



NW88-0020658

Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

JULY, 1965
(Vol. 29, No. 7)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH, PA. 15213

03121942



IN RE: ABRAMS November 1992

INDUSTRIAL HYGIENE FEATURES

HWBB-0020659

See Abst. No. 634 for information on acute hepatitis.

Adequate examination of the eye is outlined in Abst. No. 638.

Glaucoma, alcohol, and intraocular pressure are reviewed in Abst. No. 639.

Abst. No. 640 describes an epidemic in a medical school.

Abst. No. 641 reports on asthma caused by the grain weevil.

Newer drugs in the treatment of hypertension are discussed in Abst. No. 645.

A brief review on tennis elbow in industry is presented in Abst. No. 646.

Abst. No. 650 is concerned with the age at onset of lung cancer.

Facial dermatitis of unknown cause is studied in Abst. No. 660.

An experimental study of chronic pneumonitis caused by phosgene is presented by Abst. No. 669.

Consult Abst. No. 671 for data on the chronic properties of benzidine.

Abst. No. 684 investigates pulmonary silicotuberculosis in a potato farmer.

A report on asbestos bodies in human lungs at autopsy is given in Abst. No. 686.

Abst. No. 699 describes a beryllium air monitor.

Air pollution in a city street is studied in Abst. No. 702.

See Abst. No. 710 for a discussion of the management of underwater accidents.

FOUNDATION FACTS

I-H-F 30th ANNUAL MEETING. A tentative program of our up and coming meeting is shown on pages i and ii of this Digest. Invitations and final programs will be mailed at a later date, so mark these dates on your calendar now.

----- OCTOBER 20-21 -----

DR. ROBERT T. P. deTREVILLE participated in a program study panel for the National Environmental Health Sciences Center, July 12-15 at the Research Triangle Institute in Durham, North Carolina. The Foundation is attempting to integrate its plans for the future with those of the U.S. Public Health Service, in order to provide the greatest possible stimulus to programs of interest to industry, providing for industrial participation and support where indicated.

QUICK REFERENCE AIDS. Ways of improving the Digest and extending its usefulness are under constant study. In response to suggestions from frequent users of the Industrial Hygiene Digest, beginning with this issue, the first and last numbers of the abstracts contained therein, will be included in the Table of Contents. As an additional aid to quick reference, consideration is being given to including the 1st two letters of the month as a prefix to the Digest number in the Annual Index.

NEW REPRINTS AVAILABLE FROM FOUNDATION UPON REQUEST:

"The Relation of Chronic Lung Disease to Community Type Air Pollution" by Paul Gross, J. Air Poll. Control Assn. 15, No. 4, 160-161 (April, 1965).

"Asbestos Bodies in Human Lungs at Autopsy" by Dzidra Cauna, Robert S. Totten, and Paul Gross. J. Am. Med. Assn. 192, 371-373 (May 3, 1965).

30th ANNUAL MEETING
October 20-21, 1965

03121944

INDUSTRIAL HYGIENE FOUNDATION

Tentative Program — 30th Annual Meeting
Mellon Institute, 4400 Fifth Avenue, Pittsburgh, Pa. 15213
October 20-21, 1965

HWBB-0020660

Wednesday, October 20, 1965

1st DAY MANAGEMENT CONFERENCE

8:45 a.m. CHAIRMAN E. K. Davison, Chairman, IHF Board of Trustees; Pres., Davison Sand & Gravel Co.
8:50 a.m. WELCOME Paul C. Cross, Ph.D., President and Chief Executive Officer, Mellon Institute

1st MANAGEMENT SESSION — Health Conservation

MODERATOR: Douglas Soutar, Vice Pres., Ind. Rela. American Smelting & Refining Company
CO-MODERATOR: Robert D. Blasier, Vice Pres., Ind. Rela., Westinghouse Electric Corp.

9:00 a.m. Is Group Health Insurance Affecting Your Profits? N. H. Collisson, Chairman of the Board Olin Mathieson Chemical Corporation
9:40 a.m. Who Said You Are "Normal"? Roger J. Williams, D.Sc., Prof., Chemistry University of Texas
10:20 a.m. Engineering Thresholds and Costs (speaker to be announced)

1st JOINT PROFESSIONAL SESSION — Compensation

MODERATOR: Andrew Fletcher, Chairman of the Board St. Joseph Lead Company
CO-MODERATOR: Andrew Kalmykow, Counsel American Insurance Association

11:00 a.m. State or Federal Workmen's Compensation — A Conflict Daniel T. Doherty, Chairman, Workmen's Compensation Commission of Maryland
11:40 a.m. Progress in Compensation in 1965. Andre Maisonpierre, Mgr., Casualty Dept., American Mutual Insurance Alliance

12:30 Noon Luncheon Meeting

Role of Collective Bargaining in the Evolution of Company Health Insurance Programs R. Heath Larry, Administrative Vice Pres., Personnel Services, U.S. Steel Corp.

2nd JOINT PROFESSIONAL SESSION — Occupational Medicine Research

MODERATOR: John F. Shrouts, M.D., Med. Dir. General Mills, Inc.
CO-MODERATOR: Ralph F. Schneider, M.D., Med. Dir., Standard Oil Co. (New Jersey)

2:00 p.m. Experience with Asbestos and Disease Kenneth W. Smith, M.D., Med. Dir., Johns-Manville Corporation
2:40 p.m. Observations from a 26-Year Sulfur Dioxide Area Survey Morton Corn, Ph.D., Asst. Prof. of Air Poll., Graduate School of Public Health University of Pittsburgh
3:20 p.m. Problems and Rewards in University-Industry Co-Operative Research Thomas A. Lincoln, M.D., Med. Dir., Oak Ridge National Laboratory
4:00 p.m. Occupational Health Programs for Small Plants — An Unsolved Problem Daniel C. Braun, M.D., Asst. Med. Dir., U.S. Steel Corp.

4:40 p.m. Annual Business Meeting

5:30 p.m. Hospitality Hour

03121946



WILLIAM E. RINEHART, Sc.D. who joins the faculty of the University of Pittsburgh in August as Assistant Professor of Applied Toxicology, has been appointed Visiting Fellow of Mellon Institute, effective the same date. He will assist Dr. Gross in the Foundation's Laboratory Toxicological Research Program. Dr. Emil A. Pfitzer left the University of Pittsburgh this month to join the staff of the Kettering Laboratory, University of Cincinnati. Dr. Pfitzer has agreed to remain a Visiting Fellow of Mellon Institute, and will thus be available to assist in the design and implementation of research in industry intended to validate Threshold Limit Values under conditions of use.

Dr. Rinehart received his B.S. degree in Chemistry from Lafayette College in 1950; his M.Sc. in Industrial Hygiene in 1958, and his Sc.D. in Applied Toxicology in 1962, both from the University of Pittsburgh. His doctoral dissertation was entitled: "A Study of the CT Relationship in Sub-Lethal Exposures to Phosgene." Since 1962 he has been Industrial Toxicologist for the Standard Oil Company of California. Previously, he was associated with the University of Pittsburgh as Research Assistant in the Department of Occupational Health from 1958 to 1962. He served with the U.S. Civil Service from 1952 to 1957, assigned to the Chemical Corps Medical Laboratories, Army Chemical Center, Maryland. From 1950-1951 he worked as Microanalyst for the Interchemical Corporation in New York City.

Dr. Rinehart has published several articles in the field of toxicology. He is affiliated with a number of scientific and technical societies including: American Association for the Advancement of Science, American Chemical Society, American Industrial Hygiene Association, Sigma Xi, and the Society of Toxicology.

We feel very fortunate to have been able to obtain the assistance of Dr. Rinehart, while retaining the interested participation of Dr. Pfitzer in the work for the Foundation.

03121948

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

612 Industrial Medical Association Reports—Survey Results.

The ratio of medical to non-medical employees in industry is 1/507, according to a questionnaire survey of 585 organizations serving 3,643,577 employees. "Medical employee" means physicians, nurses, technicians, clerical and administrative personnel in the medical departments. There were 951 physicians, each serving an average of 2,487 employed persons. There are also 3,804 nurses employed—representing one nurse for every 958 employees—and 63 licensed practical nurses. There are 727 laboratory and x-ray technicians; 1,462 clerical personnel and 186 administrative assistants employed in these medical programs. In addition to these full-time employees, there are 5,344 medical consultants. Medical services provided in relation to the number of employees served are graphically portrayed. Pre-placement examinations are performed at 559 (95.5%) of the plants reporting. Examinations of employees returning to work following illness are performed at 493 (84%) of the plants and chronic disease follow-up examinations are conducted at 344 (58.5%) of the plants. Periodic appraisals are conducted on all employees by 279 (48%) of the plants, while 277 (47%) of the plants conduct such examinations on a special basis only. The larger the facility, the more frequently are examinations done on some special basis rather than routinely. Most of the plant medical departments (57.8%) do not treat non-occupational disorders; an additional number (27.3%) do so only at the request of the employee's physician. When non-occupational disorders lead to work disability, 96.7% of the respondent medical directors maintain contact with the employee's physician. Executive health examinations, (provided by 88%), are conducted in the plant medical department, most companies reported.

-- Industrial Medical Association News Release June 9, 1965

613 Travelers Warned on Vaccinations.

A reminder that all travelers planning to visit foreign countries should carry International Certificates of Vaccination was issued by the U. S. Public Health Service. The vaccination against smallpox, within three years, is a requirement for re-entry to the U. S. It is also required by many other countries. The certificates, PHS form 731, are given out with all passport applications. To be valid, the form must include such information as dates of vaccination, the written signature of the vaccinating physician (even if his nurse or technician gave the vaccination under his supervision), and a stamp approved by the health administration of the country in which the vaccination was performed. In the United States, this can be the stamp of the health department of the area in which the vaccinating physician practices. A properly completed form is valid for three years. Copies of the certificates may be obtained from local and state health departments and from offices of the U. S. Public Health Service.

-- AMA News 8, 5 (June 7, 1965)

614 American Association of Clinical Chemists.

The American Association of Clinical Chemists (AACC) has been designated as a sponsor organization under the exchange visitor program of the Department of State. The purpose is to promote the international advancement of clinical chemistry through visits of foreign nationals. AACC will approve and designate such visitors for entry into this country for advanced education and training in clinical chemistry. Dr. Martin Rubin, Georgetown University Medical School, Washington, D. C., chairman of Education and Scholarship Committee of AACC and U. S. representative to the IUPAC Commission on Clinical Chemistry, is responsible for administration of the program.

-- Chem. Eng. News 43, 72 (June 7, 1965).

of both civilian accidental exposures and military casualties. The treatment includes atropine, oximes, and various types of artificial respiration. Symptoms in both mild and severe cases are illustrated, and the mechanism of action of cholinesterase inhibition is animated. The role of clinical studies in arriving at therapeutic regimens is also explained. This film is well done and accurate. The research that goes into the treatment of organic poisoning is stressed considerably more than the diagnosis and actual treatment.

-- J. Am. Med. Assn. 192, 265 (April 19, 1965)

621 Dangerous Fireworks.

George P. Larrick, Commissioner of Food and Drugs, U.S. Department of Health, Education, and Welfare, recently warned parents and retail dealers across the country to be on the lookout for a new kind of fireworks which can be dangerous to children in an unusual way. Several injuries to children have been reported. The fireworks, having the appearance of small colored candy balls, sometimes marketed under the name "Cracker Balls", may easily be mistaken for candy and some children in Ohio and the District of Columbia were recently injured when they bit into them. Commissioner Larrick said FDA inspectors are on the lookout for these novelty items with a view toward legal action unless they are labeled to meet all requirements of the Federal Hazardous Substances Labeling Act. He questions, however, whether any labeling can be devised which would make these products free from the danger of being mistaken for candy. Commissioner Larrick added that any stocks which can be shown to be in violation of the Federal labeling law will be removed from the market under the seizure provisions of that statute. Samples obtained thus far are imports from Japan.

-- U.S. Department of Health, Education and Welfare News Release (May 28, 1965)

COMING EVENTS

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|-----------------|---|
| 622 Aug. 1-8 | 9th Latin American Chemical Congress, San Juan, P.R. |
| Aug. 2-13 | Institute of Paper Chemistry, 3rd Annual Conference on Chemicals and Paper, Appleton, Wis. |
| Aug. 4-7 | Association of American Feed Control Officials, Annual Meeting, Clemson House, Clemson, S.C. |
| Aug. 6-8 | International Doctors in Alcoholics Anonymous, Chicago, Ill. |
| Aug. 9-12 | National Medical Association, Cincinnati, Ohio. |
| Aug. 11-13 | 20th Calorimetry Conference, Ames, Iowa. |
| Aug. 15-20 | American Institute of Biological Sciences, Annual Convention, Urbana, Ill. |
| Aug. 16-20 | American Society for Pharmacology and Experimental Therapeutics, Fall Meeting, Philadelphia, Pa. |
| Aug. 22 | American Association of Electromyography and Electrodiagnosis, Philadelphia, Pa. |
| Aug. 22-27 | American Academy of Physical Medicine & Rehabilitation, Philadelphia, Pa. |
| Aug. 22-27 | American Microchemical Society, International Symposium on Microchemical Techniques, University Park, Pa. |
| Aug. 22-27 | Flying Physicians Association, 11th Annual Meeting, Miami Beach, Fla. |
| Aug. 23-25 | 1965 Cryogenic Engineering Conference, Houston, Texas. |
| Aug. 23-26 | Clay Minerals Society and 14th North American Clay Minerals Conference, Berkeley, Calif. |
| Aug. 29-Sept. 2 | American Association of Clinical Chemists, 17th Annual Meeting, Chicago, Ill. |
| Aug. 30-Sept. 1 | 5th Rare Earth Research Conference, Ames, Iowa. |
| Aug. 30-Sept. 2 | American Hospital Association, San Francisco, Calif. |
| Aug. 30-Sept. 2 | 3rd International Symposium on Fluorine Chemistry, Munich, Germany. |
| Aug. 30-Sept. 3 | Society of Applied Spectroscopy, 4th National Meeting, Denver, Colo. |

03121951

Corporation, as provided by the Federal Food, Drug, and Cosmetic Act. The advisory committee found on the basis of newly available results of animal feeding studies, completed and in progress, that the chlordane presently in use is less toxic than the product available in 1950 when the 0.3 ppm tolerance was established. The committee concluded that use in accordance with current practices is not hazardous. According to data presented to the committee, the lower toxicity of present day chlordane results from limitation to 1% of the amount of the intermediate chemical hexachlorocyclopentadiene that is present in the pesticide. FDA's action takes into account the fact that certain animal feeding studies are continuing and that therefore there should be a reconsideration of the tolerance on or before December 31, 1966, when these studies have been completed. Chlordane is one of the most widely used pesticides and is used on many fruit and vegetable crops.

-- Natl. Agr. Chemicals Assn. News and Pesticide Rev. 23, 11 (June, 1965)

628 Food Additive Regulation.

A food additive regulation prescribing the conditions for the safe use of 1,3-butylene glycol (1,3-bg) in food flavorings has been issued by the Food and Drug Administration (FDA). The four-carbon diol, currently produced only by Celanese Chemical in the U.S., has potential use in food processing, artificial flavoring, extracts and food colors, as well as pharmaceuticals and cosmetics. FDA has previously issued regulations prescribing the conditions for safe use of 1,3-bg as a humectant in cellophane and as a component in adhesives.

-- Chem. Eng. News 43, 60 (May 24, 1965)

BOOKS, PAMPHLETS AND NOTICES

- 629 The Effects of Shock and Vibration on Man. (Report S3-W-39). D.E. Goldman and H.E. von Gierke. AVAILABLE FROM: American Standards Association, 10 East 40th Street, New York, N.Y. 10016. 55 pp. PRICE: \$3.00.

This report has been published to fill an interim need for uniform criteria with which to evaluate and assess the hazards of human vibration exposure, until such time as more definite guidance through a standard on permissible vibration exposures can be provided. As a result, efforts are now underway to develop an adequate standard. Since the development of such a standard takes time, the S3 committee recommended, as an interim solution to the numerous requests for information on this subject, the distribution of this report. The report was originally published by the Naval Medical Research Institute, Bethesda, Md. in 1960. It covers a broad scope including methods and instruments for measuring shock and vibration, anatomy of man, physical constants and mechanical transmission characteristics, effects of shock and vibration, protection methods and procedures, tolerance criteria for various types of exposure and actual environments experienced by man. Since 1960 there has been an increase in human vibration research and not all sections of the report can be considered completely up-to-date. However, most of the recent research has concentrated on exposure to extreme vibration levels as they may occur in military environments and in space missions. Relatively little new work has been published on the effects of longtime exposure to moderate vibration levels, which is the situation of most interest in industry and for which standards are needed.

-- J. Am. Soc. Safety Eng. 10, 6 (June, 1965)

- 630 Vanadium: Toxicology and Biological Significance. T.G.F. Hudson. Reviewed by A. Doig. AVAILABLE FROM: Elsevier Publishing Co., Ltd., Rippleside Commercial Estate, Ripple Rd., Barking, Essex, Great Britain. 140 pp. (1964). PRICE: Not Given.

The author is medical adviser to the Imperial Smelting Corporation Ltd., and lecturer in Industrial Hygiene in the University of Bristol. He states that his intention to describe the toxicological aspects and to summarize the present knowledge of vanadium has led him to make

03121953

- 634 Acute Alcoholic Hepatitis. E.A. Porta, A.A. Stein, and B.J. Bergman. Am. J. Pathol. 46, 657 (April, 1965).

Electron microscopic studies of liver biopsies from three women with alcoholism exhibiting similar clinical features showed that fatty hepatocellular changes leading to the formation of fatty cysts were one of the most consistent findings. More than 30% of the fatty hepatocytes, including those forming the wall of the cysts, showed bizarre "finger-print-like" aggregates of parallel arrays of membrane studded with glycogen particles. Mitochondrial enlargement, a common feature in these organelles, was accompanied by alterations of cristae and matrices and abundant crystalline inclusions (myelin figures). Focal cytoplasmic degradation found in some hepatocytes suggested a relationship to the formation of Mallory bodies, and it appeared that any of the altered cytoplasmic constituents could participate in the formation of these structures. Ceroid pigment was consistently found in Kupffer and reactive mesenchymal cells. Fibrosis appeared mainly as thin connective tissue fibril bands located in the spaces of Disse, frequently appearing to abut into hepatocytes and also probably contributing to sinusoidal "capillarization." -- J. Am. Med. Assn. References & Reviews

- 635 Law-Medicine Notes. Change in Common Law. W.J. Curran. New Engl. J. Med. 272, 961-962 (May 6, 1965).

The Common Law, the body of law resulting from precedent, is also changing as it develops. Since World War II very significant developments have occurred in the law of torts, the portion of the law that encompasses medical malpractice. One is invasion of privacy, e.g. the presence of unauthorized persons at medical examinations or operations and the unauthorized use of patients' records in publicity releases or in reports on research. Physicians or hospitals can avoid most of the problems in this area by obtaining the patient's consent in advance. Another new cause of action is that for injury to the unborn child. Actions involving only mental suffering, unaccompanied by physical injury or contact, reflect greater confidence on the part of the judges in the validity of medical and psychologic testimony in this area. Decisions in many states, such as Michigan and California, have removed from governmental bodies and nonprofit agencies legal immunity to tort actions. These decisions displaced Common Law, which goes back centuries and is imbedded in the ringing imperious phrase, "The King can do no wrong." It took an audacious court to strike down this rule and subject another branch of the Government to hundreds of thousands of dollars in liability suits. The Wilmington General Hospital v. Manlove Case (53 Del. 339, 174 A 2d 135 (1961)) overruled a previously well settled principle of medical jurisprudence by imposing a requirement on a hospital to accept an emergency-care patient on the grounds that the hospital incurred this obligation by opening an emergency service and making it known to the public. This resembles statutes in Europe, which require physicians to stop at emergencies under pain of criminal penalties. Many states are now expanding the standard of care from "community rule" to a generalized one covering all physicians in the state on the theory that the standards of good medical care are now basically the same throughout the jurisdiction.

- 636 The Clinical Acceleration of Healing with a Cartilage Preparation. A Controlled Study. J.F. Prudden and J. Allen. J. Am. Med. Assn. 192, 352-356 (May 3, 1965).

A controlled study of the wound acceleration induced by fine-grind acid-pepsin digested calf tracheal cartilage has been made in 15 human volunteers. Small paired skin incisions were made in precisely corresponding anatomical sites, and one wound treated with the powder by atomization while the other wound served as a control. Closure was identical. After varying (7 to 14 days) intervals of time, the wounds were excised with a margin and the resulting defects closed. The tensile strengths of the wounds were then determined. In 12 of the 15 wound pairs, the treated wound was stronger. The overall percentage increase in tensile strength resulting from the treatment was 42%, and the difference is statistically highly significant. The effectiveness of this material in the acceleration of human wound healing is considered established. -- Authors' abst.

03121955

using the Prausnitz-Kustner technique. One hundred patients attending an allergy clinic for seasonal hay fever symptoms were also tested. All reacted to skin testing to a high dilution of grass pollens, and 51 gave some response to extracts of *Sitophilus granarius*; in 18 the wheal size was at least 6 mm. in diameter. The significance of the positive response in these 18 patients is at present unexplained. One of the laboratory workers was so sensitive to weevil dust that she had to leave the laboratory; the other worker, by using an extractor fan and wearing a mask, could remain free of symptoms. *Sitophilus granarius*, like other insects, easily gives rise to inhalant allergic symptoms and may be a possible cause of bakers' asthma which has not been previously considered.

-- Authors' abst.

- 642 The Sense of Smell. A Critical Review. W. Gorman.
Eye, Ear, Nose, Throat Monthly 43, 54-58 (Aug. 1964).

The purpose of this article is to summarize some clinically applicable data on the sense of smell from studies in clinical physiology and applied neuroanatomy. There is a bibliography of 67 references to the literature. In this review, observations on man have been given greater emphasis over those on lower animals, as man's olfactory reactions differ both qualitatively and quantitatively from those of other species. The functional anatomy of the olfactory system is also reviewed. The olfactory bulb functions as a primitive "smell brain", and stimulation of the olfactory bulb dependably produces sensations of smell. What has been considered the rhinencephalon in the human subject is not primarily concerned with olfaction, but with arousal of sexual responses. The human fetus and some adult animals have three pairs of olfactory nerves. It appears that olfactory evolution produces a diminution in functional complexity and size of the olfactory apparatus.

-- APCA Absts.

- 643 The University of Manitoba Follow-Up Study: A Prospective Investigation of Cardiovascular Disease. Part I. General Description—Mortality and Incidence of Coronary Heart Disease. F.A.L. Mathewson, et al. Can. Med. Assn. J. 92, 947-953 (May 1, 1965).

A prospective study of cardiovascular disease was initiated in 1946 whereby 3,983 healthy North American males, 91% under age 40, were subjected to periodic electrocardiograms and medical examinations between 1948 and 1963. The health of all but five of the 3,773 survivors was known in 1963. There were 210 deaths: aircraft accidents accounted for 45%, cardiovascular disease 20%, cancer 11% and other causes 23%. The aggregate mortality closely resembled that of the Canadian Life Table 1955-57 (Male). Extra deaths were observed under age 40 owing to a high frequency of flying accidents. At older ages the mortality was lower than expected because congenital and chronic diseases were excluded at entry. One hundred and forty-three developed coronary heart disease. The case fatality rate was 31%. The incidence rate for coronary heart disease rose progressively from 0.277 per thousand per year for ages 25-34 to 26.5 at ages 60-69.

-- Authors' abst.

- 644 The University of Manitoba Follow-Up Study: A Prospective Investigation of Cardiovascular Disease. Part II. Build, Blood Pressure and Electrocardiographic Factors Possibly Associated with the Development of Coronary Heart Disease. F.A.L. Mathewson, et al. Can. Med. Assn. J. 92, 1002-1006 (May 8, 1965).

The relationship of selected physical and electrocardiographic factors to the occurrence of coronary heart disease was examined in a cohort of 3,983 healthy North American males followed up for 15 years. Variations in build or mean heart rate were not found to be related to the occurrence of coronary heart disease. The risk of coronary heart disease rose progressively as blood pressure increased. With readings of 160/95 mm. Hg or higher the risk was 1.77 times that of the population as a whole. Non-specific S-T or T wave changes in the electrocardiogram were associated with three times the risk of developing coronary heart disease. Individuals with the combination of a blood pressure of 160/95 mm. Hg and nonspecific T wave changes exhibited an augmented susceptibility to coronary heart disease, the risk being four times that of the whole population.

-- Authors' abst.

03121957

the number of cigarettes smoked per day and the socioeconomic status. A twofold increase in prematurity occurred among babies born to smokers, again directly proportional to the cigarettes smoked per day. A slight increase in the abortion rate was found among smokers, but generally it was not significantly elevated. No significant increase in stillbirths, major fetal anomalies, or maternal complications was noted in comparing smokers and non-smokers, although there was a suggestion of an increase in the incidence of premature rupture of membranes in smokers. Smoking does not interfere with breast feeding to any significant degree.

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

- 649 The Acute Effect of Cigarette Smoking on Pulmonary Function. T. T. Chapman.
J. Irish Med. Assn. 56, 72-74 (March, 1965).

Six patients suffering from chronic nonspecific lung disease with pulmonary insufficiency at rest, were examined before and after smoking a cigarette. In four of the patients the arterial oxygen saturation showed a significant drop. In 12 volunteers, who had a diffusing capacity estimated before and after smoking a cigarette, there was a constant fall in the value after smoking. These results suggest that cigarette smoking has an acute effect on the pulmonary vasculature, causing a diminution in the circulation.

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

- 650 Age at Onset of Lung Cancer: Significance in Relation to Effect of Smoking.
M. C. Pike and R. Doll. Lancet 1, 665 (March 27, 1965).

When the average age at onset of lung cancer is calculated for patients with different smoking histories, it is found that the "period" average decreases only slightly from light cigarette smokers to heavy cigarette smokers and it increases only slightly from men who started smoking early to men who started smoking late. Estimates of the "life-span" average indicate that the differences, though still small, are somewhat larger. It is not justifiable to argue from these results that cigarette smoke does not act as a true carcinogen. Experiments which show distinct differences when the dose of the carcinogen or the age at which it is given is changed, produce cancer in a high proportion of animals. Estimates of what would be observed if doses of cigarette smoke could be given large enough to produce lung cancer in the majority of men show differences comparable to those observed experimentally. Whether cigarette smoke acts as a true carcinogen cannot be decided on the basis of these data alone. Other observations suggest that its action may be that of a promoting agent.

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

- 651 Stress, Tobacco, and Coronary Disease in North American Professional Groups. Survey of 12,000 Men in 14 Occupational Groups. H. I. Russek.
J. Am. Med. Assn. 192, 189-194 (April 19, 1965).

A survey of 12,000 professional men in 14 occupational categories was conducted to determine the inter-relationship among smoking habits, occupation-related emotional stress, and coronary heart disease prevalence. The distribution of the disease among professional groups in the United States showed a marked gradient which was unassociated with heredity or diet but strikingly related to the relative stressfulness of occupational activity. This increase in prevalence rate with advance in stress was shown to be remarkably consistent by age. Smoking was not only found to be stress-related but also statistically correlated with the reported frequency of ischemic heart disease in these professional groups. An entirely unexpected finding was the higher prevalence of coronary heart disease among nonsmokers (6.54%) than among exsmokers (2.34%). This paradox casts doubt upon the alleged role of smoking in the genesis of coronary heart disease and adds further emphasis to the probable influence of emotional factors in its causation.

-- Author's abst.

03121959

- 656 Hemodynamic Responses to Controlled 100% Oxygen Breathing in Emphysema.
J.H. Holt and B.V. Branscomb. *J. Appl. Physiol.* 20, 215-220 (March, 1965).

Cardiopulmonary hemodynamic responses to breathing 100% oxygen for 20 minutes under conditions of controlled ventilation were studied in 13 patients who had moderate to severe chronic obstructive emphysema. A technique for regulating the level of ventilation in the unanesthetized subject is described. Cardiac output was measured by the indicator-dilution method. Arterial blood gas analysis and pH were performed in each phase of the study. A slight but statically significant decrease in cardiac index occurred. There was a highly significant reduction in pulmonary arterial pressure and pulmonary vascular resistance. No change in heart rate, pulmonary wedge pressure, or aortic pressure occurred. It is concluded that oxygen breathing caused a release in part at least, of a pulmonary vasoconstrictive element in these patients.

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

- 657 Chronic Obstructive Emphysema. The Thoracic Surgeon's Position. M. Joannides, Jr.
J. Am. Med. Assn. 192, 365-367 (May 3, 1965).

Only a small number of patients with chronic obstructive pulmonary emphysema can look forward to help and relief from surgery. Resection or surgical obliteration of large emphysematous bullae affords relief in a high percentage of patients. There must, however, be strict criteria for the choosing of surgical candidates. A large stationary bulla of at least one-third the size of the hemithorax, or an expanding bulla accompanied by increasing dyspnea are the most common symptoms of surgical candidates. Preoperative regimen includes seven days of expectorant therapy and intermittent positive pressure breathing treatments. The most important and informative preoperative procedure is a pulmonary angiograph.

-- Author's abst.

- 658 The Effect of Neodymium Laser Radiation on Two Experimental Malignant Tumor Systems.
J.P. Minton, et al. *Surg. Gynecol. Obstet.* 120, 481 (March, 1965).

Neodymium laser radiation has been used to permanently destroy the Cloudman S91 melanoma in the CxDBA/F1 hybrid mouse and the Lewis T241 sarcoma in the C57BL/6JN mouse. The transfer of the neodymium laser energy into the tumor cells and an intense amount of heat in the target area is an important fact in tumor destruction. The size of the tumor receiving laser radiation, its ability to absorb laser energy, and the total amount of laser energy delivered to the tumor are all related to permanent tumor destruction.

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

- 659 Familial Leukemia. Five Cases of Acute Leukemia in Three Generations.
C.W. Heath, Jr., and W.C. Moloney. *New Engl. J. Med.* 272, 882-887 (April 29, 1965).

Five cases of acute leukemia observed in three consecutive generations of one family over a sixty-year period are discussed. The three most recent cases were confirmed to be myelocytic. These cases were associated in one generation with two cases of breast cancer and possibly a case of pernicious anemia and in another generation with a case of mongolism; the paternal uncle of one patient died of chronic lymphocytic leukemia. Cytogenetic studies in one family member with acute leukemia and in her two healthy sons revealed no abnormalities. The pattern of leukemia cases within this family seems compatible with current concepts concerning the possible viral etiology of human leukemia. There are 27 references.

-- Authors' summary

03121961

- 663 Repetitive Poisoning in Children. R. Sobel and J.A. Margolis.
Pediatrics 35, 641 (April, 1965).

The families of 20 poison repeaters, 19 single ingestors, and 13 controls were studied psychiatrically. Social class, religious affiliation, income, geographical setting, and size of family do not seem to be correlated with repeated episodes of poisoning in childhood. Accidents, proneness, pica, environmental hazard, and lack of parental supervision also are unrelated. Ingestion of poisons seems to be the result of purposeful behavior correlated, in the repeater, with other behavioral problems and disturbed family relationships.

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

- 664 A Sensitive Method for the Determination of Carboxyhaemoglobin in a Finger Prick Sample of Blood. B.T. Commins and P.J. Lawther.
Brit. J. Ind. Med. 22, 139-143 (April, 1965).

About 0.01 ml. of blood taken from a finger prick is dissolved in 10 ml. of 0.04% ammonia solution. The solution is divided into two halves, and oxygen is bubbled through one half to convert any carboxyhemoglobin into oxyhemoglobin. The spectra of the two halves are then compared in a spectrophotometer, and the difference between them is used to estimate the carboxyhemoglobin content of the blood either graphically or by calculation from a simple formula. Calibration is simple and need only be done once. A sample of blood can be analyzed in about 20 minutes, which includes the time to collect the sample. The method is sensitive enough to be used for the analysis of solutions of blood containing less than 1% carboxyhaemoglobin.

-- Authors' abst.

- 665 Semi-Automated Analysis of Fluoride in Biological Materials. L.H. Weinstein, et al.
J. Air Poll. Control Assn. 15, 222-225 (May, 1965).

A semi-automated method for determination of fluorine in biological materials has been developed incorporating the Technicon Auto Analyzer. One half gram of dried, ground plant material is ashed, alkali-fused, diluted with water, and the suspension is pumped, along with sulfuric acid, at controlled rates, into the hot revolving glass helix of a digester unit. As the acid-digest mixture passes through the heated coil, volatile fluoride and water vapor are evolved. The volatile fluoride and water vapor are pulled from the helix under reduced pressure through a tube which projects into the helix. The tube, in turn, is connected to a water-jacketed condenser and then to an impinger where the sample is continuously mixed. An aliquot of the impinger liquid is being constantly withdrawn. This sample is then air-segmented and mixed with a reagent containing alizarin complexone, pH4 acetate buffer, lanthanum nitrate, acetone, and water. The sample-reagent combination passes through 4 full-length mixing coils where color development takes place. Upon reacting with fluoride, the wine-red alizarin complexone-La(III) reagent forms a lilac blue fluoride complex. The solution is pumped from the mixing coils through the tubular flow cell of the colorimeter. The absorbence of the solution is measured at 624 millimicrons, and the signal is transmitted to a recorder where the results are plotted on absorbency paper. The absorbence at the apex of the peak is proportional to the amount of fluoride in the sample between the range of 2.5-80 micrograms*F. Samples are analyzed at a rate of 12 per hour. Results compare favorably with those obtained by Willard-Winter distillation. Recent studies indicate that the fluorine content of plant tissues can be estimated without prior ashing and fusion. There are 18 references.

-- Authors' abst.

- 666 Question of Fluoridation of Cooking Salt. E. Ziegler.
Schweiz. med. Wochschr. 95, 453 (April 2, 1965).

Fluoridated cooking salt is currently available in Switzerland, but it alone does not provide optimum protection against dental caries. For low fluoride areas of Switzerland, where fluoridation of the public water supply is impractical, the author recommends that the use of fluoridated salt be combined with that of fluoridated milk or with the use of fluoride tablets. Fluoride prophylaxis should begin prenatally and should be continued until physical development is completed. The success depends on regular application. The physician must act as an educator of both parents and children. -- J. Am. Med. Assn. References & Reviews

had a CT value of 15 (3ppm for 5 minutes). The chronic pneumonitis is initially centered in the respiratory bronchiole and its evaginating alveoli. There is cellular thickening of these structures with the elaboration of new reticulin fibers. With increasing dosage the lesion extends peripherally, affecting alveolar ducts and sacs as well as the distal alveoli until practically all alveoli between two thickened respiratory bronchioles are involved. These alveoli, in addition to possessing thickened walls, are often filled with desquamated cells. A possible explanation is offered for the initial focalization about respiratory bronchioles of the phosgene-induced chronic pneumonitis.

-- Authors' summary

- 670 Ethylene Action and the Ripening of Fruits. S. P. Burg and Ellen A. Burg. Science 148, 1190-1196 (May 28, 1965).

Recent studies employing gas chromatography show that an amount of ethylene large enough to stimulate ripening is always present within a fruit before the respiratory climacteric begins. This fact and data from experiments in which fruits were exposed to a partial vacuum or varying concentrations of oxygen, carbon dioxide, and ethylene oxide reinforces the view that ethylene is a ripening hormone. The respiratory climacteric begins soon after the fruit is harvested because the tissue no longer receives from the shoot system a substance which inhibits ripening; this substance may act by lowering the sensitivity of the fruit to ethylene. The threshold for ethylene action is also influenced by the composition of the atmosphere, for oxygen is a substrate in the reaction activated by ethylene and carbon dioxide inhibits the action of ethylene by competing with the olefin for the receptor site. Experiments indicate that ethylene is derived from acetate or acids of the Krebs cycle and acts by binding to a metal receptor site in the tissue. There are 56 references.

-- Authors' summary

- 671 Carcinogenic Properties of Benzidine. G. B. Pliss. Federation Proc. Pt. II. (Translation Supplement) 24, T529-T532 (May-June 1965).

Although the question of the carcinogenic properties of benzidine remained unanswered for a long time, it has now been established beyond doubt that benzidine causes tumors of the urinary bladder in workers in the aniline dye industry. For several years the author has been working on the carcinogenic potentialities of benzidine derivatives. To compare their activity and type of neoplastic action it was necessary to study the tumorigenic properties of benzidine under identical conditions. In an attempt to gain more information about the nature of the carcinogenic action of this compound a number of animal experiments have been carried out. It was found that benzidine is a comparatively potent carcinogen. In addition to cirrhotic changes in the liver, rats developed hepatomas, tumors of the cymbal* glands and sarcomas both at the site where the substance is injected and also at remote sites. Females proved more susceptible than males to the toxic action of benzidine.

- 672 Toxicology of New Chlorinated Organic Insecticides Obtained by Diene Synthesis from Hexachlorocyclopentadiene. E. I. Spynu. Federation Proc. Pt. II. (Translation Supplement) 24, T551-T553 (May-June 1965).

Because of the very small absolute size of the lethal doses and concentrations when the preparations are absorbed via the respiratory tract, the skin or the gastrointestinal tract, and also in view of their marked cumulative properties, endrin, isodrin and preparation No. 948 should be classified as highly toxic pesticides. On the basis of these data, the Committee for the Control of Chemical Poisons has banned the use of these chemical poisons in Soviet agriculture. It has been established by comparative evaluation that aldrin and dieldrin are less toxic. Temporary use of these chemical poisons in agriculture is therefore permitted under strictly regulated conditions. The preparation allodan can be widely used provided the usual safety measures are observed.

-- Author's conclusion

* Neoplasms in the cymbal glands arose at the 5.5-month stage, sometimes destroying the bones of the face. Microscopically, they were either squamous-cell keratinizing carcinoma or organoid carcinoma of a sebaceous gland which contained both components of a sebaceous gland and the associated structures of squamous ductal keratinizing epithelium.

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valences of byssinosis as judged from the workers' histories were 68%, 55%, 44%, and 25% in the four mills; the lowest prevalence of 25% was found in a mill spinning both high grade cotton yarn and rayon. Among 67 workers in the mills having a byssinosis prevalence of 68% and 55%, 60% were non-smokers, 70% had chronic cough, and 27% had chronic dyspnea. The $FEV_{0.75}$ decreased on Monday in workers who gave a history of Monday dyspnea, and to a lesser degree, but still significantly, in those who did not. In spite of marked differences in fine dust (i.e., dust smaller than 2 mm. diameter) concentrations in the four cardrooms, no significant relations between dust content, byssinosis prevalence, and $FEV_{0.75}$ changes on Monday could be demonstrated. The prevention and treatment of byssinosis is discussed. Workers at risk should receive a periodical medical examination including at least a spiropulmonary function at intervals of one year or less. -- Authors' abst.

- 677 Ventilatory Capacity in Flax Workers in Northern Ireland. G.C.R. Carey, et al. Brit. J. Ind. Med. 22, 109-120 (April, 1965).

Of 2,528 persons aged 35 years and over who were interviewed during a survey of Northern Ireland flax mills, 2,003 (79%) carried out tests of one-second forced expiratory volume ($FEV_{1.0}$) and forced vital capacity (FVC) which were suitable for analysis. The omission of the remaining 525 workers is discussed in the text. The object of this paper is to compare each of these two measurements of ventilatory capacity between preparers and non-preparers of flax in this industry. Many factors, other than job, may influence ventilatory capacity; these include sex, smoking habits, the area of the mill, the type of fiber handled, byssinotic grade, age, and stem height. Within each sex and job, workers were divided into eight basic groups according to whether they did or did not smoke, whether the mill was in a town or rural area, and whether the mill processed only flax or flax plus synthetic fibers. It was found that: (1) Byssinotic flax preparers had a lower mean $FEV_{1.0}$ and FVC than did comparable groups of non-byssinotic non-preparers, (2) non-byssinotic preparers had a lower average $FEV_{1.0}$ than did non-byssinotic non-preparers, (3) there is some evidence that preparers with symptoms of grade I or II byssinosis had a lower $FEV_{1.0}$ than did preparers with no, or only slight, symptoms (grades 0 and 1/2 respectively). -- Cond. from authors' abst.

- 678 Changes in Ventilatory Capacity in a Group of Flax Workers in Northern Ireland. G.C.R. Carey and J.D. Merrett. Brit. J. Ind. Med. 22, 121-127 (April, 1965).

One-second forced expiratory volume ($FEV_{1.0}$) and forced vital capacity (FVC) were measured before starting work in five flax hacklers with symptoms of grade II byssinosis and in five matched controls. Similar measurements were taken in each group at the end of the day shift. A significant ($P < 0.05$) decline in $FEV_{1.0}$ was observed in the hacklers during the day on Monday, Tuesday, Wednesday, and Friday. The FVC also declined significantly in the hacklers on Monday, Tuesday, and Wednesday. In the control group, ventilatory function tended to decline during the day, but this was significant only for $FEV_{1.0}$ on Monday. The reason for this is discussed. Variations in the dust concentrations in the mill and in indoor air pollution are shown to be unlikely to have affected the findings. Morning values of $FEV_{1.0}$ and of FVC were consistently lower in the byssinotic group than in the matched controls, suggesting that the inhalation of flax dust causes not only daily variations in lung function but longer-term impairment of ventilatory capacity as well. Additional evidence is given for this conclusion from two other studies. -- Authors' abst.

- 679 Farmer's Lung. P. Hamer and A. Petersen. Deut. med. Wochschr. 90, 427-435 (March 5, 1965).

The authors describe observations on six patients with farmer's lung. The typical history of dust inhalation either during threshing (thresher's lung) or during contact with moldy hay is reviewed. Radiological findings and the course of the disease are discussed, and literature reports on the disorder are analyzed. Various theories on the etiology and pathogenesis of farmer's lung are evaluated and therapeutic implications are discussed. In an addendum, a recent report on a fatality from farmer's lung in a 15-year-old boy is cited. He had assisted in threshing moldy oats. Mycological and histological studies had revealed a pulmonary aspergillosis. Observations on this boy together with animal experiments had led to the identification of farmer's lung as a pneumonocystosis.

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

aluminum chloride the quartz dust was less strongly taken up by the phagocytes. During phagocytosis of corundum dust the percental value of phagocytosis was significantly less influenced by aluminum chloride than in case of quartz phagocytosis. Phagocytosis of rock crystal, coated with trimethylsilyl-hydrate and aluminum oxide hydrate, has also been examined. Here too, rock crystal coated with mono-molecular groups of aluminum oxide hydrate was essentially less strongly phagocytosed. The question whether a variably firm agglomeration of the dusts having been observed after the addition of aluminum chloride as well as with the dusts coated on the surface, will explain the differences observed in the rate of phagocytosis cannot yet be decided.

APCA Absts.

- 684 Pulmonary Silicotuberculosis in a Potato Farmer. Report of a Case. K.K. Kapur, J.M. Judd, and L. Delli-Pizzi. *Diseases of Chest* 47, 560-563 (May, 1965).

This is a case report of pulmonary silicotuberculosis in a 66-year-old potato farmer, an unusual situation, which to the authors' knowledge, has never been described. The pathologist's diagnosis of silicotuberculosis of the resected specimen was quite surprising as the patient had denied history of association with known occupations where exposure to silicious dust was possible. The roentgenographic features of the lesions too were inconsistent with those of silicosis (generally bilaterally symmetrical, nodular fibrosis, usually earlier development of hilar lymphadenopathy). Thus the possibility of the lesion being silicotic in nature was least expected. On questioning he vaguely mentioned that he was exposed to a dusty atmosphere, while grading potatoes by machine, but at that time he gave no specific statement about the duration of exposure. The authors were dubious of the pathologic diagnosis in the absence of history of adequate exposure to crystalline-free silica. In order to substantiate their diagnosis, they submitted a sample of the settled dust from the potato-sorting area, for analysis of total and free silica. An analysis of soil samples submitted revealed (51.1% of total silica, and 43.88% of free silica as SiO_2) significantly high levels of crystalline-free silica. Following the receipt of these results of chemical analysis, the authors were able to elicit a pertinent history of prolonged exposure to the causative agent. The farmer had worked for over 47 years for 7-8 hours a day for 8-9 months in the year, grading potatoes in his cellar. This exposed him to a high concentration of crystalline-free silica from the grading machine. This stresses the importance of the fact that a detailed occupational history is an absolute essential in such cases. Significant pulmonary changes have been seen in the roentgenograms of farmers, but the significance of the silica concentration in the soil has never been appreciated.

- 685 Experimental Studies on Asbestos. F.M. Engelbrecht. *S. African J. Lab. Clin. Med.* 10, 45-48 (June, 1964).

The pathogenicity of pure, very fine crocidolite particles and of a mixture of crocidolite and quartz was investigated after intratracheal injection of 50 mg. of these dusts into the lungs of rats. The proliferation of reticulin due to these two dusts respectively, was found to differ significantly. The crocidolite particles elicited an initial reticulosis that became slightly more compact, with or without collagen fibers, especially in cases with acute infections. It appeared that exposure only to asbestos dust predisposed to acute respiratory infections. The asbestos-quartz admixture gave a progressive increase in reticulin and collagen, resulting in partially acellular collagenous nodules (grade-3 fibrosis). The histological picture of the pathological changes appeared to be very similar to those observed in human asbestosis. Asbestos dust in combination with a small amount of free silica should be regarded as extremely dangerous. No malignant tumors have been produced in the experimental period by either asbestos or the asbestos-quartz admixture. Some non-malignant pleural changes were observed in animals of the asbestos group with infection, and in animals of the asbestos-quartz group.

-- APCA Absts.

- 686 Asbestos Bodies in Human Lungs at Autopsy. D. Cauna, R.S. Totten, and P. Gross. *J. Am. Med. Assn.* 192, 371-373 (May 3, 1965). Reprints Available from Industrial Hygiene Foundation Upon Request.

The incidence of asbestos bodies in the lungs was investigated in 100 autopsies of adults. Lung smears were taken from the sectioned surfaces of the upper and lower lobes of both lungs. The slides were dried and mounted without staining, and approximately 400 low-power fields

- 690 An Air Engineer Explains How to Accurately Control Mechanical and Distribution System Noise. T.R. Shine. *Air Eng.* 7, 32-36 (June, 1965).

The concept of distributing clean and thermally-treated air through ductwork by means of a centrifugal fan is a firmly established practice in modern mechanical engineering design. The advent of forced air ventilating and conditioning systems brought problems. Many of the drawbacks were effectively overcome through careful design, resulting in system sophistication. Others relied on adjunct equipment for their solution. Perhaps the most significant of these problems is noise and its subsequent control. The subject is discussed under the following headings: System Noise Divisions, Early Control Efforts, Lined Duct Systems, Lined Duct Limitations, Acoustical Plenums, and Duct Sound Traps. Noise necessarily exists in air conditioning systems. The air moving source—centrifugal fans, the air moving vehicle—ductwork, and the air itself all generate noises as they do their work in an otherwise efficient manner. The author has attempted to show that the efficiency of the system need not be altered for the sake of noise reduction, as there are definite ways to accurately and economically control unwanted sound.

- 691 Effect of Constant Magnetic Field on Motor Activity of Birds. A. L. EL'Darov and Yu. A. Kholodov. *Federation Proc. Pt. II. (Translation Supplement)* 24, T431-T433 (May-June, 1965).

The possibility that birds may be guided on long migrations by the earth's magnetic field has been examined in experimental studies of bird behavior (Middendorf, 1855; Viguer, 1882; Yeagly, 1947). The effect of an artificially produced magnetic field on birds has been examined by conditioned-reflex (Orgel and Smith, 1956) and labyrinth (Neville, 1955) methods. It was found that defensive conditioned reflexes could not be elaborated to a magnetic field in pigeons. At the same time, the labyrinth experiments demonstrated that a magnetic field had some effect on the behavior of birds. Kholodov, 1959, has shown that a food-obtaining reflex to a magnetic field could not be elaborated in pigeons, although the effect of the magnetic field was nevertheless evident in the increased number of intersignal reactions and the inhibition of photic conditioned reflexes. The present aim was to determine the effect of a constant magnetic field on the motor activity of birds, which can be estimated numerically and is often used by ornithologists and physiologists investigating the effects of different factors on bird behavior. The present investigation showed that a constant magnetic field increases the motor activity of passerine birds and alters its pattern. Increased motor activity persists for some time after disappearance of the magnetic field.

RADIOACTIVITY AND X-RADIATION

- 692 Analysis of Data from a System of Assessment of the Gonadal Radiation Dose During Radiographic Procedures. H. E. Duggan and G. L. Olde. *Can. Med. Assn. J.* 92, 1051-1056 (May 15, 1965).

The radiation hazard, if any, from diagnostic x-ray examinations was assessed in a study divided into three phases: (1) The gathering of data to allow estimation of the total gonadal dose received by each patient; (2) the accumulation of the individual and accumulative gonadal-dose totals on a large group of patients; (3) the examination and follow-up of patients who had received a substantial gonadal dose to determine any relationship between small recurring doses of ionizing radiation and various indices of somatic and genetic damage. The mean gonadal dose received by females was much higher than that received by males—1012 mr. as compared to 310 mr. Of 7,021 individuals in this study, only 428 (6.1%) received 2 r. or more during the 3-year test period. No definite conclusions as to radiation hazard could be made. A system, however, has been developed which, if continued, could eventually produce this basic information.

-- Authors' abst.

03121971

- 697 Field Experience with the Mast Ozone Recorder. L. Potter and S. Duckworth. J. Air Poll. Control Assn. 15, 207-209 (May, 1965).

The practical necessity for continuous air monitoring by an instrument network is explained. Network criteria are listed. A coulometric monitoring system for oxidant is described and evaluated. Operating methods, calibration techniques, costs, and comparative field data are given. The authors conclude the coulometric system is feasible for operation on a widespread basis. Attractive features include: portability; remote recording; easy installation; centralized, coincident calibration of several monitors; linear data output; data consistent with other systems; and a potential for mobile use in horizontal and vertical surveys of the atmosphere.

-- Authors' abst.

- 698 The Determination of Sulfur Trioxide and Acid Dew Point in Flue Gases. E.S. Lisle and J.D. Sensenbaugh. Combustion 36, 12-16 (Jan. 1965).

The accurate determination of sulfuric acid in flue gases depends principally on satisfactory sampling. Two sources of difficulty in sampling are the possibility of acid condensation occurring in the sampling probe, and reaction with or adsorption by the probe. The relationship between acid dew point and sulfuric acid concentration has been established experimentally. This relationship agrees with the curve calculated by Müller. It is recommended that this curve be used with measured acid concentrations in preference to determining dew points by the electrical conductivity method.

-- APCA Absts.

- 699 Beryllium Air Monitor. J.T. Rozsa, et al. Appl. Spectry. 19, (1) 7-10 (1965).

Airborne industrial materials such as beryllium compounds have been found to be highly toxic. A weighted exposure average of two micrograms/cu.m. beryllium concentration in air represents the tolerance limit over an 8-hour period. To permit corrective action numerous methods have been devised. For beryllium oxide, the major sampling approach has been to strain this component from the air by filter systems. The filter paper with the retained dust is analyzed by spectrochemical, fluorometric, or colorimetric methods. An automatic air sampling system was combined with a direct reading spectrograph into a mobile cabinet for the continuous quantitative determination of the beryllium particulate matter in air. An analysis is reported every 75 seconds with a precision of about 20% at the 95% confidence level. Sensitivity is about 0.5 microgram/cu.m. of beryllium. -- APCA Absts.

- 700 Studies on the Gas Chromatographic Determination of Mercaptans. M. Feldstein, S. Balestrieri, and D.A. Levaggi. J. Air Poll. Control Assn. 15, 215-217 (May, 1965).

A series of partitioning agents were studied to determine their ability to separate organic sulfur compounds by gas chromatography. Several columns showed promise, but did not separate organic sulfur compounds from normally occurring atmospheric hydrocarbons. Higher concentrations of organic sulfur compounds in stack gases are separated as metallic salts in a series of impingers. The nature of the precipitated sulfur compound can be determined by gas chromatography after regeneration of the compound by addition of acid to the metallic precipitate.

-- Authors' abst.

PREVENTIVE ENGINEERING

- 701 Air Eductors Used to Handle Noxious and Corrosive Fumes. R.B. Boies. Air Eng. 7, 40-41 (June, 1965).

03121973

In the processing of uranium compounds to metal and the fabrication of uranium metal to fuel cores, many noxious and corrosive fumes are evolved. Laboratory, pilot plant, and production areas all generate these fumes, which include nitric, perchloric, hydrochloric, and hydrofluoric acid vapors; nitrous and nitric oxide; sulfur dioxide; and ammonium chloride fumes. The fumes are passed through electrostatic precipitators, dust collectors, scrubbers, and other devices to render them harmless before release to the atmosphere. Air eductors claim advantages over conventional exhaust fans in handling such corrosive fumes. These advantages are described and a number of specific applications discussed and illustrated.

- 706 Investigation to Determine the Possible Need for a Regulation on Organic Compound Emission from Stationary Sources in the San Francisco Bay Area. H.C. Wohlers and M. Feldstein. J. Air Poll. Control Assn. 15, 226-229 (May, 1965).

On the basis of evidence presented, it is concluded that photochemical smog is a major air pollution problem in the San Francisco Bay Area. Attempts should be made to reduce the intensity of photochemical smog effects by controlling the emission of organic compounds to the atmosphere. In order to reduce the intensity of photochemical smog effects in the Bay Area, it is estimated that 80% total reduction of organic material emitted to the atmosphere is necessary. The nitrogen oxide problem needs clarification. Because of the complexity of the photochemical smog reaction in open atmospheres, technical answers to all phases of the problem are not available.

-- Authors' conclusions

- 707 Sampling and Mass Spectrometer Analysis of Reaction Products from the Photochemical Decomposition of Various Olefins. W.B. Barlage, Jr., and F.C. Alley. J. Air Poll. Control Assn. 15, 235-238 (May, 1965).

Results of this investigation have shown the sampling technique described in this paper to have potential for mass spectrometer analysis of trace products from the photochemical decomposition of olefins. In addition, preliminary results of this investigation using 1-pentene and 1-hexene as reactants, along with nitrogen dioxide in air mixtures, have shown the presence of compounds or ion fragments of compounds with molecular masses as high as 166 and possibly higher. More work is needed to determine if these compounds are indeed peroxyacyl nitrates or nitrates, "compound x", or perhaps some form of a polymer produced in the photochemical reaction.

-- Authors' conclusions

- 708 The Utilization of Optimum Meteorological Conditions for Reduction of Los Angeles Automotive Pollution. E.K. Kauper and Charlotte J. Hopper. J. Air Poll. Control Assn. 15, 210-213 (May, 1965).

Advantage can be taken of optimum conditions of turbulent mixing to decrease the intensity of automobile-caused pollution in the Los Angeles Basin. Changing the summertime peak traffic hours—delaying the morning rush by one hour—will result in an improvement of 24% for an 8-hour day, in terms of oxidant concentrations. Greater improvements (up to 54%) are possible by use of 7 or 6-hour days, should they be found to be economically feasible.

-- Authors' abst.

- 709 Studies on the Role of Sulfur Dioxide in Visibility Reduction. J. Harkins and S.W. Nicksic. J. Air Poll. Control Assn. 15, 218-221 (May, 1965).

Highly sensitive radio tracer techniques were used to see if the sulfuric acid mist from sulfur dioxide oxidation allows the incorporation of organic matter. Tagged organic compounds were irradiated with and without sulfur dioxide. When the aerosol was filtered off, no radioactivity was found on the filter paper showing the absence of organic matter and the lack of sulfur dioxide synergism. There are 29 references.

-- Authors' abst.

ACCIDENTS AND PREVENTION

- 710 Management of Underwater Accidents. J.B. Weeth. J. Am. Med. Assn. 192, 215-219 (April 19, 1965).

03121975

Five general types of underwater accidents due to gas and pressure exposure are discussed. Proper classification will lead to better treatment even though the physician himself is not familiar with skin diving. In an era when high-pressure (hyperbaric) environments are being discussed and used for research and treatment of various medical disorders, the casualties herein described, including 10 men with permanent incapacitating injuries, serve as reminders that high-pressure environments are dangerous, accidents will occur, and the physician must know what to do in an emergency. There are 18 references.

-- Author's summary

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New York, N. Y. 10016

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Chestnut Hill 67, Mass.

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Hunscheidstr. 18,
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B. M. A. House, Tavistock Sq.
London, WC1, England

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150 St. George Street
Toronto 5, Canada

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1155 Sixteenth Street, N. W.
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Deutsche medizinische Wochenschrift
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American College of Chest Physicians
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Chicago, Illinois 60611

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The Professional Press, Inc.
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9650 Wisconsin Ave.
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4400 Fifth Ave.
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Lancet

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London WC2, England

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Ministry of National Defense
National Health & Welfare
Ottawa, Ontario, Canada