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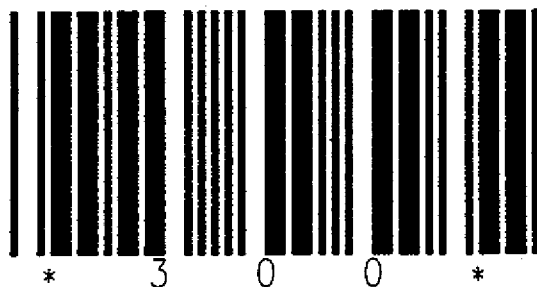
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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

JANUARY, 1965

(Vol. 29, No. 1)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH, PA. 15213

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INDUSTRIAL HYGIENE FEATURES

See Abst. No. 18 for the future of industrial medicine in Great Britain.

The retardation of avian atherosclerosis by pectin is discussed in Abst. No. 29.

Abst. No. 30 reports on a method for the detection of the hidden diabetic in industry.

Abst. No. 32 is concerned with the length of cigarette ends and inhaling.

The laser treatment of experimental malignant tumors is studied in Abst. No. 37.

For a review on the epidemiology of skin disease in an automobile factory see Abst. No. 39.

Information on the effects of inorganic fluorides on animals is given in Abst. No. 45.

For data on the volatilization of mercury by bacteria see Abst. No. 46.

Mercury poisoning from an unsuspected source is described in Abst. No. 47.

Lead poisoning in rabbit and man is discussed in Abst. No. 51.

The mortality rate among coal miners is investigated in Abst. No. 65.

The influence of strong magnetic fields on the electrocardiogram of the squirrel monkey is studied in Abst. No. 75.

A discussion of the x-ray hazard in small-animal veterinary practice is given in Abst. No. 76.

A report on odor control in cattle feed yards is given in Abst. No. 92.

Data on sick absence in certain Western Countries are presented in Abst. No. 99.

Abst. No. 100 investigates electrical injuries.

FOUNDATION FACTS

AN ENGINEERING DISCUSSIONAL ON NOISE, AIR POLLUTION, AND HOT ENVIRONMENTS was held at the Holiday Inn, Pittsburgh, Pa., January 12-14 for the membership of the Industrial Hygiene Foundation, sponsored by the Foundation's Engineering Committee, under the chairmanship of Dr. Lester V. Cralley, Chief Industrial Hygienist, Aluminum Company of America. There were 52 registrants all intimately engaged in the areas covered. Attendance was not limited to experts or even to engineers, but included those having practical problems in the areas covered. A distinguished group of authorities led the discussions. Characteristics and controls of major industrial noise sources, with stress on accuracy of noise measurement, were included, along with damage risk criteria and design factors. Specific cases were presented, allowing comparison of data between participants in the discussion period. Air pollution analysis and abatement was covered, along with a critical evaluation of certain engineering problems in equipment selection. Case reports were presented and discussed. Broad engineering aspects of measuring and interpreting data from hot environments and designing controls to physiological criteria were discussed by expert ventilation engineers and those having in-plant heat problems. Research needs were identified in some cases. No proceedings or papers will be published and comments at the meeting were considered "off the record" to stimulate discussion.

DR. PAUL GROSS, Director of the Research Laboratory, participated in a meeting on Colloids and Particulates in Tissues held at the Argonne National Laboratory. He spoke on the mechanics of uptake, retention, and translocation and excretion of particles. Dr. Gross has just been elected to the American Conference of Governmental Industrial Hygienists (ACGIH) as an Associate Member. (See Foundation Facts for December, 1964 where Dr. Gross' appointment to the ACGIH Threshold Limit Value Committee was announced).

NEW REPRINTS available from Industrial Hygiene Foundation upon request:

"Environmental Stress and the Aging Lung: The Pulmonary Effects of Air Pollution" by Paul Gross. Aging of the Lung, 217-226 (1964).

"The Processes Involved in the Biologic Aspects of Pulmonary Deposition, Clearance and Retention of Insoluble Aerosols" by Paul Gross, Health Physics 10, 995-1002 (1964).

"Enzymatically Produced Pulmonary Emphysema: A Preliminary Report" by Paul Gross, et al. J. Occ. Med. 6, 481-484 (Dec. 1964).

30th ANNUAL MEETING
OCTOBER 20-21, 1965

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CHARLES R. WILLIAMS. Ph.D.

Industrial Hygiene Foundation Member
(Liberty Mutual Insurance Co.), 1945-1964
Member Industrial Hygiene Foundation
Policy & Planning Committee, 1962-1964

Industrial Hygiene Foundation was saddened to learn of the death of Dr. Charles R. Williams on November 21, 1964.

A past president of American Industrial Hygiene Association(AIHA), Dr. Williams had been chosen for its Cummings Memorial Award and Lecture for 1965, and acknowledged notification of his selection prior to his death. He held various AIHA committee posts and, at the time of his death, was a member of the AIHA-AEC Monograph Advisory Committee.

Originally chosen as a speaker at the President's Conference on Occupational Safety during 1964, Dr. Williams was physically unable to appear, but offered advice and assistance in development of the session on occupational environmental hazards. He pointed out in a discussion at the Philadelphia AIHA Meeting, with considerable gratification, a significant increase in voluntary requests for industrial hygiene services from companies receiving compensation coverage from Liberty Mutual Insurance Co., and to the field and laboratory industrial hygiene services which had been developed within his company to support this workload. He believed that the Workmen's Compensation System has played an important role in initiating institution of corrective industrial health hazard controls, but that the effects have gone far beyond simple "loss control", and reflected genuine concern in health conservation and improvement in industry.

Dr. Williams made an outstanding contribution to our understanding of beryllium disease and was a participant in symposia at Massachusetts Institute of Technology and the Kettering Laboratory. He was also a recognized pioneer in the control of hazards from introduction of radioisotopes and new forms of electromagnetic radiation into safe use in industry.

Truly, our nation is in Dr. Williams' debt in these and other important areas of occupational health and his untimely loss will be widely felt by all of us.

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1 One-Third of Psychiatrists Practice in Two States.

A total of 16,863 psychiatrists are in active practice in the United States according to tabulations based on a National Register of Psychiatrists recently established by the American Psychiatric Association under contract with the National Institute of Mental Health, NIH. New York and California are the most popular locations of psychiatrists. Together the two states employ about one-third of the total. New York, with 3,500 practitioners provides employment for 22% of the total. California is second with 2,100 psychiatrists practicing there. Relatively few are found in several western states—Wyoming, Idaho, Nevada and Montana. The smallest number practice in Alaska. About 10% of the nation's psychiatrists are women. Previous tabulations have been based on a register which was restricted to members of the American Psychiatric Association, (APA) who represent about three-fourths of all practicing psychiatrists. The present tabulation also includes non-members of APA. -- Military Med. 129, 1225 (Dec. 1964)

2 Pesticides Makers Look Into Better Housekeeping Practices.

A special committee within the National Agricultural Chemicals Association has been formed to develop good housekeeping practices in the manufacture of pesticides. The committee will also develop procedures for disposal of empty containers and pesticide plant wastes. In addition, the committee has been assigned the job of preparing a manual on manufacturing procedures designed to prevent cross-contamination of pesticides during blending and mixing. The methods developed for the disposal of empty containers are designed to provide maximum protection to the area in which the pesticides are made. Following completion of its studies, the committee will hold a series of regional workshops. At these meetings plant managers and others responsible for manufacturing operations will discuss good housekeeping practices and procedures developed by the groups. -- Chem. Eng. News 42, 39 (Nov. 30, 1964)

3 Water Pollution Control Program.

A cooperative project to develop a water pollution control program for the New York harbor area, the Hudson River system, and New Jersey and Connecticut coastal areas has been launched by the U. S. Public Health Service (USPHS). The project, to cost \$12 million and last 7 years, will be developed in cooperation with state, interstate, and local agencies, and with other federal agencies besides USPHS. Director of the program will be Paul DeFalco, now director of USPH's Raritan Bay water pollution enforcement project. -- Chem. Eng. News 42, 25 (Nov. 23, 1964)

4 Gentamicin.

Gentamicin, a new antibiotic, has been shown to be effective in the treatment of severe burns. Dr. H. Harlan Stone and Dr. J. D. Martin, Jr., of Emory University (Atlanta, Ga.) say that treatment with the antibiotic has saved 90% of badly burned patients who were expected to die. Gentamicin works by attacking *Pseudomonas*, the bacteria that produces infections which can cause death in cases of major burns. The antibiotic, which is being produced by the Schering Corporation in research quantities, comes from the fermentations of the organism *Micromonospora purpurea* which is found in the bottom of some lakes. -- Chem. Eng. News 42, 31 (Nov. 30, 1964)

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5 Institute of Environmental Sciences.

The 11th Annual Institute of Environmental Sciences will hold its technical meeting and equipment exposition April 21 to 23 at the Sherman House, Chicago. Theme of the meeting will be Environmental Relativity. For further details write the Institute at 34 South Main Street, Mt. Prospect, Illinois 60057.

-- Chem. Eng. News 42, 76 (Nov. 23, 1964)

OCCUPATIONAL DISEASE STATISTICS

6 Occupational Disease Statistics. (Cases reported to the Respective Health Departments).

	<u>Ind.</u> <u>Nov.</u>	<u>Tenn.</u> <u>Nov.</u>	<u>Total</u>
Aggravation of bronchitis (dust)	1		1
Asphyxiation (cause not stated)	1		1
" (gasoline ingestion)	1		1
" (trichloroethylene)	1		1
Blood poisoning	1		1
Chemical pneumonia (insecticide)	1		1
Conjunctivitis	9(1)		9
Dermatitis	23(2)	15	38
Eyeburns	8(3)		8
Eye injury (mercury compound)	1		1
Eye ulcers (dust)	1		1
Finger amputation from fiberglass infection	1		1
Heat exhaustion	1		1
Hemorrhoids (compressed air)	1		1
Infectious hepatitis	1		1
Lung infection (dust)	1		1
" injury (cause not stated)	1		1
Mass hysteria (15 cases of syncopic syndrome)	60		60
Poisoning (paint fumes)	1		1
Serum sickness (tetanus immunization)	1		1
Staph infection	2		2
Tenosynovitis		2	2
Throat irritation (smoke and fumes)	1		1
" spasms (ammonia)	1		1
Ulcerated cornea (cause not stated)	1		1
Total	<u>121</u>	<u>17</u>	<u>138</u>

Causes are listed as follows:

Indiana:

(1) Dust 3, oil 1, toluene 1, hydrogen sulfide 1, sawdust 1, rust 1, compressed air 1.

(2) Cause not stated 3, cleaning compound 2, tar 2, oil 2, paint 2, lumber 2, alkali 1, caustic soda 1, chemicals 1, trisodium phosphate 1, sodium arsenite 1, asphalt 1, epoxy resin 1, poison sumac 1, cement 1, concrete 1.

(3) Welding flash 3, ammonia 2, sulfuric acid 1, caustic soda 1, acid 1.

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COMING EVENTS

- 7 Feb. 1-3 International Symposium on Myasthenia Gravis, New York, N. Y.
 Feb. 4-5 Symposium on Noise in Industry, Institute of Industrial Health, Kettering Laboratory, Cincinnati, Ohio.
 Feb. 7-8 Congress on Medical Education, Chicago, Ill.
 Feb. 8-10 Symposium on Unmanned Exploration of the Solar System, Denver, Colo.
 Feb. 13-17 American Academy of Allergy, Bal Harbour, Florida.
 Feb. 15-17 American College of Surgeons (sectional meeting) Philadelphia, Pa.
 Feb. 17-19 American Academy of Occupational Medicine, Columbus, Ohio.
 Feb. 17-21 American College of Cardiology, Boston, Mass.
 Feb. 19-24 American Society of Abdominal Surgeons, New Orleans, La.
 Feb. 22-26 American Protestant Hospital Association, Chicago, Ill.
 Feb. 22-26 Canadian-American Medical and Dental Ski Assn., Harbor Springs, Mich.

LEGAL DEVELOPMENTS

8 More Funds Needed for Indiana Job Safety.

Declaring that the State of Indiana is falling down on its job safety program because of understaffing, State Labor Commissioner Robert P. Butler has asked for an increase in funds for the 1965-1967 biennium to increase his staff from 36 to 74. Butler said the most troublesome field for on-the-job accidents is in retail outlets such as supermarkets and dress shops where many women and children work. It was reported by Butler's staff that there were 1,564 lost-time accidents in one month alone, including 14 broken backs, 36 broken legs, 10 broken hips, 2 amputated legs, 64 amputated fingers, 22 broken arms and 328 back injuries. There were 187 accidents in retail trades reported and 70% of injuries were at locations employing less than 300 persons. Butler said that although large employers have reduced accidents to a major extent through safety training and supervision, the small employers and retailers in particular need state help. He said the state has only two inspectors and a director in the Women's and Children's Division to inspect retail establishments.

-- J. Am. Soc. Safety Eng. 9, 10 (Nov. 1964)

9 Program for Air Pollution Control.

An ambitious legislative program for air pollution control is being readied for the next Congress by Senator Muskie's subcommittee on air and water pollution. Proposals which the committee hopes to push through Congress next year include a minimum national standard limiting exhaust emissions from gasoline-powered motor vehicles, national criteria for allowable exhaust emissions from diesel-powered vehicles, a program of grants for construction of community solid waste disposal facilities, and establishment within the Department of Health, Education and Welfare (HEW) of a federal air pollution control laboratory to do research on air pollution problems. The committee also wants HEW to draft model state laws to encourage uniform control of pollution in interstate "air sheds."

-- Chem. Eng. News 42, 21 (Dec. 7, 1964)

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10 To Enforce Prescription Drug Advertising Laws.

Plans to enforce strict prescription drug advertising laws have been set up by the Food and Drug Administration (FDA). Under the Kefauver-Harris law, prescription drug ads must show the "established name" of the drug, if one exists, in type at least half as large as that used for the brand name. Ads must also contain the drug's quantitative formula and a "true and non-misleading brief summary of information about adverse side effects, contraindications, and effectiveness of the drug for the guidance of physicians." FDA says its Bureau of Medicine will monitor professional journal advertising for prescription drugs. Ads that appear to violate the laws will be forwarded to FDA's Bureau of Regulatory Compliance for corrective action.

-- Chem. Eng. News 42, 19 (Nov. 30, 1964)

11 Extend Deadline for Changes in Pesticide Labels.

Deadline for changes in pesticide labels has been extended by the Agricultural Department. The original deadline of July 1, 1965, for full compliance with new label regulations has been extended to October 1, 1965. The new rules require the USDA registration number on the label, require key warning and caution statements on the front panel, and prohibit unwarranted safety claims. The postponement is needed to permit the chemical industry to make an orderly change-over in labels for nearly 60,000 pesticides, USDA officials say.

-- Chem. Eng. News 42, 21 (Dec. 7, 1964)

12 Chlordan Residues on Fruits and Vegetables.

Permissible tolerances for residues of chlordan on fresh fruits and vegetables will be studied by an advisory committee appointed by the Food and Drug Administration (FDA) from a panel of experts nominated by the National Academy of Sciences. The advisory committee, appointed by FDA recently, will make recommendations on FDA's proposal to reduce the tolerance on chlordan residues from 0.3 ppm to zero; the present tolerance was set in 1955, based on testimony presented at spray residue hearings held in 1950. When FDA proposed to eliminate the tolerance for residues of chlordan in December 1963 Velsicol Chemical objected and called for consideration by a scientific advisory panel as provided under the law. FDA says that the 1950 toxicity data are not adequate under present criteria to conclude that the chlordan tolerance is safe.

-- Chem. Eng. News 42, 21 (Nov. 16, 1964)

13 Use of FD & C Red No. 4 Banned.

The Food and Drug Administration (FDA) has banned the use of FD & C Red No. 4 as a coloring agent in food and ingested drugs and cosmetics (lipstick). The color may still be used in drugs and cosmetics for external use. FDA's action is based on a 7-year animal study which shows the coloring agent to be harmful when fed over a long period of time. FDA will not condemn current stocks of food containing the color because it is not acutely toxic and is used in small amounts.

-- Chem. Eng. News 42, 19 (Dec. 14, 1964)

BOOKS, PAMPHLETS AND NOTICES

- 14 Heat Stress and Heat Disorders. C.S. Leithead and A.R. Lind. Reviewed by D. Turner. Brit. J. Ind. Med. 21, 325 (Oct. 1964). Cassell, London. 304 pp. (1964) 35 shillings.

The authors bring together in authentic practical form, for use by medical officers and others concerned with the supervision of men at work in hot environments, the considerable volume of published information on heat stress and its effects. The first six chapters consider the assessment, management, and control of heat stress. After a brief discussion of the

occurrence of heat stress and man's physiological reactions to it in terms of thermo-regulatory mechanisms and acclimatization, consideration is given to the physical factors governing the rate of heat exchange between man and his environment. This leads to a description of the various indices of heat stress and an evaluation of their usefulness in given circumstances. Limiting conditions for various occupations on three criteria—intolerable, just tolerable, and easily tolerable—are developed. The final chapter discusses ways of controlling the hazard and reducing the level of stress by such means as shielding, insulation, and ventilated clothing. Next follow five chapters devoted to disorders due to excessive exposure to heat. These are considered in four groups—heat syncope, disorders of water and electrolyte balance, disorders with skin lesions, heat stroke and heat hyperpyrexia. For each group the etiology, pathogenesis, diagnosis, and treatment are clearly described. The final chapter in the book was contributed by Dr. R.D. Pepler and considers the psychological effects of heat. It is shown that both short-term and prolonged exposure to heat result in a deterioration in the performance of certain skilled tasks; it is claimed that there is no evidence for any true neurotic reaction to prolonged exposure to heat.

-- Cond. from the review

- 15 Industrial Toxicology and Dermatology in the Production and Processing of Plastics. K.E. Malten and R.L. Zielhuis. Reviewed by D. Malcolm. *Brit. J. Ind. Med.* 21, 325-326 (Oct. 1964). Elsevier, Barking. 258 pp. (1964) 50 shillings.

This new volume of the Elsevier Monographs is a comprehensive review of the up-to-date literature on the toxicology and dermatology of the production and processing of plastics. The book begins with a chapter on the chemical composition of plastics and their biological activity; it then explains the classification into thermo-plastic and thermo-setting resins. The third chapter deals with the nature and function of auxiliary substances such as plasticizers, accelerators, and antioxidants. This is followed by a chapter on the skin effects of plastic raw materials. A description of patch testing for allergy is given, also a warning against interpreting as positive, reactions which are due to the primary irritation effects of the substance. At the end of the book is a long list of recommended concentrations of potential allergens in suitable solvents for patch testing. Various plastics are described, dealing with the industrial toxicology and skin hazards and ending with a well classified survey of auxiliary substances, and the toxicology of those substances likely to be a risk to health. This book, which is a translation from the Dutch, critically reviews and brings together in an easily readable form a large amount of information, which will be invaluable to doctors, chemists, and those in charge of plastics manufacture.

-- Cond. from the review

- 16 Manual of Hazardous Chemical Reactions. NFPA No. 491 M. National Fire Protection Association. Available From: National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110. 112 pp. (1964). Price: \$1.25.

This publication is a compilation of chemical reactions which have been reported to have the potential of causing fires, explosions or detonations at ordinary or slightly elevated temperatures. Each reaction is reported under the name of one of the reactants and cross-referenced under the others. This guide, the first of its kind, was prepared by the NFPA Sectional Committee on Hazardous Chemical Reactions and approved by the NFPA Committee on Chemicals and Explosives.

- 17 Flash Point Index of Trade Name Liquids. NFPA No. 325 A. National Fire Protection Association. Available From: National Fire Protection Association, 60 Batterymarch Street, Boston, Mass. 02110. 224 pp. (1964). Price: \$2.00

This 224-page guide provides basic data about more than 6,300 flammable liquid products, arranged alphabetically by trade names. The flash point, principal uses and manufacturer of each product are listed. The new edition, the sixth since the guide was first published in 1954, contains approximately 2,600 additions and changes since the 1962 edition.

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INDUSTRIAL MEDICAL PRACTICE

- 18 The Future of Industrial Medicine in Great Britain. Mackenzie Industrial Health Lecture delivered at the University of Sheffield, July 16, 1964. J. Rogan.
Brit. J. Ind. Med. 21, 251-258 (Oct. 1964).

The author discusses the subject under the following headings: The Future of Medicine, the Future of Industry, Political Attitudes to Industrial Medicine, Review of Future Trends, The Future of Industrial Medicine, Functions of an Occupational Health Service, Organization, Staffing, and Research. Reflecting on the lack of any material advance of industrial medicine in recent years, on the negative attitude of the responsible authorities, and on the apathy of many employers, it seems to the author that some responsibility for this state of affairs may be attributed to the persistent advocacy of a rapid and indiscriminating expansion of industrial medical services. The arguments and proposals advanced in this lecture may not be congenially received in all quarters but to the author they seem to be realistic and justifiable. In advancing them he had the sole purpose in mind of suggesting a form for industrial medicine which can meet the needs of industry without excess or extravagance and which can ensure that industrial medicine will remain not only viable but full of promise for the future.

- 19 The Hyperbaric Chamber at the Royal Victoria Hospital, Montreal. J.H. Duff, et al.
Can. Med. Assn. J. 91, 1051-1055 (Nov. 14, 1964).

The single apparent and potential benefit of hyperbaric oxygen is the great increase in the blood content of dissolved oxygen achieved when pure oxygen is breathed at increased pressure. The design of an economical chamber for this purpose is presented. A large number of physiological measurements (cardiac output, electroencephalogram, electrocardiogram, etc.) can be performed on patients or experimental animals within the chamber by use of unique electronic connections in the chamber wall which permits all recording equipment to remain outside. Expected arterial blood oxygen tensions have been achieved by patients studied at 2, 3, and 4 atmospheres. Safety features are emphasized. No complication has resulted in 113 dives over the period January to June 1964, one-half of which were for treatment of patients. The chamber has been used clinically as an adjunct to treatment of shock, certain forms of malignancy, anaerobic infections, coronary occlusion, and problems of ischemia, and for preservation of organs for transplantation.

-- Authors' abst.

- 20 Gynecologic Problems in Aviation and Space Medicine. H.G. Mutke.
Deut. Arztebl. 61, 985-987 (April, 1964). German.

Gynecological problems in aviation and space medicine are described in view of the increasing number of women flying either as passengers or in a professional capacity, e.g., stewardesses. Flight stresses have been blamed for polymenorrhea, or amenorrhea, fatigue, and exhaustion in airline stewardesses. Psychological stresses, including anxiety, fear of flying, and emotional stresses occasioned by continuous dealing with people contribute to gynecologic disturbances. Irregular sleep periods, disruption of diurnal periodicity on transcontinental flights are stresses specific to flying occupations. Acceleration stresses, such as hypoxia, lowered atmospheric pressure, heightened exposure to cosmic radiation are to be considered. Up to now a clear-cut direct effect of flying on the menstrual cycle has not been shown. With respect to pregnancy and abortion the prevailing opinion is that flight travel is harmless during normal pregnancy but is contraindicated in the presence of habitual abortion, eclampsia, motion sickness, or morning emesis. Noxious influences of radiation, hypoxia, noise, and vibration on the maternal endocrine system and the forming embryo have been found in animal experiments. Space stresses, particularly weightlessness, are still relatively unexplored with respect to the female organism.

-- Aerospace Med. Absts.

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- 21 Clinical Problems in Aviation Medicine. Influence of the Aftereffects of Alcohol Combined with Hypoxia on Psychomotor Performance. J.R. Carroll, W.F. Ashe, and L.B. Roberts. *Aerospace Med.* 35, 990-993 (Oct. 1964).

In an effort to determine the aftereffects of alcohol (hangover) and altitude on human subjects a pursuit-type tracking task was devised with an additional time splitting visual task used in conjunction. The task involved two factors, one being the monitoring and control of a moving point source on an oscilloscope and the other being the monitoring and cancelling of lights displayed around the subject. This study indicated that there was no effect on performance by human subjects on the tasks provided for periods up to 15 minutes after having consumed up to 105 cc. of absolute alcohol in orange juice 10 hours prior to testing. The added variable of exposure to altitude up to 13,000 feet did not alter these findings. It was felt that the obvious weakness in this procedure was the short exposure time involved, and subsequent longer studies may be indicated. However, the authors are unable to find valid pharmacological or physiological evidence that a single rather severe "hangover" does in fact seriously affect performance in a well motivated otherwise normal subject.

-- Authors' abst.

- 22 "Whiplash" Injuries. J.J. Dowling. *Am. Assn. Ind. Nurses J.* 12, 12-15, 34-35 (May, 1964).

Various aspects of the mechanics of whiplash injury are discussed in the light of more recent information. Sites of injury in the neck and vertebral column are identified and discussed from a clinical point of view. Symptoms and specific effects in damaged areas are described. The significance of diagnosis by x-ray is stressed, and treatment by immobilization and rest recommended.

-- Aerospace Med. Absts.

- 23 Inguinal Herniorrhaphy: Immediate Return to Unrestricted Work. Surgical Techniques Using Local Anesthesia and Results in 5,903 Personal Cases. C.J. Bellis. *Ind. Med. & Surg.* 33, 721-725 (Oct. 1964).

A preponderance of successes in 5,903 cases of inguinal hernia has attended the routine use of local anesthesia, discharge from the hospital on the day of operation, and resumption of unrestricted physical work the same day or a day or two later. No indirect hernias recurred. In 4,432 inguinal herniorrhaphies using forms of Bassini's operation direct hernias later developed in 23 patients. In another group of 1,471 inguinal herniorrhaphies in which polyester mesh was employed to enforce the posterior canal wall without additional apposition techniques, direct hernias subsequently appeared in three cases. There are 33 references.

-- Author's summary

- 24 The Routine Use of Echoencephalography in the Diagnosis of Intracranial Masses. R.G. Lee and T.P. Morley. *Can. Med. Assn. J.* 91, 987-990 (Nov. 7, 1964).

Ultrasonic echoes can be detected from interfaces within the body. This principle has been applied to the examination of the cranial contents by the procedure of echoencephalography. The presence of a unilateral intracranial mass was correctly predicted by this technique in 30 out of 33 cases. The method of examination is simple, harmless, painless and rapid. Its general adoption as an aid in diagnosis of intracranial lesions, particularly in acute head injuries, is recommended.

-- Authors' abst.

- 25 A Trial of Oil-Adjuvant Influenza Vaccine in a Non-Epidemic Season. R.W. Howell and A.N.B. Stott. *Brit. J. Ind. Med.* 21, 259-264 (Oct. 1964).

In the autumn of 1963, 1,679 employees of two United Kingdom Atomic Energy Authority establishments were inoculated with a single dose (0.25 ml.) of polyvalent oil-adjuvant influenza vaccine. In a non-epidemic winter, no significant improvement in certified sickness absence could be demonstrated in the vaccinated group when compared with a randomly selected uninoculated group. In particular, no real protection was shown in those vaccinated, against in-

fluenza and acute upper respiratory tract infections. Once respiratory sickness had occurred the vaccine showed no significant effect on the length of sickness absence. In this trial, unpleasant reactions to the vaccine occurred in about a quarter of the inoculated, and, in particular, a large number of participants complained of general malaise which persisted for more than two weeks. These reactions were thought to be severe enough to induce consumer-resistance to routine annual immunization, which is thought to be neither justified nor acceptable in a healthy industrial population at the present stage of vaccine development. This in no way detracts from the suitability or acceptability of the vaccine to high-risk patients. Further research and testing, which is being carried out by pharmaceutical firms, is essential, and so, too, is the need for more controlled trials to evaluate changing vaccines in different population groups.

-- Authors' abst.

26 A Comparative Trial of Oil-Adjuvant and Aqueous Polyvalent Influenza Vaccines.

R. W. Howell and A. B. Mackenzie. *Brit. J. Ind. Med.* 21, 265-268 (Oct. 1964).

In the early autumn of 1963, 957 volunteers were inoculated with Admune (an oil-adjuvant polyvalent influenza vaccine) and 337 with Munevan (an aqueous polyvalent vaccine). A survey by questionnaire suggested that the oil-adjuvant vaccine was more acceptable to the inoculated than the aqueous one. The oil-adjuvant vaccine seemed less likely than the aqueous to provoke serious side effects in unknown reactors, and this more than offset the possibility of subcutaneous nodules not encountered with the aqueous vaccine. No difficulty was encountered in administering the oil-adjuvant vaccine, in recommended dose, to those giving a history of hay fever, asthma, and some other major allergies. On this occasion, reactions to both vaccines were fairly prevalent, and about a quarter of all those vaccinated complained of a feeling of malaise lasting at least two weeks. These reactions were thought to be severe enough to induce consumer-resistance to routine annual immunization, which is considered hardly acceptable in a healthy industrial population at the present stage of development. Medically the case for such immunization is not yet proven. There is a need for further vaccine development and for more controlled trials. If the efficacy of the oil-adjuvant vaccine is proved in clinical practice, this vaccine appears preferable to the aqueous type.

-- Authors' abst.

27 Pneumonitis with Alveolar-Capillary Block in a Cattle Rancher Exposed to Epizootic Bovine Abortion. M. G. Barnes and H. Brainerd. *New Engl. J. Med.* 271, 981-985 (Nov. 5, 1964).

A case of fatal pneumonitis with alveolar-capillary block resembling an acute form of the Hamman-Rich syndrome is reported. An agent of the bedsonia group was isolated from cardiac blood obtained at autopsy. Retrospective investigation showed that the patient, a California rancher, had been the owner of the cattle in which epizootic bovine abortion had first been described. Subsequently, an agent of the bedsonia group was isolated from the aborted fetuses of the infected animals. These findings, together with the demonstration of complement-fixing antibodies to standard psittacosis antigen in the serums of 3 men who worked on the patient's ranch, suggest that the patient may have acquired the infection from a bovine source. There are 23 references.

-- Authors' summary

28 Paraostial Atherosclerosis. Cases Involving Left Coronary Artery. A. F. Naji. *Arch. Pathol.* 78, 461-466 (Nov. 1964).

The proximal segment of the left coronary artery was studied in 100 autopsy cases. The atherosclerotic changes appeared to predominate in two zones: the superior ostial zone of the outer wall and the postostial zone of the inner wall. It is the author's opinion that the hemodynamic mechanism of the systolic pressure plays a significant role in the distribution of these lesions.

-- Author's summary

29 Avian Atherosclerosis: Retardation by Pectin. H. Fisher, et al. *Science* 146, 1063-1064 (Nov. 20, 1964).

A highly significant retardation of spontaneous atherosclerosis was observed in 2-year-old cockerels fed on a standard diet supplemented with 5% pectin for 18 months. The pectin-fed birds excreted three times as much lipid extract and almost twice as much cholesterol as did the control cockerels fed the standard diet supplemented with 5% nonnutritive fiber.

-- Authors' abst.

- 30 A Method for the Detection of the Hidden Diabetic in Industry. H. T. Englehardt.
Ind. Med. & Surg. 33, 742-743 (Oct. 1964).

Three thousand one hundred and ninety-three apparently non-diabetic individuals were subjected to a glucose screening test, which consisted of the ingestion of 50 grams of glucose after their ordinary breakfast. An effort was made to do a complete glucose tolerance test on each individual whose screening exceeded 150 milligrams per 100 cubic centimeters. In this manner, a diagnosis of diabetes mellitus could be made in 1.9%, and 4.5% satisfied the criteria for potential or pre-diabetes.

-- Author's summary

- 31 Mortality in Relation to Smoking: Ten Years' Observation of British Doctors (Continued).
R. Doll and A. B. Hill. Brit. Med. J. 1, 1460-1467 (June 6, 1964); ibid. 1399-1410 (May 30, 1964). See IHD Abst. No. 857, Sept. 1964.

The present paper reports on the interpretations of the study on the mortality of nearly 41,000 medical doctors registered in the U. K. as observed over a period of 12 years. During the first 10 years 4,597 of the men and 366 of the women died. These deaths have been analyzed in relation to the smoking habits which had been reported earlier in reply to a questionnaire. An association, in differing degrees, was found with smoking in men for 7 causes of death—namely, cancer of the lung, cancers of the upper respiratory and digestive tracts, chronic bronchitis, pulmonary tuberculosis, coronary disease without hypertension, peptic ulcer, cirrhosis of the liver, and alcoholism. In women the few deaths showed an association only between smoking and cancer of the lung. The most pronounced association was shown by cancer of the lung for which the annual death rate rose linearly from 0.07/1000 in men who were non-smokers to 3.15/1000 in men smoking 35 or more cigarettes daily. The very low death rate from cancer of the lung in non-smokers of both sexes in a population that had lived mostly in urban areas did not suggest that air pollution per se had been an important factor in the production of the disease. Whether smoking acts synergistically with air pollution upon the respiratory tract is not known. Although there is good evidence that in the U. K. air pollution plays some part in the etiology or aggravation of chronic bronchitis, the association of the disease with smoking has been a conspicuous feature of nearly every form of inquiry. As with cancer of the lung, in this study there was no reason to doubt that there was a direct and important causal relationship between smoking and mortality.

-- APCA Absts.

- 32 Length of Cigarette Ends and Inhaling. I. T. T. Higgins.
Brit. J. Ind. Med. 21, 321-323 (Oct. 1964).

The suggestion that inhalers might on average leave a greater length of cigarette unsmoked was supported in a study of miners and ex-miners aged 35 to 64 years living in the Rhondda Fach. Non-inhalers, detected in an earlier random sample survey, were matched with inhalers, for age, radiological category of pneumoconiosis, and number of cigarettes smoked daily. Cigarette ends were collected for one day from all the men. The ends were measured by one observer who knew nothing about the smoking habits of the men submitting them. In each 10-year age group, the length of unsmoked cigarette was slightly shorter in non-inhalers, and the difference of 1.28 mm. was just significant ($P=0.05$). The biological implications of this small difference are discussed.

-- Author's abst.

- 33 Lung Cancer and Metastasis. S. Warren and Olive Gates.
Arch. Pathol. 78, 467-473 (Nov. 1964).

The metastatic spread in 368 autopsied cases of primary cancer of the lung has been studied with cognizance of pertinent clinical and pathologic factors. Inasmuch as this series is made up of autopsied cases including many untreated cases, the darker side of the clinical picture is presented. The weight of evidence indicates that age, sex, and treatment do not appreciably influence duration of life and the distribution of metastases. Spread by way of lymphatics is most common. There are a limited number of cases in which hematogenous spread seems the only logical way to explain certain bizarre metastases. There are 26 references.

-- Authors' summary

03121776

- 34 Carcinoma of the Lung. D.J. Lulu and L.J. Lawson. Arch. Surg. 88, 213 (1964).

A review of 321 cases of carcinoma of the lung from Des Moines covering a 10-year period provided interesting statistics. Anaplastic carcinoma was the most common form, followed by epidermoid adenocarcinoma and alveolar cell types. The upper lobes were more commonly involved, the right side most often. Most patients had smoked cigarettes for over 30 years. Pain was the most common presenting complaint, followed by cough, dyspnea, weight loss and weakness. Hemoptysis was the presenting complaint in only 5%. Bronchoscopy and bronchial washing was the most valuable tool in diagnosis. Scalene node biopsy was the most valuable procedure in determining resectability. Sixty per cent of the cases were inoperable and 40% of the remainder were non-resectable. Survival rates were almost identical after pneumonectomy, as after lobectomy. Chemotherapy and radiation had only palliative benefit and did not increase survival time. Metastases were present in 63% of patients at time of surgery. Overall survival time was 8 months. Survival time after resection averaged 15 months. Overall 5-year survival was 3%.
-- Can. Med. Assn. J. Absts.

- 35 Brucellosis in Manitoba. E. Snell. Can. J. Public Health 55, 247-250 (June, 1964).

Although brucellosis may affect many different animal species, human infection in Manitoba arises nearly always from cattle. The disease is not common; approximately 13 human cases have been reported annually. In 1959 the Canada Department of Agriculture inaugurated their "Brucellosis Eradication Program"; subsequently the pattern of the disease changed. Whereas formerly it had occurred most frequently in rural areas among males, a much higher proportion of cases began to be reported among workers in a meat-packing plant. This was apparently related to the handling of large numbers of reactors.

-- Public Health Eng. Absts.

- 36 Brucellosis in a Veterans' Hospital, 1963. F.M. Bourne, et al.
Can. Med. Assn. J. 91, 1139-1145 (Nov. 28, 1964).

In Canada, about 100 sporadically occurring cases of brucellosis are reported yearly. Three patients were admitted to one Montreal hospital in the first 7 months of 1963; all were employed in or around a packing plant. One had pain and electrocardiographic changes suggestive of Brucella myocarditis; he recovered promptly. Symptoms of neuroasthenia and anxiety are common and were observed in two of these three cases. Two had positive blood cultures; the third showed conclusive agglutination to Br. abortus (1:10,240). In some patients with frequent previous exposures to infection the agglutination response may be equivocal and difficult to interpret. All three patients responded well to tetracycline; streptomycin and corticosteroids also have a role in the therapy of some cases. There may also be some place for combined antibiotic and vaccine therapy. The program of control of the disease in cattle in Canada is aimed at eradication by 1967.

-- Authors' abst.

- 37 The Laser Treatment of Experimental Malignant Tumours. P.E. McGuff, et al.
Can. Med. Assn. J. 91, 1089-1095 (Nov. 21, 1964).

Some of the results of experiments performed during the past 2 years to assess effects of laser energy on experimental malignant tumors are reviewed. Twenty types of malignant tumors (most in the cheek pouch and 11 of human origin) were treated in over 700 Syrian hamsters. Results of laser treatment of malignant melanomas and thyroidal carcinomas are presented. A human patient with malignant melanoma treated by laser energy is described. Investigation of thermal effect revealed that the laser-treated tumor remained warm for about one minute, while the cautery-treated tumor cooled to normal temperature in 5 seconds. Direct action of laser on superficial tumors is possible; deeper lesions must be exposed surgically. Laser energy has a selective effect on certain malignant tumors, resulting in their progressive regression and ultimate dissolution. All hamsters with implanted malignant melanomas and carcinomas of human origin, after a completion of a course of laser treatment, showed no gross or histologic evidence of tumor up to the date of last observation.

-- Authors' abst.

03121777

SKIN DISEASES AND BURNS

- 38 Study of Skin Temperatures. H.V. Malin. Texas State J. Med. 60, 376-378 (April, 1964).

Skin temperatures of various body areas were measured and evaluated. Forehead temperature readings were also compared with rectal readings. Results of these studies show the following: (1) complex or expensive equipment is unnecessary for the determination of surface skin temperatures; (2) there is no appreciable variation of surface skin temperatures under normal conditions on symmetrical sides of the body or its extremities; (3) average skin temperatures were established as norms for comparative use; (4) deviations from these established norms may be anticipated in circulatory disturbances; (5) there is no statistically significant correlation between rectal and skin temperatures; and (6) the presence of a temperature gradient was demonstrated both internally and externally. -- Aerospace Med. Absts.

- 39 Epidemiology of Skin Disease in an Automobile Factory. Muriel L. Newhouse. Brit. J. Ind. Med. 21, 287-293 (Oct. 1964).

A survey was made of a random sample of workers from the machine shops, assembly lines, and stock and store departments of an automobile factory. Among the 1,223 men seen, representing 97% of the sample, the prevalence of non-infective skin diseases was 14.5%. Skin diseases were classified into 4 groups: "dermatitis" and "folliculitis" of occupational origin, endogenous "eczemas", and miscellaneous skin diseases. Slightly more than half of all skin diseases seen were considered to be occupational in origin. In this population the prevalence of skin disease was more than four times that based on patients attending the factory medical department. An unsuspected cause of allergic dermatitis was found on the assembly lines, where the incidence of dermatitis was significantly higher than among the non-production workers. The prevalence of folliculitis was significantly higher among production than non-production workers. There was no significant difference in the prevalence of "eczema" or the miscellaneous skin diseases in the various occupational groups. Among European workers fair men were more prone to skin disease than darker men. In another factory, a West Indian and Asiatic group of workers had a significantly lower prevalence of skin diseases than a group of Europeans doing similar work. Folliculitis was more prevalent among the younger workers and those recently employed in the factory; there was no obvious association between age and length of service and the occurrence of other types of skin disease. -- Author's abst.

- 40 Textile Finishing Materials as Source of Contact Dermatitis. K.E. Maltén. Ned. Tijdschr. Geneesk. 108, 1626-1629 (Aug. 22, 1964).

In 66 patients who were treated at a skin clinic for eczematous lesions, the localization (in women: axillae, arms, upper part of thorax, neck, face, and popliteal region; in men: wrists, crena ani, medial side of thighs, and popliteal region) made the author suspect that allergy to contact with textile finishing materials might be the cause of these skin lesions. Patch tests were made in 27 of the patients with textile samples and with various substances used in the finishing of textiles. A total of 66 substances were tested. The author gained the impression that many patients with hypersensitivity to textile finishing materials apparently have multiple hypersensitivities to such substances as dimethyloltriazone, dimethylolurea, ethyleneurea, melanineformaldehyde, and to some non-specified softeners. Formaldehyde hypersensitivity is found only in combination with hypersensitivity to the first four substances mentioned. In these instances, formaldehyde is probably not the primary sensitizing agent. The author emphasizes the importance of proper labeling of finished textiles.

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

03121778

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IN RE: ABRAMS November 1992

CHEMICAL HAZARDS

- 41 Fish Poisonings—Their Diagnosis, Pharmacology, and Treatment. B.W. Halstead. Clin. Pharmacol. Therap. 5, 615-627 (Sept.-Oct. 1964).

The general subject of fish poisonings is reviewed. Fish poisonings concern both oral and parenteral toxins. Four general types of fish poisonings are recognized: ichthyosarcotoxins, of which there are at least 9 kinds; ichthyotoxism; ichthyohemotism; and ichthyocanthotoxism. The pharmacology and chemistry of fish poisons are discussed, but most of them have not been characterized. Treatment for the most part is symptomatic.

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

- 42 Safety of Petroleum Waxes. A.J. Turchetti. Reprint from September, 1964 issue of Modern Packaging, 4 pp. (See IHD Abst. 638, July 1963).

Petroleum waxes for use in food packaging and other food applications have been found safe providing they meet the standards set forth in a Wax Order published in the Federal Register of July 8, 1964. In the opinion of the American Petroleum Institute, this clears all petroleum waxes which have been used in food packaging. 1. Thirty-six samples of petroleum wax representative of industry production were analyzed for polycyclic aromatic hydrocarbons. Eight samples contained identifiable members of this chemical group. No known carcinogens were found. The highest concentration of polycyclic hydrocarbon found was 0.64 part per million. No correlation was observed between polycyclic aromatic hydrocarbon content and any physical characteristic of the waxes including the crystalline form. 2. Five of the above waxes tested by feeding in rats at a 10% level in the diet for a period of two years (the approximate life span of the species), following which the rats were observed until their death. No carcinogenic or toxic effect was detected. 3. Five petroleum waxes in benzene solution were tested by repeated skin applications to mice and rabbits. In addition, one of the waxes was fractionated into aromatic and non-aromatic components which were applied separately to mice, also by repeated skin applications. Controls were painted with plain solvent or not at all. No carcinogenic effect was detected. 4. Five petroleum waxes were tested in mice by subcutaneous implantations, although it is recognized that tumors will develop around chemically inert materials from the physical presence of these materials in disk form. Tumors did develop around waxes in disk form when these waxes had melting points above body temperature. Similar tumors also formed around implants of Teflon and glass. No incidence of tumor formation was associated with implants of the same high-boiling-point wax in powdered form, or of waxes with melting points which allowed them to soften at body temperature. With questions of medical safety settled, wax makers are moving forward rapidly to apply waxes and wax compounds containing a variety of additives to the manufacture of improved protective packages of many kinds. New coatings for paper and paperboard are being developed which are heat sealable, outstanding in gloss and scuff resistant, as well as flexible, moistureproof and greaseproof. New laminating waxes are available for use with a variety of sheet materials to make barrier packages that protect over a wide range of temperature and other conditions.

-- Cond. from Reprint of Modern Packaging, September, 1964

- 43 Some Effects of Atmospheric Fluoride on Plant Metabolism. D.C. McCune, et al. J. Air Poll. Control Assn. 14, 465-468 (Nov. 1964).

Leaves of Tendergreen bean plants exposed to atmospheric fluoride concentrations in the range 1.7 to 7.6 micrograms/cu.m. showed increased levels of enolase and catalase activity and decreased levels of pyruvate and alpha-ketoglutarate. Phosphoenolpyruvate carboxylase activity and oxalacetate were not affected. The leaves of Milo maize plants exposed to 5.0 micrograms fluoride/cu.m. showed increased levels of enolase and pyruvate kinase activity and a decreased level of pyruvate. Oxalacetate and alpha-ketoglutarate levels were not affected. Catalase activity was increased, then decreased by hydrogen fluoride fumigation. The changes induced by hydrogen fluoride were greatest 6 to 10 days after the start of fumigation and disappeared or decreased in magnitude during the post-fumigation period.

-- Authors' abst.

- 44 Histopathology of Exposure to Phosgene. An Attempt to Produce Pulmonary Emphysema Experimentally. J.R. Clay and R.G. Rossing. Arch. Pathol. 78, 544-551 (Nov. 1964).

Repeated exposure to phosgene produced pulmonary emphysema in dogs. Severe acute or chronic respiratory bronchiolitis was produced in all animals exposed one or more times. The changes found by conventional histologic methods and in macrosections are described. These findings are related briefly to several popular concepts of the pathogenesis of human pulmonary emphysema. There are 15 references.

-- Authors' summary

- 45 Effects of Inorganic Fluorides on Animals. J.W. Suttie. J. Air Poll. Control 14, 461-464 (Nov. 1964).

Damage to animals by atmospheric fluoride pollution involves only those animals which subsequently graze on contaminated forages. The chronic disease which results has been most extensively studied in cattle, where the general symptoms are: An interference with normal dentition, development of osseous lesions, and a diminished appetite which may lead to weight loss or decreased milk production. Studies completed to date would indicate that depending on the conditions of exposure the tolerance level for dairy cattle is about 1.3 mg. fluoride/kg. (40 ppm fluoride in diet). Because the route of exposure is via the forage, it would seem unreasonable to base any control standard on atmospheric fluoride levels. The forage fluoride levels, analytical evidence from the animal, or even some early sign of fluoride ingestion on the animal might form a more logical basis for a standard.

-- Author's abst.

- 46 Volatilization of Mercury by Bacteria. L. Magos, A.A. Tuffery, and T.W. Clarkson. Brit. J. Ind. Med. 21, 294-298 (Oct. 1964).

Volatilization of mercury has been observed from various biological media (tissue homogenates, infusion broth, plasma, urine) containing mercuric chloride. That microorganisms were responsible was indicated by the finding that the rates of volatilization were highly variable, that a latent period often preceded volatilization, that toluene inhibited the process, and that the capacity to volatilize mercury could be transferred from one biological medium to another. Two species of bacteria when isolated and cultured from these homogenates were able to volatilize mercury. Two other bacteria, one of which was isolated from the local water supply, were also highly active. The volatile mercury was identified as mercury vapour. The importance of these findings in relation to the storage of urine samples prior to mercury analysis is discussed.

-- Authors' abst.

- 47 Mercury Poisoning from an Unsuspected Source. M. Tamir, et al. Brit. J. Ind. Med. 21, 299-303 (Oct. 1964).

In the manufacture of zinc oxide the raw material normally used is zinc metal plates. In a factory in which old aeroplane batteries containing zinc mercury amalgam were substituted, it was not realized that mercury vapor was being produced. Of 25 workers exposed, 7 developed serious chronic mercury poisoning and were admitted to the hospital. The clinical findings in the affected workers are described. They were first treated with penicillamine D, but in all but one case this had to be stopped because of rashes. Little improvement followed a switch to BAL (British Anti-Lewisite). It is suggested that if penicillamine D is used in the treatment of mercury poisoning, steroid cover should be given from the start.

-- Authors' abst.

- 48 Zinc Concentrations in Rivers of the Chesapeake Bay Region. J.T. O'Connor, C.E. Renn, and Irmgard Wintner. J. Am. Water Works Assn. 56, 280-286 (March, 1964).

Samples of stream water were collected from 33 stream sampling points on 20 streams in the Chesapeake Bay region for zinc analysis. At some locations, samples were taken of muds and silts from the surface of the river bed in an accessible backwater. The location of sampling sites, date of sampling, zinc content of the water, pH, alkalinity, total hardness, and calcium hardness for water in the Chesapeake Bay region are given. The results of analyses performed on water collected from streams in the southeastern United States and the zinc concentration of the bottom solids collected are given.

-- Public Health Eng. Absts.

- 49 Kinetics of the Distribution and Excretion of Lead in the Rat. N. Castellino and S. Aloj.
Brit. J. Ind. Med. 21, 308-314 (Oct. 1964).

The kinetics of the distribution and excretion of lead (Pb-210) were studied in rats for 14 days after single intravenous injections of 100 micrograms of lead per rat. The results show that in the blood the lead is bound mainly to the cells, and that the ratio of lead in the cells and plasma is constant throughout the whole period. Pb-210 is rapidly distributed in the tissues, the highest concentrations being in the kidneys, liver, and bones. The kinetics of the disappearance of Pb-210 from the organs and tissues follow the pattern of first order reactions. The disappearance curves in the blood, plasma, hematic cells, and some other tissues can be expressed as sums of exponential functions. In contrast, the removal of metal from the bone tissue occurs at a constant and extremely slow rate. The metal is excreted by the feces and urine. The rates reach their maxima within 24 hours and decrease asymptotically afterwards. More Pb-210 was excreted in the feces (35.7%) than in the urine (15.9%) during the 14 days of observation.

-- Authors' abst.

- 50 Plasma Porphyrins in Lead Workers. H.A. Waldron.
Brit. J. Ind. Med. 21, 315-317 (Oct. 1964).

Plasma porphyrin levels were determined in a group of 50 workers exposed to lead. The mean value obtained (0.7 microgram/100 ml.) was found to be higher than that obtained from a control group (0.2 microgram/100 ml.). Although urinary porphyrin levels in the lead workers were also higher than in the control group, no correlation was found between plasma porphyrin levels and urinary porphyrin levels. Chromatography of the plasma porphyrins from lead workers showed that some protoporphyrin was present in addition to the coproporphyrin found in plasma from the control group.

-- Author's abst.

- 51 Relations Between Lead Poisoning in Rabbit and Man. G.M. Hass, et al.
Am. J. Pathol. 45, 691-727 (Nov. 1964).

Young rabbits were fed a basal diet variably supplemented with lead subacetate, cholesterol and commercial-boiled linseed oil containing a "lead drier" for periods of 3 to 55 weeks. A study was made of the pathologic effects of the supplements and these effects were compared with those commonly attributed to lead poisoning in man. The hematologic disturbances produced experimentally were similar to those found in human cases of lead poisoning. There was a self-limited progressive anemia characterized by decreased hemoglobin, stippling of erythrocytes, poikilocytosis, polychromatophilia, erythroblastemia and evidence of hemolytic activity with accumulation of erythrocytes and hemosiderin in reticuloendothelial cells. As these changes increased in severity they were often accompanied by a relative lymphocytosis and monocytosis without undue immaturity of circulating leukocytes or evidence of interference in blood platelet production. The experimental lead nephropathy was also similar to that found in patients with lead poisoning. It was characterized principally by an accumulation, first in the straight tubules and later in the convoluted tubules, of an intracytoplasmic brown granular pigment followed by the appearance of giant "anaplastic" tubular lining cells and eosinophilic intranuclear inclusion bodies. There was no resemblance between the osteopathy occurring in young rabbits and rachitic changes described in children with lead poisoning nor was there any "lead line" demonstrated microscopically or by x-ray in bones of the experimental animals. A form of encephalopathy or motor neuropathy, attributed to lead poisoning in infants and adults respectively, was not produced experimentally. Many different disturbances in visual function and neuroretinal structure have been attributed to lead poisoning in man. None of the described pathologic changes resembles those which occurred in the retina of the rabbit. There are 63 references.

-- Cond. from authors' summary

- 52 Pesticides and Pest Control. B.N. Smallman.
Can. J. Public Health 55, 211-215 (May, 1964).

The virtues of organic pesticides for pest control and the hazard to health involved in their use are discussed. Comparisons are made with other pest control methods such as the development of pest-resistant crop varieties, the use of living organisms as control agents, and other biological and genetic concepts of pest control. Integration of several methods of pest control is indicated as the best hope for the future.

-- Public Health Eng. Absts.

- 53 Pesticides—The Saskatchewan Experience. N. Williams.
Can. J. Public Health 55, 216-220 (May, 1964).

The author discusses the use of several pesticides in agriculture and the hazard to health involved in their application. He refers to an active educational program employed to ensure the safe use of pesticides. Reference is also made to a program whereby all information pertaining to toxicological properties of new pesticides is relayed to physicians so that they may quickly diagnose cases of pesticide poisoning. -- Public Health Eng. Absts.

- 54 Toxicity and Metabolism of Dieldrin in Rats. D.F. Heath and M. Vandekar.
Brit. J. Ind. Med. 21, 269-279 (Oct. 1964).

The main constituent of the insecticide dieldrin has been studied in male and female rats. The LD₅₀s depend on the route of injection and, after intravenous infusion, on the rate of infusion. After oral injection of a 4% solution in arachis oil, deaths take place within 6 hours or from 2 to 7 days later; but the first convulsion occurs at 40 min. over a wide range of doses. For further studies Cl-36-dieldrin was used. Absorption from the gastrointestinal tract varies with the vehicle and is via the portal vein, not the thoracic lymph duct. Distribution is initially general, but within a few hours of injection it is heavily in favor of fat. Excretion of Cl-36 averages about 5% per day. It is markedly increased by a restriction of diet, which reduces the body fat. From the cannulated bile duct, excretion accelerates as the rat loses weight, exceeding 10% per day after a few days. Only 3% of the Cl-36 is excreted as dieldrin unless the bile is cannulated, when 10% may be excreted. The remainder is in metabolites, 90% in the feces and 10% in the urine. Many metabolites have been demonstrated but not identified. The most important, containing about 60% of the total Cl-36, is excreted in the bile, probably as a glucuronide and reconstituted in the intestine before being excreted in the feces. From these findings one can interpret many of the toxic effects of dieldrin, including the effects of starvation on toxicity and the prolonged sensitization to a second dose. (Barnes and Heath, 1964) in terms of the low solubility of dieldrin in water, its high solubility in fat, and its mobilization when fat is utilized. Toxic effects are related to the dieldrin mobilized; there is no need to postulate that dieldrin produces a long-lasting lesion in the central nervous system. The findings and conclusions are shown to be relevant to the toxic effects of dieldrin in man.

-- Authors' abst.

- 55 Some Toxic Effects of Dieldrin in Rats. J.M. Barnes and D.F. Heath.
Brit. J. Ind. Med. 21, 280-282 (Oct. 1964).

The oral toxicity of dieldrin in rats depends upon its concentration in the vehicle (arachis oil). It is increased by a previous restriction of diet, leading to a loss of weight. Two equal doses given within 3 weeks of each other are more toxic than the sum of the 2 given as a single dose.

-- Authors' abst.

- 56 A Blood Test Diagnostic of Exposure to Aldrin and Dieldrin. V.K.H. Brown, C.G. Hunter, and A. Richardson. Brit. J. Ind. Med. 21, 283-286 (Oct. 1964).

The findings of a diagnostic blood test for the presence of hexachloro-epoxy-octahydro-dimethanonaphthalene (HEOD) performed on whole blood obtained from operatives of plants manufacturing two chlorinated hydrocarbon insecticides, aldrin and dieldrin, and formulating products containing them and from dogs experimentally exposed to dieldrin have been reported. When clinical signs of poisoning were present, the concentration of HEOD in the blood was more than 16.0-17.0 micrograms/100 g. blood. In the absence of clinical signs of intoxication the concentration of HEOD in the blood was less than these values. However, the concentration of HEOD found in several operatives and in 2 dogs who were without signs of intoxication was above these values. It is suggested that there is a concentration of HEOD in the blood of man and dog which is a threshold for intoxication. The value for the threshold concentration may be near 15.0-20.0 micrograms/100 g. blood. An individual man or dog with a concentration of HEOD in the blood greater than the threshold is in a critical condition requiring some factor or factors not yet determined to precipitate intoxication. The use of this blood test will assess the severity of occupational exposure and support the diagnosis in suspected intoxication.

-- Authors' abst.

- 57 Survey of Workers Exposed to Chlordane. W.I. Fishbein, J.V. White, and H.J. Isaacs.
Ind. Med. & Surg. 33, 726-727 (Oct. 1964).

Fifteen workers, under constant, though minimal, exposure to chlordane over periods ranging from 1 to 15 years showed no evidence of injury to any of the organic systems subject to study. Since the exposure of these workers is greater than may be expected in the use of chlordane in the quantity and manner recommended and since they showed no signs or symptoms of toxicity, it may be stated that there is little, if any hazard from the use of chlordane when properly employed.

-- Authors' conclusion

- 58 DDT: A New Hypothesis of Its Mode of Action. R.D. O'Brien and F. Matsumura.
Science 146, 657-658 (Oct. 30, 1964).

It is suggested that DDT and perhaps other chlorinated hydrocarbon insecticides owe their activity to the formation of a charge-transfer complex with a component of the nerve axon, with consequent disturbance of function. Experimental evidence is provided for the formation of two complexes with components of cockroach nerve; the complexes have been partially purified. Their formation is accompanied by an absorption in the 245 to 270-milli-micron range.

-- Authors' abst.

- 59 Esterase Inhibitors as Pesticides. Because of Favorable Biological Properties They are Displacing Other Types of Established Compounds. J.E. Casida.
Science 146, 1011-1017 (Nov. 20, 1964).

Thirty years of testing has yielded over 120 esterase inhibitors in current use for pest control. Several hundred million pounds of these organophosphates and carbamates are employed each year as insecticides and acaricides and, to a much lesser extent, as anthelmintic agents, nematocides, and herbicides. Systemics or chemotherapeutic agents for control of insect pests of plants and animals first became practical with the organophosphates. Compounds of lower mammalian toxicity and other favorable biological properties continue to appear and displace established compounds and broaden the use areas. Problems of resistance and residues in certain areas of insect control by chlorinated hydrocarbons will result in a further shift to esterase-inhibitors for pest control. Interpretation of the potential hazards of pesticides to man is dependent on the availability of fundamental information on their modes of action combined with use experience; this knowledge is available for the organophosphates and carbamates that act as acetylcholinesterase inhibitors.

-- Author's summary

INDUSTRIAL DUSTS

- 60 The Measurement in the Field of Pollution by Dust. D.H. Lucas and D. J. Moore.
Intern. J. Air and Water Poll. 8, 441-453 (Sept. 1964).

A new design of gauge for measuring dust pollution at ground level is described. Its performance is more closely related to the nature of complaints of industrial pollution than the standard deposit gauge. It requires less manpower to operate and it gives some indication of the direction of origin of the dust pollution. It has been used experimentally in studying the effect of raising the height of the chimneys at East Yelland Power Station from 117-162 feet. The directional discrimination of the gauge has been demonstrated. The results indicate that dust pollution has been reduced both at short distances and large distances from the station but show little change at a distance of one-half mile.

-- APCA Absts.

03121783

- 61 A Simple Device for Gravimetric Sampling. R.E.G. Rendall.
Brit. J. Ind. Med. 21, 318-320 (Oct. 1964).

In view of the increased importance attached to the gravimetric sampling of airborne dust in mines and other working places, it was recently decided to start regular gravimetric sampling in the experimental animal dusting rooms in this Unit. (Pneumoconiosis Research Unit, Council for Scientific and Industrial Research, Johannesburg). As no suitable sampling instrument was available, a Hexhlet dust sampler was modified by fitting it with a probe in place of the elutriator. This instrument has also been used to collect samples of airborne particulate matter from within chimney stacks and exhaust ducts and also unelutriated samples of dust from the air in working places. -- Author's abst.

- 62 Bureau of Mines High Temperature Electrostatic Precipitator. C.C. Shale.
Combustion 35, 42-44 (April, 1964).

The design of the semi-commercial size precipitator and power pack is based on operating experience obtained on bench-scale equipment. Some of the equipment design features and a system for evaluating the effectiveness of the precipitator for removing dust from hot, pressurized gas are described. The power pack is equipped to permit investigation of the effectiveness of positive and negative coronas for cleaning hot gas. -- APCA Absts.

- 63 Industrial Pulmonary Disease in India. P.K. Ghosh.
Ind. Med. & Surg. 33, 732-737 (Oct. 1964).

In 1961 there were 50,111 factories and over 3.9 million factory workers (in India). Newer industries and newer factories are coming up. Accelerated industrialization, mechanization and modernization are exposing millions of workers in India to various and newer industrial hazards. Studies show that wherever mechanization has reached the status of western standards, more and more victims of occupational hazards have been cropping up. Only an alert, active, authoritative, modernized industrial health service can meet this challenge of rising risk in a rapidly industrializing India. -- Cond. from author's summary

- 64 Byssinosis: Antibody to Cotton Antigens in Normal Subjects and in Cotton Card-Room Workers.
A. Massoud and G. Taylor. Lancet 2, 607 (Sept. 19, 1964).

Antibody directed against an antigen present in the cotton plant is described. The distribution of titers of this antibody in groups of normal people and in card-room workers, with and without symptoms of byssinosis are compared. It is shown that the amount of antibody is higher in card-room workers than in normals, and is highest in those who suffer from byssinosis. A theory implicating this antibody in the etiology of byssinosis is presented.

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

- 65 Mortality Rate Among Coal Miners. P.E. Enterline.
Am. J. Public Health 54, 758-768 (May, 1964).

This report on tabulations provided by the National Vital Statistics Division of the Public Health Service deals with mortality rates among coal miners. Statistics of 1950 presented in table form emphasize the high death rate of coal miners as compared to other workers. Standard Mortality Ratio of miners is given by various age groups for deaths due to occupation, related, and other selected causes. Effects of long-term health hazards from this environmental factor are discussed. High death rates of U.S. miners compared to those of England and Wales are tabulated. -- Public Health Eng. Absts.

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- 66 A Follow-Up Study of Workers from an Asbestos Factory. P.C. Elwood, et al.
Brit. J. Ind. Med. 21, 304-307 (Oct. 1964).

Associations between exposure to asbestos and carcinoma of the lung, diffuse mesothelioma of the pleura, and diffuse abdominal tumors have been demonstrated. Only by an epidemiological approach can the total risks of exposure to asbestos be estimated, and such a study is reported here. This suggests that white asbestos (chrysotile) may not be a serious hazard as far as mesothelioma or abdominal tumors are concerned, though there is some evidence of an excess in the number of deaths from carcinoma of the lung and bronchus.

-- Authors' abst.

- 67 Experience in the Study of the Effect of Dust on Various Tissue Cultures. V.M. Pereygin.
Gigiena i Sanit. No. 5, 34-37 (1964). Russian.

The effect on tissue cultures of bast factory dust (native, organic and mineral components, and hashish and its alkaloids) as compared with the effect of cotton, coal, and crystalline quartz dust was investigated. It was found that the native bast dust caused cytopathological changes in the tissue culture (swelling and pyknosis of the nuclei; lysis, granular degeneration, and shrinking of cells; inhibition of cellular division) but to a lesser extent than did its mineral components and the dust of crystalline quartz, hashish, and its alkaloids. The organic (fibrous) part of the bast, cotton, and coal dust did not produce any pronounced changes in the tissue culture cells.

-- Public Health Eng. Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 68 Muscular Exercise at Great Altitudes. L. G.C.E. Pugh, et al.
J. Appl. Physiol. 19, 431-440 (May, 1964).

Six subjects performed ergometer exercise at various altitudes from sea level to 24,400 feet during a Himalayan expedition lasting 8 months. Oxygen intake for a given work rate was constant and independent of altitude, up to the maximum work rate that could be maintained for 5 minutes. Maximum oxygen intake declined with increase in altitude, reaching 1.4 liters/minute at 24,400 feet in the best subject. Ventilation for a given work rate was independent of altitude in light and moderate exercise but increased at each altitude as maximum oxygen intake was approached. Heart rates at altitude were higher at low and moderate work intensities, but the same as or lower than the corresponding sea-level value for the same work load, as maximum oxygen intake was approached. Breathing oxygen at sea-level pressure at 19,000 feet reduced ventilation and heart rate for a given work rate, restored work capacity almost to sea-level values, and increased maximum heart rate. Evidence that lung diffusion, cardiac output, and the high oxygen cost of extreme ventilation all contributed to the limitation of exercise at 19,000 feet is presented. -- Aerospace Med. Absts.

- 69 Work Tolerance: Age and Altitude. D.B. Dill, et al.
J. Appl. Physiol. 19, 483-488 (May, 1964).

The work capacity at sea level and high altitude was measured on 9 men, 5 of whom had taken part in similar studies at high altitudes from 18 to 33 years earlier. Except for a few measurements on the treadmill at sea level each subject rode the bicycle ergometer; the braked load was increased minute-by-minute until his limit was reached. The maximum capacity for oxygen intake declined with age both at high altitude and at sea level. Individual responses varied greatly: the most fit individual, age 54, had about as great an oxygen intake on the ergometer at a barometric pressure of 455 mm. Hg as had a man one-half his age at sea level. After 5 or 6 weeks of acclimatization a man of 71 attained at a barometric pressure of 485 a greater oxygen intake per minute and per kilogram than that of a man of 27. At that barometric pressure the limiting oxygen intake on the bicycle ergometer may be only one-half of the sea-level value 2 or 3 days after arrival; after 4-6 weeks it may range from two-thirds to five-sixths of the sea-level value.

-- Aerospace Med. Absts.

- 70 The Effects of Explosive Decompression on the Gastrointestinal Tract: A Preliminary Report. F.T. Sargent and R.D. Williams. *J. Trauma* 4, 618-623 (Sept. 1964).

Rapid decompression from 40,000 ft. to ground level produces pressure differentials similar to those previously recorded with blunt abdominal trauma. The pressure difference between the peritoneal cavity and decompression chamber is greater than that between the intestine and chamber, which might explain the absence of intestinal rupture with intact animals. Both the exposure of intestinal loops and of the external abdominal support by taping increased the hemorrhagic injuries; but there were no intestinal ruptures unless the gut was previously distended and obstructed. These findings, coupled with previous reports on experimental blunt trauma, further suggest that pressure is of secondary importance in the etiology of intestinal injury. -- J. Am. Med. Assn. References & Reviews

- 71 The Effects of "Dry" Heat on the Circulation of Man: Coronary Hemodynamics. S.M. Sancetta, et al. *Am. Heart J.* 67, 593-598 (May, 1964).

Subjects with normal hearts, as well as patients with enlarged left ventricles, compensated or in left ventricular failure, were exposed for 2 hours to a dry, warm environment of 98°F. (36.7°C.) and 40% relative humidity. Brachial arterial pressure and left ventricular myocardial oxygen consumption decreased significantly. There was a positive correlation between these measurements. These changes are not harmful to the overburdened left ventricle and, within the design of the experiment, may actually be considered to be beneficial in the case of resting subjects. -- Aerospace Med. Absts.

- 72 Effect of Ultrasound on the Secretion of 5-Hydroxy-3 Indoleacetic Acid (5HIAA). J. Jankowiak, et al. *Am. J. Phys. Med.* 43, 46-47 (Apr. 1964).

Experiments on 34 rabbits have shown that radiation of the occiput of the skull with ultrasound produces an increase of one of the metabolic products of serotonin in the urine of those animals which before treatment showed no secretion of this product. In those animals in which the metabolite 5-hydroxy-3-indoleacetic acid was present in the urine prior to the ultrasonic radiation, no significant change was observed as the result of ultrasonic irradiation. These findings are related to clinical observations of disturbances of the autonomic nervous system, changes in the electroencephalogram, and complaints of fatigue, drowsiness, and dizziness after prolonged exposure to ultrasound. -- Aerospace Med. Absts.

- 73 Acoustic Trauma. G.B. Page. *Med. Serv. J. (Can.)* 20, 43-46 (Jan. 1964).

A short review is presented of the history of acoustic trauma due to exposure to high intensity noise in various occupations. Among military occupations various aspects of hearing loss due to aircraft noise and small arms fire are discussed in relation to means of protection and prevention. Examples are taken from surveys made by the Canadian Armed Forces. A program in the Royal Canadian Air Force for combating hearing loss by adequate methods of personnel training and protection is elucidated. The use of the new NRC liquid-seal ear muffs is discussed. -- Aerospace Med. Absts.

- 74 The Effect of Intensive Noise on Certain Functions of the Body. A.B. Strakhov. *Gigiena i Sanit.* 4, 29-37 (April, 1964). Russian.

Experimental long-term exposure to intensive high-frequency noise produced numerous shifts in the activities of the central nervous and cardiovascular systems. These shifts consisted of changes in conditioned reflex and electrical brain activity, considerable fluctuations of the arterial blood pressure level, and weakening of cardiac muscle contractions. As a rule, all these changes were of a temporary nature. On the basis of the data obtained, it may be concluded that all deviations from the normal occurring in the body due to noise action were connected with changes in the function of the reticular formation of the brain stem and gradually progressing alterations therein. -- Aerospace Med. Absts.

- 75 Influence of Strong Magnetic Fields on the Electrocardiogram of Squirrel Monkeys (*Saimiri sciureus*). D.E. Beischer and J.C. Knepton, Jr.
Aerospace Med. 35, 939-944 (Oct. 1964).

Man may be exposed to strong magnetic fields over prolonged periods of time if plans to apply such fields for reasons of a technical nature in future space ships are realized. Experiments with subhuman primates are necessary in preparation for systematic investigation of possible effects of such fields on man. A study of the performance of the heart in a strong magnetic field is of special interest. Electrocardiograms (ECG) of 4 monkeys were recorded during exposure of the animals to magnetic fields of 20,000 to 70,000 gauss. Neither breathing rate nor R wave amplitude of the ECG was affected. A decrease in the heart rate, an increase in the degree of sinus arrhythmia, and a considerable augmentation of the amplitude of the T wave are newly observed biomagnetic effects. The influence of strong magnetic fields on electrical processes in living matter is stressed.

-- Authors' abst.

RADIOACTIVITY AND X-RADIATION

- 76 X-Ray Hazard in Small-Animal Veterinary Practice. A. Schmidt and L.B. Leppard.
Can. J. Public Health 55, 287-293 (July, 1964).

In the latter months of 1962, a tour of 10 small animal clinics was undertaken to investigate radiation hazards that might possibly be connected with the typical use of x-ray installations. Although a properly aligned and filtered x-ray tube is not a completely innocuous device, the hazard is small. A lead apron and gloves are likely to prevent acute injuries, even in the case of moderately high workloads or of low workloads and less favorable technical conditions. The accepted practice of wearing lead gloves and apron indicates that the profession is aware of the radiation hazard to some degree. The authors have tried to show, however, that the omission of filtration, beam-limiting diaphragms and cones could change a relatively harmless operation into a dangerous one, and that in practice conditions can easily arise where 0.25 mm. lead (contained in the normal lead garment) would not prevent exposures in excess of the limit values recommended by such bodies as the International Commission on Radiological Protection.

-- Public Health Eng. Absts.

- 77 Disposal of High-Level Radioactive Wastes. R. Eliassen.
J. Water Pollution Control Fed. 36, 201-216 (Feb. 1964).

The present temporary and unsatisfactory disposal methods for nuclear wastes, and the need for a more reliable method at a reasonable cost are discussed. The failing points and inefficiencies of current methods of disposal are cited. Results are given of a recent study to incorporate the wastes into glass at high temperatures. An analysis of the problems that were confronted in the study and in the solutions is presented. As a result of the study, glass can be produced that will provide the necessary degree of security needed in high-level radioactive waste disposal by a method that can cope with the anticipated growth of the nuclear power industry. There are 21 references.

-- Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 78 An Auto Exhaust Proportional Sampler. R. Smith, A.H. Rose, Jr., and R. Kruse.
Intern. J. Air and Water Poll. 8, 427-440 (Sept. 1964).

This paper concerns the development of an instrument to obtain a proportional sample of auto exhaust gas in the sampling line to maintain it at a fixed percentage of the carburetor

air flow rate. The flow rates in carburetor and sample line are measured continuously by laminar flow elements and associated pressure difference transducers. The proportional sampler is used in a vehicle on the road to provide a representative sample of exhaust gas, which is then analyzed to obtain mole fraction measurements of various air contaminants in the vehicle exhaust. The total volume of air entering the carburetor is also measured. The values for total air volume entering the carburetor and mole fraction of contaminants are used to calculate the emission rates in lb. of each air contaminant emitted/vehicle mile traveled.

-- APCA Absts.

- 79 Measurement of Atmospheric Ozone with the Chemiluminescent Method. V.H. Regener. J. Geophys. Res. 69, 3795-3800 (Sept. 15, 1964).

The balloon sonde and the aircraft ozone meter are provided at the air intake with a moisture trap containing phosphorus pentoxide, which does not react appreciably with ozone. A small pump aspirates air in the dark across the surface of the chemiluminescent substance while a photomultiplier tube views the material. Techniques are described for the measurement of atmospheric ozone, using the chemiluminescent reaction between ozone and rhodamine B. Details for a balloon sonde for an aircraft installed ozone meter, and for a surface ozone recorder are given.

-- APCA Absts.

- 80 Vertical Distribution of Atmospheric Ozone and Its Relation to Synoptic Meteorological Conditions. J.G. Breiland. J. Geophys. Res. 69, 3801-3808 (Sept. 15, 1964).

Results from an analysis of data obtained by means of the chemiluminescent ozone sonde in a series of observations at various stations in North America indicate that the vertical distribution of ozone is closely related to the thermal properties of the air masses through which the sounding is taken. Individual ozone soundings were analyzed and compared with features of the atmosphere depicted by charts showing individual temperature soundings, winds, and temperatures at the tropopause level, the topography of the tropopause, and wind and temperature fields in vertical cross sections. Ozone mixing ratio is relatively small at all levels below the tropopause and increases with altitude above the tropopause.

-- APCA Absts.

- 81 Carbon Dioxide Measuring Systems for Manned Spacecraft. W.H. Bush. Aerospace Med. 35, 951-953 (Oct. 1964).

For manned space flight to date, three types of carbon dioxide sensors have been developed. At present, the infrared approach to carbon dioxide detection is considered the most reliable and sensitive system available for use in manned space flight. The problems of total pressure sensitivity can be offset electronically, if required, on future missions; however, at present, the excellent pressure control which the environmental system supplies the spacecraft makes such refinements unnecessary for normal operations. -- Author's abst.

- 82 The Measurement of Atmospheric Sulphur Compounds Using Lead Dioxide. E.N. Lawrence. Intern. J. Air and Water Poll. 8, 381-388 (July, 1964).

The effect of wind speed on the reaction of lead dioxide with atmospheric compounds of sulfur is examined. The results from experiments with the standard (cubical) lead dioxide atmospheric pollution measuring instrument, described in a publication of the Department of Scientific and Industrial Research, are compared with those obtained from the exposure of unprotected lead dioxide in a wind tunnel. With allowance for differences between the two environments (atmosphere and wind tunnel), the results are found to be generally consistent. A formula is developed relating concentration of atmospheric sulfur compounds to the mean external wind speed and the sulphation of lead dioxide within the cylindrical louvred screen of a modified atmospheric pollution measuring instrument. This formula and the corresponding formula for the standard (cubical) instrument are found to be consistent with results obtained by Bowden (1964) from a comparison of the sulphation of lead dioxide within cubical and cylindrical screens. Orientation and exposure to wind of cubical and cylindrical instruments are discussed with reference to their effects on the pollution measurements from these instruments.

-- Cond. from Public Health Eng. Absts.

- 83 Nashville Sulfur Dioxide Emission Inventory and the Relationship of Emission to Measured Sulfur Dioxide. W.W. Stalker, P.A. Kenline, and H.J. Paulus.
J. Air Poll. Control Assn. 14, 469-474 (Nov. 1964).

A detailed inventory of sulfur dioxide emissions was prepared as part of the Nashville Community Air Pollution Study conducted by the Public Health Service during 1958-1959. The primary purpose of the inventory was to provide data for a study of the relationship between the emission of sulfur dioxide and measured ambient levels. The development of the inventory, data collection methods, and calculations are described. Ambient levels of sulfur dioxide were related to average emissions of sulfur dioxide in such a way (correlation coefficient = 0.81) that mean seasonal concentrations of atmospheric sulfur dioxide in square-mile areas could be predicted with fairly good confidence from a knowledge of sulfur dioxide emissions. For these long-period (average) predictions meteorological variables can be disregarded. On a square-mile basis, on the average, one ton of sulfur dioxide emitted per day produced a mean atmospheric sulfur dioxide concentration of 0.022 ppm, and 10 tons of sulfur dioxide per day produced a concentration of 0.067 ppm. -- Authors' abst.

- 84 Continuous Determination of Nitrogen Oxides in Air and Exhaust Gases.
D.L. Ripley, J.M. Clingenpeel, and R.W. Hurn.
Intern. J. Air and Water Poll. 8, 455-463 (Sept. 1964).

Nitric oxide is the principal nitrogen oxide present in automobile exhaust gases and in photochemically reactive systems important to air pollution studies. Only the dioxide is readily determined in instruments that are available and suitable for exhaust research applications. In order to use these instruments for determination of nitric oxide it is necessary first to convert the simple oxide to the dioxide form. A solid chemical oxidant was developed to effect this conversion in a continuous process appropriate to the analytical requirement. The oxidant is particularly useful in atmospheric analyzers used in air pollution studies. -- APCA Absts.

PREVENTIVE ENGINEERING

- 85 Handling Flammable Dust. C.I. Fishkin and R.L. Smith.
Chem. Eng. Progr. 60, 45-48 (April, 1964).

The engineering design factors are considered: Inerting, venting, suppression, and containment. Five characteristics of dust that can be measured and evaluated are covered briefly: Maximum explosive pressure, explosive concentration, rate of pressure rise, particle size, and ignition energy. Explosion suppression systems are outlined by specific examples. Protection methods and design are suggested. -- Public Health Eng. Absts.

- 86 How to Control Noise in Distribution Systems. R.M. Hoover.
Heating & Air Conditioning Contractor 55, 50-55 (March, 1964).

It is shown how to solve problems associated with vibration of fans and noise through terminal outlets; examples are presented of cases where minimum background noise is needed in office areas of a single building, and how to eliminate damper-grid noise in an auditorium air conditioning system. -- J. Am. Soc. Safety Eng. Absts.

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- 87 Forced-Draft-Fan Noise Can Be Controlled. G.J. Sanders.
Elec. Light and Power 42, 46-50 (April, 1964).

Modern techniques for noise reduction are discussed including silencing, fan-room configuration design, and use of sound absorbing materials. A 33 1/3 rpm record is appended which helps to illustrate the article.
-- J. Am. Soc. Safety Eng. Absts.

- 88 New Techniques in Pressure Suit Cooling. E.C. Wortz, D.K. Edwards, III, and T.J. Harrington.
Aerospace Med. 35, 978-984 (Oct. 1964).

Suit cooling methods developed in the authors' laboratories employing use of liquid heat transport loops with heat exchangers inside the environmental suit appear to offer considerable promise for overcoming most of the disadvantages of ventilation cooling at high metabolic rates. The principal advantages of the methods described are reducing the ventilation flow and minimizing sweat rate, while achieving complete removal of the metabolic heat. Because of the physiological stress problems known to exist with ventilation cooling methods at high metabolic rates, it is believed that future life support systems and space suits will utilize liquid cooling methods.
-- Authors' summary

- 89 A Self-Contained Atmospheric Protective Ensemble for Titan II. E.C. Wortz, et al.
Aerospace Med. 35, 1062-1066 (Nov. 1964).

The toxicity of the Titan II propellants—hydrazine, unsymmetrical dimethylhydrazine (UDMH) and nitrogen tetroxide (N_2O_4)—necessitated a new concept in the design of protective clothing. To ensure utmost protection and efficiency of personnel in hazardous conditions encountered in propellant transfer requires a gas-tight enclosure and a portable life support system. To meet this requirement the Self-Contained Atmospheric Protective Ensemble (SCAPE) was designed, developed, and tested as a system. The development criteria were that the ensemble provide adequate breathing, cooling, and ventilating air for one hour; adequate humidity control; adequate visibility and mobility; be impermeable to UDMH, hydrazine, and N_2O_4 ; and have an operating range of $-20^\circ F.$ to $+120^\circ F.$ This paper describes the design of the outer garment, helmet, and faceplate and the design of the environmental control system. Discussion of the testing program covers developmental, environmental, physiological, psychophysical, and materials testing.

- 90 Laboratory Safety in Research with Infectious Aerosols. A.G. Wedum.
Public Health Repts. 79, 619-633 (July, 1964).

Safety in the research laboratory is discussed in relation to infection by aerosols. The author presents a breakdown of illnesses to which man is exposed in the laboratory and their causes. The length of time selected common diseases are viable in connection with normal laboratory animals and some applicable regulations for the control of these agents are presented. A suggested floor plan for a small facility is shown and the various types of equipment necessary for safely handling aerosols are discussed. Routine periodic medical examination of employees is recommended. There are 70 references.
-- Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 91 Methodology for the Study of Public Attitudes Concerning Air Pollution. Jane Schusky, et al.
J. Air Poll. Control Assn. 14, 445-448 (Nov. 1964).

A significant element of a community's total air pollution picture is the "state of mind" of the people living in the area with respect to air pollution. The reasons why a study of public attitudes can be an important factor in planning an air pollution control program are briefly summarized. The methodology applied in one such study in the St. Louis Metropolitan area is described, and possible variations related to different scope, objectives and survey area characteristics are suggested.
-- Authors' abst.

- 92 Odor Control in Cattle Feed Yards. W. L. Faith.
J. Air Poll. Control Assn. 14, 459-460 (Nov. 1964).

Commercial cattle-feeding is a large industry in the United States. In California, for instance, there are more than 500 commercial feedlots. Each of these lots handles from less than 500 to more than 50,000 head of cattle at one time. With the urban and suburban explosion, feedlots that were at one time many miles from residential centers are now "just across the street." Naturally the high odor level from improperly operated yards gives rise to considerable complaint and citizen indignation. A variety of methods to reduce odor to an acceptable level have been tried with varying results. A highly satisfactory procedure is based on "good house-keeping" practices, frequent removal of fecal material, and abatement of residual odor by spraying the lots at designated intervals with a solution of potassium permanganate. Details of the method are discussed. -- Author's abst.

- 93 Plant Damage Caused by Irradiation of Aldehydes. I. J. Hindawi and A. P. Altshuller.
Science 146, 540-542 (Oct. 23, 1964).

The report that damage to petunia has been correlated with the presence of aldehydes in the atmosphere is discussed in relation to recent laboratory findings. Laboratory investigations have shown that irradiation of formaldehyde in air will not cause plant damage to the varieties of petunia, pinto bean, and tobacco wrapper used, even when nitrogen oxide is added to the system. Irradiation of propionaldehyde in air does cause damage to these plants. Addition of nitrogen oxide to the irradiated propionaldehyde-in-air system does not markedly increase damage. -- Authors' abst.

- 94 What is the Role of Air Pollution as a Cause of Disease? T. M. Cocks.
Am. J. Public Health (Suppl.) 54, 71-78 (Jan. 1964).

Limited studies done in Jersey City, where relatively high levels of sulfur dioxide concentrations have been recorded, demonstrate evidence of an excess mortality of such chronic lung diseases as cancer of the lung, chronic bronchitis, and pulmonary emphysema. In addition, epidemiologic studies have indicated high rates of chronic respiratory symptoms among a selected male population in this community. Included in the type of chronic air pollution that is experienced in Jersey City and elsewhere, one must add that of pollution associated with cigarette smoking. One of the future studies will be to determine the relationship between air pollution and respiratory infection among men, who already have been selected in Jersey City, both those who have chronic respiratory symptoms and those who at this time are free from such symptoms. The type of bronchial reaction produced by irritants in the air, cigarette smoke, and bacterial infections are quite similar. Whether the initial lesion of chronic bronchitis is the result solely of infection or bronchial irritants is yet unknown. -- APCA Absts.

- 95 Practical Applications of Stacks to Minimize Pollution Problems. J. A. Brink, Jr. and B. B. Crocker. J. Air Poll. Control Assn. 14, 449-454 (Nov. 1964).

"Rules of thumb" for stack design have been developed for use on problems where extensive studies cannot be justified or where quantitative design data are unavailable. The application of these rules to a practical stack design problem is discussed. The IBM 704 computer has been used for rapid yet rigorous stack design studies. The computer procedures for design are discussed and its application to a practical problem is described in detail. -- Authors' abst.

- 96 The Prediction of the Rise of a Hot Cloud from Field Experiments. I. A. Singer, J. A. Frizzola, and M. E. Smith. J. Air Poll. Control Assn. 14, 455-458 (Nov. 1964).

The rise of a hot cloud resulting from combustion of a solid propellant rocket fuel at ground level has been determined from lapse-time movies and visual aircraft observations. The field tests were conducted near a 420-foot meteorological tower under various atmospheric conditions. A method of predicting the maximum thermal rise of a cloud, based on source and meteorological parameters, is described. Comparisons with other theoretical formulations are presented. -- Authors' abst.

- 97 Air Pollution Curbed, Profits Hiked. M.G. Boone.
Oil Gas J. 62, 92-93 (Aug. 24, 1964).

Air pollution is reduced and profits are increased by removing hydrogen sulfide and sulfur dioxide from gases that are vented to the atmosphere. Gases that contain hydrogen sulfide are recovered and given additional processing to recover light ends. Sulfur dioxide is thus eliminated from the furnace stacks. -- Public Health Eng. Absts.

- 98 Emission Standards for the Control of Solid Particles, A New Approach by New Jersey.
L.A. Winkelman. J. Air Poll. Control Assn. 14, 441-444 (Nov. 1964).

Existing chapters of the New Jersey Air Pollution Control Code are described, followed by an explanation of a proposed new chapter to control emissions of coarse solid particles and fine solid particles from industrial processes. The chapter is designed to limit dustfall of coarse particles off the premises of the emitter to 200 tons per square mile per year, and the methods used to relate this criterion to stack emissions are explained. Fine particles, suspended in the air off the premises, are limited to 0.615 milligrams per cubic meter during average weather conditions. Measures taken for the protection of buildings, where the plant property line is less than 10 stack heights from the base of the stack, are described.

-- Author's abst.

MANAGEMENT ASPECTS

- 99 Sick Absence in Certain Western Countries. P.E. Enterline.
Ind. Med. & Surg. 33, 738-741 (Oct. 1964).

Absence from work due to illness substantially depresses the Gross National Product in the United States. Data for 14 Western nations show that the economic effect of sick absence is considerably greater in Europe than in the United States and Canada. The percentages of the working population absent on an average work day in European countries are 2-3 times those for the United States and Canada. Two reasons are suggested for the low sick absence rates in the United States and Canada. Neither country has a national compulsory cash sickness benefit program (these programs exist in all of the other countries studied) and there is some evidence that the absence of cash sickness benefits depresses sick absence rates. In both the United States and Canada unemployment rates are high in comparison with other countries, and it is likely that high unemployment excludes from the employed labor force many workers who are marginal in terms of health or incentives to work, high unemployment rates thus tending to depress sick absence rates.

-- Author's summary

ACCIDENTS AND PREVENTION

- 100 Electrical Injuries. K.L. Brown and A.R. Mortiz. J. Trauma 4, 608-617 (Sept. 1964).

This review confirms some aspects of what is known about the effects of electrical injury. The authors found no previous reference to a correlation of the intensity of current, the pathway of current, and the effects of injury in a documented series of cases. Objective injury is inconstant, except for burns with high intensity current. An individual may survive currents in the range of 33,000 volts. Therefore, it is imperative to institute and maintain appropriate resuscitative measures immediately, even though the patient is ostensibly dead. It may require hours of continuous effort. -- J. Am. Med. Assn. References & Reviews

- 101 Relation Between Accident Incidence and Type and Level of Job. E. P. Sanders. Psychological Repts. 14, 670 (June, 1964).

The study is based on a sampling of 597 hospital employees. A total of 46 positions were under investigation classified in terms of Roe's system. Results indicate that hazard exposure varies with job levels in that a greater accident rate was observed in lower than in higher level jobs. Within a given job level there are no significant differences in accident rate.

-- Aerospace Med. Absts.

- 102 Mass Casualties. H. J. Bennett. Ind. Med. & Surg. 33, 728-731 (Oct. 1964).

The primary purpose of medical service in a catastrophe should be to give adequate care in order to prevent or reduce death and personal injury; to sort properly so that appropriate disposition of the cases can be made; to ensure proper transportation to regular medical installation for more thorough treatment. The question always arises as to what type and how much medical equipment should be stocked in preparation for an emergency. Various schema have been presented in the past suggesting specific supplies be stored or stockpiled per 100 employee casualties. Other plans recommend that enough medical supplies be stored to take care of 40 to 50% of the employee population in a catastrophe. In any event, medical supplies and equipment for the care of mass casualties should be determined on the basis of the expected capability of the industrial medical department rather than the expected number of casualties, the medical and paramedical personnel available and the number of reserves that can be called in if necessary. The geographical location of the plant also has some bearing on a plan. There will be a difference in thinking if the plant is located in or near a metropolitan area with several well-stocked hospitals and medical suppliers or if it is located in a relatively isolated area where it has to depend on its own resources. The usual medical facilities and equipment in an industrial medical department are not only adequate for day-to-day work but will in most cases be sufficient for a catastrophe. Additional trained personnel and equipment may, however, have to be brought in depending on the situation. Clinical judgment is the best guide in sorting patients for proper disposition. When in doubt, it is best to be conservative and evacuate for definitive medical care.

MISCELLANEOUS

- 103 "Sleepy Lagoon". J. McNulty. Can. Med. Assn. J. 91, 1064-1071 (Nov. 14, 1964).

Lagooning of raw wastes constitutes a health hazard and violates one of the concepts of modern waste treatment. Since this primitive practice provides an excellent opportunity for the transmission and spread of communicable disease, there exists at present a potential unchecked plague. In a cynical age of political opportunism and expediency, the general public may find it difficult to imagine any group, including the medical profession, taking an unselfish stand on public affairs. Yet the time has come for such a scientific and dedicated discipline as the medical profession to take this stand and place this absurd and stupid method of waste treatment where it really belongs—in the museum of sanitation history. There are 30 references.

-- Author's conclusion

- 104 A Review of the Literature of 1963 on Wastewater and Water Pollution Control. Part I. D.A. Okun, et al. J. Water Pollution Control Fed. 36, 535-572 (May, 1964).

Subjects included are: Analytical methods, wastewater, physical and chemical methods, biological filtration, activated sludge, disinfection, detergents, sludge digestion, sludge disposal and utilization, waste stabilization ponds, and reuse. There are 351 references.

-- Public Health Eng. Absts.

- 105 Water Pollution by Organic Pesticides. S. D. Faust and O.M. Aly.
J. Am. Water Works Assn. 56, 267-279 (March, 1964).

There are more than 500 organic pesticides in some 54,000 formulations. These pesticides occur in water supplies in very low concentrations as the result of accidental or deliberate discharge of waste waters and of direct application. Potable water supplies are affected through impairment of the taste and odor quality. Some of these organic pesticides can persist for long periods in ground and surface waters and soils where they resist biologic decomposition. In general, activated carbon appears to be the most effective method of reducing most organic-pesticide levels in water supplies. Chemical coagulation and oxidation are inefficient or impractical. There are 38 references. -- Public Health Eng. Absts.

- 106 Handling and Treating Petrochemical Plant Wastes: A Case History. E. S. Shannon.
Water & Sewage Works 111, 240-245 (May, 1964).

This paper discusses the process waste streams from a petrochemical complex, their origin, and how they were handled and treated before discharge to the receiving stream. Problems encountered and solutions to these problems are presented.

-- Public Health Eng. Absts.

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