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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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INDUSTRIAL HYGIENE FEATURES

Abst. No. 730 discusses the aging worker.

The paradox of mental health is surveyed in Abst. No. 731.

The measurement of pilot fatigue is discussed in Abst. No. 737.

Abst. No. 741 presents the mechanisms of some structural alterations of the lung caused by environmental health.

The treatment of burns with intensive antibiotic therapy and exposure is described in Abst. No. 758.

Abst. No. 759 is concerned with caterpillar dermatitis.

Details on the biological effects of ozone on man and animals are given in Abst. No. 765.

Acute pathological reactions to administration of nickel carbonyl are described in Abst. No. 769.

Abst. No. 774 investigates dust disease in hemp workers.

Consult Abst. No. 776 for data on lycoperdonosis.

Abst. No. 777 surveys mesothelioma and asbestos exposure.

An evaluation of filters for high-volume sampling of atmospheric particulates is given in Abst. No. 780.

Commuter exposure to atmospheric lead is described in Abst. No. 789.

See Abst. No. 793 for data on performance of respirator expiratory valves.

Abst. No. 801 deals with alcoholism in industry and the safety program.

FOUNDATION FACTS

The Management Conference on the first day of the Foundation's 32nd Annual Meeting to be held on October 10-11, 1967 at Chatham Center, Pittsburgh, Pa. will be chaired by Dr. James H. Sterner, IHF Trustee and Medical Director, Eastman Kodak Company.

Among the interesting and important subjects scheduled for discussion will be leadership in the areas of urban and industrial health. Speaking for the administration's program will be Assistant Surgeon General Richard A. Prindle, M.D., who has been deeply involved in the recent reorganization of the Public Health Service Bureau of Disease Prevention and Environmental Control. The importance of U.S. leadership will be discussed also by Mark D. Hollis, Ph.D., Chief Engineer of the Pan American Health Organization—World Health Organization who will comment on the magnitude of the environmental and occupational health problem and the need for soundly based effective programs in the public interest. Systematic organization and presentation of pollution control data to the public will be discussed after a talk by Mr. F.J. Solon, Vice President for Advertising and Public Relations of Johns-Manville Corporation, who asks whose job it is to properly orient the public in such matters.

After considering management of environmental problems in some depth, the Conference will turn to management of personnel with cured or controlled chronic diseases, in an attempt to further utilization of skilled manpower, while understanding and providing means of avoiding excessive group health insurance losses from employing individuals considered to have a higher risk of early morbidity and mortality.

The meeting will be opened by Mr. E.K. Davison, Chairman, IHF Board of Trustees and President, Davison Sand and Gravel Company, who will also chair the Membership Meeting. The Social Hour will again be hosted by Mine Safety Appliances. Participants in the IHF Meeting are cordially invited to attend a dinner meeting of the Pittsburgh section of the American Industrial Hygiene Association. Guest Speaker will be Clyde M. Berry, Ph.D., President of AIHA.

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IN RE: ABRAMS November 1992

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DR. PHILIP E. ENTERLINE
IHF ADVISORY FELLOW APPOINTEE



Industrial Hygiene Foundation announces with pleasure the appointment of Philip E. Enterline, Ph.D. of the University of Pittsburgh Graduate School of Public Health, as Advisory Fellow to Mellon Institute.

Dr. Enterline received an undergraduate degree in Economics from Westminister College in New Wilmington, Pa., continuing his education at the American University in Washington, D.C. where he took graduate work in Statistics, Sociology and Demography. Subsequently, he has held several university teaching posts, most recently serving as Professor of Medical

Statistics at McGill University in Canada prior to joining the Department of Biostatistics at Pitt on August 1.

An internationally recognized authority on population health statistics, Dr. Enterline has authored or co-authored 40 reports in scientific journals on epidemiology, medical care, medical economics and public health. Honors received include the U.S. Department of Health, Education and Welfare's Superior Service Award, and its Arthur S. Fleming Award, (given each year to the ten most outstanding young men in government).

Dr. Enterline is a member of the American Statistical Association, American Sociological Association, Population Association of America, Pi Gamma Mu (National Social Science Honor Society), and Fellow of the American Public Health Association. He also is a member of the Health Services Research Study Section (National Institutes of Health, U.S. Public Health Service) and the American Thoracic Societies Committee to Develop Standards for Epidemiologic Surveys of Respiratory Disease.

Dr. Enterline will assist the Foundation's membership in projects involving morbidity and mortality statistics and the creation of a common mechanism for industry-wide data exchange.

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INDUSTRIAL HYGIENE DIGEST

NEWS ITEMS

707 Work Evaluation in Cardiac Rehabilitation.

Heart Association-sponsored Work Evaluation Units have helped more than 20,000 heart attack survivors return to their jobs in the last 15 years. Judging from recent surveys, that adds up to a considerable saving for business and industry in personnel training costs alone. Recent studies indicate that new worker costs may range as high as \$10,000 for a salesman; \$16,800 for an engineer—and many companies carry insurance on key executives for half a million dollars or more. Plant worker replacement—based on a spot survey of leading industrial companies—averages out to about \$3,700 per worker; some authorities claim much higher. Most people who have recovered from heart attacks can work: as many as nine out of ten can do some kind of work, and one out of three can return to their former jobs without restrictions. There are 38 work evaluation units in major metropolitan areas, sponsored by local Heart Associations. The Unit team—which usually includes a cardiologist, a social worker, a vocational counselor and a psychiatrist or psychologist—pools its findings and determines whether the patient is physically and emotionally ready for work, whether his old job is too demanding, or whether he needs retraining in a less strenuous job.

-- Abstracted from AHA Management Digest 2, 2 (March-April, 1967).

Editor's Note: Management Digest is a new publication of the American Heart Association being distributed by local Heart Associations to industrial management personnel. To receive it contact local Heart Association. For further information on Heart Disease see Book Review Item 728, page 5.

708 American Industrial Hygiene Conference.

The 1968 American Industrial Hygiene Conference will be held May 13-17, 1968 at the Chase-Park Plaza Hotel in St. Louis, Missouri. Inquiries concerning the program or exhibits may be directed to the Conference Chairman, Mr. J. T. Garrett, Monsanto Company, 800 North Lindbergh Boulevard, St. Louis, Missouri 63166.

-- Am. Ind. Hyg. Assn. J. 28, A-4 (May-June, 1967).

709 Telemetering System.

A telemetering system for transmitting air quality data has been purchased by the New York City Department of Air Pollution Control. The total cost of the installation and the first 12 months of field service is \$181,000. When operative later this year, the Aerometric Telemetering and Data Handling System will provide continuous data on sulfur dioxide, carbon monoxide and coefficient of haze (smoke shade), and measure wind direction, velocity and air temperature from 10 automated stations—three in Brooklyn, two each in the Bronx, Queens and Manhattan and one in Staten Island. Five of the stations will be part of an early warning system for the calling of air pollution alerts in the metropolitan area. The 27 additional stations, all manual, will record sulfur dioxide, smoke shade and total suspended particulates on a 24-hour basis.

-- Air Eng. 9, 8 (June, 1967).

710 Commission for Air Pollution Control.

The establishment of a national commission for the control of community air pollution has been announced by the National Tuberculosis Association. Called the National Air Conservation Commission (NACC), its goal is to stimulate and coordinate an informed, broadly based citizen effort to restore clean air. It seeks full cooperation with other organizations sharing this goal.

-- Air Eng. 9, 8 (June, 1967).

711 Quality Control for Pesticides.

Quality control programs should be established in pesticide formulating plants to help control cross-contamination of pesticides that occurs during manufacturing and formulating processes, according to a National Agricultural Chemicals Association *ad hoc* committee on quality control. After its nine-month study, the committee further recommends that a system of sampling be established to check adequacy of cleanout procedures in the operating processes. A third recommendation is that formulating practices be regularly studied to assure product conformity within certain contamination limits set by the committee.

-- Chem. Eng. News 45, 39 (June 26, 1967).

712 To Upgrade Graduate Biomedical Studies.

Five universities will share a \$3 million HEW grant to upgrade graduate biomedical studies. The Department of Health, Education, and Welfare (HEW) grants are awarded to the University of Colorado, Boulder and Denver; University of Oregon, Eugene; Purdue University; Vanderbilt University; and Washington University, St. Louis, Mo. The grants are part of the continuing National Institutes of Health's health sciences advancement award program. Awards may be used to initiate or further biomedical research. Clearly defined institutional plans of study are required for receipt of the grants, but research may cover diverse subjects in medicine, such as biomathematics and behavioral research. -- Chem. Eng. News 45, 33 (July 17, 1967).

713 Aviation Accidents.

General aviation accidents accounted for 80%—or, 1,069—of the 1,340 civil aviation deaths reported by the Civil Aeronautics Board in 1966, the National Safety Council reported. It was the third straight year in which deaths in general aviation, as opposed to commercial or military aviation, topped the 1,000 mark. -- AMA News 10, 1 (June 5, 1967).

714 Swimming Pool Fatalities.

A prediction that 350 people, mostly youngsters under 10, will die in residential swimming pool accidents this year has been made by the U.S. Public Health Service. The PHS said that more than half of all pool fatalities could be prevented by adequate fencing and other protection around the pool, adult supervision of youngsters in the water, and instruction of young children in water-survival knowledge and skills at the earliest possible age. -- AMA News 10, 2 (June 5, 1967).

715 Reading X-Ray Films by Digital Computer.

In NASA Tech. Brief No. 67-10005 a process is described for the use of a computer for enhancing areas of x-ray photographs to provide better comparison and easier reading. The photograph is converted to a suitable form for input to the computer by a cathode-ray tube device that scans the film with a light beam on a line-by-line basis and converts each point of the picture to a number proportional to the film optical density. Each sample (typically 500,000 samples for a one square inch transparency) is recorded on magnetic tape which is subsequently fed into a computer. Reconstituting the film from the computer data permits many useful manipulations of the picture. Loss of detail resulting from the use of fluorescent x-ray intensifying screens can be overcome or specified areas of the film can be intensified. The computer also permits image subtraction of x-rays taken at different times thus highlighting any changes which may have occurred. Inquiries concerning this innovation may be directed to: Technology Utilization Officer, Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, California 91103. Please refer to Reference: B67-10005.

-- Am. Ind. Hyg. Assn. J. 28, 290 (May-June, 1967).

716 To Study Effect of Laser on Cancer.

The National Cancer Institute will study the effect of laser beams on cancer. A laser instrument developed by the U.S. Army Missile Command is being installed and modified at the National Institutes of Health, Bethesda, Md. The device arises from year's combined study by the Missile Command and the National Cancer Institute (NCI) scientists. It has already been used to expose internal and external cancer growths of laboratory animals to pulses of infrared light. Headed by Dr. Alfred S. Ketcham and Dr. Robert C. Hoye of NCI, a research team will make further animal studies to determine the laser's use for treating malignant tumors in humans. -- Cham. Eng. News 45, 33 (July 17, 1967).

717 Arsenic Not a Cumulative Poison.

Arsenic is not a cumulative poison in the body, contrary to common belief, according to Dr. S. A. Peoples, Professor of Comparative Pharmacology at the University of California, Davis. In most instances, the body eliminates the element about as fast as it takes it in, he says. Rats, however, do store it in their tissues, causing their eventual death. Arsenic is a normal constituent of plants and animals (including man) through food intake. Some organic arsenicals, in fact, promote growth of livestock, Dr. Peoples notes.

-- Chem. Eng. News 45, 29 (June 26, 1967).

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718 Migraine Headaches.

A sudden drop in blood-serotonin level marks the onset of migraine headaches and may be their cause, according to Australian scientists James W. Lance, Michael Anthony, and Herta Hinterberger of Prince Henry Hospital and School of Medicine, University of South Wales. Migraine pain is directly associated with excessive dilation of scalp arteries. Injection of serotonin, a powerful vasoconstrictor, makes the pain more bearable, Dr. Lance said at the ninth annual meeting of the American Association for the Study of Headache in Atlantic City, N.J. The Prince Henry scientists now plan to study causes of the serotonin drop.

-- Chem. Eng. News 45, 29 (June 26, 1967).

719 Home Health Service.

Referral of medicare patients to home health agencies under plans of treatment established by physicians is increasing. According to the Department of Health, Education, and Welfare, there are now 1,780 such agencies certified for medicare participation, compared to 250 in 1963.

-- AMA News 10, 1 (June 5, 1967).

720 Special Board to Advise NASA.

The National Academy of Engineering has set up a special board to advise NASA and other government agencies on problems related to aeronautics and space engineering. The new Space Science Board, headed by Dr. H. Guyford Stever, President of Carnegie-Mellon University, will operate under a contract from the National Aeronautics and Space Administration. Spending for the first year of operation is estimated at \$186,500. The board will recommend priorities to be assigned to engineering objectives in the space program, how to improve engineering education in the aerospace field, and how to bring engineering talent to bear on aerospace problems of national importance.

-- Chem. Eng. News 45, 35 (July 10, 1967).

721 Hygienic Guide Series.

The following additional Hygienic Guide Series are now available and can be ordered directly from the American Industrial Hygiene Association, 14125 Prevost, Detroit, Michigan 48227, at 50 cents each: Propylene Dichloride (1, 2-Dichloropropane, 1, 2-Dichloropropane, Propylene Chloride), Turpentine (Wood Turpentine, Gum Spirits of Turpentine, Oil of Turpentine), and Bisphenol A (4, 4'-Isopropylidenediphenol; 2, 2-bis(4-Hydroxyphenyl) propane).

-- Am. Ind. Hyg. Assn. J. 28, 294-304 (May-June, 1967).

COMING EVENTS

- | | | |
|-----|-----------------|---|
| 722 | Sept. 5-9 | 22nd Annual Symposium on Molecular Structure and Spectroscopy, Columbus, Ohio. |
| | Sept. 10-13 | Canadian Agricultural Chemicals Association, Convention, Quebec, Que. |
| | Sept. 10-15 | American Chemical Society, 154th National Meeting, Chicago, Ill. |
| | Sept. 11-13 | ASTM, Meeting on Space Simulation, Philadelphia, Pa. |
| | Sept. 11-13 | Instrument Society of America, 22nd Annual ISA Conference & Exhibit, Chicago, Ill. |
| | Sept. 12-14 | American Nuclear Society, Gatlinburg, Tenn. |
| | Sept. 12-15 | 13th National Chemical Exposition, Chicago, Ill. |
| | Sept. 14-16 | American Thyroid Association, Ann Arbor, Mich. |
| | Sept. 14-17 | Drug, Chemical and Allied Trades Assoc., 77th Annual Meeting, Pocono Manor, Pa. |
| | Sept. 15-23 | American Academy of General Practice, Dallas, Texas. |
| | Sept. 20-21 | National Academy of Engineering, Autumn Meeting, Ann Arbor, Mich. |
| | Sept. 21-22 | Society of Cosmetic Chemists, Seminar Meeting, Chicago, Ill. |
| | Sept. 21-22 | Society of Petroleum Engineers of AIME, Regional Meeting, Evansville, Ind. |
| | Sept. 21-23 | American Association of Medical Clinics, Chicago, Ill. |
| | Sept. 21-23 | American Medical Writers Association, Chicago, Ill. |
| | Sept. 22-29 | College of American Pathologists, Chicago, Ill. |
| | Sept. 22-30 | American Society of Clinical Pathologists, Chicago, Ill. |
| | Sept. 24-27 | American Institute of Chemical Engineers and Instituto Mexicano de Ingenieros Quimicos, Joint Meeting, Mexico City, Mexico. |
| | Sept. 25-26 | Congress on Occupational Health, Atlanta, Georgia. |
| | Sept. 26-29 | American Roentgen Ray Society, Washington, D.C. |
| | Sept. 27-30 | Pennsylvania Medical Association, Philadelphia, Pa. |
| | Sept. 28-30 | American Association for Surgery of Trauma, Chicago, Ill. |
| | Sept. 29-30 | Western Industrial Medical Association, San Francisco, Calif. |
| | Sept. 29-Oct. 3 | American Society of Anesthesiologists, Las Vegas, Nev. |

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LEGAL DEVELOPMENTS

723 Flammable Fabrics.

The House Subcommittee on Commerce and Finance completed hearings on H.R. 5654 (Staggers, D., -W. Va.) and similar bills to amend the Flammable Fabrics Act. Rep. A. H. Quie (R.-Minn.) told the committee "it is evident that dangerously flammable fabrics are being marketed which are beyond the reach of the Flammable Fabrics Act, although flame-retardant material in one form or another is available for practically all of our fabric needs." Federal Trade Commission (FTC) Chairman Paul Rand Dixon advised the committee that a survey showed "that the articles from which the greatest number of deaths and injuries result are items of bedding and upholstered furniture." The survey showed 204 deaths and 1,747 injuries because of ignition and burning of bedding, and 44 deaths and 2,168 injuries from the ignition of upholstered furniture. He stated that "most" of these deaths and injuries "resulted from articles which would pass the present flammability tests under the Act." The FTC urged: (1) That the term "article of wearing apparel" be defined to include "any costume, article of clothing or accessory worn or intended to be worn by individuals," (2) "it would be most desirable to have all children's clothing made flameproof by applying a chemical finish to all combustible fabrics or by having such clothing made of noninflammable material." -- Natl. Safety News 95, 77 (June, 1967).

724 Controls on Pesticide Manufacture.

A bill to put tighter controls on pesticide manufacture has been introduced by Senator Abraham Ribicoff (D.-Conn.). S. 2057 would require registration of all pesticide manufacturing plants with the Secretary of Agriculture and would permit the Department of Agriculture to inspect these plants. It would also provide penalties for producing pesticides in unregistered plants or for using production methods that "do not conform to good manufacturing practice." Meanwhile, the National Academy of Sciences will make a study of pesticide residues in the environment for USDA. The NAS study has four goals: to review and summarize recent data on pesticide residues; to evaluate the significance of these residues; to look at the possible impact, both economic and biological, of substituting less persistent pesticides for those now in use; and to establish criteria for evaluating present regulations.

-- Chem. Eng. News 45, 35 (July 10, 1967).

725 Licensing of Patented Drugs.

A proposal to force licensing of high-priced patented drugs is before Congress again. This time, the proposal, first considered during the Kefauver drug hearings, is in H.R. 10777 introduced by Rep. Seymour Halpern (R.-N. Y.). Under the bill, the holder of a patent on a drug would be forced to issue licenses to competitors to manufacture it if, three years after the patent issues, it is found that the net profit on the drug exceeds 400%. The Federal Trade Commission would enforce the new rule. Rep. Halpern urges immediate action on his bill "to curb those who would take advantage of monopoly to capitalize on human misery."

-- Chem. Eng. News 45, 25 (June 26, 1967).

726 Committee on Environmental Problems.

A proposal to create a committee to advise on long-range environmental problems cleared its first Congressional hurdle. S. Res. 68, which would create a select Senate committee with a life of only three years, has been approved by the Subcommittee on Intergovernmental Relations, and early approval by the parent Government Operations Committee seems likely. The select committee would provide a special forum where scientists and politicians could discuss the environmental problems that are likely to arise from technological advances and what might be done to solve them.

-- Chem. Eng. News 45, 35 (July 10, 1967).

BOOKS, PAMPHLETS AND NOTICES

- 727 Physiology in the Space Environment. Vol. II. Respiration. Publication 1485B. National Academy of Sciences. AVAILABLE FROM: Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D.C. 20418. 150 pp. (1967). PRICE: not given.

At the request of the Office of Advanced Research and Technology of the National Aeronautics and Space Administration, studies were undertaken in two areas of biomedical research germane

to the space program: respiratory physiology and cardiovascular physiology. The two study groups were charged with determination of the current state of knowledge in their field, the assessment of problem areas related to space travel, and the course of future research to implement space travel. The products of these two studies are presented in separate volumes. Other reports, such as the Space Medicine Advisory Group Study of 1966² and the Space Science Board Summer Study of 1965,³ deal with general problems in the biomedical areas. Also, there have been a large number of specific studies in the biomedical area, and these are referenced where pertinent in the papers in this volume. In addition, the U.S. Air Force, in support of its Manned Orbiting Laboratory (MOL) Program, has undertaken a study of the specific problems and possible applications of remedial measures in pertinent biomedical areas. By delineating specific areas, it is intended that the two volumes from the 1966 conference be more comprehensive and suggest longer-range research with approaches that require extensive planning to assure the long-range result. The selection of participants for the summer conference was guided by the need to cover areas of specific interest to the space program and to involve a number of scientists who are not directly concerned with space biomedical research, as well as many who have, or have had, contact with the program. This volume deals with the respiratory physiology and relevant medical problems. Present and applied problems, including medical questions such as infection and toxicology, are discussed. In addition to the rather specific discussion and recommendations concerning the practical and applied problems, this report also suggests a number of basic experiments, such as experiments to validate the predicted changes in pulmonary function, especially the ventilation-to-perfusion ratio, in different regions of the lung. The report indicates that no striking effects have been noted in respiratory function in space flight to date, nor is there expectation of any debilitating effect from prolonged space flight. There are problems introduced by the artificial environment and other supportive mechanisms that are necessary for maintenance of man in space.

-- Cond. from Forward

²Medical Aspects of an Orbiting Research Laboratory, NASA Special Publ. 86, 1966. (Available from Superintendent of Documents, U.S. Government Printing Office, Washington D. C., price \$1.00.

³Space Research: Directions for the Future, NAS-NRC Publ. 1403, 1966. (Available from Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, Washington, D. C., price \$7.50.

- 728 Hearts—Their Long Follow-Up. Paul Dudley White, M. D. and Helen Donovan. AVAILABLE FROM: W. B. Saunders Company, West Washington Square, Philadelphia, Pa. 19105. 357 pp. (Feb. 13, 1967). PRICE: \$12.00.

Some readers of the Digest will remember an address by Dr. White (in 1962, at the 27th IHF Annual Meeting Management Conference) in which he stressed the great change he had observed in the nature of heart disease during the preceding 40 years of practice of cardiology. At the beginning of his career, he had spoken of rehabilitation of young workers with heart disease because rheumatic heart disease was predominant. Middle-aged workers apparently had less heart problems and also coronary heart disease was less often recognized in the population. Today, rheumatic heart disease and other heart diseases of infectious origin are much better controlled, and the major problem of concern to industry is disease of the arteries: atherosclerosis, which affects the inner walls of important arteries throughout the body. In his Foundation talk, Dr. White stressed the importance of heredity, but indicated certain additional, environmental factors of etiological importance which include: 1) rich diets 2) physical inertia and 3) heavy use of tobacco. Those wishing additional details of Dr. White's professional experience, which now spans about 50 years, should welcome this new volume, which is written for non-specialists as well as cardiologists. It will be of special interest to those in industry who recognize the value of the "long follow-up" in medical research, and who share Dr. White's hopes that such research will "be more widely recognized, effected, and supported particularly in establishing a base line of the natural history of various diseases for comparison with the effect of the many new medical and surgical therapeutic and preventive measures that are being constantly introduced." This book contains 86 clinical cases and 63 illustrations including electrocardiograms, chest x-rays and graphs showing chronic illness trends over the past 25 years. Dr. White's bibliography from 1913-64 includes 598 separate articles. His other writings, which number 112 are also listed, as are the subjects of the nine other books on the heart which he has written. Thus, this interesting book, which will be useful to individuals in many fields besides medicine provides an entree to the life of Dr. White and to the field of cardiology in which he has labored so long and successfully.

-- RTPdeT.

*White, Paul Dudley, M. D., "Heart Disease—A Matter of Concern to Executives" A.M.A. Archives of Environmental Health 6, 309-311, (March, 1963).

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INDUSTRIAL MEDICAL PRACTICE

- 720 Legge's Axioms Re-Examined. A. W. Gardner.
Trans. Soc. Occ. Med. 17, 74-75 (April, 1967).

Thomas Morison Legge (1863-1932) was the first Medical Inspector of Factories in England. His name is well-known to all students of occupational health, not least on account of the celebrated and oft quoted axioms which appeared in his posthumous book "Industrial Maladies" (Legge, 1934). The axioms set out in Legge's original words and order are: (1) Unless and until the employer has done everything—and everything means a good deal—the workman can do next to nothing to protect himself although he is naturally willing enough to do his share. (2) If you can bring an influence to bear external to the workman (i.e., one over which he can exercise no control) you will be successful; and if you cannot or do not, you will never be wholly successful. (3) Practically all industrial lead poisoning is due to the inhalation of dust and fumes; and if you stop their inhalation you will stop the poisoning. (4) All workmen should be told something of the danger of the material with which they come into contact and not left to find it out for themselves—sometimes at the cost of their lives. Having examined Legge's axioms in the light of present problems and knowledge, the author suggests the following revisions: (1) Both employers and employees have important and complementary responsibilities, which neither must shirk nor evade for the prevention of occupational diseases and injuries. Evasion or failure of responsibility by either or both will lead to undesirable consequences. (2) A great deal is known about the causes and principles of prevention of occupational diseases and injuries. Lack of recognition of problems, lack of appreciation of the importance of human attitudes and risk-taking behavior as causes, and lack of practical application of existing knowledge are the commonest causes of failure to prevent. (3) No material or process should be used without knowledge of the potential hazards. All the people who are involved must understand in detail the hazards, so that they can cooperate in the application of appropriate safety measures.

- 730 The Aging Worker. I. H. Stokoe.
Trans. Soc. Occ. Med. 17, 57-63 (April, 1967).

The subject is discussed under the following headings: Definition, Age Structure and Demography, Characteristics of the Older Worker, Sensorimotor Activities, Physical Powers, Mental Powers, Short-Term Memory, Learning Ability, Psychological Characteristics, Placement of Older Workers, Retraining, and Retirement Counseling. The author states in his conclusion: "We have seen how the demographic trends are towards an aging population, and an aging and falling labor force, and how society at the moment, by its retirement policies, denies youth and the aged of the privilege of labor. We have seen how the older worker becomes slow in sensorimotor activity due to delay in control mechanisms, how his capacity for heavy work falls off less than might be expected, how short-term memory failure becomes a problem, and how complexity of task will tend to baffle him. On the other hand, he is reliable, stable and conscientious and by proper design of machines, modifications of tasks, retraining and regular medical examinations, proper placement in industry can lead to his continuing employment to the benefit of the economy of the nation, the productivity of the firm, and the satisfaction of the individual. And finally, when retirement eventually does occur, preparation for this should be initiated at least 5-10 years earlier."

- 731 The Paradox of Mental Health. W. Gomberg.
J. Occ. Med. 9, 239-250 (May, 1967).

Management has in many instances, without prodding, provided appropriate insurance coverage for employees and their dependents for the treatment of psychiatric disability. Unions, for their part, have come to the fore in recent years, both sponsoring clinics which include psychiatric care for their members and successfully bargaining for broader insurance coverage to include such treatment at community facilities and through private physicians. Together, unions and management have begun to attack the problem successfully. Workmen's Compensation is contributing, but, as the author sees it, for the wrong reasons and in a less healthy way. Nonetheless, a significant facet of the impetus for providing industrial sponsorship (which is passed ultimately to the consumer) for the treatment of psychiatric disorder must be acknowledged through Workmen's Compensation court decisions. Unions, management, and the Workmen's Compensation courts are together providing some of the answers to the question, "Who has the responsibility for the treatment of the employee with a mental illness?" Others also have a share of responsibility, not the least of whom is the employee himself. It is well and good that management, labor, and the compensation courts are making provisions for the treatment of mental disorder. But the ultimate responsibility is with the individual and his family. Not only must the individual feel a need for professional assistance, he must be willing to make the move, to reach out for help. For many, this is a painful decision, often postponed too long. Seven references are given.

-- Author's summary, cond.

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- 732 Motivation Problems Related to Secondary Prevention in Industrial Mental Health. W. E. Powie, W. W. Winslow, E. P. Rubin, and W. D. Ross. *Am. J. Psychiat.* 123, 297-302 (1966).

Efforts at secondary prevention (early case finding and treatment) made during an industrial mental health project were less successful in securing follow-through of treatment recommendations than the more traditional consultation by a psychiatrist. These were conclusions resulting from a study of 38 industrial employees seen in previous psychiatric consultation as compared with a group of 325 employees with whom an attempt was made at application of secondary prevention methods by an industrial mental health research team. Cases selected for study in secondary prevention were: (1) individuals who were problem-free and functioning optimally, and (2) individuals manifesting job-disrupting behavior. Direct intervention by mental health specialists with employees not under pressure of symptoms or other duress appeared of little benefit. Occupational physicians or other professionals within an industry are better able to bring about the follow-through of recommendations of a psychiatrist to employees. A mental health program in an industrial setting could be pursued by a combination of the principles of screening for secondary prevention and those of consultation and referral after an employee is aware of a threatening problem. -- J. Occ. Med. Absts.

- 733 Mental Health in Industry: Whose Responsibility? D. Coffee and A. A. McLean. *J. Occ. Med.* 9, 213-214 (May, 1967).

The author suggests five criteria for evaluating mental health in industry, namely: (1) Treat people as individuals, not stereotypes. (2) Be flexible under stress, rather than rigid and routinized. (3) Provide for gratification from a number of sources: people, tasks, ideas, etc. (4) Accept the capacities and limitations inherent in the program; try to provide the resources needed but not to strain those presently available. (5) Be active and productive; avoid the temptation to do more than is needed, but rather maintain a primary concern for fulfilling the professional responsibilities of both the medical and nonmedical practitioners in the work organization. If programs which meet these standards can be developed and staffed with adequately trained managers, supervisors, and medical personnel, more persons may be found in work organizations who can withstand the growing pressures of an increasingly complex and demanding society.

- 734 Effects of Alcohol on Performance in Continuous Attention Tasks. G. A. Talland. *Psychosom. Med.* 28 (4, Pt. 2), 596-604 (1966).

Alcohol addicts and control subjects were tested by experimental tasks to determine the effect of moderate doses of whisky on performance demanding continuous attention over relatively long periods. The control subjects were men without any history of alcohol addiction, but who were incarcerated in the same correctional institution as the addicts. When working in isolation, the two groups of subjects did not differ significantly in accuracy; nor did alcohol significantly affect their performance. Working under competitive instructions in a group setting, the addicts made more errors than the control subjects, and alcohol impaired accuracy in both types of subject. An experiment in visual and combined audiovisual signal detection requiring rapid search showed a sizable drop in performance as a result of alcohol, and gradual improvement as the toxic effects wore off. -- J. Occ. Med. Absts.

- 735 Cardiomyopathia Alcoholic. B. B. Aslaksen. *Tidsskr. Norske Laegeforen* 87, 618-621 (April 1, 1967).

Two cases, both with the probable diagnosis of alcoholic cardiomyopathy are described. One patient died and an autopsy was performed. The other showed regression of symptoms during abstinence from alcohol. -- J. Am. Med. Assn. References & Reviews

- 736 Automation of Electrocardiographic Diagnostic Criteria. J. R. Whiteman, et al. *J. Am. Med. Assn.* 200, 932-938 (June 12, 1967).

A complete system with capabilities to provide automatic clinical evaluations of standard 12-lead electrocardiograms has been developed. The basic equipment includes a magnetic tape ECG machine and a medium-sized digital computer. The computer accepts data directly by telephone or by tape playback. Each of the 12 leads is converted to digital samples, measured, and stored. A three-step program then recalls the measurements to be condensed, combined, and refined to one or several diagnostic statements. These are immediately available for use at the processing center or may be transmitted by teletype to the clinical site. At an experimental automated heart station, now operational for more than two years, more than 50,000

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twelve-lead electrocardiograms have been processed using only one third of a small computer system's capacity. There are 8 references.

- 737 Measurement of Pilot Fatigue. F.S. Preston.
Trans. Soc. Occ. Med. 17, 52-56 (April, 1967).

The subject of fatigue in airline pilots is discussed with particular regard to the operational problems of the industry. So far no reliable means of assessing pilot fatigue in quantitative terms has been found, although much work has been carried out by researchers in many countries. There is no short-cut to safety in aviation and the assessment of pilot fatigue and the prevention of errors in flight by pilots can only be achieved by study of all the factors affecting skill and mental performance. The reduction of flying accidents due to human error in the air and on the ground can only be achieved by the utilization of knowledge from the biological and engineering sciences and further active research programs. There are 15 references.

-- Author's summary

- 738 Use of Ultrasound to Measure Left Ventricular Stroke Volume. H. Feigenbaum, A. Zaky, and W.K. Nasser. Circulation 35, 1092-1099 (June, 1967).

A technique was developed whereby left ventricular stroke volume could be measured with diagnostic ultrasound. This technique utilized an ultrasound measure of left ventricular diameter and a measure of the amount of motion exhibited by a portion of the left ventricle near the mitral ring. The formula used to calculate left ventricular stroke volume was based on the hypothesis that left ventricular wall motion was proportional to left ventricular stroke volume and inversely proportional to left ventricular volume or diameter. Ultrasound stroke volume measurements were obtained simultaneously with Fick stroke volume determinations on 16 patients with no mitral or aortic insufficiency. The correlation between the two methods of measuring stroke volume was excellent ($r=0.973$, $p<0.001$). When the regression equation was used to predict stroke volume from the ultrasound measurements, the results were within 11 ml. or $\pm 15\%$ of the Fick stroke volume. -- J. Am. Med. Assn. References & Reviews

- 739 Inner Ear Pathology of Sudden Deafness. D.D. Beal, W.G. Hemenway, and J.R. Lindsay. Arch. Otolaryngol. 85, 591-598 (June, 1967).

Two cases are presented of rapidly developing unilateral deafness in adults. One was associated with an upper respiratory infection probably viral in nature. The histopathology characteristically corresponded in type with previously documented cases of maternal rubella, mumps, and measles although differing in degree. As in the previously reported cases, the portal of entry to the inner ear has most probably been the tria vascularia during viremia.

-- J. Am. Med. Assn. References & Reviews

- 740 Eye Burns Caused by Tear Gas. D. H. Hoffmann. Brit. J. Ophthalmol. 51, 265-268 (April, 1967).

A short description is given of the experience gained in treating almost 50 cases of ocular injuries caused by tear gas weapons. The clinical course of the burns is characteristic. Treatment remains symptomatic until more is known about the chemical changes occurring in the tissues, caused by infiltrated substances. The visual acuity achieved after treatment may vary from almost perfect vision to perception of light, depending on the distance of the shot and the amount of infiltrated substance. -- J. Am. Med. Assn. References & Reviews

- 741 The Mechanisms of Some Structural Alterations of the Lung Caused by Environmental Health. Paul Gross, M.D. Arch. Environmental Health 14, 883-891 (June, 1967). (Reprints available from IHF).

The basic structure of the lung, the alveolar wall, is composed of two embryologically different tissues, the capillary network, which is derived from the mesoderm; and the alveolar membrane, an entodermal derivative. Each of these components reacts in a specific manner to inhaled environmental irritants. In general, the alveolar capillary responds to an irritant that is sufficiently aggressive to penetrate the protective alveolar membrane. This response consists of pulmonary edema or of acute pneumonia or both. The alveolar membrane responds also to irritants that are less aggressive. Structural alterations produced by irritation of the alveolar membrane consist of thickening of alveolar walls by proliferation of alveolar cells and the elaboration of a precollagenous argyrophilic supporting stroma. This proliferated tissue is avascular and may extend into air spaces to a degree that may result in their occlusion.

The proliferative reactions of the alveolar membrane are reversible as long as the stroma remains precollagenous. In general, this reactive stroma (of entodermal origin) does not become collagen, except over a period of months and years compared to the stroma of mesodermal origin which converts to collagen regularly in two to three weeks. Both components of the alveolar wall may react to an inhaled irritant and the structural alterations specific to each component may be present. The pulmonary clearance mechanism is the most important factor that determines if a reaction to injury from an inhaled irritant will occur and where. Multifocal alveolar membrane reactions are more common than diffuse reactions and occur in regions where the clearance mechanism was incapable of removing the irritant. Conversely, a diffuse alveolar proliferative reaction to an inhaled irritant generally implies a diffuse inadequacy of the clearance mechanism relative to the irritant. The hypersensitivity-type reaction, which may also be diffuse, is an exception to this rule. There are 9 references.

-- Author's summary

- 742 Tuberculin Conversion. The Iceberg of Tuberculous Pathogenesis. D. C. Kent, et al. Arch. Environmental Health 14, 580-584 (April, 1967).

A series of 42 patients with minimal primary pulmonary tuberculosis, characterized by tuberculin skin test conversion, negative roentgenographic studies, and positive bacteriologic cultures for *Mycobacterium tuberculosis* are presented. The pathogenesis of this entity in the development of pulmonary tuberculosis is elucidated as well as its postulated concurrent significance in the epidemiological control of tuberculosis morbidity. It is concluded that all tuberculin skin test converters represent active, primary pulmonary tuberculosis, which is most probably communicable. Accordingly, all such subjects should receive the benefit of chemotherapy. Further, all control programs should include in their protocols bacteriologic studies of all converters, even those with negative chest roentgenograms, if the program can be considered to be all inclusive. It is anticipated that such a program will result in a further decline of tuberculosis morbidity, just as the warm ocean currents reduce the hazard to shipping by removal of the invisible, submerged portion of the iceberg to its ultimate destruction. There are 18 references.

-- Authors' summary

- 743 New Aspects of Mycobacterial Skin Tests. V. The Antigenicity and Allergenicity of Tuberculin and the Anamnestic Effect of a Tuberculin Test. D.T. Smith. Arch. Environmental Health 14, 569-579 (April, 1967).

In any group where the risk of developing tuberculosis is sufficiently great to justify some additional specific measure of protection, the choice should not be between BCG vaccination of the tuberculin-negative persons and annual tuberculin testing of the tuberculin negative. Individuals with strong tuberculin reactions should be treated with isoniazid immediately, and those with negative tuberculin tests should be given BCG. The British study has shown that the BCG vaccination gave an 80% protection up to 10 years in slum schoolchildren with a single vaccination. Repeated skin tests would not be needed. The detection of pulmonary disease in the remaining 20% would depend upon annual x-rays. The protection from isoniazid is only 80%, and here, also, the other 20% must be detected by annual x-rays. There are 43 references.

-- Cond. from author's comment

- 744 Tuberculin Testing of the Aged. E. J. Chesrow and J. B. Novak. Diseases of Chest 51, 635-636 (June, 1967).

About 57% of our present old aged population are infected with tubercle bacilli. There has been an appreciable reduction in the reservoir of tuberculosis during the interval of ten years. More men than women react to the tuberculin test among the aged. Although a gratifying reduction of the tuberculosis reservoir is noted, tuberculosis among the elderly remains a major problem. Retesting with tuberculin of this age group after a period of ten years would give us a new index of tuberculosis infection.

-- Authors' summary

- 745 Occupational Asthma Following Inhalation of Moth Particles. D.D. Stevenson and K.P. Mathews. J. Allergy 39, 274-284 (May, 1967).

Because their larvae are desirable live fish bait, bee moths (*Galleria mellonella*, wax worm) are raised in captivity. One of 18 persons, employed over a period of eight years at a commercial fish bait establishment, developed bronchial asthma resulting from heavy exposure to emanations of this moth. Skin tests, passive transfer, in vitro histamine release, and provocative bronchial inhalation tests indicated an immunologic mechanism to be responsible for the adverse effect. Extracts of other types of moths also elicited passive transfer reactions, as well as extracts prepared from different stages of the life cycle of *Cecropia* moths. In this particular case, however, extracts of several insects outside of the

Cecropia moths. In this particular case, however, extracts of several insects outside of the Lepidoptera order failed to produce positive passive transfer tests.

-- J. Am. Med. Assn. References & Reviews

- 746 Regional Patterns in Mortality From Cancer in the United States. E. J. MacDonald, D. G. Wellington, and P. F. Wolf. Cancer 20, 617-622 (May, 1967).

In a study of the US age-adjusted cancer death rates during 1940 to 1959, strong regional patterns were found in the level of death rates and in their variation over time. Marked differences in race and sex were found in the death rates for each site. By correlation analysis, relationships between various primary sites of cancer with respect to their regional mortality patterns were derived. Similarities in the changes that occurred in mortality during this period were evaluated. Increases or decreases in different types of cancer deaths have been reported, but this study is an overall survey in which the basic data from the US Public Health Service is organized to reveal significant trends and racial and regional differences.

-- J. Am. Med. Assn. References & Reviews

- 747 Cirrhosis and Primary Cancer of the Liver: Comparative Study in Tokyo and Cincinnati. W. Mori. Cancer 20, 627-631 (May, 1967).

A survey of 3,232 autopsies in Tokyo revealed 59 cases of primary hepatic cancer and 124 cases of cirrhosis of the liver. This result, with emphasis on the interrelationship of these two lesions based on the classification of cirrhosis, was compared with similar findings in a survey made by E. A. Gall in Cincinnati, under comparable circumstances. There is an agreement in the fact that significant causative relation exists only between hepatocellular carcinoma and non-specific cirrhosis. The higher incidence of primary hepatic cancer in Tokyo may be due to the following facts: Types A and B (postnecrotic and posthepatic) cirrhosis, which may be called hepatoma-related, seem to be more active in Tokyo. The former shows higher incidence in number, and the latter shows higher possibility of malignant complication. On the other hand, type C (nutritional) cirrhosis, which may be called hepatoma-unrelated, seems to be more common in Cincinnati.

-- J. Am. Med. Assn. References & Reviews

- 748 Distribution of Polonium-210 in Mice Following Inhalation of Polonium-210-Tagged Tobacco Smoke. R. Soremark and V. R. Hunt. Arch Environmental Health 14, 585-588. (April, 1967).

The authors have shown that polonium-210, when associated with tobacco leaf, and used in a simulated smoking procedure, can be inhaled and deposited in the lungs of experimental animals. Distribution of polonium-210 can then be observed in many organs of the body. There are 12 references.

-- Cond. from authors' comment

- 749 Foot-and-Mouth Infection in Human Beings: Case Report. G. Eissner, H. O. Bohm, and E. Julich. Deut. med. Wochschr. 92, 830-832 (May 5, 1967).

A veterinary surgeon was proved to be infected with the virus of foot-and-mouth disease (type C); the clinical features are described. The causative organism was demonstrated from material obtained from the vesicles by transmission to suckling mice. Specific antibodies against type C were demonstrated in the patient's serum.

-- J. Am. Med. Assn. References & Reviews

- 750 Bites by Coral Snakes: Report of 11 Representative Cases. H. M. Parrish and M. S. Khan. Am. J. Med. Sci. 253, 561-568 (May, 1967).

Analysis of 11 representative coral snake bites from a national survey of snake bites showed that four occurred in Florida, four in Texas, two in Alabama, and one in Louisiana. Eight bites failed to produce venenation, two produced moderate venenation, and one resulted in severe venenation and death. The treatment recommended included: incision and suction, antibiotics, tetanus prophylaxis, and coral snake antivenin given intravenously before the onset of systemic symptoms. Artificial maintenance of respiration may be necessary; narcotics and sedatives are contraindicated.

-- J. Am. Med. Assn. References & Reviews

- 751 Buckthorn Polyneuropathy. R. Calderon-Gonzalez and H. Rizzi-Hernandez. New Engl. J. Med. 277, 69-71 (July 13, 1967).

Karwinskia Humboldtiana ("tullidora", "wild cherry", "coyotillo" and so forth) is a poisonous shrub of the buckthorn family that grows in central and northern Mexico, and in Texas and New Mexico of the United States. The toxic effects of the plant were first reported by Clavijero in

1789; since then numerous reports have been published in Mexico. The clinical picture is that of a progressive and symmetrical polyneuropathy, starting in the lower limbs and ending with respiratory and bulbar paralysis. If the patient survives, there is a slow and progressive improvement to almost complete functional recovery. In the present case a five-year-old girl who ingested the fruit of *Karwinski Humboldtiana* developed a progressive and symmetrical polyneuropathy. Sural-nerve biopsy revealed segmental demyelination that may have resulted from disruption of the metabolic activity of the Schwann cell by a poisonous element of the endocarp of this fruit. There are 6 references.

- 752 Magnetic Fields Around the Torso: Production by Electrical Activity of the Human Heart. D. Cohen. *Science* 156, 652-654 (May 5, 1967).

Fluctuating magnetic fields produced by the heart were explored outside the torso. Measurements were made inside a highly shielded enclosure. The amplitudes of the heart magnetic fluctuations were usually in the range of 10^{-8} to 10^{-7} gauss, and thus previous reports were verified. The magnetic signal output was produced synchronously with the electrocardiogram (ECG). A magnetocardiograph (MCG) chest map, plotting magnetic field against time at various spatial positions, showed QRS complex and the T-wave. -- J. Am. Med. Assn. References & Reviews

- 753 Experimental Use of Laser in Otosclerotic Stapes. J. Sataloff. *Arch Otolaryngol.* 85, 614-616 (June, 1967).

The area and depth of damage in the stapes footplates produced with a laser can be controlled accurately. Considerably more work is essential before determining that this method has application in clinical otosclerosis. However, laser irradiation makes it possible to produce very discrete lesions in the stapes footplate provided a satisfactory dye is first applied to the surface. -- J. Am. Med. Assn. References & Reviews

- 754 Bacteria in Chilled Delicatessen Foods. C. A. Rasmussen and D. H. Strong. *Public Health Repts.* 82, 353-358 (April, 1967).

The numbers of selected organisms in 85 samples of chilled delicatessen foods purchased in the Madison, Wis., area were determined. Protein-rich salads were found to contain relatively high numbers of total viable bacteria, enterococci, pseudomonads, and staphylococci. More than one fourth of the staphylococci colonies tested were coagulase positive. The vegetable salads contain considerable numbers of pseudomonads, enterococci, and total bacteria. The staphylococci count in the vegetable salads was low; only 1.7% of the colonies tested were coagulase positive. The gelatin salads and gelatin desserts had low counts for all groups of organisms studied except enterococci. Samples from large chain stores showed a lower average number of cells for all organisms. *S. faecalis* was identified in 27% to 55% of the significant dilutions of tubes used to determine the enterococci most probable number value. The study results suggest the need for bacterial standards for chilled, commercially prepared foods. -- J. Am. Med. Assn. References & Reviews

- 755 The Microflora of Hand Washed Milk Bottles. S. B. Thomas, Kay P. King, and Angela Davies. *J. Appl. Bacteriol.* 29, 423-429 (Aug. 1966).

The examination of a series of 713 milk bottles cleansed by hand washing at producer-retailer farm dairies showed that although nearly 60% attained satisfactory bacteriological standards, about 30% gave high colony counts (greater than 600 per bottle). Ten references are given. -- Summary cond., Public Health Eng. Absts.

- 756 Staphylococcus aureus on the Hair. W. C. Noble. *J. Clin. Pathol.* 19, 570-572 (Nov. 1966).

Staphylococcus aureus was present on the hair of about 10% of people having no hospital contact and on about 50% of patients with skin diseases. The "resident" carrier rate was higher in patients with eczema and psoriasis than in others and appeared to be related to carriage of the organisms on the skin. Two references are given. -- Abst. cond., Public Health Eng. Absts.

- 757 Hard Water Syndrome. R. M. Freeman, R. L. Lawton, and M. A. Chamberlain. *New Engl. J. Med.* 276, 1113-1117 (May 18, 1967).

During a one-week period of observation vomiting of variable severity occurred during 17 of 23 dialyses (74%) performed on 12 patients; the incidence of vomiting during the previous week in the same patients was three of 23 (13%). The onset of vomiting occurred from 2 to 12 hours

following institution of treatment. Other symptoms included extreme weakness during and following the dialysis, unexpected changes in blood pressure, and a warm sensation to the skin. There was an apparent increased incidence of clotting within the arterial venous shunts. Pre- and post-dialysis levels of plasma calcium and magnesium were obtained from ten patients. The mean plasma calcium rose from 4.62 (± 0.63) to 7.49 (± 1.26) mEq/liter, while the mean plasma magnesium rose from 2.49 (± 0.89) to 3.93 (± 1.34) mEq/liter. A dialysate sample revealed calcium and magnesium concentrations of 7.4 and 3.0 mEq/liter, respectively. A nonfunctioning water softener was found to be responsible for the high levels of calcium and magnesium found in the dialysate.

-- J. Am. Med. Assn. References & Reviews

SKIN DISEASES AND BURNS

- 758 Treatment of Burns With Intensive Antibiotic Therapy and Exposure. G.E. Collentine, Jr., B.A. Waisbren, and J.W. Mellender. J. Am. Med. Assn. 200, 939-942 (June 12, 1967).

The high mortality and serious morbidity of burns demands the publication of new methods of treatment that appear to have given results different from those reported by others. Therefore, the results of treatment with maximum tolerated doses of parenterally administered antibiotics and exposure in 500 consecutive patients admitted to the St. Mary's Burn Center, Milwaukee, between January 1961 and January 1964 are the subject of this report. Analysis of the mortality among this group of patients was performed by the probit method. Comparison of this mortality with that obtained at burn centers that used other methods of treatment suggests that intensive prophylactic antibiotic therapy may have merit in the treatment of severe burns. There are 19 references.

- 759 Caterpillar Dermatitis. F.F. Hellier and R.P. Warin. Brit. Med. J. 2, 346-348 (May 6, 1967).

An outbreak of dermatitis involving at least 22 children and 8 adults, and due to handling the yellow tail moth caterpillar (Euproctis similis) is described. The adults probably were affected by indirect contact through the children's clothes. Dermatitis occurred in a boy and his mother after contact with small eggar moth caterpillars (Eriogaster lanestris), in a young girl who had been playing with unidentified caterpillars, in a boy after handling a garden tiger moth caterpillar (Arctia caja), and in five boys who had been playing with a number of oak eggar moth caterpillars (Lasiocampa quercus). Patch tests carried out on volunteers showed a reaction at all tested sites to the three caterpillars used, namely, the small eggar, yellow tail, and white ermine. The poisonous hairs of the caterpillars are hollow cuticular tubes which pierce the skin. The nature of the substance injected is not fully known but the reaction appears to be due to a primary irritant or pharmacologically active substance, rather than an allergic response.

-- J. Am. Med. Assn. References & Reviews

- 760 Characterization of Ragweed Pollen Extracts Prepared by Sonication and Other Methods. D.G. McKaba and D.H. Sussdorf. J. Allergy 39, 285-294 (May, 1967).

Extracts of ragweed pollen were prepared by stirring for 48 hours, homogenization, or sonication, and by various combinations of these methods. The extracts were compared with respect to protein yield and to degree and stability of skin-sensitizing activity in ragweed-sensitive patients. Compared with the usual method of extraction by stirring, both homogenization and sonication proved to be highly efficient, rapid methods with respect to all criteria evaluated. A decrease in allergenic activity was observed in all extracts during storage over a 20-day period. Following fractionation of extracts on Sephadex G-25 and G-100 columns, most of the skin-sensitizing activity was found in protein fractions with a molecular weight between 5,000 and 70,000 although some activity resided also in a fraction of low molecular weight.

-- J. Am. Med. Assn. References & Reviews

- 761 Napalm. P. Reich and V.W. Sidel. New Engl. J. Med. 277, 86-88 (July 13, 1967).

Napalm, an incendiary substance made by the gelation of gasoline, has assumed an important role in warfare since its invention by L.F. Fieser in 1942. Named for naphthenate and palmitate, two constituents of the gelling agent, napalm has unique physical properties that have led to the perfection of various incendiary weapons. It produces injury by burn and carbon monoxide poisoning and through the production of fires and conflagrations. Physicians should be familiar with the nature and use of napalm, not only to be prepared to treat the injured but to be able to evaluate the decision to use it in warfare. The authors discuss Chemical and Physical Properties, Weapons, Extent of Use, Individual Casualties, and Mass Casualties. There are 23 references.

CHEMICAL HAZARDS

- 762 Glue Sniffing and Heroin Abuse. J. Merry.
Brit. Med. J. 2, 360-364 (May 6, 1967).

The first report of a case of glue sniffing addiction in Great Britain was published in 1962. The same patient was followed up in 1967; his history revealed a typical progression in drug abuse such as experimentation with amphetamines, marihuana, and finally with heroin. Glue sniffing is not a problem in Great Britain, and this is, apparently, the only case. It is noted that in the United States glue sniffing is a common prelude to later use of heroin among young people and also that glue sniffing may become more common in Great Britain as an experimental experience preceding heroin addiction.

-- J. Am. Med. Assn. References & Reviews

- 763 Organic Nitrate Poisoning at an Explosives Factory. Plethysmographic Study.
Y. Morikawa, et al. Arch. Environmental Health 14, 614-621 (April, 1967).

The explosives factory where this investigation was undertaken used the so-called German type of dynamite production. The initial process of production consisted of nitration of glycerin and glycol, washing of nitrated products, gelatinization, transportation of gelatinized materials to the kneading house, and kneading. The kneaded matter was then made into either gelatin dynamite or semigelatine dynamite through several additional processes. The pulse waves of workers in the plant were examined by a reflection type of plethysmograph with the following results: A total of 1,446 examinations was made. In 143 instances abnormal pulse waves were noted. The occurrence of such waves varied greatly from workshop to workshop. Of the abnormal pulse waves observed 82% were in the poisoning category "slight", while the remaining were "moderate". At the workshops with automatic machines such as "extruding type", "rollex", and "biazzi", the occurrence of abnormal pulse waves was very low. The concentration of organic nitrates in the air at the workshops was very low, the highest average concentration being 0.066 ppm. No positive correlation between occurrence of abnormal pulse waves and atmospheric gas concentration was observed. Even when ethylene nitrate was not used for the production of semigelatine dynamite in summer, the workers at the semiautomatic machine house showed abnormal pulse waves at a very high rate (40%). The significance of the percutaneous absorption of the organic nitrates retained in the used surgical rubber gloves worn by the workers is emphasized. There are 8 references.

- 764 Effects of Chlorine Gas Upon Respiratory Function. T.A. Kowitz, et al.
Arch. Environmental Health 14, 545-558 (April, 1967).

On March 28, 1961, approximately 150 longshoremen were accidentally exposed to chlorine gas. Eleven subjects who were hospitalized because of respiratory distress were evaluated serially with respiratory function tests on four occasions during the ensuing two- to three-year period. Fifty nine subjects, including the 11 mentioned above, and a complete clinical and respiratory function evaluation between two and three years following the incident. The mean acute respiratory function changes of the 11 subjects were compatible with an alveolocapillary injury. This was followed by continuing repair over the ensuing two to three years with an increase in airway resistance. A decrease in lung volume and diffusing capacity remained. Studies in the 59 subjects suggested that a decreased vital capacity, an increased elastic work of breathing, and a decreased diffusing capacity resulted from the exposure. Except for their more gradual appearance these changes were felt to be compatible with the findings in controlled animal exposure studies reported in the literature.

-- Authors' summary

- 765 The Biological Effects of Ozone on Man and Animals. L.S. Jaffe.
Am. Ind. Hyg. Assn. J. 28, 267-277 (May-June, 1967).

Recent literature on the effects of ozone exposures on man and animals is reviewed, with emphasis on the effects at low concentrations of ozone (0.05 to 0.20 ppm). Irritation of the mucous membranes of the upper respiratory tract, a decrease in visual acuity and other changes in ocular parameters, an enhancement in mortality of respiratory infected test animals, the spherizing of red blood cells, structural changes in the nuclei of myocardial tissue, and an increase in mortality of newborn animals have been reported within this range. At higher concentrations (0.6 to 0.8 ppm for 2 hours), ozone will interfere with lung function for the duration of exposure and beyond. Other effects of ozone include distinct respiratory distress, coughing, choking and severe fatigue, which occur at concentrations at or below 1.0 ppm (the maximum level of ozone ever measured in dense atmospheric photochemical air pollution). There are 75 references.

-- Author's abst.

- 766 Effect of Neonatal Thymectomy on the Development of Ozone Tolerance in Mice. A.R. Gregory, L.A. Ripperton, and B. Miller. *Am. Ind. Hyg. Assn. J.* 28, 278-282 (May-June, 1967).

Male white Swiss mice, thymectomized at birth, were unable to develop tolerance to ozone when pre-exposed to sublethal concentration of 0.3 and 5.0 ppm of ozone for one hour. On the other hand, tolerance was readily induced in sham-operated animals. Thus the thymus appears to be necessary during maturation for the development of tolerance to ozone. No statistical difference in mortality was shown between mice pre-exposed to 0.1 ppm of ozone and those not so pre-exposed, despite the fact that a larger number of pre-exposed animals survived compared to those not pre-exposed. There are 16 references. -- Authors' abst.

- 767 Current Status of Arsenic in American Cigarettes. R.H. Holland and A.R. Acevedo. *Cancer* 19, 1248-1250 (Sept. 1966).

A steady decline in the arsenic content of American nonfilter cigarettes has been noted since 1957. The arsenic carcinogen in cigarette smoke probably is triphenyl arsine, which the authors recently found has a carcinogenic activity on mouse skin. There are 10 references -- Abst. cond., Public Health Eng. Absts.

- 768 Specific Response of Mesenchymal Tissue to Cancerigenesis by Cadmium. S.A. Gunn, T.C. Gould, and W.A.D. Anderson. *Arch Pathol.* 83, 493-499 (June, 1967).

Cadmium, even in soluble salt form, was shown to be a potent cancerigen. As little as 0.17 mg to 0.34 mg of cadmium ion as a single injection of cadmium chloride solution to male Wistar rats produced pleomorphic sarcomas at the injection site 10 to 16 months following administration. These small doses were cancerigenic only in tissues of mesenchymal mesodermal origin, such as subcutaneous, subperiosteal and intramuscular sites. No tumors formed in any of the sites of ectodermal (intracutaneous), endodermal (salivary gland, liver, ventral prostate), or epithelial mesodermal (kidney) origin. In comparable molar dose levels cobalt and zinc did not produce tumors in any tissue sites tested for cadmium. The observation that more tumors resulted from injections into subcutaneous than subperiosteal or intramuscular sites and that all tumors formed, even those in skeletal muscle, were fibrosarcomas, suggests that the neoplasia was derived from the injured fibroblasts.

-- J. Am. Med. Assn. References & Reviews

- 769 Acute Pathological Reactions to Administration of Nickel Carbonyl. R.L. Hackett and F.W. Sunderman, Jr. *Arch. Environmental Health* 14, 604-613 (April, 1967).

In previous investigations, pulmonary carcinomas have been induced in rats following inhalation of the toxic vapors of nickel carbonyl. In the present investigation, administration of nickel carbonyl parenterally has been studied in an attempt to develop a more convenient and less hazardous method of introducing nickel into the lungs. The LD₅₀ values for nickel carbonyl were found to be 2.2 ± 0.11 mg Ni/100 gm, by injection intravenously; 2.1 ± 0.42 mg Ni/100 gm by injection subcutaneously; and 1.3 ± 0.14 mg Ni/100 gm by injection intraperitoneally. The acute clinical and pathological reactions to injections of nickel carbonyl by parenteral routes developed primarily in the lungs, and to a lesser degree in the liver, resembling the reactions which were previously observed following inhalation of nickel carbonyl. Pulmonary histological changes were characterized by focal adenomatous transformation and by diffuse hypertrophy and hyperplasia of alveolar lining cells, with increased mitotic activity and cytologic abnormalities. The pulmonary parenchyma was found to be the target tissue for nickel carbonyl, regardless of its route of administration. There are 73 references. -- Authors' summary

- 770 Difficulties in the Evaluation of Lead Poisoning. R.P. Collins. *Arch. Environmental Health* 14, 523-528 (April, 1967).

There is no substitute for prevention through education and engineering control. A company's health program should seek the employee's confidence and require the employer's cooperation in correcting hazards, transferring workers when medically indicated, and insisting on safety standards. For the older worker who has already accumulated body burden of lead, regular supervision and treatment is necessary and can be usually done while the worker is on the job. There are 31 references. -- Author's conclusion

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- 771 Short-Term Feeding Study With Diethylene Glycol Monoethyl Ether in Rats. D.E. Hall, et al. Food Cosmet. Toxic 4, 263 (June, 1966).

A study of the dietary administration of diethylene glycol monoethyl ether (DGME) to rats indicates that it is acceptable as a food additive. The test sample contained 0.4% ethylene glycol as an impurity. A no-effect level was established at 1% DGME for 90 days. The growth of male and female rats was significantly retarded at the 5% level and was associated with decreased food consumption. No hematological changes were seen at any dietary level. Raised levels of urinary glutamic oxaloacetic transaminase at the 5% level indicated slight impairment of the renal function; this was more pronounced in males, who also showed a high degree of proteinuria. One male rat in the 5% group died; the autopsy showed hydropic degeneration of the kidney tubules and liver.

-- J. Occ. Med. Absts.

- 772 Mitoses in Bile Duct Epithelium Following Acute Carbon Tetrachloride Poisoning. P.M. Sutton and P. Juliette Spurgeon. Brit. J. Exptl. Pathol. 47, 545-549 (Dec. 1966).

Experiments investigating the possibility that the liver regeneration following acute carbon tetrachloride poisoning involves bile duct epithelium as well as parenchymal cells are described. Rats were given single doses of carbon tetrachloride to cause centrilobular hepatic necrosis. In the subsequent regeneration, mitoses occurred not only among the parenchymal cells but were also found in the bile duct cells of the portal tracts. Three references are given.

-- Authors' abst., Public Health Eng. Absts.

- 773 Exposure of Workers to Pesticides. H.R. Wolfe, W.F. Durham, and J.F. Armstrong. Arch. Environmental Health 14, 622-633 (April, 1967).

Values for dermal and respiratory exposure and for total exposure in terms of fraction of toxic dose were determined for 31 different work activities involving ten different pesticides. There were wide ranges in exposure level for a given work activity with a specific pesticide, depending on environmental conditions, particularly wind and technique of the operator; but other factors could not be excluded. Also, for a given pesticide there was a significant variation in hazard depending upon the type of work activity involved. Various phases of an operation often produced different levels of exposure. Generally, the loading operation was the most hazardous part of the spraying or dusting cycle. Exposure also depended upon the method of application. Not only was the hazard related to the length of time worked, but the use of dusts or fine aerosols rather than sprays greatly increased respiratory exposure. As reported in previous exposure studies, the potential dermal exposure to each compound in every work situation studied was much greater than the potential respiratory exposure. The results indicate that, in general, workers using pesticides in agriculture and public health vector control are exposed to relatively small fractions of the toxic dose each day. These findings are consistent with the idea that pesticides can be used safely provided recommended precautions are followed. However, the relatively high exposure values associated with a few of the more toxic pesticides (such as endrin, parathion, and TEPP) indicate that even minor lapses in adherence to safety precautions might be sufficient to allow poisoning to occur. There are 58 references.

-- Cond. from authors' summary

INDUSTRIAL DUSTS

- 774 Dust Disease in Hemp Workers. A. Barbero and R. Flores. Arch. Environmental Health 14, 529-532 (April, 1967).

The importance of hemp workers' disease, from a social point of view, is that it leads to a progressive loss of working capacity and to premature death. After about 20 years' exposure the worker may be able to produce only at a rate of 25% to 40% of a young man's rate of production. Only rarely does an "initial intolerance" cause a worker to give up his job. Much more frequently the gradual development of disability, which requires many years to reach its peak, renders him totally disabled in middle or early old age. There are 8 references.

-- Authors' comments

03122586

- 775 Byssinosis in Hemp Workers. A. Bouhuys, et al.
Arch. Environmental Health 14, 533-544 (April, 1967).

Severe byssinosis, chronic cough, and other chronic respiratory symptoms are highly prevalent among workers exposed to dust of raw, biologically retted, soft hemp (*Cannabis sativa*). Within this group nonreactors and reactors could be distinguished by the absence or presence of a decrease of forced expiratory volume (FEV_1) during dust exposure on Mondays. The questionnaire interview underestimated the extent of the workers' symptoms. Urinary excretion of a major histamine metabolite (1, 4-methylimidazolacetic acid; MeIAA) was higher on Monday than on Wednesday in those reactors whose FEV_1 decreased on Monday but not on Wednesday. This finding agrees with the hypothesis that the bronchoconstrictive response to hemp dust exposure on Monday is a result of the release of histamine in the lungs. A deleterious effect of long-term hemp dust exposure upon pulmonary function is highly probable: (1) FEV_1 (before dust exposure; adjusted for age and height) was significantly lower among the hemp workers than among a control group (farm workers), although the latter smoked more, and significantly lower among those with byssinosis grades 1 and 2 than among those without or with mild symptoms of disease; (2) 9 out of 20 retired hemp workers had an FEV_1 of half the expected value or less. Among the active workers, abnormally low values of FEV_1 (before dust exposure) were only found in reactors. This supports the assumption that irreversible pulmonary function changes develop primarily in those individuals who are sensitive to the acute bronchoconstrictive effect of hemp dust. There are 25 references.

-- Authors' summary

- 776 Lycoperdonosis. R.D. Strand, E.B.D. Neuhauser, and C.F. Sornberger.
New Engl. J. Med. 277, 89-91 (July 13, 1967).

Lycoperdonosis is the respiratory disease caused by inhalation of large quantities of spores from the mature mushroom, commonly termed puffball. *Lycoperdon* is the genus of fungi to which most puffballs belong. The two most common species, *Lycoperdon pyriforme* and *L. gemmatum*, have worldwide distribution. They may be found July to October, often growing on decaying logs, stumps and woody refuse, generally in dense clusters, and may occasionally be scattered through open fields. The spore fruits of *lycoperdon* are pear or top shaped, with large, sterile bases. Within the wall, or peridium, of the puffball, vast numbers of club-shaped spores form. At maturity, any external agitation or compression of the peridium cause the spores to be discharged through the apical ostia. A single *lycoperdon* produces approximately 1.6×10^{14} spores. It is well known to many nonherbalists that some practitioners of folk medicine use the hemostatic effect of the "dust" that can be extruded from puffballs. The concept has been applied to surface wounds and nosebleeds. For the treatment of epistaxis, the usual technic is to hold the puffball under the nose and inhale gently as the spores are puffed, so that the spores adhere to the inside of the nostril. With a massive inhalation of the spores, symptoms become rapidly progressive. Nasopharyngitis occurs within a few hours of exposure, and a form of pneumonitis, appears, accompanied by nausea, a rapid pulse, crepitant rales and dyspnea. The course may be protracted for many weeks, with gradual subsidence of symptoms to complete recovery. Two cases are described in detail. There are 7 references.

- 777 Mesothelioma and Asbestos Exposure. J. Lieben and H. Pistawka.
Arch. Environmental Health 14, 559-563 (April, 1967).

Forty-two cases of mesotheliomas reported from 152 hospitals over a five-year period, were studied with regard to exposure to asbestos. Survivors or employers, or both, were questioned regarding the possibility of asbestos exposure. Ten patients actually worked in asbestos plants; eight lived or worked close to an asbestos industry; three patients were family members of asbestos workers. In ten patients a history of assumed exposure to asbestos was obtained after prolonged questioning. In 11 other patients no history of asbestos exposure could be obtained.

-- Authors' summary

- 778 Asbestos Bodies in the Lungs of Inhabitants of Milan. I. Ghezzi, G. Molteni, and U. Puccetti.
Med. Lavoro 58, 223-227 (March, 1967). (In English).

The incidence of asbestos bodies in the lung of adult inhabitants of Milan was studied by lung smears obtained at autopsy, following the same technique used by Thomson and by Cauna et al. None of the individuals studied had been occupationally exposed to asbestos. Asbestos bodies were found in 51 out of 100 subjects studied. The incidences observed were 54% for men and 44% for women. Positive cases were more frequent in the oldest group of subjects and in those

showing evidence of pulmonary edema. In one case, positive for asbestos bodies, a slight pulmonary fibrosis was histologically demonstrated but no case of clear-cut asbestosis was found. No parietal pleura plaques or thickening were found in any of the 65 subjects accurately studied from this point of view, 35 of whom were positive for asbestos bodies. -- Authors' summary

- 779 Settling Velocity and Density of Monodisperse Aerosols. J.W. Thomas and R.H. Knuth. Am. Ind. Hyg. Assn. J. 28, 229-237 (May-June, 1967).

The theory of particles settling in streamline flow in a horizontal tube has been applied to determine the settling velocity and density of a monodisperse aerosol. The aerosol is collected on a filter paper placed in a tube cross section downstream of the inlet. Microscopic examination of the characteristic pattern of the deposited particles on the paper permits a calculation of particle settling velocity and density. Tests of the theory, using monodisperse particles 0.796, 1.305, 1.90, and 2.68 microns in diameter, showed agreement to within 8% or better with settling velocity values calculated from the known size and density of the particles. The theory applies to spheres, cubes, and particles having symmetrical shapes. There are 12 references.

-- Authors' abst.

- 780 Evaluation of Filters for High-Volume Sampling of Atmospheric Particulates. D.N. Kramer and P.W. Mitchel. Am. Ind. Hyg. Assn. J. 28, 224-228 (May-June, 1967).

A practical evaluation was carried out on commercially available glass fiber filter materials for use in the high-volume sampling of atmospheric suspended particulates. Studies were carried out on the collection efficiency of the various filter materials under equilibration and nonequilibration conditions. Values were obtained of the ratio of decreased airflow through the filter at constant pressure drop as a function of particulate loading. It was concluded that improvements need to be made in the physical uniformity of the sampling matrices. A variation in suspended particulate values was observed employing standard techniques, but generally the filters were self-consistent. It was further concluded that the high-volume sampling method is only a semiquantitative measurement and that simpler and more accurate methods are required. There are 5 references.

-- Authors' abst.

- 781 Estimation of Airstream Concentrations of Particulates From Subisokinetically Obtained Filter Samples. G.A. Sehmel. Am. Ind. Hyg. Assn. J. 28, 243-253 (May-June, 1967).

Experimental estimates of errors in the measurement of concentrations of particulates in air from subisokinetically obtained samples were determined for a 1.65-inch-diameter filter holder geometry. Sampling velocities were from 0.008 of isokinetic to isokinetic for air velocities from 2.7 to 30 mph. Impaction efficiencies with no flow through the filter were determined for the lower limit of the model used to correlate the data. The model was used to calculate curves for comparison with the experimental data for finite subisokinetic sampling rates and to calculate concentration corrections as a function of particle size, sampling rate, and air velocity. There are 13 references.

-- Author's abst.

- 782 Light-Field Microscope Versus Microprojector in Determining Coal Dust Concentrations. P. Zullo and E. Digon. Am. Ind. Hyg. Assn. J. 28, 238-242 (May-June, 1967).

A study was undertaken to statistically compare equivalent area field counts and dust concentrations obtained by using a microprojector and a light-field microscope. This was to test the opinion that the two methods, although allowed by the standard dust counting technique, are not comparable. The precision between observers and within one method was also examined. The study shows that the two counting methods do not produce comparable results and that, on the average, higher dust concentrations can be expected with the microprojector. There are 10 references.

-- Authors' abst.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 783 Cold Stress and Muscular Exercise With Special Reference to Accidental Hypothermia. L.G.C.E. Pugh. Brit. Med. J. 2, 333-336 (May 6, 1967).

Observation of O_2 intake and body temperature on clothed subjects during ergometer exercise in a simulated wet-cold situation showed that at work rates up to 800 kg/min, O_2 intake increased by 0.4 to 0.5 liter/min, compared with control observations in warm situations. At work rates of 900 kg/min and over there was no metabolic increase in response to cold. The metabolic response was inhibited at a rectal temperature of 37.8°C, mean skin temperature being

approximately 20°C. At the lower work rates rectal temperature fell toward new levels, depending on the work rate. Muscle temperatures and clothing insulation were also investigated. The findings are discussed in relation to accidental hypothermia in outdoor activities.

-- J. Am. Med. Assn. References & Reviews

- 784 Hearing in the Mabaans; a Critical Review of Related Literature. M. Bergman. Arch. Otolaryngol. 84, 411-415 (1966).

The author corrects a popular but erroneous summarization of studies on the Mabaan tribe in the Sudan. It has been said that the studies indicate that these people, who are exposed to a minimum amount of noise, have better hearing at all ages than, for example, Americans. Bergman shows that instead there is no essential difference between young people in the two cultures, and that even in the oldest age groups, the best 10% of the listeners are completely comparable. He speculates that the mean differences in the oldest groups are due to the greater heterogeneity of the American culture.

-- J. Occ. Med. Absts.

- 785 Noise. L.L. Beranek. Sci. Am. 215, 66-74, 76 (Dec., 1966).

The author suggests the problem of noise can be solved by instituting and enforcing noise codes, by improving design and operation of industrial machinery and vehicles, by interposing buffer zones to separate residential areas from airports and superhighways, and by sealing buildings against noise where proximity to noise is unavoidable.

-- Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 786 Portable Battery Powered Instrument for Measuring Concentrations of Airborne Halogenated Hydrocarbon Compounds. C.B. Avera, Jr. Rev. Sci. Instr. 37, 1711-1715 (Dec., 1966).

A lightweight, portable instrument for detection and measurement of halogenated hydrocarbon concentrations in ambient air has been developed. The detection principle is a form of the Beilstein flame test; with the addition of certain refinements, notably regulation of fuel delivery and sampling rates, precise optical filtering, and solid state optical detection and readout, a fully quantitative response has been achieved. There are 7 references.

-- Public Health Eng. Absts.

- 787 Calibration of Lined Filter Paper for Measuring Short-Term Hydrogen Fluoride Dosages. The Effect of Temperature, Humidity, WindSpeed, and Dose. W.L. Wilson, M.W. Campbell, L.D. Eddy, and W.H. Poppe. Am. Ind. Hyg. Assn. J. 28, 254-259 (May-June, 1967).

Lined filter papers were exposed to analyzed concentrations of hydrogen fluoride under controlled conditions of temperature, dew point, concentration, windspeed, and time. The exposed papers were analyzed for their fluoride content. Within the limits of accuracy of the test set-up, the following conclusions are made: Temperature, dew point, concentration, and time have little or no effect on absorption. Dose has little or no effect on absorption until dosages in excess of 400 to 600 ppm min, dependent on windspeed, are reached. Within the limits of 3 to 18 mph, absorption varies with dosage according to the following equation: $\mu\text{g}/\text{dm}^2/\text{ppm min} = 1.07 \times \text{windspeed (mph)} + 11$.

-- Authors' abst.

- 788 Evaluation of Teflon Permeation Tubes for Use With Sulfur Dioxide. F.P. Scaringelli, S.A. Frey, and B.E. Saltzman. Am. Ind. Hyg. Assn. J. 28, 260-266 (May-June, 1967).

Use of permeation tubes has been proposed as a simple technique for preparing accurate primary standard low concentrations of gaseous air pollutants. Liquefied gas is sealed in FEP Teflon tubes with glass or metal balls. The gas permeates through the walls of the tube at a rate fixed by the geometry of the system and by the properties of the compound. At constant temperature the permeation rate is constant. This study of tubes containing sulfur dioxide includes comparison of the gravimetric method of calibration with more specific methods of analyses for sulfur dioxide. Comparison of the average rates determined colorimetrically and coulometrically with the average rates computed from weighing the tubes over a period of 600 hours gave ratios of 95.5% for the thin-walled (0.012-inch) and 97.5% for the thick-walled (0.030-inch) tubes. These results indicate that Teflon permeation tubes are extremely useful for preparing accurate concentrations of atmospheric pollutants, for calibrating instruments, and for developing or comparing analytical methods. Temperature is a critical variable that must be controlled within $\pm 0.1^\circ\text{C}$. There are 19 references.

-- Authors' abst.

03122589

- 789 Commuter Exposure to Atmospheric Lead. V.J. Konopinski and J.B. Upham.
Arch. Environmental Health 14, 589-593 (April, 1967).

A method of sampling for atmospheric particulate lead from a moving vehicle is described. Commuter exposure to lead levels measured in Cincinnati, Los Angeles, and San Francisco are presented. Mobile sampling was conducted on representative traffic arteries in each city during the morning and afternoon traffic rush and during midday. Background levels were also measured on rural routes. Mean concentrations ranged from 9 micrograms/cu. m. to 38 micrograms/cu. m. in weekday samples from downtown and freeway routes, and from 2.8 micrograms/cu. m. to 5.8 micrograms/cu. m. for rural roads. In Los Angeles on the Hollywood and Harbor Freeways and at the "stack", 11 of 14 samples had concentrations greater than 40 micrograms/cu. m., and the maximum single measurement was 71.3 micrograms/cu. m. There are 8 references. -- Authors' summary

- 790 Atmospheric Lead Concentrations as a Function of Meteorology. K.G. Blemel.
Arch. Environmental Health 14, 594-603 (April, 1967).

Through the use of curvilinear numerical programming techniques, it was possible to establish basic relationships between concentrations of atmospheric lead particulate and the concurrent meteorology. Once the mathematical model was maximized to desired or possible levels, predictions were made of the extreme concentrations possible under existing conditions. The model derived for samples at the Philadelphia International Airport was a combination of an inverse logarithm of the wind speed and directional coefficient of the wind vector. The effect of inversions or atmospheric stability on concentrations generated over a flat topographical area was minimal when averaged over 48 hours. Under special conditions, concentrations of lead particulate in the atmosphere can be expressed as a function of wind, emissions, and traffic patterns. Ideal conditions of flat terrain and long sample duration can be investigated by curvilinear parametric numerical techniques with the use of a mathematical model developed through statistical techniques of correlation. It seems very worthwhile to investigate further the meteorological dispersion of vehicular lead emissions in a central city location with comprehensive traffic and meteorological data. Perhaps, through such investigations the contribution of automotive exhaust to atmospheric pollution can be estimated with the use of lead concentrations as the indicator. There are 13 references. -- Author's summary

- 791 Instrumentation for the Measurement of Low Velocities With a Pitot Tube. G.M. Hama and L.C. Curley. Am. Ind. Hyg. Assn. J. 28, 204-207 (May-June, 1967).

The advantages of the pitot tube for stack and duct sampling include: ruggedness, reliability, ability to be used in dusty, corrosive, or hot atmospheres, and no need of calibration. The main disadvantage is its lack of preciseness in velocities below 700 to 1000 fpm. A simple electrical sensing manometer which retains the trouble-free characteristic of a U-tube manometer has been developed. This manometer will give repeatable readings within 0.0003 inch with different observers. Preliminary wind tunnel tests have indicated that velocities as low as 250 to 300 fpm can be measured. -- Authors' abst.

- 792 Aerosol Sampling With a Side Port Probe. D. Lundgren and S. Calvert.
Am. Ind. Hyg. Assn. J. 28, 208-215 (May-June, 1967).

A most important consideration in determining particulate concentration in a gas stream is that of obtaining a true sample. This report describes an experimental investigation of a side port probe and a conventional sampling probe for obtaining aerosol samples from a duct. Sampling bias for both types of probe was determined experimentally over a wide range of test conditions using monodispersed aerosols from 0.5 to 10 microns in diameter. Sampling bias was shown to be a function of the inertial impaction parameter and duct to probe velocity ratio. Experimental results are presented. Operational limits over which a sampling probe can be used are shown as a function of the permissible sampling error. There are 8 references. -- Authors' abst.

PREVENTIVE ENGINEERING

- 793 Performance of Respirator Expiratory Valves. W.A. Burgess and D.E. Anderson.
Am. Ind. Hyg. Assn. J. 28, 216-223 (May-June, 1967).

A survey of the performance of expiratory valves used in air-purifying respirators is presented. Valves chosen for the study represented the four major valve design types in use in this country.

Operating pressure, resistance to flow, and dynamic leakage were evaluated. The study of leakage included an investigation of the effects of valve orientation, covering, humidity, and work rate on dynamic leakage. Test results demonstrated significant differences in performance between valve types. There are 7 references.
-- Authors' abst.

- 794 Hydrogen Distribution to Process Laboratories. J.W. Hammersmith and A.W. Larson. Chem. Eng. Progr. 62, 54-58 (Dec. 1966).

A system for supplying hydrogen to process laboratories facilitates the safe handling of increasing amounts of hydrogen that are demanded by petroleum and petrochemical processing. Pilot plants are supplied through individual distribution subsystems. There are 10 references.
-- Authors' abst., Public Health Eng. Absts.

- 795 Fire and Hyperbaric Oxygen. D.M. Denison, J. Ernsting and A.W. Cresswell. Lancet 2, 1404-1405 (Dec. 24, 1966).

Experimental evidence shows that the risks of ignition and the subsequent burning-rate in oxygen-rich environments, such as those obtained with hyperbaric oxygen therapy, are strikingly increased when compared with normal conditions. The risk increases as more equipment fitted with electronic instruments is used. The fires are more serious because of the high burning rate, and established methods of fire extinction are ineffective under these conditions. Possible precautions are discussed. There are 11 references.

-- Summary cond., Public Health Eng. Absts.

- 796 Hazards of Potentially Explosive Materials. W.G. Sykes. Chem. Eng. Progr. 62, 49-53 (Dec., 1966).

Conventional tests for explosive sensitivity and safety with such materials as ammonium nitrate do not determine all hazards. The Primacord Wrap Test described in this paper is useful in detecting unexpected levels of sensitivity in new products. There are 7 references.

-- Author's abst., Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 797 The Electric Automobile. G.A. Hoffman. Sci. Am. 215, 34-40 (Oct., 1966).

Advances in development of an air battery permits consideration of the electric automobile as a future replacement for the gasoline-driven automobile. The changes possible from use of electric cars, including lessened air pollution, are described. -- Public Health Eng. Absts.

- 798 Ice Nuclei From Automobile Exhaust and Iodine Vapor. V.J. Schaefer. Science 154, 1555-1557 (Dec. 23, 1966).

When exposed to a trace of iodine vapor, the submicroscopic particles of lead exhausted by automobiles produce nuclei for the formation of ice crystals. Concentrations of particles exceeding 10^6 per liter can be directly sampled from the exhaust pipe of an idling motor. Concentrations of from 10^4 to 10^5 per liter have been found in rural air downwind of auto roads; the concentration at one rural site has increased by an order of magnitude in 13 years. The phenomenon may provide a method of modifying clouds and of determining (and monitoring) the percentage of automobile exhaust in a polluted atmosphere. It may be an important factor in inadvertent modification by man of the climate. There are 7 references.

-- Author's summary, Public Health Eng. Absts.

- 799 Area-Dosage Relationships Downwind of a Point Source. P.W. Nickola and Naydene E. Nutley. Am. Ind. Hyg. Assn. J. 28, 283-290 (May-June, 1967).

A relationship is developed between the value of a dosage isopleth downwind of a point source and the area enclosed by that isopleth. Equations describing this relationship are presented for stable, slightly stable, and unstable atmospheres. The equations for estimating the enclosed area are improved by the inclusion of a wind speed in the dosage term. The choice of a representative wind speed is discussed. These empirical equations are compared to similar equations previously developed, and implications of the differences are presented. There are 9 references.
-- Authors' abst.

03122591

- 800 Trends and Levels of Air Pollution in New York City. M. M. Braverman.
Am. Ind. Hyg. Assn. J. 28, 291-293 (May-June, 1967).

Gaseous pollutants that emanate chiefly from motor vehicles for which adequate control devices were not in use, continued to show a slight upward trend. Particulates continue to show a slight downward trend. Evidence has been presented which demonstrates that more significant values may be achieved when absolute concentrations of gaseous pollutants are compared with their respective threshold level values. Six references are given. -- Author's conclusions

MANAGEMENT ASPECTS

- 801 Alcoholism in Industry and Your Safety Program. F. Hill, Jr., and E. J. McCartney.
J. Am. Soc. Safety Eng. 12, 9-11 (July, 1967).

Alcoholism, as an industrial problem, has been grossly overlooked by most management groups. Its seriousness is especially acute from the standpoint of developing and maintaining an effective safety program. It takes only one or more isolated alcoholics to wreck an otherwise excellent plant safety record. The latest figures on alcoholism show that three and one half million employed persons are alcoholics or have a drinking problem. It is estimated that one of 14 drinkers are so affected, with an estimated cost of alcoholism to industry of approximately two billion dollars per year. Principle cost items are absenteeism, accidents, workmen's compensation, health insurance payments, and loss of employee efficiency. Another item is damage of product and equipment by the accident-prone alcoholic employee. Alcoholism is the fourth largest health problem in the United States and is exceeded only by cancer, heart disease, and mental illness. In many cases it has been found that the alcoholic employee will set up a situation whereby another employee will become involved in an accident. Due to these situations, as well as accidents by the alcoholic, cost figures will average out about three times that for the employee without a similar problem. In traffic safety the alcoholic is involved in a disproportionately large number (about 50%) of fatal accidents. Because of indirect costs, this is an area particularly expensive to industry. Thus, alcoholism is a very real and live safety problem, although in many companies it has not been properly judged or evaluated. This is primarily due to a lack of understanding, knowledge, and interest on the part of management, and lack of information concerning actual costs. Perhaps one of the difficulties in industry is the common misconception of an alcoholic as a drunk on Skid Row. Statistics show only three per cent of alcoholics are in this classification. Ninety-seven per cent are either in industry or in the home and both of these classifications are driving automobiles on our streets and highways. A table shows the number of alcoholics employed and their absenteeism records. There are 11 references. -- Authors' introduction

ACCIDENTS AND PREVENTION

- 802 Psychology of Safety. R. Turfboer. Natl. Safety News 95, 52-53 (June, 1967).

Further accident prevention and improved safety records may result from careful individual attention given to people who are known to be high-accident risks. This means early recognition of possible underlying factors and appropriate help for people who are habitually or temporarily under great stress. Accidents are the end result of an interplay of many variables in which major life changes play an important part. Life's crisis do not come and go unnoticed. Other variables discussed by the author may be more subtle. A person's safety, including our own, can be preserved to some degree by avoidance of security threats. Even after unavoidable ones have occurred they need not be followed by an accident or other health change provided proper counseling is available. It should be realized that what is a crisis for one person may not be a crisis for another. The stress potential varies greatly from individual to individual. Future research and applied behavioral science will eventually contribute to further improvement of safety records. The success of the next 50 years of safety efforts in industry will depend on a better understanding of safety. The paradox that some people forego safety to avoid insecurity must be solved. There are 7 references.

- 803 U. S. Accident Frequency Rates: Fact or Fiction? A British Eye View. N. T. Freeman.
Natl. Safety News 95, 42-45 (June, 1967).

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of the British Standards Institution, and vice president of the Institution of Industrial Safety Officers. He concludes that safety is everybody's business in the United States. (1) There is a great awareness in government circles of the high cost of accidents at work and their effect on morale and the national economy. (2) Management has become so indoctrinated with the gospel of safe working that the correct implementation of accident prevention programs is accepted as a normal function of management. (3) The average worker (at least at those plants visited by the author) accepts, without question, personal responsibility for his own safety. He also expects others to do the same, whether they are shop floor workers or management.
--Cond. from Nat'l. Safety News

- 804 The Management of Industrial Injuries. The Internist's Role. R. A. Sokolov.
Arch. Environmental Health 14, 348-354 (Feb., 1967).

Proceeding on the theory that industrial accidents are part of a psychological process, a group of internists and psychiatrists arranged a program to study and treat accident victims. Internists managed each case and obtained consultation and direction at weekly seminars. As the internists gained experience and confidence in dealing with emotional and personal problems they required less and less help from psychiatrists. Analysis of the case histories revealed a recurring pattern of causation. This pattern is illustrated by a composite history derived from the entire series of patients studied. The details of a single case are presented illustrating the therapy. Four references are given.
-- Author's summary

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