clothing, which is washed daily at the plant, and a more thorough venting of the fumes. Since these additional preventive measures were taken no new cases of chloracne have occurred.

-- Cond. from Bull. Hyg.

03120430

CHEMICAL HAZARDS

- 182 Toxicity of High Energy Fuels. W. H. Scheshter. Safety Maintenance 115, 40-43 (Jan. 1958).

The search for high energy fuels for aircraft has lead to the choice of the boranes as the most economical. The boranes have only two obvious disadvantages for these applications: they are toxic, and their combustion products are not ideal. It is difficult to assess human toxicity of boranes because the incidence of acute toxicity has been so low that clinical observations are negligible. Extensive animal studies, however, have been made; diborane has been studied most extensively. The main effect of this gas seems to be damage to the lungs. Pentaborane and decaborane differ in that they attack the central nervous system rather than the pulmonary system. Decaborane has also been found to cause damage to the liver and the kidneys. The toxicity of boron high energy fuels is between that of pentaborane and of decaborane. Experimental work is reviewed briefly and toxicity figures are given. The detection of low concentrations of boranes is difficult. Two types of monitoring devices are under development. The principal safety measure is ventilation. Possible additional uses for boranes are discussed.

- 183 Iodine. Data Sheet D-457. National Safety Council, 425 North Michigan Ave., Chicago 11, Ill. Natl. Safety News 76, 45, 46 (Dec. 1957).

Iodine in any form is irritating to the mucous membranes. Inhalation of high concentrations or prolonged exposure to low concentrations may result in severe disturbances. It is also corrosive to the skin and causes dermatitis. Workers handling iodine should wear goggles or face shields, and self-contained breathing apparatus should be available for emergency use. Spilled iodine should be neutralized by sodium thiosulfate or dry sodium carbonate. Exposed persons should be referred to a doctor for proper treatment. First-aid directions are given. The accepted threshold limit for iodine is 0.1 ppm. Brief directions for determination and information on properties are included.

- 184 Toxicity of Ozone. 4. Silicone Aerosols and Alcohol Vapor Therapy in Ozone Poisoning. S. Mittler. Ind. Med. & Surg. 27, 43-45 (Jan. 1958).

Mice which died during the various forms of therapy were autopsied, and in the majority of cases edema and extensive hemorrhage were present. In many animals which were fatally injured with ozone, edematous fluid oozed from the nostrils. It can be questioned whether ozone-induced death can be due to edema alone, for both edema and hemorrhage occur together. If death is a result of edema in which frothy fluid prevents oxygen from reaching the alveolar surfaces then antifoams should provide some aid if they can reduce the foam. But if death is a result of hemorrhage of lung capillaries, then antifoams cannot prevent death. In the research work here reported alcohol vapor and Dow Corning Antifoam A aerosols had no influence on mortality of mice exposed to ozone. One may be led to conclude that edema produced by irritant gases does not respond to treatments used successfully for edema from other causes. Whether this failure is due to a difference between edema induced by irritant gases and edema induced by epinephrine and other causes can only be resolved by further research. -- Cond. from author's comment and summary

- 185 Prolonged Exposure of Guinea Pigs to Sulfuric Acid Aerosol. M. D. Thomas, R. H. Hendricks, F. D. Gunn, and J. Critchlow. A.M.A. Arch. Ind. Health 17, 70-80 (Jan. 1958).

Guinea pigs were exposed to coarse, medium, and fine sulfuric acid aerosols in average concentrations up to 4 mg. per cu. m. for periods ranging from 18 to 140 days. Some exposures to fine aerosol averaged 26.5 and 21.2 mg. per cu. m. for 18 to 45 days. No guinea pigs were killed by these treatments, but four accidents occurred in which higher

concentrations of aerosol caused the death, within several hours, of 21 of the 45 animals exposed. The tabulated results are based on the microscopic examinations of sections from the respiratory tract of each animal and the appraisal of 45 histological alterations assumed to be the result of experimental procedures. Statistically significant positive changes were found in only eight items in the animals that received the accidental high concentrations, namely, hyperemia, edema, hemorrhage, extent of cellular exudation, predominance of polymorphonuclear leukocytes, fibrinous thrombi in alveolar walls, and excess of desquamated cells in the major and minor bronchi. Similar but smaller effects were observed with the low concentrations. The medium sized aerosol (about 0.9 microns in diameter) was the most active. Eight statistically significant negative changes were also observed. Evidence of irreversible damages to the lungs, such as fibrosis, was not significantly greater in the animals exposed to aerosols than in the control animals. Published data on acid aerosol concentrations in the field are discussed in relation to those used in the present experiments.

-- Cond. from authors' summary

- 186 Oral Administration of Edathamil Calcium Disodium (Calcium Disodium Versenate). L. D. Pagnotto, H. B. Elkins, and I. Bayka. *A.M.A. Arch. Ind. Health* 17, 29-33 (Jan. 1958).

Control subjects treated themselves with edathamil calcium disodium tablets orally, and their urinary lead excretion was determined. Some of the results parallel the excretion following an intravenous injection of edathamil. The amount of free edathamil in the urine was estimated. A known excess amount of lead was added to the urine, and the quantity used or complexed by the free edathamil was determined. Each mole of edathamil was found to complex about two moles of lead. The amount of free edathamil in the urine was small, about 0.3% of the administered dose by mouth. However, there was enough free edathamil to combine up to about 7 mg. of the added lead per liter of urine. A coprecipitation method to determine urinary lead in the presence of edathamil is described. Chromium is introduced into the edathamil complex. The lead freed is precipitated by calcium oxalate in the usual manner.

-- Authors' summary

- 187 The Pharmacological Action of Some Inorganic-Organic Chelates. T. Bersin, A. Muller, and H. Schwarz. *Arch. Biochem. Biophys.* 69, 507-513 (July 1957). German.

Dicalcium ethylene diamine tetraacetate, which contains cationic and anionic calcium, behaves pharmacologically as a weak antihistaminic resembling the corresponding calcium disodium salt. Both may be used therapeutically and prophylactically against lead poisoning. Toxicity data of similar chelates of EDTA, such as calcium magnesium, magnesium disodium, bismuth sodium, calcium piperazinium, and of calcium disodium hexamethylene diamine tetraacetate tend to support the belief that the whole molecules of the investigated compounds determine the physiological action.

-- Cond. from Biol. Absts.

- 188 Treatment of Lead Poisoning. G. Saita. *Med. lavoro* 48, 307-328 (1957). Italian.

The author reports the results obtained in 46 cases of lead poisoning treated with versenate, in doses of 2 g. daily. Lead elimination in the urine was found to be as high as 20 mg. daily and up to 70 mg. in 9 days of treatment. Lead elimination was found higher when the drug was administered by intravenous injection than when given orally. If the drug is administered by slow intravenous perfusion its action is more effective than when it is rapidly injected as a 10% solution. The lead content of the blood has a tendency to decrease in cases where it is initially high, while it remains unchanged in cases with initial values lower than 100 micrograms percent. Coproporphyrinuria decreases rapidly and more so with the intravenous than with oral administration. Clinical conditions improve and the duration of colic is reduced. Slight activity or none at all is shown by the drug in repairing anemia. For best results in respect to lead elimination and dosage the versenate must be administered in successive cycles. When BAL is administered after some days of calcium versenate treatment a new increase in the elimination of lead occurs.

-- Cond. from Bull. Hyg.

03120432

- 189 Analytical Studies on Lead in Human Urine. K. W. Nelson and R. E. Hamm.
A.M.A. Arch. Ind. Health 17, 38-44 (Jan. 1958).

The purpose of the analytical studies was to determine whether lead in blood and urine is in the form of a chelate. Several facts support a conclusion that lead in urine is bound as a strong neutral or negatively charged chelate or complex. No positive proof, however, is given that such a compound exists, and experiments with a number of possible chelating agents did not indicate that any of their lead complexes were present in the urine. Citrate is more likely than any of the others, but no conclusive evidence in favor of citrate was obtained.

- 190 Toxicological Hazards of Mercurial Paints. A. A. Goldberg and M. Shapero.
J. Pharm. and Pharmacol. 9, 469-475 (1957).

The toxicological hazards of ingestion of mercury by absorption through the skin from mercurial ointments and through the lungs from mercury laden air are reviewed. Mice living for six months in cages painted with antifungal mercurial paints show no significant mercury levels in the kidneys, liver, lung or spleen. From this it is inferred that no toxic hazard to human beings working in rooms treated with these mercurial paints should result. Using the literature figure of 100 micrograms of mercury per cubic meter of air as the upper safe limit for continuous exposure of man for eight hours per day and assuming that 25% of the inhaled mercury is absorbed, it has been deduced that the maximum safe continuous peroral intake of mercury is 1.3 micrograms per kilogram per day. This figure should assist in deciding the maximum permissible amount of mercury salts in food and drinking water. Guinea pigs have been given 150 times this dose daily for six months and found to remain in perfect health. The hazard arising from the possibility of contamination of food-stuffs by flaking of an antifungal mercurial paint is thought to be negligible.-- Bull. Hyg.

- 191 Utilization of BAL and Thiocetic Acid in the Therapy of Nickel Carbonyl Poisoning.
L. Ghiringhelli. Atti soc. lombarda sci. med. e biol. 12, 24-26 (1957). Italian.

Rats poisoned with 1, 2, and 3 LD₅₀ doses of nickel carbonyl were treated with 25 mg. BAL or 80 mg. per kg. of 6,8-dithiocaprylic acid given subcutaneously. Treatment started soon after poisoning and was continued for four days. Both substances had an anti-toxic effect. Thiocetic acid was given the preference because it is a normal component of the organism and because the toxic effect of nickel carbonyl seems to be due to the inhibition of this acid.
-- Chem. Absts.

- 192 Effects of Feeding Polyoxyethylene Preparations to Rats and Hamsters. C. E. Poling, E. Eagle, and E. E. Rice. Food Research 21, 337-347 (1956).

The effects of ingesting various levels of polyoxyethylene-derived surface active preparations (2 polyoxylene stearates and polyoxyethylene sorbitan monolaurate) were observed in rats and hamsters with lard or mono- and diglycerides as control substances. The animals fed the experimental substances showed retardation of growth, decreased adult size, markedly increased water consumption in rats, markedly decreased efficiency of food utilization, unthrifty appearance, increased mortality, consistent diarrhea, and hemorrhage. These effects were noted at dietary levels as low as 5%. -- Chem. Absts.

- 193 Oral Toxicity and Pathology of Polyoxyethylene Derivatives in Rats and Hamsters.
E. Eagle and C. E. Poling. Food Research 21, 348-361 (1956).

At very high feeding levels with rabbits, hamsters, and rats, generally harmful results were found. Repeated doses daily of two polyoxyethylene monostearates were administered orally to hamsters for eight days, and the respective LD₅₀ values were 1.36 and 1.44 ml. per hamster per day.
-- Chem. Absts.

03120433

- 194 Nontoxicity of Maleic Hydrazide for Mammalian Tissue. J. M. Barnes and others. *Nature* 180, 62-64 (July 13, 1957).

Numerous experiments in which maleic hydrazide was injected subcutaneously into rats produced no evidence of toxicity and no more tumors than in control groups. Applied to mouse skin with croton oil as a co-carcinogen, it produced no tumors. After an oral dose of 100 mg. per kg. in rabbits, 43 to 62% was excreted unchanged, and no metabolites were found. It is concluded that maleic hydrazide has no significant effect on the growth of mammals or isolated mammalian tissues, also that it is improbable that the hydrazide or any metabolite has any carcinogenic properties.

- 195 Exemption from Requirement of Tolerance for Chloropicrin. Anon. *Federal Register* 22, 7050-7051 (Aug. 31, 1957).

Chloropicrin is exempted from the requirement under the Federal Food, Drug, and Cosmetic Act of a tolerance for residues when used as a fumigant for barley, buckwheat, corn, oats, rice, rye, grain sorghum, and wheat. -- Chem. Absts.

- 196 A Contribution to the Study of Chronic Asthmatic Bronchitis with Pulmonary Emphysema as a Consequence of Occupational Mustard Gas Poisoning. E. Sartorelli, M. Giubileo, and E. Bartalini. *Med. lavoro* 48, 336-346 (1957). Italian.

The paper describes seven cases of severe chronic asthmatic bronchitis in workers employed for periods varying from a few months to five years in a chemical plant where mustard gas was produced. All the workers suffered during their work from irritative symptoms of the conjunctivae and the upper respiratory tract. Five workers suffered from severe acute intoxications due to vapor inhalation in a rather high concentration. Clinical and x-ray investigations and respiratory functional tests showed the presence of an advanced pulmonary emphysema with severe respiratory impairment in four cases and moderate emphysema in three cases. In all cases the emphysema was considered as secondary to the chronic asthmatic bronchitis. The intensity of the chronic bronchial and pulmonary lesions in the patients examined gives further evidence of the acute even if not severe poisoning due to mustard gas inhalation. -- Cond. from Bull. Hyg.

- 197 Dimethylsulfate Poisoning. E. Bartalini, L. Mariani and L. Vaggi. *Med. lavoro* 48, 329-335 (1957). Italian.

According to the authors, exposure to dimethylsulfate (DMS) vapor in a concentration of 97 ppm for ten minutes can be fatal for man and the maximum tolerable concentration for eight hours' work is 1 ppm. No antidote is known. The compound can be absorbed by inhalation, through the skin and mucosae, and the digestive tract. The first named is the most important as absorption is most rapid this way. Four cases of acute poisoning and one case of poisoning through long-continued exposure to DMS vapor are described. In the acute cases, two of which were due to receiving a spray of DMS into the eye, symptoms were a burning feeling, tension, and pruritus in the affected areas, temporary diminution of vision, edema of the tissues and the formation of multiple vesicles on the skin which tended to coalesce and after rupture healed with scarring. When the patients were examined six years later some impairment of liver function was found and there was reduction of the visual fields for red and green in one patient, and for white in the other, and increase in the blind spot in both. One fatal case occurred three hours after the accidental ingestion of approximately 50 g. DMS. Symptoms began 30 minutes after, with burning in the esophagus and stomach, vomiting, motor agitation, loss of reflexes, convulsions and cyanosis. Death occurred with symptoms of circulatory failure. -- Cond. from Bull. Hyg.

- 198 Effect of Naphthalene on the Eyes—Experimental Congenital Naphthalene Cataracts. B. G. Rankov and S. Dybov. *Compt. rend. acad. bulgare sci.* 9, No. 3, 69-72 (1956). German.

The eyes of young born from rabbits which had been treated orally, cutaneously, and subcutaneously with naphthalene showed pathological lesions. No changes were noted in the eyes of the adult rabbits. No pathological changes were noted in eyes of young rabbits reared under the same conditions except that the mothers received no naphthalene. -- Chem. Absts.

- 199 The Carcinogenic Action of p-Aminobiphenyl in the Dog. (Final Report). W. B. Deichmann, J. L. Radomski, W. A. D. Anderson, M. M. Coplan, and F. M. Woods. *Ind. Med. & Surg.* 27, 25-26 (Jan. 1958)

Because of its close chemical relationship to benzidine, p-aminobiphenyl (PAB) was considered a possible carcinogenic agent of the urinary bladder. Until recently this compound was of commercial importance in the chemical industry, and it was for this reason that its possible carcinogenic action was investigated. This report summarizes the observations made on four dogs. In one dog tumors were first noted after 21 months following ingestion of 94.5 g. (8.4 g. per kg.) of the compound. In a second dog tumors were first noted after 29 months following ingestion of 87.5 g. (8.2 g. per kg.) of PAB. Tumors were noted in a third dog after 33 months following ingestion of 144 g. (14.1 g. per kg.) of PAB; and in a fourth dog after 34 months following ingestion of 129.5 g. (9.6 g. per kg.) of PAB. The significant lesion in each of these dogs was carcinoma of the bladder with predominantly squamous differentiation.

- 200 Pathologic Changes in the Liver of Rats after Feeding Low Levels of Various Insecticides. P. Ortega, W. J. Hayes, Jr., and W. F. Durham. *A.M.A. Arch. Pathol.* 64, 614-622 (Dec. 1957).

In order to reinvestigate the minimal dietary levels of certain chlorinated hydrocarbon insecticides to produce pathologic change, chlordane, dieldrin, lindane, and toxaphene were fed to rats at several concentrations. The control diet contained less than 0.6 ppm of DDT as the only known contaminating insecticide. New low dietary levels of dieldrin (2.5 ppm), lindane (50 ppm), and toxaphene (50 ppm) were found occasionally effective in producing liver-cell changes. The previously reported minimal level for chlordane (2.5 ppm) was confirmed. At these and higher concentrations, clinical toxicity was minimal and histological findings were confined to cytoplasmic alterations of liver cells. The improvement in the sensitivity of the test is ascribed, at least in part, to the use of characteristic fatty inclusion bodies called lipospheres, as a measure of subtle cytoplasmic alteration.

-- Cond. from authors' summary

- 201 Dieldrin Poisoning in Man. W. J. Hayes, Jr. *Public Health Repts.* 72, 1087-1091 (Dec. 1957).

In certain programs, 10-20% of spraymen applying dieldrin for the control of disease vectors have been poisoned. Half or more of the reported cases were characterized by epileptiform convulsions. In general, the occurrence of poisoning parallels the intensity and duration of exposure but the factors influencing safety are too little understood. Ordinary, careful medical examination may offer the most sensitive and practical way of detecting preclinical poisoning, thus removing workers from exposure to prevent serious illness.

-- Editor's summary

- 202 Neurological Syndrome and Electroencephalogram in Occupational DDT Poisoning. T. Sessa and C. Serra. *Folia Med.* 40, 447-461 (1957). Italian.

Neurological symptoms appeared concomitantly with pathological changes in the electroencephalogram and electrolyte disturbances, consisting in a reduction in the potassium-calcium ratio and a frequent increase in the sodium-potassium ratio. Normalization of all signs occurred simultaneously.

-- Chem. Absts.

- 203 Chronic Toxicity of 3-(p-Chlorophenyl)-1, 1-Dimethylurea (Monuron). H. C. Hodge, E. A. Maynard, W. L. Downs, and R. D. Coye. *A.M.A. Arch. Ind. Health* 17, 45-47 (Jan. 1958).

In the chronic studies of rats and dogs, 25 mg. per kg. body weight of Monuron has been shown to be a noneffective dose even on long-continued administration. Approximately ten times this dose was associated with (a) growth retardation, (b) a slight anemia, and (c) liver and spleen weight increases (in female rats). The noneffective level, if

expressed as the concentration in the diet to give the same dose for rats and dogs, falls in the range of 250-500 ppm of the diet. This concentration range exceeds by 35-70 times the residue tolerance figure for asparagus and by 250-500 times the residue tolerance figure for most crops. If man is no more susceptible to the toxic effects of Monuron than are rats and dogs, and assuming that only a minor fraction of the human diet will contain Monuron, the margin of safety in the established residue tolerances seems adequate.

-- Authors' comment

- 204 Tolerance for Residues of Sodium o-Phenylphenate. Anon.
Federal Register 22, 7463-7464 (Sept. 19, 1957).

The tolerances previously promulgated (IHF Abst. 895, July, 1956) under the Federal Food, Drug, and Cosmetic Act are revised to permit 20 ppm of this chemical from postharvest application in or on peaches.

-- Chem. Absts.

- 205 Influence of Physical Activity on the Toxicity of Aerosols and Vapors. Inhalation Toxicity of Paraoxon and Sarin in Rats. C. L. Punte, E. J. Owens, E. H. Krackow, and P. L. Cooper.
A. M. A. Arch. Ind. Health 17, 34-37 (Jan. 1958).

Experiments were made to study the effect of physical activity on the inhalation toxicity of paraoxon aerosol and sarin vapor for rats. LC_{50} (10-minute exposure) values were obtained for rats in a resting state and were compared with values obtained with physical activity (1) before, (2) during, (3) after, and (4) before and during exposure. Intramuscular LD_{50} values for rats indicate that muscular exercise increased the toxicity of these compounds. Measurements were made with use of rats to correlate physical activity with respiratory minute volume. Physical exercise as induced in these experiments accounts for about a 2.2-fold increase in respiratory volume. It is concluded that: (1) the inhalation toxicity of the anticholinesterase paraoxon (aerosol) or sarin (vapor) is approximately parallel to the respiratory ventilation during physical activity; (2) factors associated with physical activity or exertion independent of variations in respiratory ventilation enhance the toxicity of anticholinesterases; and (3) physical activity following exposure to anticholinesterases is contraindicated.

-- Authors' summary

- 206 Some Chemical and Biological Experiments with Thiodan. D. A. Lindquist and P. A. Dahm.
J. Econ. Entomol. 50, 483-486 (1957).

The insecticide Thiodan consists of two isomers which were separated by chromatography. Synthesis and reactions of the isomers are described. Toxicity to flies is evaluated. The LD_{50} of Thiodan in corn oil to male white rats was between 40 and 50 mg. per kg.

-- Cond. from Biol. Absts.

- 207 The Influence of Chlorpromazine on Phosphoric Ester Poisoning. G. Frada and G. Gucciardi.
Med. lavoro 48, 301-306 (1957). Italian.

Guinea pigs poisoned with a mixture of malathion 50 and parathion 20% and subsequently treated with 5 mg. chlorpromazine subcutaneously every 3 hours, survived 5 hours. Pulmonary edema and nicotine-like excitement were not observed. Chlorpromazine and atropine treatment at the same dosage level resulted in a survival time of 22-24 hours. No pulmonary edema or nicotine-like excitement was observed. Chlorpromazine and atropine are advisable in the therapy of human poisoning.

-- Chem. Absts.

- 208 Tolerance for Residues of S-(p-Chlorophenylthiomethyl) O, O-diethyl Phosphorodithioate. Anon. Federal Register 22, 7503, 7505 (Sept. 20, 1957).

A tolerance of 0.8 ppm is established under the Federal Food, Drug, and Cosmetic Act for residues of this chemical in or on apples, crabapples, pears, and quinces.

-- Chem. Absts.

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- 209 Tolerances for Residues of Malathion. Anon. Federal Register 22, 7417 (Sept. 18, 1957).

Pecans and walnuts are added to the foods for which a tolerance of 8 ppm was established for residues of malathion under the Federal Food, Drug, and Cosmetic Act.
-- Chem. Absts.

- 210 Safety of Inside Enamel Coatings in Food Cans. Margaret Ives and Gail M. Dack. Food Research 22, 102-109 (1957).

Monkeys were fed one year and rats two years on a basal ration plus supplements (extractives) from enameled food cans without ill effects. It is concluded that enamel coatings for food cans, as presently manufactured, are nontoxic.
-- Chem. Absts.

- 211 A Study of the Physiological Effects of Carbon Black. 1. Ingestion. C. A. Nau, J. Neal, and V. Stembridge. A.M.A. Arch. Ind. Health 17, 21-28 (Jan. 1958).

The feeding of whole carbon black to mice produces no changes from the normal. Carbon black has adsorptive powers which enable it to make ineffective a known carcinogen when it is fed to mice in the adsorbed state.
-- Authors' conclusions

INDUSTRIAL DUSTS

- 212 The Deposition of Dust in Colliery Workings. F. Bradshaw and A. L. Godbert. Trans. Inst. Mining Engrs. (London) 115, Pt. 9, 677-694, Discussion 694-701 (1955-1956).

The fine coal produced at the coal-face and by the transport of coal is to some extent disseminated into the ventilation currents and settles on the surfaces of the roadways traversed by the ventilating air. Other fine dust is spilled from conveyor belts and tubs. Accumulations of dust so deposited may become explosion hazards. Visual observation shows that the hazard varies widely, but measurements of the rate of deposition give a picture of the changing hazard. For example, near a loading point danger may arise within a few minutes, whereas a few hundred yards from the face it may take even months before the accumulation becomes dangerous. Measurement of the rate of deposition may form the basis of the stone-dusting of roads. Such measurement is a much less onerous task than the sampling and analysis of road dust. The rate of deposition is determined by exposing catchment surfaces at suitable points and estimating the amount of coal dust in the material so collected. The flammable fraction of the deposit is assumed to be that passing the 60-mesh sieve. The results of measurements of dust deposition made in two seams at one colliery are given in detail, and in a discussion of the risk of explosion due to dust deposits results obtained in seven collieries are used.
-- Cond. from Bull. Hyg.

- 213 Silicosis and Bronchogenic Carcinoma. H. Weissman. Am. Rev. Tuberc. 76, 1088-1093 (Dec. 1957).

Two cases of a very infrequently reported association of silicosis and bronchogenic carcinoma are reported. Various opinions as to the interrelationship of these two disease entities are presented, i. e.: the concept that silicosis predisposes to bronchogenic carcinoma; that no causal relationship exists between the two disease entities; and that silicosis constitutes a definite protection against attacks by bronchogenic carcinoma. The difficulty of differential diagnosis between bronchogenic carcinoma, silicosis, and pulmonary tuberculosis is discussed. It is hoped that the presentation of these two cases will stimulate further investigation into the association of silicosis and bronchogenic carcinoma.
-- Author's summary

- 214 Fatal Silicosis with Complicating Infection by an Atypical Acid-Fast Photochromogenic Bacillus. G. W. H. Schepers, R. H. Smart, C. R. Smith, M. Dworski, and A. B. Delahant. Ind. Med. & Surg. 27, 27-36 (Jan. 1958).

A case of fatal silicosis, in which an infectious complication was induced by an atypical photochromogenic acid-fast bacillus, is described. The clinical course was characterized by episodic febrile phases, recurrent pulmonary hemorrhages, increasing pulmonary insufficiency, and despite drug therapy, progressive bilateral cavitation. The disease was limited to the free-silica-laden pulmonary tissues, and the pneumoconiosis was characterized by multifocal necrosis, hyperemia, and vascular damage. The biologic characteristics of the causative organism and its avirulence for a wide range of experimental animals, served to differentiate this bacillus from the *Mycobacterium tuberculosis*. The biologic significances of this discovery are reviewed.-- Authors' summary

- 215 The Connection between Silicosis and the Circulation. E. Heymanns, F. Katzmeier, W. Schild, and H. J. Voigt. Beitr. Silikose-Forsch. No. 48, 45-47 (1957). German.

Examinations were made of 250 miners from a Lower Rhine coal mine, with silicosis in all stages; the ages ranged from 31 to 69. The chief object was to find whether by simple methods of examining the circulation a diagnostic standpoint could be attained which would enable the cardiac injury from silicosis and the accompanying lung changes to be assessed. Clinical, radiological, electrocardiographic and ballistocardiographic examination and vital capacity measurements were made, and the detailed findings on the circulation were related to the stages of silicosis; the severity of the cardiac impairment was indicated by a quantitative points system, each patient receiving 1-19 points on the state of the circulation; the results were statistically analyzed. The results showed that direct relations between the silicotic changes and the electrocardiographic and ballistocardiographic findings did not exist, but a greater proportion of pathological findings were established with advancing stages of silicosis. The difference was statistically small. The calculations indicated, however, that through complications which impaired respiratory function and thereby affected cardiac efficiency, pathological circulatory symptoms were significantly increased. Ballistocardiography showed a morbid change more frequently, or a greater number of points of impairment of the circulation, when a complication was present than when the silicosis was uncomplicated. -- Bull. Hyg.

- 216 Investigations on the Influence of the Degree of Dispersion of a Fine Particle (200 Å) Amorphous Silicic Acid on its Biological Activity by Intratracheal Injections in Rats. Contribution to the Pathogenesis of Silicosis. H. W. Schlipkoter, I. Rothes and A. J. Defesche. Z. Hyg. Infektionskrankh. 143, 533-542 (1957). German.

Suspensions of Aerosil were prepared as follows: Suspension A-1% Aerosil in distilled water; Suspension B-1% Aerosil in distilled water heated at 65°C. for 45 minutes; Suspension C-1% Aerosil in distilled water homogenized for 1 minute in an Ultra-Turrax apparatus; Suspension D-1% Aerosil in distilled water homogenized for 1 minute in an Ultra-Turrax and heated at 65°C. for 45 minutes. Electron microscope investigation of these different suspensions showed no morphological differences of the individual particles but there was obvious aggregation of particles in suspensions A and B whereas C and D were well dispersed. Weekly intratracheal injections of 0.5 ml. (5 mg. Aerosil) of each suspension were given to 40 white rats. The mortality after injection as noted on the 30th day was as follows: Group D, 34 deaths, Group B, 26 deaths, Group C, 24 deaths, and Group A, 21 deaths. Rats killed on the 30th day of the experiment showed an obviously greater fibroblastic reaction in groups A and B than in groups C and D. C and D's showed cellular foci of fibroblasts and histiocytes with only few reticulin fibers and scanty collagen, whereas in Groups A and B there were well-defined nodules which were confluent and showed thick reticulin and collagen. The authors suggest that the aggregation of particles in suspensions A and B causes them to have a "depot" effect so that there was a continuous local increase in the level of silicic acid which led to the characteristic picture of progressive silicosis, whereas increased dispersion of the material led to a greater toxic effect but a lesser fibroblastic effect. Heating to 65°C also increased the toxic effect. -- Bull. Hyg.

- 217 The Silicosis Danger in the Bavarian Granite Industry. H. Schneider.
Staub No. 50, 450-456 (1957). German.

Statistical investigations have shown a high incidence of silicosis among the workers employed in the granite industry in Bavaria. The numbers registered with the employment insurance agencies varied widely, but taking a given date in 1953, 7,473 persons were employed and there were 330 with silicosis or silico-tuberculosis; of these 141 have since died. The area is divided into three regions, southern, central and northern. The distribution of cases and deaths is shown for each region, and the causes of differences between the regions are discussed. Differences in working conditions, including methods of working, tools used, hurry in piece work, and dust accumulation appear to be more important than differences in quartz content or in softness of the rock. Dust samples taken with a Sartorius konimeter at breathing level gave the following counts, in particles per cc.: stone working in the open air 40-120, in open sheds 60-260, surfacing tools open air 100-300, in closed sheds 240-1,000; pneumatic tools, surfacing in open air 120-1,000 and over; drilling in open air 200-1,000; blowing dust off the stone over 2,000. The percentage of particles under 5 microns was 30 to 80. A recent development, and one which causes dangerous dust, is mechanical crushing for gravel.

-- Cond. from Bull. Hyg.

- 218 The Behavior of Serum Protein Fractions in Silicotuberculosis. K. A. Rosenkranz.
Beitr. Silikose-Forsch. No. 43, 1-43 (1957). German.

An extensive study of the serum proteins in silicosis and silicotuberculosis is reported. The serum fractions, including albumin and alpha, beta and gamma globulin were determined by electrophoresis, using two methods which gave comparable results. The patients examined were 548 with silicotuberculosis and 351 with simple silicosis. Age gradations are given. The most notable change was a decrease in albumin and an increase in alpha-2-globulin, most often in silicotuberculous patients. Changes in beta- and gamma-globulin were not significant. The effects of treatment by drugs were followed in 282 patients; in 131 patients who showed radiological improvement there was a significant return toward normal values in the electrophoretic fractions, with increase in albumin and decrease especially in the alpha-2 fraction. These changes are regarded as the result of a definite change in the course of the disease, rather than the effect of the drug on the serum protein.

-- Cond. from Bull. Hyg.

- 219 Severe Asbestosis with Alveo-Capillary Block Syndrome. E. Sartorelli.
Med. lavoro 48, 358-362 (1957). Italian.

The author reports a case of severe asbestosis in a man aged 57 who was employed for seven years in a very dusty asbestos factory. Three years after commencing work the patient complained of dyspnea on exercise, with slight sputum, the condition became progressively worse and finally he was sent to a sanatorium as a case of combined tuberculosis and asbestosis with a disability of 50%. After two years, in spite of his respiratory symptoms, he started work as a general laborer, and was admitted to the author's clinic three years later with a recurrence of chest symptoms. No tubercle bacilli were found. X-ray of the chest showed intense reticulation especially in the medio-basal regions, small zones of fibrosis in the right apico-clavicular area and thickening of the pleura at the left base. Tests of respiratory function showed dyspnea on repose and markedly so on exercise, and while respirometry gave only slight alteration from normal, the oxygen saturation was only 90%. The diagnosis of advanced asbestosis was made on account of the marked respiratory insufficiency, absence of tuberculosis, increased erythrocyte sedimentation rate and hypergammaglobulinemia.

-- Cond. from Bull. Hyg.

- 220 The Causes of Thomas Slag Pneumonia with Special Reference to the Vanadium and Manganese Containing Constituents. 2. Animal Experiments on the Importance of Manganese and Other Components of Thomas Slag. G. Klavis, H. Kohler and F. Bister.
Arch. Gewerbepathol. Gewerbehyg. 15, 355-376 (1957). German.

Rabbits were used and the test substances were given by direct insufflation through an opening in the trachea. The test dusts were manganous oxide, manganese dioxide, magnetite, lime, normal Thomas slag, and slag to which 5% vanadium and 23% manganous oxide

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were added, an artificially prepared dust made by fusing iron, manganese and lime in various stated proportions, and neutralized Thomas slag in which the pH was adjusted with lactic or hydrochloric acid. Bacteriological examinations were made in 34 animals; these showed only an unspecific mixed flora with no significant features. From a comparison of the histological findings in dusted animals no individual constituents of Thomas slag were identified as the causal factors of the lung damage; in particular neither the vanadium nor the manganese components could be so regarded. The injuries observed after the use of manganese dioxide were more severe than those from manganous oxide and Thomas slag. The histological picture after insufflation of lime did not resemble the appearance after Thomas slag or manganese dioxide, but rather that of a caustic alkali. No specific toxic effect was evident from Thomas slag. The clinical concept of Thomas slag pneumonia is not confirmed by animal experiment. Contrary to the action found with vanadium pentoxide, manganese dioxide and lime a chemical irritant effect could not be established with Thomas slag.

-- Cond. from Bull. Hyg.

- 221 How Ohio is Solving the Alfalfa Dust Problem. R. D. Schafer. A. M. A. Arch. Ind. Health 17, 67-69 (Jan. 1958).

There is presently available a satisfactory, economical method of dust control for the alfalfa dehydration industry. Its general acceptance will enhance the financial returns of the owner and release the processor from the onus of poor public relations by relieving plant neighbors of dust.

-- Author's summary

- 222 Experimental Cork-Dust Coniosis. Experimental Suberosis. J. da S. Horta and L. de C. Cancelli. Arch. Gewerbepathol. Gewerbehyg. 15, 319-354 (1957). German.

Certain workers who were exposed to much dust in cork factories presented symptoms closely resembling tuberculosis, but the sputum was negative. On the assumption that cork dust might be the injurious agent, experiments were carried out on three groups of animals: (1) guinea pigs and rabbits were exposed to the dust in the workrooms for 56-1,278 days; (2) guinea pigs were given injections of sterile suspensions of cork dust into the peritoneal cavity, the muscles and subcutaneously; (3) intravenous injections of suspended dust were given in guinea pigs. The conditions and the results of the experiments are described in detail. In the guinea pigs the particles were found to travel by a definite route and collected into masses in certain foci, especially under the pleura. Two kinds of injury were observed: diffuse interstitial, and nodular, partly intraalveolar and partly interstitial. The rabbits were exposed in the workrooms for 276-1,100 days. The fine and medium dust was found first in the large alveolar cells and some was free in the alveoli. In the second group the cork dust caused a sharp fibrinous and granulocytic inflammatory process in the peritoneal cavity within the first hours and days. Fibrotic tissue formed adhesions between visceral parietal peritoneum, and foreign body reactions were noted. In the third group intravenous injection produced small arterial emboli in the lung tissue of the rabbits. The authors conclude that, having produced nodular pneumoconiosis in animals by inhalation of cork dust, they have proved its irritant action. This is supported by the subjective improvement experienced by workers removed from exposure to cork dust for a time.

-- Cond. from Bull. Hyg.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 223 Good-Neighbor Noise Control. D. P. Loye. Noise Control 3, 11-13, 62 (Nov. 1957).

This paper tells how an aviation parts manufacturing concern modified its plant and equipment in order to reduce noise in the adjacent residence community. In several operations noise was reduced at the source. The walls of another noisy building were bricked in. A large compressor outside the building was replaced by quieter machinery

which was enclosed. The inexpensive modifications have been effective in prompting both good-neighborliness and the safety, comfort, and efficiency of employees. The problems would have been simpler if residential and manufacturing zones had not been adjacent to each other, and this should be avoided wherever possible in city planning.

- 224 The Noise Performance Standards of the Chicago Zoning Ordinance. Anon. Noise Control 3, 51, 52, 74 (Nov. 1957).

On May 27, 1957, the so-called "comprehensive amendment" to the Chicago Zoning Ordinance was passed by Chicago City Council. This amendment, in particular the standards for noise and vibration, has received considerable publicity in the seven years during which the various parts have been formulated. Its passage marks a major step forward in zoning ordinance requirements limiting noise and vibration. The standards are reprinted here in their entirety. It is important to bear in mind that these standards have been worked out to suit the Chicago situation and are not necessarily suitable for direct application to any other city, town, or county ordinance. The ordinance specifies methods of measurement and performance standards in classified districts.

- 225 Noise Control Criteria for Buildings. K. D. Kryter. Noise Control 3, 14-20 (Nov. 1957).

Four major effects of noise on man that require criteria with respect to noise control are discussed: (1) disruption of work performance; (2) damage to the auditory mechanism; (3) annoyance; and (4) speech interference. The maximum upper bounds for tolerable noise levels in buildings where persons are without protective devices are the damage risk criteria derived from the report of the American Standards Association. Roughly speaking, the damage risk criterion for long-term noise exposure appears to permit sound-pressure levels that do not exceed the threshold of hearing by more than 85 decibels. It is proposed that a loudness level of 62 phons be used as the criterion for acceptable noise that will barely permit reliable conversation and telephonic speech communications in executive and secretarial offices. This criterion is flexible; a number of conditions in which the limit may be higher or should be lower are discussed. The degree to which noises or sounds that interfere with hearing other sounds and the degree to which these noises are accepted as a part of one's normal environment, and not their absolute sound-pressure level, determine the individual's "annoyance" or acceptance threshold.

-- Cond. from author's summary

- 226 Acoustical Treatment—Answer to Your Noise Problem? L. F. Yerges. Natl. Safety News 77, 22, 23, 110-113 (Jan. 1958).

The best methods of noise control are avoidance of making noise and medical control of hearing loss, but they involve difficulties; the next best is acoustical treatment. This term refers to the use of materials, constructions, treatment, systems, or combinations of all three, to: (1) absorb sound; (2) isolate noise sources; (3) insulate rooms from sounds produced elsewhere; and (4) prevent passage of sound out of a building to the surrounding neighborhood. The principles, uses, and limitations of these methods are discussed. Absorption of sound is beneficial within limited areas, and at comparatively low noise levels. Isolation can be accomplished with the aid of experts, by methods described. Constructions, not materials, can prevent sound transmissions. An open window or door, or even a keyhole, can vitiate a system of insulation. Isolation and insulation are superior to absorption. Often a combination of two or all three methods is required. The steps in planning to control noise by acoustical treatment are: identification of the problem (diagnosis); decision on the proper solution (the cure); and choice of the proper materials, constructions, systems, or plans (the medicine).

- 227 Silencer for a Cat Craker. R. N. Lane. Noise Control 3, 49-50 (Nov. 1957).

The noise generated by flue gas vented at about the 15th story of a catalytic cracker in a Houston, Texas refinery was sufficient to create a community problem in an adjacent residence district. A silencer, which is described and illustrated, satisfactorily reduced the noise level in the community, and there have been no complaints regarding this noise source during the five years of its operation.

- 228 Noise Reduction in Machinery. G. J. Sanders. Noise Control 3, 29-37, 62 (Nov. 1957).

The author discusses the general principles of noise reduction in machinery and their application to a number of problems involving types of machinery. An outline summarizes the basic machinery noise control methods, including control at the source and control of transmission and radiation. The factors to be controlled at the source include impact, friction, air turbulence, forced vibration, and magnetic noise. Several methods of control of each of these factors are listed in the outline and discussed in the text, as are also control of radiation and of transmission by air and mechanical paths. Each problem encountered is different, and therefore it is not possible to establish a best plan of attack for all cases. If the basic principles of machinery noise reduction are understood and a sound-flow diagram is made to indicate which noise paths are the most important, the problems will not be difficult to solve.

- 229 Jet Noise on the Airport. H. C. Hardy and J. E. Ancell.
Natl. Safety News 76, 40-42, 216, 218 (Dec. 1957).

In addition to the exhaust noise of the jet, a large number of operating personnel will be exposed to the whine from the front end of the engines, which is caused by the rotation of the turbine blades. Graphs are presented showing the noise of a future jet plane and of the Viscount plane in relation to tolerable noise. The three environments which should be of concern to operating personnel are: (1) idling and taxiing activities around the airport terminal or near hangars; (2) ground run-up and take-off of jet engine aircraft which would be expected at some distance from the terminals and hangars; and (3) testing of jet engines at overhaul bases. The noise problems of each operation are discussed, and possible means of noise reduction are suggested. Solutions for all the noise problems are not readily evident because they depend upon the entire operation.

- 230 The Medical Principles of Monitoring Audiometry. H. Davis, G. Hoople, and H. O. Parrack.
A.M.A. Arch. Ind. Health 17, 1-20 (Jan. 1958).

This article is based directly on the discussions of Working Group 25 Armed Forces-National Research Council Committee on Hearing and Bio-Acoustics. Monitoring audiometry is an essential feature of any effective hearing conservation program. This paper explains the medical principles on which monitoring audiometry is based and outlines a general plan for medical disposition of cases of hearing loss that is consistent with these principles. The general plan was developed for the Armed Forces but is suitable also for industrial organizations both large and small. Certain features are flexible and can be adjusted to the needs of the particular organization. The four central features of the general plan are (1) reference audiograms, (2) routine monitoring audiometry, (3) a diagnostic center or available qualified otologist, and (4) "monitor limits" of hearing that make referral to such medical authority mandatory. These and other relevant terms and concepts, such as "temporary noise-induced threshold shift", and the way in which the features depend upon one another and on fundamental principles are explained in the body of the report.
-- Cond. from authors' introduction and summary

- 231 Hearing Conservation in Industry. E. G. Meiter. Noise Control 3, 38-41, 62 (Nov. 1957).

In order to develop an effective hearing conservation program for an industrial plant, the plan must be sold to top management, so that management becomes a cooperative partner rather than a reluctant and therefore ineffective follower. Some opposition may be expected, because of (1) management's lack of knowledge regarding the basic problem, and (2) the fear that it may create an atmosphere in which many compensation claims for hearing impairment will be filed. Until these two factors are overcome, only limited progress will be made. It is possible by proper training and experience for an industrial hygienist to become a "qualified interpreter" who can explain the benefits to be derived by the employer and employee from a well-rounded hearing conservation program. Some sound films are recommended for help in enlightening management concerning these problems and their solution. The next step is to discuss the particular program required. The essentials of a hearing conservation program, including noise measurement, reduction of noise exposure, and hearing evaluation are discussed, and a number of suggestions are given for carrying out each part of the program.

- 232 Occupational Hearing Loss. M. S. Fox. *Ind. Med. & Surg.* 27, 21-24 (Jan. 1958).

The author presents a general paper on occupational hearing loss, especially for the information of the general practitioner who may come in contact with occupational hearing loss cases. The discussion includes: a review of and the anatomy and function of the human ear; definition and causes of occupational hearing loss; dimensions of sound; temporary and partial hearing loss; medico-legal aspects; and industrial hearing conservation programs, including preemployment tests, reduction of noise, and use of ear plugs and other protective devices.

- 233 Hearing and Acoustical Handicaps. L. D. Hedgecock. *Public Health Repts.* 72, 818-824 (Sept. 1957).

This paper does not deal with noise as a cause of hearing loss or with occupational deafness in itself, but rather with the rehabilitation of persons with deafness from any source. The mechanism of hearing and the sound heard by the normal ear are discussed. Medical treatment is of value in special cases, as in the case of deafness caused by infection. The deaf person can acquire compensatory skills founded on sight or kinesthetic sense. Objections to hearing aids is decreasing with the use of inconspicuous devices. Auditory training and practice in listening can play an important part in the adjustment to a hearing aid, although in some cases its effects may be limited. When hearing is absent or nearly so, the principal means of compensation is visual perception, in the form of speech reading. Auditory impairment of any degree need not interfere with useful and happy adjustment of a person. This should not be interpreted to mean that deafness is no handicap; but only by acknowledgement and careful assessment of the handicap can proper adjustments and compensations be made.

- 234 The Early Detection of Glaucoma. Results of 2000 Routine Tonometries. H. Reed and J. E. L. Bendor-Samuel. *Can. Med. Assn. J.* 78, 6-9 (Jan. 1, 1958).

Two per cent of persons over the age of 40 have unrecognized glaucoma. Routine tonometry is the best method of discovering these unrecognized cases. In 2000 routine ophthalmic examinations 3% of patients about 40 years of age were found to have glaucoma. Of these one would have been missed for every case recognized on clinical examination were it not for routine tonometry. General physicians (and by implication industrial physicians) should learn to perform this simple test and include it in every physical examination of patients over the age of 40. Medical schools should make sure that all undergraduates receive adequate instruction in the performance of tonometry as a public health measure.

-- Cond. from authors' summary

- 235 Man and His Thermal Environment. *Mech. Eng.* 79, 1029-1036 (Nov. 1957).

Six papers presented at the June 1957 meeting of the American Society of Mechanical Engineers, reviewing various aspects of the effect of the thermal environment on man are given here in condensed form. The include:

Analysis of Energy Exchange between Man and His Environment, by A. H. Woodcock and others. ASME Paper No. 57-SA-64.

The effects of temperature, humidity, and clothing are discussed.

The Body as a Heat Exchanger, by L. P. Herrington. ASME Paper No. 57-SA-5.

The human body as a servomechanism is discussed. The complex interrelated alterations even over a small range of temperatures and the measurements necessary to establish the extent of heat loss are described.

Heat Transfer and Safe Exposure of Man to Extreme Thermal Environment, by K. Buettner. ASME Paper No. 57-SA-20.

Peripheral blood circulation, shivering and muscular activity, and sweating are the principal means employed by the body to fight the effects of cold and heat. The discussion includes the effect of exposure time on these three mechanisms and the effects of radiant heat on skin temperatures, penetration of heat, burns and pain.

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Body Cooling and Hand Cooling, by J. P. Meehan and H. I. Jacobs.
ASME Paper No. 57-SA-34.

The reaction to extreme cold and acclimatization experiments are described.

Measurement of the Heating of the Skin During Exposure to Infrared Radiation,
by E. Hendler and others. ASME Paper No. 57-SA-33.

Theoretical considerations and measurements of the effects of infrared radiation on the skin are discussed.

Histologic Studies of Some Reactions to Skin to Radiant Thermal Energy, by
J. R. Hinshaw. ASME Paper 57-SA-21.

The atomic bombings of Japan demonstrated the importance of being able to predict heat flow through tissue and thermal damage to tissue. Experimental methods are described and results are summarized and discussed.

The original papers may be obtained from the ASME Order Department, 29 West 39th St., New York 18, N. Y., at 25 cents each to ASME members, 50 cents each to non-members.

RADIOACTIVITY AND X-RADIATION

- 236 ATS Statement on Radiation. American Trudeau Society, Executive Committee.
Bull. Natl. Tuberc. Assn. 43, 167-169 (Dec. 1957).

The full text of the statement presented by the committee is presented. The points discussed include: who should have x-rays; types of apparatus to be used; nature of radiation effects; and techniques for minimizing exposure. The kernel of the problem of radiation effects is the recognition that the benefits of radiography must be weighed against the known and unknown effects of radiation exposure. It should remain clear that radiation that serves a useful and necessary purpose is warranted, but that it should be used with the best protective devices to minimize exposure. The radiation exposure to the gonads or body from a single chest film, using a well-monitored machine, is infinitesimal when compared to the commonly used x-ray diagnostic procedures involving the gonadal areas. Recommendations embodying these principles are made. Tuberculin testing should be the primary guide to tuberculosis contact in infants, prenatales, young adults, and young diabetics. Chest x-rays could then be limited to those with a positive tuberculin test. Chest x-ray surveys should be continued for the detection of tuberculosis and other chest diseases. Proper protective devices should always be used, and personnel should be instructed concerning their use. Education of health workers and the public should be undertaken with a positive program incorporating the new and more optimistic look concerning chest x-ray examination.

- 237 Radiation Hazards and What is Being Done about Them. Symposium. American Roentgen Ray Society. Am. J. Roentgenol. Radium Therapy 78, 944-1002 (Dec. 1957).

The symposium begins with an introduction and statement of the problem by Edith H. Quimby. The following papers are presented: "The Shortening of Life by Chronic Whole-Body Irradiation", by G. Failla and Patricia McClement; "The Genetic Basis for the Limitation of Radiation Exposure", by B. Glass; "Bone, Skin, and Gonadal Doses in Routine Diagnostic Procedures", by J. S. Laughlin, M. L. Meurk, I. Pullman, and R. S. Sherman; "Practical Suggestions for Reducing Radiation Exposure in Diagnostic Examinations", by L. S. Taylor; "Past and Present Radiation Exposure to Radiologists from the Point of View of Life Expectancy", by C. B. Braestrup; and "Common Sense in Radiation Protection Applied to Clinical Practice", by Robert S. Stone. The symposium concludes with a summary by R. H. Chamberlain. Among the points emphasized in the summary are: the possible somatic

and genetic consequences of radiation, especially during infancy and childhood; the evidence that there is no radiation exposure threshold for the genetic hazard to populations; the lack of knowledge of radiation exposure of the population, and the need to study differential exposures of portions of the body, as well as the whole body exposure; and the necessity and feasibility of decreasing medical and dental exposure by methods that are now available. The physician using radiation should consider: the type of apparatus used for radiation exposure; the individual exposed; the location and extent of exposure; and the reason for exposure, all with reference to possible damage.

- 238 A Study of Occupational Radiation Exposure in Connecticut Dental Offices. A. T. Heubner. Conn. Health Bull. 72, 3-8 (Jan. 1958).

A survey of 511 dental offices showed that about 6% of the total film badges processed indicated a radiation exposure exceeding 300 milliroentgens in the week of testing. Recommendations include: use of lead diaphragms or cones; use of aluminum filters; control of timing of exposure; use of faster films; and use of a commercial film badge service. Also, no operator or assistant should hold the films in the patient's mouth, and the operator should always stand outside the direct beam.

- 239 A Survey of X-Radiation Exposure in the Practice of Veterinary Medicine. R. J. Sullivan, B. E. Keene, Miriam Sachs, and O. Sussman. Public Health Repts. 72, 883-887 (Oct. 1957).

A survey of x-ray exposures to veterinarians in New Jersey revealed that good practices were fairly well followed, and total exposure was usually within safe limits, on account of the comparative short periods of exposure. Some negligence was found, however, in forgetting to wear film badges and in procedure that resulted in excessive exposure. Three veterinarians reported that their hands had received a disabling dose of radiation in years past with bare hands under a fluoroscopic screen. The recommendations, including wearing of leaded aprons and gloves, use of a suspended leaded rubber curtain, limiting of the beam by a cone, restriction of dose to the lowest practical level, provision of aluminum external filters, and housing the tube for fluoroscopy, correspond in general to recommendations for human x-ray examination. Other recommendations applying to veterinarians include anesthetization of the animals and keeping the hands out of the direct beam during manipulation.

- 240 Environmental Safety for Industrial Uses of Radionuclides. A. E. Gorman. Public Health Repts. 72, 1107-1112 (Dec. 1957).

Operations are classified according to their environmental impact as follows: (1) mixing, handling, and storage of raw ores; (2) production of nuclear fuel; (3) enrichment of fissionable materials for fuel; (4) research and development; (5) operation of nuclear reactors; and (6) processing of irradiated fuels. Safe methods for each of these processes are reviewed. General considerations, including site selection, disposal of high-level and low-level wastes, are discussed.

- 241 Nuclear Safety Considerations in Reprocessing Plant Design. N. Ketzlach. Chem. Eng. Progr. 53, 357-360 (July 1957).

Some of the nuclear safety aspects of the design and operation of reactor fuel separations plants are presented. The primary purpose is to acquaint those desirous of entering the spent reactor fuel processing business with some of the problems that must be considered in the design and operation of such a plant. -- Editor's summary

- 242 Official Inquiry Report on Nuclear Accidents. Anon. Nucleonics 15, 41-43, 89-92 (Dec. 1957).

Reports on two of the few accidents that have occurred in the nuclear reactor industry are presented: The first, a statement by the Atomic Energy Commission, deals with the M. W. Kellogg Co. radiation incident on March 13, 1957. Portions of broken radioactive pellets were spilled from a can that was being opened, resulting in contamination

of the laboratory area and of the apparatus used. Decontamination procedures are described. The only established effects were minor radiation burns on the two employees who opened the can. The burns were healing without complication on the last examination. Excessive exposure of another employee occurred when he was cleaning up the laboratory four weeks later. A temporary suspension order was issued but later partly lifted.

The second accident occurred at Windscale No. 1 Pile on October 10, 1957. A portion of the report by the Committee of Inquiry of the (British) Atomic Energy Authority is presented. Bursting of some cartridges in the reactor caused a fire, which was localized by appropriate means. Causes of the accident and the steps taken to deal with it are discussed in detail, and recommendations are made for the prevention of similar accidents. No excessive exposure to employees occurred. Those concerned are commended for prompt and efficient action and devotion to duty.

- 243 The Biological Effects of Microwave Radiation on Air Force Personnel. G. M. Knauf. A. M. A. Arch. Ind. Health 17, 48-52 (Jan. 1958).

High-power radars give off energy of four types, ionizing, ultraviolet, infrared, and microwave radiation. The effort of the Air Force is directed toward producing more and more microwave radiation, and the discussion is confined to this type, in frequencies of 25 to 70,000 megacycles. Up to the present time no hazard is evident, but peak powers as high as 100 megawatts and average powers of 600 kilowatts are foreseen. The safe level has been estimated variously as 0.01, 0.001, and 0.0001 watts per sq. cm., and these three levels are sponsored by three of the largest producers of this form of energy. Research is being instituted to determine the time safe level. The plan is to have investigations conducted by university groups at 200, 3,000, 10,000, 24,500, and 35,000 megacycles. Various phases of the investigation are discussed. When the results of these investigations are obtained, definite means for protection can be established. In the Air Force laboratories, an arbitrary maximum ambient power level of 0.01 w. per sq. cm. has been established for the present.

ENVIRONMENTAL MEASUREMENTS

- 244 Beryllium-Hazard Detection Using Polonium-210 Alphas. R. Gold. Nucleonics 15, 114, 116, 117 (Nov. 1957).

Present chemical techniques for analyzing minute amounts of toxic airborne beryllium are involved and time-consuming. A method utilizing the high specific activity of polonium-210 alpha decay is described. Samples of airborne beryllium dust are collected on filter paper and exposed to a flux of Po^{210} alpha particles. The gamma-ray yield of the beryllium-carbon reaction can then be used to determine the beryllium content of the filter in 5 to 10 minutes. The principles of the method are discussed. The results with a millipore filter paper were checked by the AEC for absolute beryllium-content determination. Good correlation was obtained.

- 245 Determination of Atmospheric Mercury Trapped in Permanganate Solutions: A Modified Method. R. G. Drew and E. King. Analyst 82, 461-467 (1957).

The method of Buckell (IHF Abst. 1157, Oct. 1951) is modified by using hydrogen peroxide to reduce the excess permanganate. End-point detection requires experience. The end point should be to the first detectable green. Other metals and oxides found in the industrial atmosphere interfere very little.

-- Chem. Absts.

03120446

- 246 The Determination of Ethylene Oxide in the Atmosphere. J. C. Gage.
Analyst 82, 587-589 (Aug. 1957).

A sensitive colorimetric method is described for the determination of ethylene oxide in the atmosphere. It is based on the separation of ethylene oxide from the sample by means of silica gel, and then oxidation with periodic acid and a colorimetric determination of the formaldehyde produced. The method has been checked on atmospheres of known ethylene oxide content.

-- Author's summary (APCA Absts.)

- 247 Determination of Ethylene Dibromide in Fumigated Fruit. B. H. Kennett and F. E. Huelin.
J. Agr. Food Chem. 5, 201-203 (Mar. 1957).

Ethylene dibromide is recovered from fumigated fruit by steam distillation and extraction with benzene. It is decomposed with sodium hydroxide in alcohol-benzene solution, and the liberated bromide is oxidized to bromate, which is determined iodometrically.

-- Editor's summary

- 248 Microdetermination of the Fungicide Dinitrocaprylphenylcrotonate in Food Crops and Animal Tissues. I. Rosenthal, C. F. Gordon, E. L. Stanley, and M. H. Perlman.
J. Agr. Food Chem. 5, 914-918 (Dec. 1957).

With the commercial development of Karathane, dinitrocaprylphenylcrotonate, a method of analysis was developed for microdetermination of the fungicide in extracts of fruits and vegetables. A steam distillation isolates the substance together with any free dinitrophenol. The distillate is evaporated to dryness and taken up in pyridine-water. After one hour the color developed is read at 442 millimicrons. Reproducible results are obtained at sensitivity as low as 10 micrograms of Karathane in a 200-gram sample. Equipment for semiautomatic steam distillation is described.

-- Cond. from editor's summary

- 249 The Determination of Parathion Vapor and Dust in the Atmosphere. J. C. Gage.
Anal. Chim. Acta 17, 291-294 (Sept. 1957).

A sensitive method is described for the determination of parathion in air. The air sample is drawn through filter paper or cellulose powder, which traps both particles and vapor, and the parathion is reduced without heating by means of a zinc-copper couple in acid solution, followed by diazotization of the amino derivative and coupling to give an azo dye. An alternative procedure is described in which the parathion is trapped on cellulose powder containing zinc dust, from which the reduced derivative is directly eluted.

-- Author's summary (APCA Absts.)

PREVENTIVE ENGINEERING

- 250 Dust and Fume Control. J. C. Somers. Mech. Eng. 79, 1022-1024 (Nov. 1957).

The author discusses rather briefly the various dust hazards and methods of dust and fume collection. The importance of particle size is emphasized. A chart shows the particle size range of various fumes, dusts, and other particles, and the methods of removal for use in the different size ranges. Other charts show the collector efficiencies of wet wash, efficiency cyclone, and tubular bag collectors in relation to particle size, and the approximate investment for these types of collectors in relation to collector capacity. Other important considerations on the dust collecting problem are listed.

- 251 Experimental Investigation of Critical Design Factors for Vane-Type Collectors. A. B. Walker and W. H. Cole. Trans. Am. Soc. Mech. Engrs. 79, 1715-1721 (Nov. 1957).

Many of the so-called high-efficiency mechanical collectors in use today are of the multiple-tube vane type. A basic investigation has been made on the effects of tube size, inlet-vane design, and utilization of outlet-tube vanes on the performance of this type of collector. The critical nature of these factors and methods for obtaining higher efficiency and gas flow is demonstrated. A comparison between predicted field results from laboratory tests and actual field results is presented, and the accuracy of specific laboratory techniques in predicting field performance is indicated.

-- Editor's summary

- 252 The Resistance of Wire Mesh Screens to Air Flow. S. R. Rabson and A. Bogner. J. Mine Vent. Soc. S. Africa 10, 135-147 (July 1957).

Experimental results are given for the resistance of wire screens of different mesh size and wire diameter at various air flows. A method of calculating the resistance of screens based on the friction concept and using certain semi-empirical parameters is applied to provide results for the resistance of screens. A series of graphs are presented showing the resistance of a wide range of wire screens of given mesh and wire gauge at different air flow rates.

-- Authors' summary

COMMUNITY AIR HYGIENE

- 253 Cooperation for Air Pollution Control. H. C. Ballman. Coal Utilization 11, 34-36 (Dec. 1957).

The coal industry is in the best position of any industry to do a progressive job to obtain realistic air pollution control measures. This has been accomplished by approximately 20 years of concerted effort in support of air pollution control at the grass roots, including work with legislators, administrators, and operators of fuel-burning equipment. The work of several well-known organizations supported wholly or partly by the coal industry, is reviewed. All these organizations are recognized by governmental agencies as sources of reliable assistance. As such they will continue to serve a vital need in the future requirements of our way of living with a highly industrialized economy.

-- Adapted from author's conclusion

- 254 Anthracite's Relation to Air Pollution Control. R. E. Morgan and J. Ratway. Coal-Heat 73, 35-38 (July 1957).

Anthracite, inherently a smokeless fuel because of its high percentage of fixed carbon and low volatile matter, meets fully the limitations on smoke or soot imposed by smoke-abatement ordinances; therefore, with adequate dust or fly-ash control, the use of anthracite will not only bring a particular heating plant, or installation, well within the limits imposed by local ordinances but may result in savings in fuel costs in its competitive markets. Under highly fluctuating loads, such as those found in commercial and small industrial plants, it is advisable to install automatic controls. Air contamination caused by the impurities of fuel combustion is discussed, also how various cities are reducing contamination by specifying the burning equipment and fuel for certain conditions.

-- APCA Absts.

03120448

- 255 Public Nuisance Problems from Invisible Stack Effluents. J. M. Kane.
APCA News 5, 4, 5 (Dec. 1957).

Air pollution control is generally concerned with two types of pollutants: visible smoke, and extremely fine aerosols and gases that remain suspended in the air under adverse conditions. Less attention is given to a third type, the coarse particles that settle out rapidly in the vicinity of the source. The author discusses several sources of this nuisance pollution. The dust from metal grinding and machining is generally removed to the extent of 90 to 95% by air cleaners; however, easily oxidized metal particles that escape, when deposited on a metal surface, can attack finishes and produce "pin point" corrosive attacks. Recognition of this problem by industry is increasing rapidly. It can be solved by more efficient collection. Other examples of this type are exhaust stacks from acid tanks and from salt bath heat treating furnaces. The sources of pollution can be traced and corrective measures can be applied. Boiler fly ash removal is a more difficult problem, and a solution does not appear on the present day horizon.

- 256 Administration of Air Pollution Control in the United States. P. W. Purdom.
Public Health Repts. 72, 957-961 (Nov. 1957).

A study made in 1956 reflects a wide variation in the legislative, organizational, and operational aspects of local air pollution control activities, a situation to be expected at this time in view of variations in severity of air pollution and in degrees of public support given to its palliation. Areas of administration of air pollution controls worthy of further investigation are suggested. While much has been written concerning technical progress, little attention has been given to the administrative mechanisms necessary to use the technical knowledge effectively. To achieve the objective of clean air, administrative practice must keep pace with technical advances.

-- Cond. from editor's summary and author's conclusion

- 257 Allegheny County Bureau of Smoke Control, Eighth Annual Report of Activities for the Year Ending May 31, 1957. T. C. Wurts, Director. 14 pp. (1957).

Progress has been made by industries, schools, hospitals, and others in the installation of properly designed and operated incinerators, but burning of rubbish in back yards and alleys still presents a difficult problem. Factors in the problem include difficulties in enforcing ordinances, lack of suitable means of disposal, and lack of cooperation on the part of independent municipalities. The subject should be studied and a solution should be determined with the least possible delay. In an appendix, the Joint Air Pollution Abatement Research Committee reports progress on the blast furnace, Bessemer, open hearth, coke oven, and electric furnace research programs. The status of the open hearth research program is discussed on some detail, including pilot plant tests. Brief reports of the Fly Ash Disposal Research Committee and the Non-Ferrous Foundry Emission Research Committee are included.

- 258 Fluoride Control at Geneva Works. Anon. Intermountain Ind. & Mining Rev. 22-26 (Dec. 1957).

An extensive fluoride research and control program at the Geneva Works (Provo, Utah) of the U. S. Steel Corporation is reviewed. The ore contains an excessive amount of fluorine, 95% of which was released by the stack gases, especially from the ten open hearth furnaces and by the sintering plant. The atmospheric fluoride was sufficient to cause fluorosis in cattle. An extensive survey showed that 90% of the fluorine would have to be removed. Conventional scrubbing methods proved unsatisfactory on account of destruction of equipment by hydrofluoric acid and the problem of disposal of large amounts of wash water high in hydrofluoric acid. The control method adopted after considerable research involved the use of calcium hydroxide. In the sintering plant, lime chips are added to the fine ore piles, and the exhaust gases are treated with lime in steam and wash water. Particles remaining in the gas are removed by electrostatic precipitators. Collecting equipment needed for the open hearth was considerably more elaborate, but the washing process was essentially the same. A number of details are given. The chips used in the sintering process are used as slag in the blast operations. Fluorine collecting facilities now operating are recovering well

over the 90% safe minimum established. Nearly 1200 claims totaling over \$25 million for air pollution damage were made. In a recent court decision, 24 of the claimants were awarded \$12,000 for alleged damages. The remaining claims were dismissed. As the cleaning equipment removes not only the calcium fluoride but also all other solids present in the gas, the end result has made Geneva Works one of the cleanest operating steel plants in the world.

- 259 Characteristics of the Organic Particulate Matter in the Atmosphere of Certain American Cities. E. C. Tabor, T. E. Hauser, J. P. Lodge, and R. H. Burttschell. A. M. A. Arch. Ind. Health 17, 58-63 (Jan. 1958).

A method is described for the separation of organic particulate pollutants into classes. Examples of the type of data obtained are cited, and typical graphs are presented showing comparisons between different cities. In addition to the quantitative data yielded by this method, it may also be used to provide relatively clean fractions for further separation and identification of pure species. An interesting example is the identification of caffeine in the air of New Orleans, in the vicinity of coffee-roasting plants.

- 260 Production of Skin Tumors in Mice with Products of Aliphatic Hydrocarbons. P. Kotin, H. L. Falk, and M. Thomas. Cancer 9, 905-909 (1956).

A carcinogen of moderate potency was found in the products of ozonized aliphatic hydrocarbons from air and from synthetic atmospheres. -- Atm. Poll. Bull.

- 261 Experimental Induction of Pulmonary Tumors in Strain-A Mice after Their Exposure to an Atmosphere of Ozonized Gasoline. P. Kotin and H. L. Falk. Cancer 9, 910-917 (1956).

Of mice maintained in an ozonized gasoline atmosphere 80% developed lung and multiple tumors. It is suggested that gasoline and petroleum products in urban atmospheres should be investigated as a possible cause of lung cancer. -- Atm. Poll. Bull.

- 262 A Full-Scale Study of Air Flow Around Structures. G. F. Collins. Ind. Wastes 2, 109, 110 (July-Aug. 1957).

Two techniques utilized in the study of dispersion patterns and air currents around buildings are described. One employs a low-speed wind tunnel where ratios of air speed to stack exit speed may be determined quickly. This method fails to reproduce vertical atmospheric temperature gradients, particularly in terrain models where it is necessary to heat an uneven surface. The other method uses smoke grenades or smoke generators, with the full-scale building serving as the model. This method enables observations to be made under actual weather and turbulence conditions. Some disadvantages are that the desired wind conditions are not always available and that the plume has no initial vertical velocity. A typical study made with this technique is described.

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MANAGEMENT ASPECTS

- 263 Psychiatry and the Everyday Work of the Foreman. A. M. Duval. Advanced Mgmt. 22, 15-17 (Dec. 1957).

The practice of the psychiatrist is no longer confined to the treatment of the seriously mentally ill, but to a large extent includes dealing with the lesser maladjustments. The discussion of this work includes the description of a number of typical cases. Successful

therapy does not consist in telling the patient what is the matter with him and following with directions as to the cure. It lies rather in development of understandings and insights by the patient himself so that he makes the decisions for himself and gradually develops self-reliance in the permissive, understanding climate created by his purposive faith in the psychiatrist. To a lesser degree this kind of relationship develops between pastor and parishioner, lawyer and client, and employer and employee. If these insights can be developed by the manager, a climate follows which will lead to improved morale and the general feeling that the employee has a good place to work. The supervisor cannot be expected to be a skilled technician in the field of psychiatry, and it must be remembered that a little learning is a dangerous thing. However, the man who has some clear understanding of how he functions as a person not only enjoys a happier life for himself, but also is able to offer an understanding and helping hand to a friend in need, which is the much greater privilege.

ACCIDENTS AND PREVENTION

- 264 Technical Safety Symposium. A. E. MacGee and others.
J. Am. Oil Chemists' Soc. 34, 431-447 (Sept. 1957).

This symposium includes the following papers dealing with safety in the use of solvents in the oil and fat industry: "The Solvent-Extraction Process Is Not as Hazardous as It Seems", by A. E. MacGee; "Foam Protection for Solvent-Extraction Plants", by J. E. Miller; "Application of Mechanically Produced Airfoams to Fire Protection Problems", by W. E. Ault and E. B. Rumble; "Some Aspects of Laboratory Safety", by H. H. Schultz; "Solvent-Extraction-Plant Operating Safety", by H. James; "The Changing Complexity of Fire and Health Protection Problems in Vegetable-Oil Processing Plants", by J. H. Brawner; "Safety Aspects of the Receiving and Bulk Storage of Extraction Solvents", by J. F. Miller and A. L. Saltzman; and "Safety in the Solvent Pilot Plant", by L. E. Matthews and J. W. Dunning.

- 265 Health Hazards from Maintenance Solvents. K. M. Morse.
Safety Maintenance 115, 34-39 (Jan. 1958).

Attention is called to the hazards of solvents used in industry, including dermatitis, narcosis, damage to specific body organs, unconsciousness, and death. No organic solvent is safe. Differences in specific toxicity of solvents may not be as great as the comparison of toxic-limit data may imply, considering all criteria. Fifteen suggestions are given on the control of solvent hazards. Briefly they include: (1) use only in large, maximum-ventilated areas; (2) transport and use only in safety containers; (3) safety meetings to impress on workers their role in good operating practice; (4) available information on health and fire hazard potential before approval for use; (5) a list of approved solvents for each cleaning job; (6) measurement of vapor concentrations in the breathing zone of workers; (7) avoidance of the more hazardous solvents such as carbon tetrachloride and benzol; (8) labeling of containers; (9) provision of personal hygiene facilities; (10) barrier protection such as gloves and aprons; and (11) limiting of consumption of solvents.

- 266 The Role of the Flight Surgeon in Aviation Safety. C. E. Wilbur.
A. M. A. Arch. Ind. Health 17, 64-66 (Jan. 1958).

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The accident rate in Navy aviation has decreased greatly over the past ten years, but the fatality rate has remained constant. The flight surgeon is one of those responsible for finding ways to protect the pilot in the event of an accident. This task includes the design of adequate protective equipment, provision of successful escape from disabled aircraft, and provision for the pilot's survival in any part of the world. The flight surgeon also has an

important role in the selection and training of pilots, and is responsible for the pilot's state of flight readiness, which often includes care of the pilot's wife and children. Accident investigation and prevention is also a function of the flight surgeon. In spite of the development of higher performance aircraft, landing accident rates have decreased rather than increased. Military aviation is inherently more dangerous than civil aviation. The flight surgeon must find ways to adapt man to a constantly new environment, as well as ways, along with the engineer, to alter the environment in favor of the pilot.

MISCELLANEOUS

- 267 Waste Pickle Liquor Disposal. G. A. Howell.
Sewage & Ind. Wastes 29, 1278-1281 (Nov. 1957).

Many factors must be considered in the problem of disposal of spent pickle liquor, including its composition and volume, and the conditions of the streams that receive the waste. If the acidity of the stream is increased to the point of altering or destroying aquatic life, treatment is necessary. Many methods of spent liquor disposal without treatment have been tried, including discharge into deep wells, fissures in cavernous limestone, abandoned mines, exhausted oil and gas sands, artificial lagoons, sumps, and sewers. All these methods have their limitations, and pollution may occur if the discharge reaches the underground fresh-water table. Methods of treatment include volume reduction, the Blaw-Knox Ruthner process (still in the experimental stage), treatment of raw coke-oven gas with the spent liquor, and neutralization. These methods are discussed and evaluated. The individual pickling operations must be studied before applying any disposal idea. Taking advantage of local natural conditions can, at times, save thousands of dollars in equipment and operation costs.

- 268 Water Pollution Abatement Research in the Steel Industry. C. A. Bishop.
Sewage and Ind. Wastes 29, 1273-1277 (Nov. 1957).

Progress is reported in the study of water pollution on the part of the steel industry in cooperation with ORSANCO (Ohio River Valley Water Sanitation Commission). The basic industrial waste requirements adopted by that organization are stated: freedom from anything that will settle to form putrescent or otherwise objectionable sludge deposits; freedom from floating debris, scum, and other floating materials in amounts sufficient to be unsightly or deleterious; and freedom from materials producing color or odor in such degree as to create a nuisance. The research supported by the American Iron and Steel Institute on phenol, settleable solids, ferrous sulfate, and toxicity is summarized, and equipment for practical solution of the problems is described briefly.

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