

IN RE: ABRAMS
November 1992



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LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

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INDUSTRIAL HYGIENE FEATURES

A pointed study in pre-employment examinations is presented in Abst. No. 21.

A discussion of medical disability standards is given in Abst. No. 22.

The medical care of the alcoholic patient is described in Abst. No. 25.

Abst. No. 31 reports on the early management of the critically injured.

A prospective study of coronary heart disease in an industrial population is reviewed in Abst. No. 42.

The effects of cutting and grinding fluids on the skin are studied in Abst. No. 50.

Washing machine and fiberglass in the subject of Abst. No. 51.

Abst. No. 56 investigates the pharmacologic effects of pentaborane, decaborane, and reserpine.

Neurological disease in two manganese steel workers are reported in Abst. No. 59.

Data on solving air contamination problems through diagnostic air sampling are detailed in Abst. No. 66.

Abst. No. 70 is concerned with the measurement of dust exposures in the asbestos textile industry.

Information on morphologic changes induced in lungs of animals by x-rays is presented in Abst. No. 75.

Abst. No. 87 gives details on effects of community air pollution on the prevalence of respiratory disease.

See Abst. No. 88 for the Pittsburgh air pollution control story.

Abst. No. 91 surveys the scope and function of the professional safety position.

A nitric oxide explosion is described in Abst. No. 94.

FOUNDATION FACTS

NEW MEMBER: The Foundation is pleased to add the name of American Petroleum Institute to membership.

THE 3rd ANNUAL ENGINEERING DISCUSSIONAL sponsored by the Foundation's Engineering Committee, on "The Control of Environmental Health Hazards," and attended by 53 interested representatives of the Foundation's membership was held at the Sewickley Motor Inn, Pittsburgh, on January 10-12. Details of the program were arranged by S.H. Thomas, Owens-Corning Fiberglas Corporation; Chairman of the 1967 Discussional Committee. The meeting opened with a general discussion of industrial hygiene and pollution control trends in 1967. Other topics of discussion were: Confined Space Ventilation, chaired by William J. Schreiber, Bell Telephone Labs, discussion leaders were Kenneth M. Morse and William C. Jones both of U.S. Steel Corporation, Kenneth E. Robinson, General Motors Corp., and Douglas Ballard, Sandia Corporation; Heat Stress, chaired by Lester V. Cralley, Aluminum Company of America and led by Miles O. Colwell and B.R. Small both of ALCOA; Legal Aspects of Air Pollution, chaired by S.H. Thomas and discussion leader was William L. Kreutz also of Owens-Corning Fiberglas Corporation; H. Wilbur Speicher, Westinghouse Electric Corporation, chaired a discussion on Waste Disposal along with two discussion leaders from Cyrus William Rice & Company, James Rice and Henry Bramer. The last session of the meeting was a discussion on Special Problem Areas led by Mr. Thomas. The meeting was considered highly successful by those who attended according to Lester V. Cralley, chairman of the Foundation's Engineering Committee, who added that plans are already underway to develop a program for next year. The dates of January 9-11, 1968, have been tentatively reserved.

THE 2nd ANNUAL CHEMICAL-TOXICOLOGICAL MEETING: February 1-2 are the dates set for the IHF Workshop on Threshold Limit Values to be held at Mellon Institute, Pittsburgh, sponsored by the Chemical-Toxicological Committee.

AN IHF BOARD OF TRUSTEES MEETING will be held on February 1.

PUBLICATIONS IN PREPARATION: The following publications, now in preparation, will be distributed in the near future: Transactions of 1966 Annual Meeting; List of Publications; Chemical-Toxicological Series Bulletin No. 6 "Range-Finding Toxicity Data (A summary of findings of 43 compounds from IHF Research Laboratory)" and Engineering Series Bulletin No. 7 "Combustible Gas and Vapor Detectors."

32nd ANNUAL MEETING—OCTOBER 10-11, 1967

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1 Science and Public Policy.

Seventy-five per cent of the funds devoted to scientific research and technological development come from the Federal Government. This financing of science enables the government to affect not only our scientific, technical, and economic development but also our higher education, industrial and regional growth, future health, defense capability, and taxes. Therefore the question of public policy with respect to science and the effect of science on other public policies is one of national concern. Public policy must be concerned with science because the plain fact is that, in almost any activity, science and technology are very important to the functioning of our society. As a civilized country our position in the world depends to a high degree on the intellectual stature of our science and on the superior technology which supports our higher standard of living. The achievement of many of our other goals will require the continued advance of science, so on that score we cannot afford to let up. The education of scientists and engineers must be a primary task for any federal policy. Whatever we conceive to be important in the future will require highly educated, highly trained men and women. Science is one of the leading forces which determine the shape of the future. And public policy cannot be intelligently formulated without an informed estimate of what the future will bring. -- Cond. from a paper by Dr. Donald F. Hornig, in December, 1966, Battelle Tech. Rev.

2 Alcoholism Control.

The Department of Health, Education, and Welfare (HEW) is setting up a National Center for the Prevention and Control of Alcoholism. HEW Secretary John Gardner said the immediate goal is to make the best treatment and rehabilitation services available to those who need them now through the stimulation of existing resources and the development of new manpower and facilities. Gardner said the long-range goal of the center will be the development of effective, practical and acceptable methods of preventing alcoholism and excessive drinking. In addition, Gardner said, another long-range goal will be development of improved therapeutic techniques. In addition to creation of the center, Gardner announced the appointment of an 18-member National Advisory Committee on Alcoholism to provide advice and guidance to the department. Milton Silverman, special assistant to the assistant secretary for health and scientific affairs, was named coordinator of the new program and executive secretary of the new advisory committee. Gardner, in announcing the new program, called alcoholism a major health problem. According to the best available estimates, he said, four to five million Americans are alcoholics and 70 million Americans drink.
-- AMA News 9, 6 (Oct. 31, 1966)

3 \$16 Million Cost to End Smallpox.

It will cost an estimated \$16 million to rid the Western Hemisphere of smallpox, says the Pan American Health Organization. Only 247 cases have been reported so far this year (1966). There were 3,218 cases in 1964, the last year for which full statistics were available. Of those cases, 3,176 were reported in seven countries—Brazil, Peru, Columbia, Paraguay, Bolivia, Argentina and Uruguay. Most cases occurred in Brazil where 2,673 were reported. Next was Peru with 454. Pan American officials say it will take \$13.6 million as the share of ten hemisphere governments, and a \$2.4 million international contribution to carry out the two-year programs necessary to eradicate smallpox in these countries.-- AMA News 9, 8 (Oct. 31, 1966)

4 Drug Efficacy.

The FDA again has enlisted the National Academy of Sciences in a study of drug efficacy, this time on the effectiveness of approximately 1,100 veterinary drugs put on the market between 1938 and 1962. The \$100,000 study will nearly parallel the one the academy now has under way, also for the Food and Drug Administration, on the efficacy of drugs for humans. Dr. C.M. Stowe, professor of veterinary medicine at the University of Minnesota, is chairman of the

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12-member committee which will direct the study. The study likely will take from 18 to 24 months to complete. Meanwhile a drug industry suit contesting FDA's authority to require proof of efficacy of drugs introduced before passage of the 1962 Kefauver-Harris Drug Amendments (the so-called "grandfather clause") still is pending in federal court in Wilmington, Delaware.

-- Chem. Eng. News 44, 53 (Dec. 5, 1966)

5 Drinking Water and Pesticides.

Farm wells used for drinking water are not contaminated with pesticides, says the U.S. Department of Agriculture (USDA). A water monitoring program conducted by the Plant Pest Control Division of the Agricultural Research Service shows that neither deep nor shallow wells are being contaminated with pesticides. However, ponds and catch-basins that collect runoff water from treated fields show minute but measurable amounts of pesticides at certain times. Organic pesticides, although nearly insoluble in water, frequently become bound to suspended matter in the water, USDA says.

-- Chem. Eng. News 45, 29 (Jan. 2, 1967)

6 Effect of Air Pollutants on Plants.

The effect of air pollutants on plants will be studied by the Agriculture Department at a new laboratory under construction at Beltsville, Maryland. Studies will be concentrated on air pollutants present in photochemical smog, including ozone, peroxyacetyl nitrate, sulfur dioxide, and nitrogen oxide. Part of the research will be directed at identifying species and varieties that are resistant or susceptible to pollutants and developing pollution-resistant types. USDA will also explore use of antioxidants to reduce damage.

-- Chem. Eng. News 44, 49 (Dec. 12, 1966)

7 Fingernail Hardeners.

Increasingly popular in recent years as part of milady's beauty care have been nail hardeners, designed to prevent the fingernails from chipping, fragmenting, and peeling. Recently, however, a disturbing note has appeared in that several physicians have reported severe reactions to the formaldehyde contained in many of these hardeners. The reactions have included discoloration, bleeding under the nail, pain, dryness, and loosening or even loss of the nails, according to AMA Committee on Cutaneous Health and Cosmetics. In some cases the cuticle and surrounding skin have also been involved. While formaldehyde nail hardeners may be helpful, the Committee warns that the potential user should realize that there is a risk involved.

-- J. Am. Med. Assn. 198, adv. p. 9 (Dec. 5, 1966)

8 Society of Toxicology.

The annual scientific meeting of the Society of Toxicology will be held in Atlanta, Georgia, on March 23, 24, and 25, 1967. Anyone interested may attend. At the 1966 annual meeting, 82 scientific papers in all phases of toxicology were presented. Abstracts of these appeared in the journal of the Society, Toxicology and Applied Pharmacology, Vol. 8, pages 334-364 (1966). Papers for the 1967 meeting may be submitted or must be sponsored by members of the Society. Additional information about the meeting may be obtained from the Secretary: Mr. Carrol S. Weil, Mellon Institute, 4400 Fifth Avenue, Pittsburgh, Pennsylvania 15213.

9 Conference on Biological Effects of Pesticides.

A conference on the Biological Effects of Pesticides will be held under the auspices of The New York Academy of Sciences at the Waldorf-Astoria in New York City on May 2, 3, 4, and 5, 1967. It is believed that this will be the first conference directed especially to members of the scientific community who are in a position to contribute to the further sophistication of research on health and related aspects of pesticides. It is planned to invite world authorities on toxicology, metabolism, mode of action, and epidemiological effects of pesticides to participate as speakers. Interested persons desiring information concerning the conference should address inquiries to the Executive Director, The New York Academy of Sciences, 2 East 63rd Street, New York, N. Y. 10021.

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COMING EVENTS

- 10 Feb. 8-10 American Academy of Occupational Medicine, San Francisco, Calif.
 Feb. 9-15 Congress on Medical Education, Chicago, Ill.
 Feb. 15 American Urological Association, New York, N.Y.
 Feb. 15-19 American College of Cardiology, Washington, D.C.
 Feb. 18-22 American Academy of Allergy, Palm Springs, Calif.
 Feb. 19-23 Association of Operating Room Nurses, San Diego, Calif.
 Feb. 20-25 American Academy of Forensic Sciences, Honolulu, Hawaii.
 Feb. 23-25 Central Surgical Association, Pittsburgh, Pa.
 Feb. 26-Mar. 4 American Society of Clinical Pathologists (Interim), Las Vegas, Nev.
 Feb. 27-Mar. 2 American College of Surgeons (Annual Four-Day Sectional Meeting for Doctors and Graduate Nurses), New York, N.Y.
 Feb. 28 National Multiple Sclerosis Society, New York, N.Y.

LEGAL DEVELOPMENTS

11 Carcinogenic Chemicals.

Britain is moving to prohibit the importation of certain carcinogenic chemicals. Draft regulations just published by the Ministry of Labour ban the production and use in the chemical industries of beta-naphthylamine, benzidine, 4-aminodiphenyl, 4-nitrodiphenyl, and their salts. This step is a legal formality since production of all four compounds has already been given up in the U.K. However, once the regulations are on the books, the Ministry of Labour can obtain an order in council prohibiting the importation of the chemicals. The draft regulations also provide for medical supervision of employees who work with alpha-naphthylamine, 0-tolidine, dianisidine, and dichlorobenzidine and their salts, as well as auramine and magenta. All are suspected of being carcinogenic.

-- Chem. Eng. News 45, 41 (Jan. 2, 1967)

12 Laboratory Animals.

Regulations for the humane treatment of laboratory animals have been proposed by the Agriculture Department. This is the first step in enforcing the Laboratory Animal Welfare Act (Public Law 89-544) passed by Congress earlier this year (1966). The rules apply principally to animal dealers, and cover dogs, cats, monkeys, guinea pigs, rabbits, and hamsters. The rules apply to research laboratories while the animals are on the premises, but they do not apply during actual research. Under the law, the final regulations must be in effect no later than February 24. Interested persons have until January 15 to send their comments to the Animal Health Division, Agricultural Research Service, U.S. Department of Agriculture, Federal Center Building, Beltsville, Maryland 20782.

-- Chem. Eng. News 44, 23 (Dec. 26, 1966)

13 Pesticides.

Pesticide makers can no longer disclaim responsibility for the safety or effectiveness of their products when used as directed. Under a new ruling by the U.S. Department of Agriculture (USDA) such statements when made on the label of a pesticide "are both false and misleading, and are not acceptable." Many manufacturers state on their labels that they assume no responsibility for the safety or effectiveness of their product—even if used as directed. However, USDA points out, federal law requires that anyone registering a pesticide must prove that it is safe and effective if directions are followed.

-- Chem. Eng. News 44, 31 (Dec. 19, 1966)

14 Fluorides and Pregnancy.

There is no evidence that drugs containing fluoride prevent tooth decay in children when the drugs are taken by expectant mothers according to a recent ruling by the Food and Drug Administration. The agency said these prenatal preparations, sold only on prescription, are misbranded and subject to regulatory proceedings if offered for prenatal tooth strengthening and decay prevention. Drugs for which such claims are made may be sold only when evidence of their effectiveness is shown in an approved new drug application, the FDA said.

-- AMA News 9, 2 (Oct. 31, 1966)

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BOOKS, PAMPHLETS, AND NOTICES

- 15 Mental Health In a Changing Community. Edited by: Reed Brockbank and Dorothy Westby-Gibson. AVAILABLE FROM: Grune & Stratton, Inc., 381 Park Avenue South, New York, N.Y. 10016. 163 pp. (October 18, 1966). PRICE: \$6.50.

Mental health, despite its conceptual ambiguity, is seen as a positive value and a goal toward which individuals and groups in the community are devoting an ever-increasing amount of effort, money, and attention. Recent studies (i.e., the Manhattan Study, the Baltimore Study, and the New Haven Study) have increased the average person's awareness that we are not a mentally healthy society. At least, we have an abundance of mental and emotional discomfort and dysfunction. Attempts to look at the causes and to consider possible remedies must entail a multidisciplinary approach. The San Francisco Association for Mental Health joined with the University of California, San Francisco Medical Center, Department of Continuing Education in Medicine and the Health Sciences, to sponsor a symposium. The material presented in this symposium makes up the contents of this book. Some portions are formal and explicit while others are discursive. Taken together they reflect the thinking of the participants. Two threads, the uniqueness of the individual and the effort to make fact of the theoretical assumption that humans are all equal to one another, will be found weaving themselves through the discussions.

- 16 Air Quality Data From the National Air Sampling Networks and Contributing State and Local Networks 1964-1965. U.S. Department of Health, Education, and Welfare. AVAILABLE FROM: U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Air Pollution, Cincinnati, Ohio. 125 pp. (1966). PRICE: Not Given.

The Air Quality Section of the Public Health Service's Division of Air Pollution, with the assistance and cooperation of state and local agencies, carries on a variety of air sampling activities to obtain information about air quality in the United States. This report summarizes data gathered during 1964 and 1965 at nearly 300 stations that gathered bi-weekly samples of suspended particulate matter, about 30 stations that gathered bi-weekly samples of two gaseous pollutants, and another seven stations that continuously monitored six gaseous pollutants, suspended particulates, and soiling index. In addition to the basic data on suspended particulates and gases, data on several fractions of the particulate matter are included herein. These are generally presented for years earlier than 1964-1965, not only because the chemical analysis of the particulate samples lags behind the primary weight determination, but also because expanded laboratory capacity has permitted the analysis of earlier samples held in reserve. Table A presents network-wide average and maximum concentrations of the suspended particulate and gaseous pollutants sampled for at the bi-weekly sampling stations, including comparable data gathered by state and local agencies. Concentrations of suspended particulates in individual samples ranged from $2 \mu\text{g}/\text{m}^3$ to $1254 \mu\text{g}/\text{m}^3$. The range of concentrations in suspended particulate samples from nonurban stations was from $1 \mu\text{g}/\text{m}^3$ to $312 \mu\text{g}/\text{m}^3$. Concentrations of sulfur dioxide in individual gas samples ranged from below the minimum detectable up to $1100 \mu\text{g}/\text{m}^3$; nitrogen dioxide concentrations ranged from $11 \mu\text{g}/\text{m}^3$ to $374 \mu\text{g}/\text{m}^3$. The geometric mean concentration of suspended particulates at "every-year" stations was $106 \mu\text{g}/\text{m}^3$ in both 1964 and 1965. The 1965 average indicates no change from 1964. Levels during both years were significantly (some six percent) above the level of 1961-1963. Arithmetic averages for some 300 cities over the period 1961-1965 have been rank-ordered and divided into five equal groups, or quintiles. The ranges of concentrations included in the quintiles are listed in Table B. Thus, a city can be classified in the "lowest," "highest," or one of the intermediate concentration categories. Table C presents the distribution of average particulate values for the 300 cities by population. Thus a city of 300,000 with a suspended particulate average of $75 \mu\text{g}/\text{m}^3$ would have relatively low particulate levels for its size, while a similar-sized city with an average of $175 \mu\text{g}/\text{m}^3$ would have relatively high levels. The Continuous Air Monitoring Program (CAMP) stations produce such a wealth of data that the results from each station are being published in detail individually. Brief summaries of the CAMP data are included and salient values are presented in Table D. Curves in Figure 2 portray the percent of time or frequency with which the various concentrations of the gaseous pollutants occur at the several CAMP stations.

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- 17 Occupational Health Guide—For Medical and Nursing Personnel. Revised and Enlarged 1966. Occupational Health Committee of State Medical Society of Wisconsin and Occupational Health Nurses Section of the Wisconsin Nurses Association. AVAILABLE FROM: The State Medical Society of Wisconsin, 330 East Lakeside Street, Box 1109, Madison, Wisconsin, 53701. 69 pp. plus 12 anatomical charts. PRICE: \$5.00 with ring-book cover, \$4.00 without cover. All pages punched to fit standard ring binder for 8-1/2 x 11 sheets.

This Guide is concerned with the scope and objectives of occupational health programs and, in particular, with the functions and relationships of physicians and nurses in this health field. It sets forth the shared responsibilities, as well as those of each of the professions. The Occupational Health Committee of the State Medical Society of Wisconsin deems it essential for the development of a sound occupational health program that a physician be appointed to serve as medical director. His services are necessary in the proper conduct of the employee health program and to provide medical direction for the occupational health nurse. These principles were first stated in 1932 when the State Medical Society of Wisconsin published "Suggestions for the Guidance of the Nurse in Industry". It was the first statement by any medical society in the nation formally acknowledging responsibility for establishment of a well-defined relationship between physicians and professional nurses working in occupational health programs. This is the second revision of the original publication. Each edition has stressed the need for concise, written medical directives from the physician. When the physician serves on a part-time, consultant, or other basis, written medical directives are needed to guide the occupational health nurse in making a provisional diagnosis and determining the next step in the care of ill or injured employees. It is fully recognized that today the preventive aspects of employee health services are and should be receiving increased attention from occupational health physicians and nurses. However, one of the nurse's major functions continues to be the emergency care of injured and ill employees. For this reason, a major portion of this publication has been devoted to the development of medical directives. A practical manual, it covers a wide range of subjects from "Abdominal Injuries" to "Wounds", suggesting steps to be taken, and providing space for specific instructions of the plant physician.

- 18 Handling of Toxicological Information. President's Science Advisory Committee, The White House, Washington, D.C. 21 pp. (June 1966). AVAILABLE FROM: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. PRICE: 15 cents.

During 1963-64 about 2,500 Investigational New Drug Applications were filed with the Food and Drug Administration. During the same period, approximately 20 new chemicals entered the human environment as herbicides, pesticides, insecticides and additional new chemicals as food preservatives; while perhaps an equal number of new industrial chemicals found places in the economy. None of these latter were subjected to the intensive physiological scrutiny required by the FDA for approval of new drugs. The human body has a remarkable tolerance for extraneous chemical compounds, but it is possible that under the onslaught of the increased numbers, varieties, and concentrations of compounds this protective tolerance may no longer be adequate to ensure good health over today's 70-year-plus life span. Social organizations already exist to handle problems created by acute lethal dosages of chemicals; there are at most only sporadic and accidental problems of this type. However, most chemical compounds are toxic to some degree and in some manner. The problem is that toxic effects which may appear only after long-term, low-level exposure may be equally significant and potentially just as disastrous. Not only are these toxic effects important to the individual whose health may have been damaged; they may be of grave importance for the future well-being of the human race. "Toxicological information," as used in this report, comprises all information descriptive of the effects of chemicals on living organisms or their component subsystems. Responsibility for defining and minimizing the public health dangers resulting from the rapid increase in new chemical compounds introduced into man's environment is shared by many groups in the United States. The three largest groups are the medical and scientific community, governmental organizations (Federal, State, and local), and industry. Within each group, in turn, numerous organizations are involved with the toxic effects of chemical compounds; all three groups are represented on the Drug Research Board of the National Academy of Sciences/National Research Council. Ultimately, however, the public interest in its entirety can be safeguarded only by Government, as recognized in the act which created the Food and Drug Administration. This report therefore focuses on the role of appropriate organizations within the Federal Government, and in particular, on the Food and Drug Administration. A complete list of these agencies and their major responsibilities and activities in this area is given in appendix A.

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- 19 Working With Silver Solder. U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Occupational Health, PHS Publication No. 1518. 4 pp. (folder) (Oct. 1966). AVAILABLE FROM: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. PRICE: 5 cents; \$2.50 per 100.

Fumes generated during brazing can be a serious hazard. Brazing fluxes generate fluoride fumes when heated. Cadmium in silver brazing alloys vaporizes when overheated and produces cadmium oxide, a highly toxic substance. If cadmium oxide fumes are inhaled into the respiratory tract, they can cause pulmonary distress, shortness of breath, and in cases of severe exposure, may cause death. (See Industrial Hygiene Digest 30:5 p.1, May 1966 and 30:7 p.12, July 1966.) Silver brazing alloy, frequently called "silver solder," is an extremely valuable industrial material used for joining metals and alloys such as silver, copper, brass, bronze, stainless steel, carbon steel and dissimilar metal combinations where it is necessary to perform the joining of these metals at low temperatures. Its wide variety of applications include use in home jewelry making, dental laboratories, refrigeration and electronic equipment, and in the aerospace and missile industries. Brazing is a safe operation when proper practices are followed. As in all operations, there are certain hazards to be avoided. In brazing the major hazards are heat, chemicals and fumes. The American Welding Society and the American Society for Testing and Materials designations for silver brazing filler metals containing cadmium are: BAg-1, BAg-1a, BAg-2 and BAg-3. These silver brazing alloys can be safely used, however, if precautions are followed. The BAg-1 and BAg-1a classes of silver brazing filler metal can be successfully and properly used at temperatures below 1400°F. Since the boiling point of cadmium is 1412°F, brazing can be carried on safely using these two classes of filler metal. The remaining two classes of silver brazing filler metal, BAg-2 and BAg-3, have recommended brazing temperature ranges of 1295–1550°F and 1270 to 1500°F respectively. Brazing can be carried on safely using temperatures below 1400°F with these latter classes of filler metal. Since temperatures in the upper portion of these ranges can be reached, it is important to provide adequate local exhaust ventilation or, where this is not possible, individual air-supplied respirators. The American Welding Society states that: "Local exhaust or general ventilation systems shall be provided and arranged to keep the amount of toxic fumes, gases or dusts below the maximum allowable concentration as defined by the Acceptable Concentrations of Toxic Dusts and Gases, American Standard Z37, or the latest threshold limit value of the American Conference of Governmental Industrial Hygienists." The 1966 threshold limit value for cadmium is 0.1 mg per cubic meter of air. Under no circumstances should a torch flame be applied directly to the silver brazing alloy. The heat of the base metal should be used to melt and flow the brazing filler metal. As the torch flame is applied directly to the base metal, cadmium plated parts are potentially more hazardous than cadmium-bearing silver brazing alloys. When in doubt about a base metal, check with the supplier of the part. Cadmium plating should be removed before heating for brazing.

INDUSTRIAL MEDICAL PRACTICE

- 20 Phase Shifts of the Human Circadian System and Performance Deficit During the Periods of Transition: II. West-East Flight. G. T. Hauty and T. Adams. Aerospace Med. 37, 1027-1033 (Oct. 1966).

At periodic intervals throughout the day, biomedical assessments were made during the week prior to jet flight to Rome, throughout a 12-day layover period in Rome, and during the week following return to Oklahoma City. Completion of the primary shift of phase of the circadian periodicity manifested by internal temperature and heart rate required from four to six days and six to eight days, respectively. Increase in subjective fatigue occurred during the primary period of transition and following return to the environment of origin but psychological performance was not impaired to any statistically significant extent during either of these periods. Compared to the time lag of the physiological phase shift, the duration of subjective fatigue was very short. Comparison of these results with those obtained from a previous East-West flight did not reveal striking bidirectional differences save for the possible exception of psychological performance which was significantly impaired in the case of the East-West flight. -- Authors' abst.

- 21 Pre-employment Examinations—A Pointed Study. R. G. Leckey. J. Occ. Med. 8, 532-536 (Oct. 1966).

The findings of this study may be simply stated as follows: (1) on pre-employment examination the physical findings may exclude many excellent employees as well as the incapacitated; (2) medical history obtained during such examinations is next to worthless; (3) any record of previous

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minor accidents at work is of no use in predicting a man's future worth; and (4) the only information of use in foreseeing a man's potential contribution to the company are his age and marital status which information can be obtained by the personnel department.-- Cond. from author's comment

- 22 Medical Disability Standards. L. Price. J. Occ. Med. 8, 542-547 (Oct. 1966).

Disability in all its forms deserves universal interest. Disability as a result of old age, injury and disease is of more concern to every section of the population now than ever before. The medical and legal professions have special responsibilities to improve present standards and methods in bringing just, uniform, and valid assessments of the presence and degree of disabilities that interfere with natural functions and health and employment of people. Progress is necessary to develop more precise methods of measuring biological and other capacities that result in loss of ability to perform. The establishment of useful scientific standards is an important indicated goal. Education and research are means to essential improvement necessary in this social area of medicine and law. There are ten references.

-- Author's summary

- 23 Chronic Disease in Former College Students. III. Precursors of Suicide in Early and Middle Life. R.S. Paffenbarger, Jr., and D.P. Asnes. Am. J. Public Health 56, 1026-1036 (July, 1966).

A total of 225 suicides were identified among approximately 40,000 male former students of the University of Pennsylvania and Harvard University. Living classmates were randomly chosen to provide 450 control subjects for comparison with the suicides. Casetaking and other college records were examined for potential precursors of the self-destruction that evolved later in life. Familial, physical, sociocultural, and psychological characteristics emerged as correlates of subsequent suicide. The strongest indicators were psychological traits, and the other characteristics seemed important chiefly through their psychological implications. The differentiating familial characteristics included college training of parents, professional status of the father, marital separation of parents, and death of the father. Distinguishing physical characteristics of the subsequent suicides were average height, status of underweight, allergic predisposition, and self-assessed ill health. Sociocultural correlates were the characteristics of secondary boarding school student, cigarette smoker, nonparticipant in extracurricular activities including athletics, and failure to graduate from college. The distinguishing psychological traits, when self-assessed by the student, were insomnia, worry, self-consciousness, persecution, secretive-seclusiveness, and a complex of anxiety-depression. The role of the father assumed special prominence in the male suicide background, since paternal deprivation was a significant element and the loss of the mother was not. Professional status of the father also seemed to contribute either a deprivation of paternal guidance or the creation of a difficult model for emulation by the son. Substitution of guidance for the loss or absence of a father may constitute an effective and important preventive measure which college and other social agencies are capable of providing.

- 24 Trends in Employee Testing. Anonymous. Conf. Board Rec. II, 46-47 (Dec. 1965).

Conference Board surveys of personnel practices regarding the use of psychological tests were made in 1954 and 1964. In 1954, about 50-55% of the surveyed companies tested their workers. In 1964, 81% of the 437 surveyed companies used tests. Clerical testing was most widely used by all companies, with intelligence testing a strong second and interest testing least popular. Personality tests have not proven up to the early hope of screening out possible troublesome applicants. In the 1964 survey, 96% of the companies with testing programs considered test scores in selecting new salaried workers and 70% of these companies tested candidates for hourly jobs. Four out of ten companies administered tests to employees being considered for promotion. Nine per cent have psychologists on their payrolls and 59% have some employees with training in psychological procedures in charge of their programs. Some of the large companies have persons with Ph. D.'s in industrial psychology in charge of their testing and personnel research work, while other companies use the services of consulting psychologists.

-- J. Occ. Med. Absts.

- 25 Medical Care of the Alcoholic Patient. W. Boothroyd, et al. Can. Med. Assn. J. 95, 407-409 (Aug. 27, 1966).

Alcoholism is an illness that constitutes a major health problem at all levels of society. The physician should accept his responsibility to prevent it and to care for the alcoholic. If he knows that one of his patients is drinking immoderately, he should warn him of the outlook. A patient's acquired dependence on alcohol may be overt, or revealed only on examination for organic disease or emotional disturbance. The diagnosis may be accepted reluctantly, or

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denied despite positive evidence, but the patient should be persuaded to give up drinking. He may require psychiatric help or advice from a social worker. He may be so ill as to require treatment in a hospital, and hospitals must recognise the urgency of such admissions. Discharge from a hospital does not end treatment, for alcoholism is a chronic disease, requiring long-term planning, persistent follow-up and enduring sympathy by the physician, who must always be as available to his alcoholic patient as he is to his patient with diabetes, epilepsy or cardiac disease.

-- Authors' abst.

- 26 Statistical Study and Analysis of 164 Cases of Alcoholic-Tobacco Optic Neuritis. C. Bouniq and G. Coscas. Ann. Oculist 199, 955-974 (Oct. 1966).

In 50% of 164 cases of optical neuritis vision was inferior to 40/200. Both optic nerves were always affected, sometimes not symmetrically. Besides the classical scotoma, in 48% of the cases a campimetric deficiency was found. Chromatic vision, particularly the red-green combination, was disturbed in 84% of the cases. Half of the patients exhibited decoloration of the temporal sector of the papilla, involving the macular fasciculus. There was a frequent association of general disorders of the hepatic or neurological type, although tests on hepatic function almost always gave normal results. Therapy consists in abstinence from the use of alcohol and tobacco, plus a well-balanced diet rich in vitamins of the B group.

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

- 27 Current Aspects of Alcoholic Optic Neuritis. H. Saraux, R. Labet, and B. Biaix. Ann. Oculist 199, 943-954 (Oct. 1966).

Forty cases of alcoholic optic neuritis were studied. Deterioration of cerebral function was a major sign of chronic alcoholism in its graver forms. The Farnsworth 100 hue examination permits an early diagnosis if vision is still normal. In chronic alcoholism even without amblyopia color defect is present in 39% of the cases. Treatment of the condition should begin by abstinence and an intensive vitamin therapy (B₁, B₆, B₁₂). The patient can not be fully healed unless he totally abstains from the use of alcohol. Whether the amblyopia is due to tobacco or alcohol can be disputed. Alcoholic amblyopia is a part of alcoholic neuropathy. It differs from tobacco amblyopia in which cerebral functions are normal. A mixed etiology of the disease is a possibility. Whenever an alcoholic patient complains of poor vision, especially if he also is a heavy smoker, optic neuritis should be suspected.

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

- 28 Vestibulospinal Reflexes. IX. Alterations in the Stepping Test During Alcohol Intoxication. E. Peitersen. Arch. Otolaryngol. 83, 332-334 (April, 1966).

Ten normal persons were investigated by the stepping test before as well as 20 and 55 minutes after the intake of alcohol. A blood concentration of 0.040% and 0.080% alcohol was the aim and the obtained concentrations averaged 0.043% and 0.084%. The subjects' rotation angle on their own axis increased significantly from spontaneous 58° to 20 minutes 85° and 55 minutes and 132° as mean values. The forward movement did not show significant alterations, whereas sideways movements increased. The direction of rotation was not affected. All the subjects exhibited a very slight unsteadiness after administration of alcohol. By the stepping test it is possible to demonstrate alterations in the rotation angle on the subjects own axis at the same low blood concentrations of alcohol at which positional nystagmus is demonstrable by electro-nystagmography.

-- Aerospace Med. Absts.

- 29 The Organization of HEW and Current Health Problems. Editorial. Am. J. Public Health 56, 1004-1008 (July, 1966).

On April 19, 1966, Mr. Marion B. Folsom, former secretary of Health, Education, and Welfare, testified before a special Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives. This testimony dealt with the reorganization of the Department of Health, Education, and Welfare. Federal responsibilities in the three fields of health, education and welfare should be kept in the same department. "I found that there is need for close coordination of the programs in the three fields and that it is valuable to the secretary in arriving at decisions to have the viewpoints of those working in the different areas. Probably the most important task which the federal government in general faces is the allocation of our resources between the various needs and demands; and the establishment of priorities. As all the programs in the Department of Health, Education, and Welfare concern human needs, the secretary should be in the best position to view objectively the various demands and to recommend the proper allocation and priorities. An individual agency, with the pressure from its special clientele, finds it exceedingly difficult to view the demands objectively. And, of course, a good case for additional

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funds can be made for almost every program relating to human needs. Thus, if separate departments were created, additional burdens would be placed on the President and the White House staff to make the determinations for the three areas. The White House staff could not be expected to be as conversant with the real needs as would be the staff of the secretary of Health, Education and Welfare. The secretary is not in the position of special pleader for any one program, but concerned with all matters affecting human needs. The federal government is concerned with broad national needs, such as medical and pollution research, and with assistance to state and local health departments in meeting local health needs, through cooperation and grants. This system has been successful in the past, as illustrated by the practical elimination of malaria and infectious diseases and the substantial reduction in tuberculosis. With the recent enactment, however, of broad new national health programs with some grants being made directly to local communities and agencies, there is danger that the state health departments may be bypassed and weakened."

-- Cond. from editorial

- 30 The Social Worker in the Private Practice of Internal Medicine. Margot Wegner, J. A. Ruiz, and L. P. Caccamo. Arch. Internal Med. 118, 347-350 (Oct. 1966).

It is recognized that the practice of social work in a private medical office with a small number of patients presents many variables which are difficult to measure. Hence, this presentation does not lend itself to scientific and statistical analysis. Instead, we have tried to describe a process which has been of some value to the patient by filling a therapeutic need and which, incidentally, proved rewarding to the participants. It will probably come as a surprise to physicians that a number of qualified, competent social work practitioners are available in their communities for part-time work. The fear that it would not be practical for small office groups to employ part-time social workers is not realistic; part-time workers need not be salaried but can be employed on a fee-for-service basis. The patients have, in our experience, accepted the social worker and the fees for her service without complaint. It is our opinion that social work adds a new dimension to the quality of office medical care and that this process can be incorporated beneficially into other private medical practices. As the practice of internal medicine becomes more complicated, the staff supporting the practicing internist will undoubtedly become more diverse. The inclusion of a social worker as part of this staff is recommended as an adjunct to improved medical care. There are three references.

- 31 Early Management of the Critically Injured. D. J. Currie. Can. Med. Assn. J. 95, 862-870 (Oct. 22, 1966).

A plan for the early management of the critically injured patient is described with emphasis on the priorities of management of injuries to certain organ-systems. The most important priorities are the establishment and maintenance of adequate ventilation and adequate circulation. The general surgeon is best qualified to assume full responsibility for the proper care of the critically injured, of patients with multiple injuries, and of patients in traumatic shock. He must assume the risk of transfusing unmatched whole blood and of deferring non-essential radiographs. The emergency and radiology departments may have to be by-passed to save the life of the critically injured patient. The measures required to establish a clear airway, to treat complications which can impair ventilation, to manage shock and hemorrhage and the possible complications of massive transfusions of blood are reviewed.

-- Author's abst.

- 32 The Influence of Manned Space Flight on Cardiovascular Function. L. E. Lamb. Cardiology 48, No. 1, 118-133 (1966).

Manned space flights alter cardiovascular function. Confinement and weightlessness cause function changes similar to inactivity, designated as cardiovascular deconditioning. This includes decreased exercise and orthostatic tolerance. The influence of weightlessness as a separate environmental factor cannot yet be determined since manned space flights involve multiple changes in environmental factors which also affect cardiovascular function. Preliminary data and laboratory studies suggest that with a good life support system man can tolerate the weightlessness of space flight for at least one month.

-- Aerospace Med. Absts.

33. Ultrasonic Placentography—A New Method for Placental Localization. K. R. Gottesfeld, et al. Am. J. Obstet. Gynec. 96, 538-547 (Oct. 15, 1966).

Ultrasonic visualization of placental location had an accuracy of 97% of the 112 patients in this study. Out of 14 patients who were referred for ultrasonic examination because of suspicion of placenta previa, two were diagnosed correctly but clinical examination proved an additional third case of posteriorly implanted placenta previa which was not diagnosed by ultrasonic visualization.

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

- 34 Ultrasonic Fetal Cephalometry: Accuracy, Limitations and Applications. J. P. Durkan and G. L. Russo. *Obstet. Gynec.* 27, 399 (1966).

The results of ultrasound fetal cephalometry in 100 unselected cases are presented. The figures agree in reliability with those previously established for this technique. A method of application is discussed as well as interpretation of the fetal echogram and its limitations. Some clinical applications are suggested.

-- Can. Med. Assn. J. Absts.

- 35 Conjunctival Pigmentation Due to Cosmetics. B. D. Zuckerman. *Am. J. Ophthalmol.* 62, 672-676 (Oct. 1966).

Fourteen patients aged 15 to 40 years are presented, who have tattooed their conjunctivas by using eyeliner pencil on the conjunctival side of the lashes. This pigmentation appears to be permanent. A conjunctival biopsy was taken from one patient. An unsuccessful attempt was made to duplicate the picture in guinea pigs.

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

- 36 The Scarborough Glaucoma Survey. E. Shenken. *Can. Med. Assn. J.* 95, 595-602 (Sept. 17, 1966).

A glaucoma screening survey was carried out in Scarborough, Ontario, to detect previously unsuspected cases of the disease. General practitioners were employed to perform Schiotz tonometry. Suspected cases were further tested with applanation tonometry and tonography with water drinking. Of the 17,968 persons examined, 999 had a family history of glaucoma. Forty-one of these had obvious clinical glaucoma. The use of Schiotz tonometry plus applanation tonometry in individuals with a positive family history uncovered 463 suspected of having glaucoma. Tonography with water drinking revealed 348 persons with abnormal findings. Of this number, 228 had clinical glaucoma and 120 preclinical glaucoma. Mass screening by tonometry was found to be valuable in detecting glaucoma in the early stages. In most instances, blindness from this disease can be prevented by early diagnosis.

-- Author's abst.

- 37 Rhinovirus Infections in an Industrial Population. I. The Occurrence of Illness. J. M. Gwaltney, Jr., et al. *New Engl. J. Med.* 275, 1261-1268 (Dec. 8, 1966).

A three-year study of acute respiratory disease in an industrial population has focused on rhinovirus infections. Employees experienced an average of 2.3 respiratory illnesses per year, and rhinoviruses accounted for 23% of the 1,025 illnesses studied. Recurrent annual fall peaks of illness occurred during which rates of rhinovirus isolation exceeded 45%. As a result, 40% of rhinovirus illness was concentrated in the early fall. During the rest of the season of respiratory disease rhinoviruses caused only a small amount of illness, but reappeared with moderate frequency in the late spring. In this adult population, rates of rhinovirus respiratory illness were not influenced by age, sex, cigarette smoking, or the presence of children in the home. There are 29 references.

-- Author's summary

- 38 Domiciliary Treatment of Tuberculosis. G. F. Kincade. *Can. Med. Assn. J.* 95, 818-820 (Oct. 15, 1966).

In the present therapy of tuberculosis with anti-microbial agents, most patients receive the major part of their treatment at home, and a significant proportion of active cases never enter sanatorium or stop working during their treatment. Domiciliary treatment in Canada, with and without sanatorium admission, has been reviewed. At present, approximately 7,500 patients are being treated on an outpatient basis. Most have had a period of sanatorium treatment for investigation and institution of antimicrobial therapy, but in one province up to 30% of new active cases of tuberculosis, and in another 12%, are treated entirely on an outpatient basis. The indications are that domiciliary treatment is successful and that the practice is expanding. This practice will probably continue to expand as more and better outpatient clinic facilities are developed to provide the necessary supervision and follow-up of tuberculous patients.

-- Author's abst.

- 39 Some Cautions in the Use of Routine Spirometry. B. J. Sobol. *Arch. Internal. Med.* 118, 335-339 (Oct. 1966).

The purpose of this communication has been to caution against making the diagnosis of chronic pulmonary disease in the asymptomatic individual solely on the basis of the expiratory spirogram. The state of the art and the nature of the statistical delineation of normal is such that in the asymptomatic individual any categorization on the basis of the spirogram alone is hazardous and unwarranted. There are nine references.

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- 40 Left Bundle Branch Block. A Clinical Study. R. A. Eskesen.
J. Occ. Med. 8, 523-527 (Oct. 1966).

Among employees in an industrial complex, examined between 1960 and 1965, nine showed left bundle branch block. No particular relationship was seen to any of the usually associated underlying diseases or to obesity, smoking, or an elevated cholesterol level. None presented any specific complaint concerning his heart. One has mild diabetes and angina, and another has sustained at least one acute coronary occlusion. The others have remained well, and all have remained productive on a full-time basis to the present time or to retirement. A review of the literature indicates many inconsistencies and varieties of behavior in both right and left block, so that the picture remains rather complex and confusing. However, there is general agreement that the lesions of left bundle branch block are a result of hypoxemia involving the septal artery, through either physiological or anatomical means. There is occasional mention of it as being a relatively minor effect of vagal stimulation or tachycardia. The cases presented are presumed to have arisen from acquired lesions of coronary artery disease, which is more common in sedentary occupations associated with great emotional tension. This report agrees with previous conclusions that left bundle branch block can have a reasonably good prognosis when found in a healthy environment. It is furthermore concluded that employees in whom left bundle branch block is discovered as an unexpected, asymptomatic, and isolated finding are benefited by a casual attitude to its presence and can lead satisfactory and productive lives as a result.

-- Cond. from author's summary

- 41 Prevention of Ischaemic Heart Disease. W. Raab.
Med. Serv. J. (Can.) 21, 719-734 (Nov. 1965).

In the Western World, initiative and planning for organized active prevention of degenerative heart disease is hampered by semantic confusion and some outdated concepts regarding the pathogenesis and preventability of multifactorial ischaemic heart disease. Much existing but inadequately co-ordinated knowledge from the international literature remains unutilized. Purely vascular factors are being overemphasized over their inseparable corollary in vital myocardial oxygen economy, namely, coinciding neurogenic and hormonal interferences in the metabolism of the heart muscle itself. Atherosclerosis is presumably preventable, to some extent, by dietary measures. On the other hand, the accompanying civilization-induced, potentially detrimental adrenergic preponderance in myocardial oxygen economy can be prevented by exercise training, environmental-emotional relaxation and abstinence from smoking. These principles have been implemented for decades in vast, empirically organized preventive reconditioning programs abroad. Their introduction in the North American continent with its unparalleled cardiac mass mortality is long overdue. Professional and lay education need a drastic reorientation toward active health maintenance. Organized community programs, exercise breaks in industry and offices, establishment of rural reconditioning centres, and appropriate city renewal planning should be instigated under enlightened governmental guidance by industries, insurance organizations and private agencies. There are 86 references.

- 42 A Prospective Study of Coronary Heart Disease in an Industrial Population. J. P. Dunn and O. Paul. J. Occ. Med. 8, 518-522 (Oct. 1966).

Occupational Medicine has a vital interest in the study of coronary heart disease. Not only is the disease process a major cause of morbidity and mortality, but the population served by the occupational physician provides an unusual opportunity to study the epidemiology of coronary heart disease. However, the complexity of research studies on this problem calls for resources usually not available to the occupational physician within his own company. Such resources may be had from the physicians based at university research-teaching centers. The joint efforts of physicians in industry and universities make possible significant investigations in the field of chronic degenerative cardiovascular disease. The purpose of this report, which deals with the prospective study of coronary heart disease carried out at the Hawthorne Works of the Western Electric Company, is to describe the methodology necessary to such an epidemiologic study in an industrial population. Although the experience is based upon coronary heart disease, similar methods would be applicable to the study of other chronic diseases. It is to be hoped, therefore, that this report will encourage other occupational physicians to develop investigations into the natural history of chronic degenerative diseases, utilizing the resources available to them from research-teaching organizations.

- Authors' introduction

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- 43 Selective Placement of the Cardiac. N.K. Weaver.
J. Occ. Med. 8, 516-517 (Oct. 1966).

Our procedures are essential to a successful program of selective placement of the cardiac. First, the patient is evaluated to ascertain capacities for work. Second, the assignments under consideration are analyzed with respect to job demands. Next, placement is effected by matching the patient's capacities with the demands of a suitable employment situation. Finally, follow-up studies are carried out to make certain that the cardiac is working safely and effectively. A rehabilitation effort which ignores or slights any of these features may end in failure. For example, a patient subjected to a most sophisticated and knowledgeable clinical appraisal by a celebrated cardiologist may be vocationally frustrated by lack of job analysis. Or, the careful placement of such a well-studied subject in an initially suitable assignment, but without arrangement for appropriate follow-up studies, may invite disaster. However, diligent attention to each of the elements will usually lead the patient to the vocational rehabilitation goal.

-- Author's introduction

- 44 Studies of Male Survivors of Myocardial Infarction: VIII. Electrocardiogram and Ten-Year Survival. H.M. Shanoff and J.A. Little. *Am. J. Cardiol.* 18, 535-539 (Oct. 1966).

The relation of electrocardiographic findings to survival over a ten-year period was studied in 101 men aged 30 to 70 years, who had a myocardial infarction at least three months previous to entry into the study and were free of other disease. Age at onset of clinical coronary disease did not influence the electrocardiographic pattern, nor was it related to prognosis. A rate greater than 90 was associated with a poorer prognosis only after 80 months. Ventricular premature beats tended to be associated with a better prognosis for the first five years and a worse one thereafter. Survival was not affected by the complete disappearance of previous electrocardiographic abnormalities, by the site of infarction, anterior or posterior, or by its type, transmural or non-transmural. The electrocardiogram is of little help in predicting long-term prognosis in survivors of myocardial infarction.

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

- 45 Influence of Propranolol on Hemodynamic Changes and Plasma Catecholamine Levels Following Cigarette Smoking and Nicotine. T.C. Westfall, P.B. Cipolloni, and A.C. Edmundowicz.
Proc. Soc. Exptl. Biol. Med. 123, 174-179 (Oct. 1966).

Cigarette smoke inhalation or an intravenous infusion of nicotine produced a marked increase in cardiac output, stroke volume, arterial blood pressure, and plasma epinephrine and norepinephrine levels with a reflex decrease in the heart rate in the morphine-pentobarbital anesthetized dog. Following beta adrenergic blockade with 0.2 mg./kg. of propranolol intravenously, cigarette smoke inhalation and nicotine infusion resulted in a marked alteration of cardiac output, stroke volume, heart rate, and mean arterial pressure without significant changes in caval plasma catecholamine levels. By producing a blockade of beta adrenergic receptors, more alpha receptors are made available. Thus, the vasoconstriction produced by the action of epinephrine on alpha receptors is unopposed by vasodilation via the beta receptors in such vascular beds as skeletal muscle.

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

- 46 Reaction of Nonsmokers to Carbon Monoxide Inhalation. Cardiopulmonary Responses at Rest and During Exercise. R.B. Chevalier, R.A. Krumholz, and J.C. Ross.
J. Am. Med. Assn. 198, 1061-1064 (Dec. 5, 1966).

Differences have been found in the cardiopulmonary responses to exercise between young male cigarette smokers and nonsmokers. The present study was undertaken in an attempt to determine the cause of such differences. Since smokers carry a chronically elevated carboxyhemoglobin level (>4%), carbon monoxide was inhaled by nonsmokers to raise their carboxyhemoglobin level to the range seen in a control group of smokers. This maneuver caused the development in nonsmokers of an increased oxygen debt with exercise and a reduced pulmonary diffusing capacity at rest. The changes after carbon monoxide inhalation were similar to those found when comparing smokers to nonsmokers. The pathogenesis of these changes are unknown, but support carbon monoxide as a possible etiologic factor accounting for the less efficient exercise and poorer pulmonary function performance of smokers compared to nonsmokers.

-- Authors' abst.

- 47 The Osmolality Adjustment in Urinalysis. H.B. Elkins, L.D. Pagnotto and M. Richmond.
J. Occ. Med. 8, 528-531 (Oct. 1966).

For the purpose of adjusting urinalysis results, a study was made of urine osmolality as a substitute for, or supplement to, specific gravity. The data indicate that, while osmolality has certain theoretical advantages, essentially the same results are obtained as with specific gravity —

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except in the case of extremely dilute or very concentrated samples, or samples containing sugar or large amounts of other substances of high molecular weight. The term "osmolality" indicates the apparent molality of the solution, in terms of nonelectrolyte solute. It can be considered an index of the osmotic pressure, a property of great physiological importance. For example, it is believed that under conditions of dehydration the degree to which urine can be concentrated is determined by its osmolality. The specific gravity per se is unimportant. For this reason measurement of osmolality, rather than specific gravity, has been recommended in various kidney function tests, etc.

- 48 Familial Emphysema and Alpha₁-Antitrypsin. R.C. Talamo, J.B. Blennerhassett, and K.F. Austen. *New Engl. J. Med.* 275, 1301-1304 (Dec. 8, 1966).

The information available suggests that at least one form of familial emphysema is characterized by familial incidence, onset at an unusually early age, a higher than expected incidence of affected females, absence of clinical chronic bronchitis in the early phase of illness in many cases, the finding of almost exclusively panlobular emphysema in the limited pathological material available thus far and a frequent association with serum alpha₁-antitrypsin deficiency. In all likelihood, other forms of familial emphysema exist, and the families described by Larson and Barman may represent a different type from that described above. There are 22 references.

-- Authors' conclusion

- 49 A New Disinfectant. P.W. Ross. *J. Clin. Pathol.* 19, 318-320 (July, 1966).

Results of qualitative and quantitative tests show that Cidex, a glutaraldehyde solution, to be a useful disinfectant with a valuable potential in disinfecting perishable or fragile hospital articles that cannot be treated by physical means. Eight references are given.

-- Public Health Eng. Absts.

SKIN DISEASES AND BURNS

- 50 Cutting and Grinding Fluids and Their Effects on the Skin. M.M. Key, E.J. Ritter, and K.A. Arndt. *Am. Ind. Hyg. Assn. J.* 27, 423-427 (Sept.-Oct. 1966).

Although improvements in formulations of cutting and grinding fluids have been made, occupational dermatitis can still be a problem. Oil acne and folliculitis are the most common cutaneous problems of those who work with insoluble oils. Bacteria in lubricating coolants may contribute to breakdown of the coolant but are unrelated to outbreaks of folliculitis. The chief problem which results from exposure to soluble oils and synthetic coolants is eczematous contact dermatitis, a disease of multiple causation. These two important skin diseases as well as several minor ones associated with exposure to lubricating coolants can be prevented by measures designed to minimize contact and to improve personal hygiene. There are 41 references. -- Authors' abstr.

- 51 Washing Machine and Fiberglass. R.R. Abel. *Arch. Dermatol.* 93, 78 (Jan. 1966).

All four members of a family (the mother and three siblings) developed sudden and severe pruritis. The excoriated papules were present on covered portions of the body. A presumptive diagnosis of insect bites was made. Three days later the mother and one child were free of the eruption and the itch. The mother volunteered the information that she had washed a Fiberglass curtain in the washing machine prior to washing the family clothes, including the underwear.

-- J. Occ. Med. Absts.

- 52 Control Programs for Schistosome Dermatitis. T.E. Howard and C.C. Walden. *Can. J. Public Health* 57, 269-273 (June, 1966).

Coarse crystalline cupric sulfate is considered to be the chemical of choice to destroy the populations of aquatic snails which serve as vector hosts in the transmission of the agent for schistosome dermatitis, "swimmer's itch." A brief account is given of the ecology of the main species of vector host snails. Nine references are given.

-- Public Health Eng. Absts.

- 53 Experimental Study of the Use of Gold Leaf in Skin Grafting. F. Minkowitz. *Plast. Reconstr. Surg.* 38, 357-364 (Oct. 1966).

Experimental studies suggest that interposed commercial 23-karat gold leaf may enhance early fixation of skin grafts. Capillary oozing was readily controlled by this material, and increased

adhesion between split-thickness skin grafts and host wounds occurred where it was used. Unlike "metal gold" leaf consisting of lacquered aluminum, 23-karat gold leaf was well tolerated and allowed split-thickness skin graft take. -- J. Am. Med. Assn. References & Reviews

CHEMICAL HAZARDS

- 54 Public Health Significance of Chemical Residues in Foods. R.A. Yeary.
J. Am. Vet. Med. Assn. 149, 145-150 (July 15, 1966).

The consensus of medical scientists is that there are no known detrimental effects on the health of man attributable to chemical residues commonly found and allowed in food. Products of animal origin contribute significantly to the present dietary levels of agricultural chemical residues. The greatest hazards from agricultural chemicals are those associated with occupational exposure. There are 19 references. -- Public Health Eng. Absts.

- 55 Carcinogenic Substances in Water and Soil. XVII. On the Origin and Estimation of the Polycyclic Aromatic Hydrocarbons in Water. J. Borneff and H. Kunte.
Arch. Hyg. Bakteriologie 149, 226-243 (May 1965).

Water and effluents, as well as dust from roads and the air, were examined for the presence of polycyclic aromatic hydrocarbons. It was found that subsoil water contained carcinogenic compounds at a level of one to ten mg/m³. They were probably absorbed out of the infiltrating rain water. Some observations of these substances were made at a depth of 150 m. in the soil. In surface water bigger quantities of carcinogenic substances could be demonstrated, the minor part of which came from the phytoplankton, earth particles, airborne dust, and the major part, via the rivers and lakes, from sewage and industrial effluents especially those from the roads. Even good drinking water can absorb polycyclic aromatic hydrocarbons from the tar or bitumen with which the pipes are coated. Probably the mere consumption of drinking water with a relatively high concentration of these hydrocarbons does not provoke cancer but such a carcinogenic source cannot be completely excluded. These various aspects of pollution need to be considered whenever water supply plants are to be erected, extended, or given further pollution protection. -- APCA Absts.

- 56 The Similar Pharmacologic Effects of Pentaborane, Decaborane and Reserpine. F.W. Weir and F.H. Meyers. Ind. Med. & Surg. 35, 696-701 (Aug. 1966).

The pharmacological effects of pentaborane (B₅H₉) and decaborane (B₁₀H₁₄) were studied and compared to the effects of reserpine. Conscious dogs showed signs of limitation of sympathetic activity, evidenced by miosis, nictitating membrane relaxation, bradycardia, dilation of superficial vessels, and sedation with easy arousal. Anesthetized dogs showed an initial rise in blood pressure followed by hypotension, bradycardia, and decreased response to tyramine. Reversal of some of these effects occurred following norepinephrine infusions. Spectrofluorometric analyses of the brains of groups of rats administered any of the three compounds demonstrated depletion of serotonin and norepinephrine. Pentaborane is comparatively more active in producing excitement and convulsions. The boranes closely resemble reserpine in their effects but have a shorter duration of action. The increasing use of the borane compounds by the military and industry will undoubtedly result in further human exposures. Therefore, it is of importance to the industrial physician to be cognizant of the reserpine-like activity of these compounds in the treatment of exposed personnel. There are 19 references. -- Authors' summary

- 57 Effects on Experimental Animals of Long-Term Continuous Inhalation of Nitrogen Dioxide. B.L. Steadman, et al. Toxicol. & Appl. Pharmacol. 9, 160-170 (July, 1966).

Cumulative 30-, 60-, and 90-day mortality data for the continuous exposure studies indicate that one cannot safely extrapolate from the 30-day results to anticipate the effects that may occur after 90 days. Care should be taken in extrapolating continuous-exposure guidelines from data obtained in repeated-exposure studies. It is believed that the submarine guideline of 0.5 ppm (0.9 mg./cu. m.) will not cause any untoward effects in personnel exposed continuously for 60 days. There are 16 references. -- Public Health Eng. Absts.

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- 58 Nitrogen-and Helium-Induced Anoxia: Different Lethal Effects of Rye Seeds. R.L. Latterell. Science 153, 69-70 (July 1, 1966).

Prolonged exposures to acute anoxia caused progressive reductions in the viability of hydrated seeds of Prolific rye. For equal exposures of nine days or longer, mortality was significantly higher in helium than in nitrogen. The findings suggest that prolonged use of helium as a component of atmospheres in manned space capsules may be harmful. -- Aerospace Med. Absts.

- 59 Chronic Neurological Disease in Two Manganese Steel Workers. C.M. Whitlock, Jr., S.J. Amuso, and J.B. Bittenbender. Am. Ind. Hyg. Assn. J. 27, 454-459 (Sept.-Oct. 1966).

Two cases of apparent manganese poisoning in a manganese steel plant are reported. A new process had been introduced which was thought to be innocuous. However, both full-time employees on this job developed symptoms and signs of extra-pyramidal disease. Urine assays suggested accumulation of manganese in these workers. Survey of the work site showed manganese in significant concentration in the air. A previously unreported finding of extensor plantar responses is described and added to the list of neurological signs found in manganese intoxication. The patients have improved remarkably on removal from manganese exposure and treatment with calcium versenate (CaEDTA). The present threshold limit value for manganese is a ceiling limit. There are 13 references. -- Authors' abstr.

- 60 Metabolism of Dimethyl Sulphoxide to Dimethyl Sulphone in the Rat and Man. H.B. Hucker, et al. Nature 209, 619 (Feb. 5, 1966).

Twenty-four rats were dosed intraperitoneally with 0.5 ml./kg. of dimethyl sulfoxide (DMSO). Urine was collected in dry ice-cooled flasks, thawed, filtered through glass wool, and extracted with heptane. The aqueous residue was saturated with sodium chloride and extracted with chloroform, yielding a residue of colorless needles and a pale yellow oil. Preliminary evidence indicates that the oil was essentially all DMSO. The infra-red spectrum of the crystals was identical to that of dimethyl sulfone. Quantitative results indicated that approximately 15% of a dose of DMSO-35S was excreted in the urine as dimethyl sulfone within 24 hours. Rats given dimethyl sulfone-35S excreted 64% of the dose in the urine in 24 hours, apparently as unchanged sulfone. Dimethyl sulfone was similarly isolated from the urine of a human subject receiving a daily dose of 21 gm. of DMSO. Isotope dilution analysis of the 24-hour urine sample showed that the sulfone present represented 3.0% of the daily dose. -- J. Occ. Med. Absts.

- 61 DMSO—Its Efficacy in Acute Musculoskeletal Problems as Evaluated by a "Double Blind" Study. J.H. Brown. Ind. Med. & Surg. 35, 777-781 (Sept. 1966).

The therapeutic results evaluated in 187 patients suffering from acute musculoskeletal injuries or problems, utilizing topical application of 70% and 90% aqueous and gel dimethyl sulfoxide (DMSO) concentrations, are compared with the results in 92 cases treated by a double blind protocol, utilizing DMSO in aqueous concentrations of 90%, 80%, 70%, 60% and 10%. The problems of accurate double blind investigation with this medication are discussed, and the methods are described by which the double blind protocol was conducted so that as accurate an evaluation could be obtained as was possible. A comparison of the odor and dermatological side effects in the various concentrations is made, the types of musculoskeletal problems treated are described, and the choice of patients is discussed. Consideration is given to the possible placebo effect of this medication and to differences in individual absorption, tolerance, and excretion. The comparative results show that DMSO in proper aqueous or gel concentration is a strikingly effective therapeutic addition to medicine. Seven references are given. -- Author's summary

- 62 Organochlorine Pesticides in Gallstones. J.H. Simmons and J.O'G. Tatton. Clin. Chem. 12, 697-700 (Oct. 1966).

A method is described for the determination of organo-chlorine pesticide residues in human gallstones. The difficulty caused by the presence of large amounts of cholesterol in the stones is overcome by an acetylation step in the clean-up procedure, and the method finishes with identification and determination of the individual pesticides by gas-liquid chromatography. Results are given for 28 samples submitted by two hospitals, showing small amounts of dieldrin, p,p'-dichlorocyclohexane (pp'-DDE), and benzene hexachloride (BHC) isomers to be present commonly in small amounts in gallstones. Some explanation for the presence of these residues in the stones is given. A case of suspected poisoning by these compounds showed an unusually large amount of dieldrin in the patient's stones. -- J. Am. Med. Assn. References & Reviews

IN RE: ABRAMS November 1992

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- 63 Pesticides. W.M. Upholt and P.C. Kearney.
New Engl. J. Med. 275, 1419-1426 (Dec. 22, 1966).

It can be said that pesticides are not significantly different in principle from other chemical substances that are an integral part of modern civilization. Their ultimate disposal may produce particular problems if they persist in the environment. There is no reason why modern technology cannot provide adequate and safe disposal technics. To do so will require continued research on the nature of the degradation of the chemicals in various elements of the environment. It will also require adequate attention to the hazards to man and other elements of the environment during the degradation process. There are 28 references. -- Authors' conclusions

INDUSTRIAL DUSTS

- 64 Morphologic Analysis of Dust From Swedish Cotton Mills. S. Fridstrand.
Ind. Med. & Surg. 35, 788-792 (Sept. 1966).

In cotton dust from bale-breaking rooms, blow-rooms, and card-rooms, the main organic impurities were debris of cotton seeds and leaves. Fruit capsule debris and fragments of cotton plant fiber were also found. The number of particles in the various specimens varied widely according to the stage of production. This seemed to be a result of varying intensity in the mechanical treatment of the raw cotton. Analysis of the dust produced in cotton milling may help to locate the pathogenic factor in byssinosis. -- Author's summary

- 65 The Density of Uranine Aerosol Particles. F. Stein, N. Esmen, and M. Corn.
Am. Ind. Hyg. Assn. J. 27, 428-430 (Sept.-Oct. 1966).

The authors determined the densities of spherically shaped 2.4-8.0 microns diameter uranine particles produced by nebulizing a 1% aqueous uranine solution. Particle size and terminal settling velocity measurements were made for a total of 128 particles. A horizontal elutriator was used to deposit the particle onto glass slides which facilitated size and location measurements in order to derive the ratio of dp/de for each of the particles. These data were analyzed statistically and yielded a mean value of 1.32 for the ratio dp/de , with 95% confidence limits between 1.31 and 1.33. No correlation was found between particle size and the ratio dp/de , which means this particle parameter did not vary within the particle size range studied. The value of the ratio $dp/de = 1.32$ corresponds to a particle density of 0.58 gm./cu. cm. The bulk density of the uranine powder as received from the supplier was determined by a pycnometer technique to be 1.53 gm./cu. cm. Six references are given. -- Authors' summary

- 66 Solving Air Contamination Problems Through Diagnostic Air Sampling. A.J. Breslin.
Am. Ind. Hyg. Assn. J. 27, 460-468 (Sept.-Oct. 1966).

Air sampling can be used as an effective diagnostic tool for the identification of predominant sources of contamination, the proper selection of contaminant control methods, and the regulation of occupational exposures. The diagnostic approach in air sampling entails the discernment and interpretation of either location-dependent or time-dependent patterns of contamination or a combination of both. The effort required to distinguish the patterns varies widely, depending on the dominance of the patterns over normal fluctuations in background concentrations of the air contaminant. Examples are cited, covering a range of applications, from the collection of a few samples for the detection of dominant time or location exposure patterns to the use of multisampler arrays at varying time collection intervals. Three references are given. -- Author's abst.

- 67 Quantitative X-Ray Diffraction Analysis of Crocidolite and Amosite in Bulk or Settled Dust Samples. J.V. Crable and Marta J. Knott.
Am. Ind. Hyg. Assn. J. 27, 449-453 (Sept.-Oct. 1966).

A quantitative procedure for determining crocidolite and amosite in bulk or settled dust samples is described. Crocidolite and amosite are two of the three major types of asbestos fibers used in the United States asbestos industry. Each has a crystalline structure which provides a distinct x-ray diffraction pattern of sufficient intensity to be used in quantitative analysis. Quartz is used as the internal standard. A qualitative examination with the diffractometer establishes the presence of crocidolite or amosite in the samples and indicates possible interferences whose effects are minimized by using appropriate modifications of the quantitative procedure. Analysis of a series of known samples containing varied amounts of ground crocidolite provided a mean recovery of 99.6%. The lower end of the working range of the method is approximately 5% crocidolite. A separate series of known samples containing varied amounts of ground amosite provided a mean recovery of 96.88%. There are 12 references. -- Authors' abst.

- 68 Efficient Dust Control Needed Where Electronic Equipment is Operating. Anonymous.
Air Eng. 8, 17 (Jan. 1966).

The operating conditions for telephone equipment, how dust is measured and controlled, the type of filters used and special systems used only in the telephone industry are described. This is a partial reprint from Telephony of March 13, 1965. -- J. Am. Soc. Safety Eng. Absts.

- 69 A Simple Method for Detection of Asbestos Bodies in Sputum. A. David
Pracovni Lekar 17, 244-245 (1965).

The author describes a simplified method, according to Champeix and Faur, for estimating asbestos particles in sputum. To the sputum collected in the course of 24 hours, 4% NaOH is added, the mixture is centrifuged and from the sediment smears are made in which asbestos particles are sought either directly or under cedar oil immersion. Even when the expectoration of bronchial secretion is small, asbestos particles are regularly detected in subjects exposed to asbestos dust a number of years ago. -- APCA Absts.

- 70 Measurement of Dust Exposures in the Asbestos Textile Industry. J.R. Lynch and H.E. Ayer.
Am. Ind. Hyg. Assn. J. 27, 431-437 (Sept.-Oct. 1966).

Data obtained from environmental surveys of nine asbestos textile mills, which represent the baseline for the textile segment of the Public Health Service epidemiological study of asbestos processing industries, are presented. From these data concentration ranges are derived which yield significant differences between typical sample groups. Variance ratio tests of different methods of counting and analysis were made and count weight ratios based on magnesium analyses for asbestos were calculated. There are 13 references. -- Authors' abst.

- 71 The Incidence of Asbestos Bodies in the Lungs at Random Necropsies in Montreal.
Lily Anjilvel and W.M. Thurlbeck. Can. Med. Assn. J. 95, 1179-1182 (Dec. 3, 1966).

Asbestos bodies were found in the lungs of 48 of 100 random adult necropsies performed in four hospitals in Montreal. The proportion of positive smears depended on the technique and amount of lung sampled; this made comparison with other similar surveys difficult. Asbestos bodies were more common in men, whose lungs were also more heavily contaminated. No association was noted between the presence of asbestos bodies and death from malignant disease. The only criteria used in the present study for the recognition of asbestos bodies was their morphological appearance. These bodies are the same morphologically as those in asbestosis, and are quite easy to distinguish from pseudoasbestos bodies and other atypical bodies in deeply pigmented lungs. It may be that these structures are not formed by asbestos fibres at all, although this does not appear likely at the present time. Whatever their origin or structure, asbestos bodies are common in a high proportion of cadavers in Montreal. For this reason, asbestos is probably a significant air contaminant.

EDITOR'S NOTE: Recent studies by Dr. Paul Gross reported at the Foundation's 31st Annual Meeting demonstrate ability to produce typical ferruginous (so-called asbestos) bodies with filamentous aluminum silicate; and a variety of other filamentous dusts are being examined by Dr. Gross to determine their potential in this regard. The high incidence of ferruginous bodies in lungs of urbanites merits careful consideration but is not, of itself, adequate proof of asbestos exposure. The Foundation's current research is described in Medical Series Bulletin No. 11, "Asbestos Bioeffects Research for Industry," now in distribution. -- RPT deT

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 72 Nomographs Give Refined Estimate of Heat Stress Index. J.S. McKarns and R.S. Brief.
Heating, Piping Air Conditioning 38, 113 (19)

Two nomographs are developed, refining equations for determining the heat stress index and recovery time. The original work of Haines and Hatch (Heating Ventilating 49:93 (1952)) from which Belding and Hatch developed the heat stress index (Heating, Piping Air Conditioning 27:129 (1955)) has been modified with refined coefficients and exponents in the equations, based on a lightly clothed, 154-lb. man with a skin temperature of 95° F. The heat stress index expresses the heat load a person can be exposed to in terms of body heat gain and the physiologic effect. An index of 100 is considered the maximum for a young adult male for an eight-hour exposure. In addition to the nomographs, charts estimating energy metabolism and energy expenditures for various activities are presented. -- J. Occ. Med. Absts.

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- 73 Masking of Speech by Aircraft Noise. K.D. Kryter and C.E. Williams.
J. Acoust. Soc. Am. 39, 138-150 (Jan. 1966).

Word intelligibility tests at various intensity levels were administered to a crew of trained listeners in the presence of recorded noise from jet and propeller-driven aircraft. The noise was that which would be present outdoors and in a house as the result of engine runup operations and if aircraft were flying overhead shortly after takeoff and prior to landing. According to visual inspection of the data, methods of measuring or evaluating aircraft noise predict the results of the speech tests in the following order of merit, from best to worst: (1) articulation index (AI), (2) perceived noise level in decibels (PNdB), (3) speech interference level (SIL), (4) noise criteria (NC), (5) over-all sound pressure level on A scale (SPL A scale), and (6) over-all SPL on C scale. The difference among PNdB, SIL, NC, and SPL A scale are probably not significant according to these tests.

-- Aerospace Med. Absts.

- 74 Reducing Noise in Cams. R.G. Fenton. Machine Design 38, 187-190 (April 14, 1966).

The major noise-contributing factors in cams is usually follower-stem chatter which is proportional to the magnitude of clearance between follower stem and its guide; this noise can be reduced at the expense of increased costs for smaller clearances, however, total elimination of stem-chatter noise can only be assured by preventing side-thrust reversal on the follower; a method is presented for the proper selection of cam-follower offset in the early stages of cam design that will result in the smallest possible cam that will provide noiseless operation.

-- J. Am. Soc. Safety Eng. Absts.

RADIOACTIVITY AND X-RADIATION

- 75 Morphologic Changes Induced in the Lungs of Hamsters and Rats by External Radiation (X-Rays). A Study in Experimental Carcinogenesis. A.J. DeVilliers and P. Gross.
Cancer 19, 1399-1410 (Oct. 1966).

Reprints Available from Industrial Hygiene Foundation Upon Request.

Pulmonary cancers in hamsters and rats were induced with external radiation (x-rays). The induction and latent period of the pulmonary cancers observed in hamsters were reproducible. Invasive squamous cell carcinomata appeared in 5 (12%) of the 42 hamsters which died within the first 20 postirradiation weeks. In rats one squamous cell cancer and one adenocarcinoma were found in 32 animals which survived 12 to 24 months after irradiation. Pulmonary cancers were not found in hamsters later than 3-1/2 months postirradiation. This coincided with a predominance of mural stromal collagenization and the development of acellularity of alveolar walls. The method of producing lung cancer in hamsters and rats is suitable as an experiment model for the study of lung cancer because of the reproducibility and the control over experimental exposure factors. X-rays were delivered to the chest region of the unanesthetized eight-week-old animals through a 2 cm. diameter collimator and four portals varied through 90 degrees per day for five days. X-rays were generated by a unit operated at 135 kv., 4 ma., 2.43 Al filtration and a T.S.D. of 16 cm. An average total dose of between 3,912 R and 4,094 R was delivered to the chest region of hamsters. Rats received an estimated 3,570 R. There are 41 references.-- Authors' abst.

- 76 Industrial X-Ray Study in Jefferson County, Alabama. E.F. Seagle, K.G. Sauer, and F.E. Russey.
Am. Ind. Hyg. Assn. J. 27, 475-479 (Sept.-Oct. 1966).

A field study concerned with the education and experience background of operators of industrial x-ray equipment was conducted in Jefferson County, Alabama. The study included physical surveys of 21 industrial units and background data on operators, supervisors, and safety directors in eight industries. The procedure used is described along with findings of background and physical survey data and conclusions are stated. Three references are given.

-- Authors' absts.

- 77 Uses and Safety Aspects of the Low-Energy Source of Ytterbium-169. F.L. Green.
Am. Ind. Hyg. Assn. J. 27, 444-448 (Sept.-Oct. 1966).

Ytterbium-169 sources are useful for radiography of thin sections of many materials. They have none of the hazards, such as electrical shock, cables to trip over, and high-voltage explosion potential, associated with x-ray equipment. The radioactive source material is adequately contained in welded capsules which are usually used in exposure devices. The devices are small and light weight and must be protected from loss or unauthorized use. Several available devices have negligible radiation fields on the exterior surfaces when closed. Because of the energy spectrum of Yb-169, the personnel radiation hazard during use of the source is easier to control than is the hazard with comparable x-ray equipment.

-- Author's conclusions

- 78 Significance of R, Rad, Rem, and Related Units. M. Williams.
Am. J. Roentgenol. Radium Therapy Nuclear Med. 96, 794 (March, 1966).

There is an important difference between exposure, which is measured in roentgens, and dose, which is measured in rads. The roentgen gives no information about the number of photons available, the energy of the photons, the fraction of the available energy which was transferred to electrons, or the amount of energy which would be delivered to a volume of air at that position if the ionization chamber were not present. The effects of these properties on the conversion of the roentgen unit to varying tissue doses are illustrated. The measurement of the amount of energy absorbed in a mass (1 rad equals 100 ergs per gram of irradiated material) has been seldom made in the past because of its technical difficulty. The biological response to irradiation may be expected to correlate with dose, but frequently may have no correlation with exposure. The fact that one has gone through a procedure of calculating a new quantity—rads from r—is likely to produce a feeling that the new value is of greater significance. Actually, if the calculation gives an incorrect value, its significance will be less than the original measurement.

-- J. Occ. Med. Absts.

- 79 Radiation Measurements in Commercial Aircraft Using a Single Counter. V. D. Hopper and W. R. Rawlinson. Nature 210, 473-475 (April 30, 1966).

A single Geiger-Müller counter was used to measure cosmic rays in flights of commercial aircraft: (1) count rate with the unshielded Geiger tube, (2) with the tube shielded by 2.12 g./cm.² of lead, and (3) radioactive sources of the aircraft itself. Source and degree of experimental errors are discussed; they may have come from statistical fluctuations or accuracy of instrument readings. Some radiation was registered from sources within the aircraft. Two processes involved in the increase in count rate with shielding are discussed, and the difference in radiation doses of cosmic rays and gamma-radiation is examined. The minimum count rate occurred at the geomagnetic equator with a slow increase to 10°, and a steep increase between 25° and 40°. Between 40° and 50° there was a sudden drop in the slope of the curve, and from 55° upwards the increase was very slow.

-- Aerospace Med. Absts.

- 80 Radionuclides in Selected Human Tissues. E. J. Baratta and E. S. Ferri.
Am. Ind. Hyg. Assn. J. 27, 438-443 (Sept.-Oct. 1966).

The concentrations of strontium-90, cesium-137, and polonium-210 in various human tissues have been measured at the Northeastern Radiological Health Laboratory since 1965. The greatest concentration of cesium-137 was found in the psoas muscle. The "soft tissue" concentration of strontium-90 was highest in psoas muscle of males, but this tissue contained the lowest concentration for females. The highest concentration of polonium-210 was observed in the liver. In general, higher concentrations of this radionuclide were observed in organs from smokers than in those from nonsmokers. Comparison of the relative distribution of radionuclides observed in this study to the values used in computing maximum permissible concentrations for radiation workers revealed a number of differences. On this basis it would appear that considerably more effort is required on the determination of the body distribution of the more common radionuclides being ingested by the population today. There are 11 references.

-- Authors' abst.

ENVIRONMENTAL MEASUREMENTS

- 81 Determination of Tetra-Alkyl Lead Vapour and Inorganic Lead Dust in Air. R. Moss and E. V. Browett (Deceased). Analyst 91, 428-438 (July, 1966).

The described methods are designed for the measurement of lead-in-air concentrations down to 0.1 mg. lead per 10-cu. m. of air, with sampling periods of at least eight hours. A modified method based on a sampling period of half an hour, and having a sensitivity of 0.3 mg. of lead per 10-cu. m. is also described.

-- Public Health Eng. Absts.

- 82 Flight Research Program: IV. A Small Gas Analyzer for Aerospace. W. H. Brigden and J. Roman. Aerospace Med. 37, 1037-1040 (Oct. 1966).

Miniaturized mass spectrometers suitable for medical work are new. The feasibility of the concept is not generally acknowledged. Because of this, the NASA Flight Research Center double-focusing mass spectrometer was extensively tested in the laboratory. The instrument weighs 28 pounds and measures 10 x 10 x 11 inches in a configuration suitable for use in spacecraft. It can continuously monitor the partial pressure of 12 gases with a response time of 30 to 50 milliseconds.

It can scan the entire mass range from mass three to mass 100 with considerably longer response time. Simplicity of operation, accuracy, and stability of this mass spectrometer make it highly suitable for medical work, not only in the laboratory but in flight as well. In its present form, it is not suitable for determining the presence of trace components. -- Authors' abst.

COMMUNITY AIR HYGIENE

- 83 Public Health and Industrial Development. M.I. Shanholtz.
Virginia Med. Monthly 93, 165-166 (March, 1966).

In this period of industrial expansion, public health is assuming an increasingly important role. This role has two facets. Not only must public health provide the facilities and services required to attract expanding industry, it must also perform its function of protecting people from the challenges to public health posed by industrial growth. Industrial leaders seeking sites for relocation or establishment of new plants consider the health facilities available of primary importance. The Commonwealth of Virginia, in making a concerted effort to attract industry, is also seriously taking these factors into consideration. Among other agencies, it is mentioned that the Bureau of Industrial Hygiene offers consultation and assistance to industries in developing more healthful working conditions. Cooperative efforts between health departments and industry are continually under way to develop effective methods of controlling air pollution, water pollution, food contamination, radiation, and many other mutual problems. -- APCA Absts.

- 84 Studies on Air Pollution in a Large Residential City. P. Einck-Roskamp and H. Reploh.
Arch. Hyg. Bakteriologie 149, 360-367 (May, 1965).

Only by the control of dust deposit and SO₂ emission during several years it was possible to estimate the additional pollution of the air at Münster (Westphalia) by a planned central heating plant. In comparison to industrial centers this great habitation town shows, in general, a less severe pollution of the air. However, the strong influence of the numerous individual heating installations on air pollution, especially by SO₂, was evident. Since this pollution largely depends on meteorological conditions, comparative examinations presuppose observations over a long period. -- APCA Absts.

- 85 Apparatus for Studying the Effects of Atmospheric Pollution and Cyclic Dew Formation on the Deterioration of Materials. J.W. Pitts and D.G. Moore.
Mater. Res. Std. 6, 328-333 (July, 1966).

A new humidity cabinet with features for exposing materials to moisture condensation and atmospheric contamination is described. A thermoelectric heat pump provides controllable condensing and drying conditions. The kinetics of moisture condensation and evaporation, and the resulting corrosion of a metal surface were studied qualitatively. The exposure period and the amount of an atmospheric contaminant, SO₂, were varied, and the effects on the corrosion rate of polished iron illustrated with photomicrographs. A quantitative rating of the apparent process of corrosion was made with reflectance measurements. -- APCA Absts.

- 86 Fate of Arenes Incorporated With Airborne Soot. B.D. Tebbens, J.F. Thomas, and M. Mukai.
Am. Ind. Hyg. Assn. J. 27, 415-422 (Sept.-Oct. 1966).

The chemical modification of airborne arenes under fluorescent irradiation was studied. Smoke as an experimental source of arenes was diluted, then irradiated in a 22-foot dynamic flow chamber. Samples were collected before and after irradiation and determinations of concentrations of two arenes, benz(a) pyrene and perylene, and particle sizes were made. Irradiation caused partial modification or disappearance of the arenes by 35 to 65% of the original content. Without irradiation an apparent increase of arenes was noted; however, this was thought to be a function of the system and particle-size factors. The presence of oxygen increases the degree but is not necessary for the modification of arenes. -- Authors' abst.

- 87 Environmental Hazards. Effects of Community Air Pollution on Prevalence of Respiratory Disease. B.J. Ferris, Jr., and J.L. Whittenberger.
New Engl. J. Med. 275, 1413-1419 (Dec. 22, 1966).

Increased levels of air pollution have been demonstrated to have an effect on the health of human beings in a variety of countries, at different age groups and with a variety of approaches. Most of these effects have been related to the reducing types of pollution characterized by increased levels of sulfur dioxide or sulfur dioxide equivalents and particulates. It is not known whether

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these are the specifically active materials or whether they are only convenient indexes of some other material. Patients with respiratory disease are apparently more sensitive than persons free of respiratory disease, and they may show changes in pulmonary function to a variety of air pollutants. As improvement in the sampling and measurement of air pollutants occurs, we may be able to identify other substances that can cause responses. Up to the present it has not been possible to establish a dose-response curve for chronic low-level exposures. The figures presented here can be taken only as a tentative approximation. More data will be required to confirm them. In addition, data reported should include daily data, and maxima as well as mean data should be examined. A certain amount of air pollution will always be a part of man's environment. The levels that will be considered acceptable will depend on what the public decides is an acceptable level of disease or disability in the community and what is an acceptable interference with the aesthetic quality of the atmosphere. The controls necessary to realize this level should be considered a part of the costs of production for which the consumer will eventually pay. There are 36 references.

- 88 The Pittsburgh Air Pollution Control Story. E. L. Stockton.
Am. Ind. Hyg. Assn. J. 27, 469-474 (Sept. -Oct. 1966).

The city of Pittsburgh, formerly known as the "Smoky City" has since been renamed "Cinderella City" as a result of the smoke cleanup which has been accomplished. Citizen groups were effectively used in achieving legislation and co-operation of all parts of the community, including industrial, commercial and residential areas, in the cleanup effort. Over \$450 million has been invested by the community in installing cleaning devices, making changes in fuel uses and process changes to reduce smoke from over 170 tons per square mile per month to 28 tons per square mile per month in the city of Pittsburgh. Dust and smoke control are expected to be complete by 1970. Gaseous emissions are receiving greater attention for control.-- Author's abst.

- 89 Typical Improvements in Design of Equipment and Systems for Factory Air Pollution Control.
Anonymous. Air Eng. 8, 18-20 (June, 1966).

New equipment improvements are discussed: a rapper control system that permits electrostatic precipitators to operate continuously at highest efficiency; a bag cleaning system that pulses once every 12 minutes for 0.2 second at 90 psi through a one-inch nozzle; and a high-temperature dust control system for a 40-ton electric furnace designed to control hot gas and fume emissions up to 3,000° F.
-- Public Health Eng. Absts.

- 90 Some Physiological Effects of Non-Gaseous Exhaust Material From an Internal Combustion Engine. A. W. Scholl. Ohio J. Sci. 66, 256-258 (May, 1966).

The oily condensate from exhaust materials contained paraffins, olefins, and cycloparaffins as fraction I, aromatics as fraction II, and non-hydrocarbons and oxygenated compounds as fraction III. The solvents produced no noticeable effects on test mice after 279 days of testing. Fractions I and II produced ulcerated sores that formed thick scabs. Fraction II also produced a small amount of cancerous cells at the site of application. Fraction III produced thin scabs and was associated with hyperirritability and other evidence of central nervous system changes. This fraction was lethal in doses of 100 mg. per week.
-- Public Health Eng. Absts.

MANAGEMENT ASPECTS

- 91 Scope and Functions of the Professional Safety Position. The Professional Development Project—Phase One. The American Society of Safety Engineers.
J. Am. Soc. Safety Eng. 11, 4-7 (Dec. 1966).

The major functions of the safety professional are contained within four basic areas. However, application of all or some of the functions listed below will depend upon the nature and scope of the existing accident problems, and the type of activity with which he is concerned. The major areas are: (A) Identification and appraisal of accident and loss producing conditions and practices and evaluation of the severity of the accident problem. (B) Development of accident prevention and loss control methods, procedures, and programs. (C) Communication of accident and loss control information to those directly involved. (D) Measurement and evaluation of the effectiveness of the accident and loss control system and the modifications needed to achieve optimum results. The safety professional in performing these functions will draw upon specialized knowledge in both the physical and social sciences. He will apply the principles of measurement and analysis to

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evaluate safety performance. He will be required to have fundamental knowledge of statistics, mathematics, physics, chemistry, as well as the fundamentals of the engineering disciplines. He will utilize knowledge in the fields of behavior, motivation, and communications. Knowledge of management principles as well as the theory of business and government organization will also be required. His specialized knowledge must include a thorough understanding of the causative factors contributing to accident occurrence as well as methods and procedures designed to control such events. The population explosion, the problems of urban areas, future transportation systems, as well as the increasing complexities of man's every day life will create many problems and extend the safety professional's creativity to its maximum if he is to successfully provide the knowledge and leadership to conserve life, health and property.

ACCIDENTS AND PREVENTION

- 92 Medical Factor in 1964-1965 Fatal Aircraft Accidents in the Southwest. H. L. Gibbons, J. W. Ellis, Jr., and Judith L. Plechus. *Aerospace Med.* 37, 1057-1060 (Oct. 1966).

A nationwide study of 1963 fatal general aviation accidents with a 30% sampling revealed 35.4% of the cases studied to have alcohol involvement. Medical investigation of fatal general aviation accidents in the Federal Aviation Agency's Southwest Region during 1964 and 1965 revealed measurable blood alcohol in 30.8% of the cases studied. This represents a 72% sampling of 162 fatal accidents. On 28% of the fatal accidents studied, blood alcohol was over 50 mg. per 100 ml. In two cases, otherwise unremarkable levels of hypoxia plus carbon monoxide were thought to have been potentiated by alcohol. The combined effects of drugs, fatigue, alcohol, hypoxia, and other factors generally not recognized by an automobile-orientated public are considered to be a significant hazard in air transportation.

-- Authors' abst.

- 93 Alcohol-Induced Hypoglycemia as a Factor in Aircraft Accidents. H. L. Gibbons, et al. *Aerospace Med.* 37, 959-961 (Sept. 1966).

A case history of an aircraft accident is presented. The apparent cause of the accident was incapacitation secondary to marked hypoglycemia (blood glucose level was 20 mg. % and blood alcohol level was 98 mg. %). Alcohol induced hypoglycemia (AIH) is mentioned frequently in the literature. Since 30% of fatal aircraft accidents in the Federal Aviation Agency's Southwest Region have alcohol involved, an investigation was undertaken to evaluate the role of associated hypoglycemia in these accidents as a possible contributing factor. Due to the post mortem changes in blood glucose levels, the data are considered unreliable and no conclusions were reached regarding the frequency of AIH. A phenomenon of agonal hyperglycemia is suggested, and the role of AIH in diabetes is mentioned.

-- Authors' abst.

- 94 Nitric Oxide Explosion. S. Haseba, et al. *Chem. Eng. Progr.* 62, 92-96 (April, 1966).

An explosion occurred in the second heat exchanger of a liquid nitrogen wash unit during normal operation at Kyowa Chemicals, Ltd., Japan; as a result of this accident a method of removing nitric oxide from the gas stream using an adsorbent was developed; from 160 kinds of chemicals screened, an excellent adsorbent for nitric oxide removal was found; the adsorbent consists of sodium chlorite (NaClO_2) and several kinds of alkali, such as sodium hydroxide, sodium carbonate or potassium carbonate, supported on four to six mesh activated particles; with this adsorbent, nitric oxide existing in oil cracked gas, coke oven gas, or similar gases can be removed almost completely.

-- J. Am. Soc. Safety Eng. Absts.

- 95 Safe Radius of Heat Generating Substances. J. L. C. Van Geel. *Ind. Eng. Chem.* 58, 24-32 (Jan. 1966).

The safe radius has significance in the determination of the self ignition hazard of heat-generating substances; experimental results confirm the validity of the theoretical calculation of the safe radius for the containment of two types of smokeless powders presented in the text.

-- J. Am. Soc. Safety Eng. Absts.

- 96 Handling and Testing Unstable Materials. E. A. Platt and J. A. Ford. *Chem. Eng. Progr.* 62, 98-104 (March, 1966).

The testing techniques described are not restricted solely to rocket propellants and oxidizers or explosives; they are adaptable to most chemicals with high energy contents; in the development of new chemicals, some, if not most, of these tests should be used to measure potential hazard.

-- J. Am. Soc. Safety Eng. Absts.

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