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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -:- PITTSBURGH, PA. 15213

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INDUSTRIAL HYGIENE FEATURES

Malpractice liability in pre-placement examinations is discussed in Abst. No. 959.

Abst. No. 961 discusses training of public health nurses in mental health.

The clinical applications of pulsed ultrasound is investigated in Abst. No. 965.

Abst. No. 967 is concerned with the present status of corneal contact lenses in medical practice.

Abst. No. 969 reports on medicinal arsenic poisoning and lung cancer.

A brief discussion on menthol hypersensitivity is given in Abst. No. 982.

Data on phosgene poisoning as an example of neuromuscular acute pulmonary edema are presented in Abst. No. 986.

A case of fatal sulfur dioxide inhalation is reported in Abst. No. 989.

Consult Abst. No. 997 for information on stannosis in hearth tanners.

Parathion residue poisoning among orchard workers is studied in Abst. No. 1006.

For a study on poisoning in man from eating poisonous plants consult Abst. No. 1009.

Abst. No. 1017 surveys the prevalence of pneumoconiosis in Cornish kaolin workers.

Information on efficiency at sorting cards in compressed air is given in Abst. No. 1020.

Abst. No. 1030 reviews safe procedures in radiation.

See Abst. No. 1039 for the relationship of the personnel department to the medical department.

A study of the neurological sequelae of electrical injury is given in Abst. No. 1040.

FOUNDATION FACTS

THE ANNUAL MEETING. The daily mails bring increasing numbers of pre-registration cards, as the time for the Annual Meeting approaches. There are also telephone calls asking if there are limits to the numbers of representatives from member companies who may attend. It looks as if we will have several representatives from many member companies attending the different sessions of the Meeting. This multiple attendance suggests the soundness of advice given by several members in response to Dr. Wescott's request following the last Meeting: i. e. to return to highly technical concurrent sessions. In addition, the Foundation's Committees are sponsoring additional highly specialized meetings in the interest of the membership, where such appear needed. Out of such meetings are coming research plans, some of which will be discussed at the Membership Business Meeting. Some are mentioned in the 3rd Quarterly Report, now in process of distribution. An increasing number of requests for information concerning membership in the Foundation has been noted recently, reflecting an increasing interest in Foundation activities. The Foundation depends upon its membership to help attract potential members. One way all members can help is to become familiar with the mission and goals of the Foundation, and its related research and educational programs; then, when the opportunity presents, take a positive position on the importance of Foundation membership. Such participation on everyone's part, will be of great help to us in extending the work initiated by our founders. (Please refer to the March, 1964 issue of the Digest for a brief statement of our mission and list of members of the Foundation).

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ADVISORY FELLOWS TO ASSIST
INDUSTRIAL HYGIENE FOUNDATION RESEARCH

Three specialists in the field of occupational health are being appointed as Advisory Fellows of Mellon Institute to assist the Industrial Hygiene Foundation in its plans for future research, as described in the 3rd Quarterly Report for 1964.

They are: Theodore F. Hatch, Professor of Industrial Health Engineering, of the Graduate School of Public Health, University of Pittsburgh; Dr. Robert A. Kehoe, Director of the Kettering Laboratory, University of Cincinnati; and Dr. George W. Wright, Director of Research, St. Luke's Hospital, Cleveland.

Professor Theodore F. Hatch has been a member of the Foundation's Board of Trustees since 1958, and he has served as Treasurer since 1961. He is also Chairman of the Policy and Planning Committee.



He received his B.S. degree in civil engineering from the University of Maine in 1924, and his S.M. degree in sanitary engineering from Harvard in 1925. He began his career as assistant sanitary engineer for the Tennessee Department of Public Health. He then became an instructor in industrial hygiene at Harvard where he assisted in developing a new Department of Industrial Hygiene. Professor Hatch later moved to the New York Department of Labor's Division of Industrial Hygiene where, as chief engineer, he helped organize their engineering program. After that, he became associate professor of industrial hygiene at the University of Pennsylvania's Medical School, where he helped set up a program in occupational health. This work was interrupted by World War II, and he left to serve in the U.S. Army as a Major and later as a Lt. Colonel. He was Research Executive at the Armored Medical Research Laboratory at Ft. Knox, and helped direct human factors aspects of the planning and designing of armored vehicles. Then he became attached to the Pacific Warfare Board in the Philippines for study of armored weapon performance in combat. After four years in the military service, he joined the staff of the Industrial Hygiene Foundation as Research Director, where he conducted field and laboratory studies for its member companies throughout the United States. He left the Foundation to

take on his present duties of Professor of Industrial Health Engineering, Graduate School of Public Health, University of Pittsburgh, where he assisted in the organization of the new Graduate School of Public Health and Department of Occupational Health. He has served as consultant to various governmental agencies and became affiliated with numerous professional and technical organizations and services. In such duties he has done extensive traveling overseas, attaining international recognition for his outstanding work, especially in the evaluation and control of occupational hazards from dust and heat. He has received numerous Awards such as the Legion of Merit, Cummings Memorial Award, and the Bronfman Prize. He is author of several books and has added considerably to the professional and technical literature. His most recent text, co-authored with Dr. Paul Gross, Research Pathologist and Director of the Foundation's Research Laboratory, is "Pulmonary Deposition and Retention of Inhaled Aerosols". At the 28th Annual Meeting, Professor Hatch reviewed 50 years of progress in Industrial Hygiene and his paper appeared in the transactions (A.M.A. Archives of Environmental Health, March, 1964).

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Robert A. Kehoe, M.D., has been Director of the Kettering Laboratory since 1930. He received his B.S. and M.D. degrees from the University of Cincinnati.



He has served as Resident Pathologist at Cincinnati General Hospital; Pathologist, Jewish Hospital, Cincinnati; Assistant Professor of Physiology, Associate Professor and Research Professor at the College of Medicine, University of Cincinnati; also as Professor of Industrial Medicine, Director of University of Cincinnati Institute of Industrial Health, and Director of the Department of Preventive Medicine and Industrial Health.

Dr. Kehoe was Medical Director of Ethyl Corporation from its organization in 1925, until his retirement in 1958. He has also been National Consultant to the Surgeon General of the U.S. Air Force; and a Fellow of the Graduate School of Arts and Sciences, University of Cincinnati for many years.

He has received, among many honors, the Kilgour Prize; Knudsen Award; Award of Technical and Scientific Societies Council, Cincinnati; Award of the American Academy of Occupational Medicine; and the Mellon Award of the Air Pollution Control Association.

Dr. Kehoe has served as an officer in the following organizations: American Medical Association Council on Industrial Health; Industrial Medical Association; American Academy of Occupational Medicine; American Industrial Hygiene Association; Ohio Academy of Sciences.

He is a member of various other professional organizations such as: American Public Health Association, Royal Society of Health, American Association for the Advancement of Science, American Physiological Society, American Chemical Society, Central Society for Clinical Research, Ohio State Medical Association, American Association of History of Medicine, Cincinnati Academy of Medicine, and the Air Pollution Control Association of America. He has contributed numerous articles to scientific journals and technical publications, also chapters in reference works on industrial hygiene and toxicology. His outstanding research in human absorption and excretion of lead is described in the Harben Lectures 1960, and his most outstanding contribution to occupational health is outlined in the paper "An Example of Industrial Hygiene" presented at the 28th Annual Meeting of Industrial Hygiene Foundation, and published in A.M.A. Archives of Environmental Health, March, 1964.

George W. Wright, M.D., Head, Department of Medical Research in the Division of Internal Medicine, St. Luke's Hospital, Cleveland, received his B.S. degree from Indiana University, and his M.D. degree from Indiana University School of Medicine.



He served residencies and fellowships at Bellevue Hospital in New York City, New Haven Hospital, Connecticut, and then taught at Western Reserve University as an instructor in physiology. Since 1953 he has served as associate clinical professor of medicine in the Department of Medicine. He was Director, Department of Applied Physiology at Saranac Laboratory, during the period in which the most significant research on silicosis was performed there. Both Drs. Wright and the late Leroy U. Gardner of Saranac Laboratory, have contributed greatly to Industrial Hygiene Foundation meetings and research programs over the years. In addition to being on the senior staff of St. Luke's Hospital, he is presently on the consulting staff of Cleveland's Highland View and Metropolitan General Hospitals. He is a consultant to the Bureau of State Services, to the Division of Occupational Health of the U.S. Public Health Service; a member of the Medical Advisory Committee, Social Security Administration; member of the Air Pollution Training Committee, Bureau of State Services, U.S. Public Health Service; and of the Committee on Research, American Thoracic Society, National Tuberculosis Association. He has recently been appointed to the American Conference of Governmental Industrial Hygienists' Threshold Limit Committee. On September 15-16, Dr. Wright served as advisor to the Foundation, and participated in the Symposium on Emphysema in Industry, summarizing the findings. He will be a member of the Emphysema Panel at the 29th Annual Meeting.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

937 Manufacturing Chemists' Association Meeting.

The Manufacturing Chemists' Association will hold its 14th semi-annual meeting and midyear conference at the New York Hilton Hotel, New York City, November 24. The program is designed to interest senior and junior management and staff personnel of chemical companies and provide increased awareness as to the activities of the industry at all levels.
-- Chem. Eng. News 42, 54 (Aug. 24, 1964)

938 Society of Toxicology Meeting.

The annual scientific and business meeting of the Society of Toxicology will be held in Williamsburg, Virginia, March 8, 9, and 10, 1965. Anyone interested may attend. At the 1964 annual meeting 70 scientific papers on all phases of toxicology were presented. Abstracts of these appeared in the journal of the Society, Toxicology and Applied Pharmacology 6, 340-365 (1964). Papers for the 1965 meeting may be submitted or must be sponsored by members of the Society. Additional information about the meeting may be obtained from the secretary, Mr. Carrol S. Weil, Mellon Institute, 4400-Fifth Avenue, Pittsburgh, Pa. 15213.

939 Beryllium Case Registry.

The Beryllium Case Registry is searching for biopsy and autopsy material—tissue, blocks—from cases known or suspected of having beryllium disease. With Atomic Energy Commission support beryllium assay can be provided if 5 g. of tissue is available. If desired, the opinion of the Registry's consultant in pathology, Dr. David Freiman, may be supplied. Search for beryllium-induced lesions has become more urgent since the discovery of a case of osteogenic sarcoma in a beryllium worker not suffering pulmonary involvement. Beryllium was found in the lesion thus confirming Gardner's animal work of 1947 (L. U. Gardner: Osteosarcoma From Intravenous Beryllium Compounds in Rabbits, Federation Proc. 5, 221 (1946)). Address material to Beryllium Case Registry, Massachusetts Institute of Technology, Medical Department, 77 Massachusetts Avenue, Cambridge, Mass., 02139, for Harriet L. Hardy, M.D., Senior Investigator.
-- Arch. Pathol. 78, 156 (Aug. 1964)

940 Proposed Exhaust Standards Draw Mixed Reactions.

Comments are mixed on California's proposed new and revised standards for emissions from motor vehicles. A public hearing recently turned up all shades of opinions. Subjects of the hearing were the revision of the existing standards and proposed new standards for the oxides of nitrogen from exhaust and for hydrocarbons from fuel tank and carburetor hot-soak losses. Comments ranged from protests by representatives of the Automobile Manufacturers Association to plaudits by some who claimed that the new, stricter standards are reasonable and that the devices are economically feasible. Strongest reactions came from the Automobile Manufacturers Association. It objected to the proposed oxides of nitrogen standard of 200 ppm for exhaust and stated that it did not clearly understand the basis for some of the specific items in the standards

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for hydrocarbons and carbon monoxide. Conversely, the Los Angeles County Air Pollution Control District strongly favored this standard. Opinions and reactions expressed at the hearing are now under study by the staff of the Bureau of Air Sanitation of the State Department of Public Health. After further consultation with experts in the field, the standards will go to the State Board of Public Health.

-- Am. Soc. Civil Eng., Sanitary Eng. Div. News 90, Pt. 2, 36-6 (Aug. 1964)

941 New Method of Attack on Smog.

Using radioactive isotopes, Tracerlab scientists of the Richmond, California laboratory have developed new techniques for determining sources of air pollution. In a paper presented recently at a Nuclear Applications Symposium in Pullman, Washington, the scientists, Jack Wright, Ivan Sturman and Jack Fishman pointed out that the general problem of identifying and tracing sources of both air and water pollutants is complicated by the fact that plant effluents (gaseous and liquid) consist of relatively large numbers of components and that similar industrial processes produce similar effluents. They indicated that by introduction of small quantities of stable isotopes having a high neutron capture cross section into a plant process at appropriate points, very specific markers may be introduced into the plant effluents without regard for the specific composition of such effluents. The isotopic content of the effluent may be determined in the parts per million to parts per billion range by neutron activation analysis.

-- Safety Maintenance 128, 48 (Sept. 1964)

942 Lead Limits Set.

Revision of the American standard for surface coating materials, limiting the amount of lead compounds in film solids, (the fine solid particles in paint), was announced by the American Standards Association. The ASA Committee on Hazards to Children sponsored by the American Academy of Pediatrics, made the changes in Standard for Specifications to Minimize Hazards to Children From Residual Surface Coating Materials.

-- AMA News 7, 12 (Aug. 17, 1964)

943 Lung Cancer in Finland.

The lung cancer rate in Helsingfors, Finland, is no less than 50 times that in rural areas of Norway. Taking the two countries as a whole, there are six times as many deaths from lung cancer in Finland as in neighboring Norway. Finland, with a population of only 4 million, has recently been producing some 1,300 new cases of lung cancer each year. Over the past 20 years Finnish cigarette consumption has risen from 1,350 to 2,200 per year per adult, compared to a rise from 300 to 540 per year per adult in Norway. (The corresponding figure in the United States is 3,900). A large-scale investigation is being instituted in an attempt to establish the cause of the high Finnish figure.

-- Can. Med. Assn. J. 91, adv. p. 28 (Aug. 8, 1964)

944 Quinine May Be in Short Supply.

There may soon be a world-wide shortage of quinine. A few scientists are already calling the situation potentially serious. Cinchona bark from which the alkaloid is extracted is in tight supply and it may be many years before supplies are again adequate. At the same time, evidence continues to show that some strains of malaria parasites are becoming resistant to the commonly used synthetic antimalarials. Since the discovery of the more powerful and less toxic synthetic antimalarial drugs, the market for quinine has shown little, if any, growth. The outlook for the material has been bleak. Even in many areas of the world where quinine is now used to treat malaria, epidemiologists predicted that the synthetic drugs would soon supplant the use of quinine. Recent happenings indicate that this may no longer be the case. Demand for quinine, instead of declining, may be increasing. For example, the price of quinine has risen sharply, and, in April, the Office of Emergency Planning curtailed sales of quinine from the U.S. stockpile.

-- Chem. Eng. News 42, 35-36 (Aug. 17, 1964)

OCCUPATIONAL DISEASE STATISTICS

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

	<u>Conn.</u> <u>July</u>	<u>Ind.</u> <u>Aug.</u>	<u>Tenn.</u> <u>Aug.</u>	<u>Total</u>
Asphyxiation (solvents)		1		1
Brucellosis		1	2	3
Conjunctivitis		5 (2)		5
Conjunctivitis (allergic)	1			1
Dermatitis	16 (1)	42 (3)	12	70
Eye burns		7 (4)		7
Heat exhaustion		5		5
Lead poisoning		4		4
Pneumonitis (varsol vapors)			1	1
Poisoning (paint)		1		1
Porphyria (chlorothene)		1		1
Silicosis			1	1
Silico-tuberculosis			1	1
Sunburn		1		1
Tetrafluoroethylene poisoning (pyrolysis products)	1			1
Total	18	68	17	103

Causes are listed as follows:

(1) Connecticut: Occupational dermatitis due to plants, poison ivy, 2; occupational dermatitis due to oils and greases (and metal cutting compounds) 1; occupational dermatitis due to solvents 2; occupational dermatitis due to other chemicals: acids 2, miscellaneous 1, nickel and compounds 1, nitrates and nitrites 1, rubber chemicals 1, synthetic resins or resin (plastic) compounds 1, undetermined 1, occupational dermatitis—other: cement 1, miscellaneous 2.

(2) Indiana: Oil, solvents, fiberglass, chlorothene, acid, one each.

(3) Cause not stated 10, insect bites 3, epoxy resins 3, asphalt 3, tar 3, oil 3, chemicals 2, cement 2, detergents 2, paint 2, pitch 1, bacteria 1, polythermalex 1, wax 1, trichloroethylene 1, poison ivy 1, acid 1, rust inhibitor 1, amine 1.

(4) Welding flash 2, chemicals 2, sun 1, creosote 1, acid 1.

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COMING EVENTS

- 946 Nov. 4-6 Armed Forces Chemical Association, 19th Annual Meeting, Washington, D.C.
 Nov. 4-7 American Society of Tropical Medicine and Hygiene, New York, N.Y.
 Nov. 7-8 National Conference on Disaster Medical Care, Chicago, Ill.
 Nov. 9-11 American Petroleum Institute, 44th Annual Meeting, Chicago, Ill.
 Nov. 9-11 National Paint, Varnish and Lacquer Association, Annual Meeting, Dallas, Texas.
 Nov. 9-12 Interstate Postgraduate Medical Association of North America, Pittsburgh, Pa.
 Nov. 12-13 Conference on Nerve as a Tissue, Philadelphia, Pa.
 Nov. 12-14 American Association for the Study of Neo-Plastic Diseases, Mansfield, Ohio.
 Nov. 12-14 American Society of Cytology, Pittsburgh, Pa.
 Nov. 13-15 Association of Clinical Scientists, Washington, D.C.
 Nov. 13-16 National Society for Crippled Children and Adults, Detroit, Mich.
 Nov. 14-21 Pan American Medical Women's Alliance, Hollywood, California.
 Nov. 16-20 Soil Science Society of America, Annual Meeting, Kansas City, Mo.
 Nov. 18-20 Northeastern States Navy Research and Development Clinic, Philadelphia, Pa.
 Nov. 18-21 Congress of Neurological Surgeons (14th), Bal Harbour, Florida.
 Nov. 20-21 American Psychiatric Association, Philadelphia, Pa.
 Nov. 24 Manufacturing Chemists' Association, Semiannual Meeting and Midyear Conference, New York, N.Y.
 Nov. 28-29 American College of Chest Physicians (interim meeting) Miami Beach, Florida.
 Nov. 29 National Conference on Medical Aspects of Sports, Miami Beach, Florida.
 Nov. 29-Dec. 1 Association for Research in Ophthalmology, Minneapolis, Minn.
 Nov. 29-Dec. 2 American Medical Association (Clinical Meeting), Miami Beach, Florida, and Bal Harbour, Florida.
 Nov. 29-Dec. 4 American Society of Mechanical Engineers, Annual Winter Meeting, New York, N.Y.
 Nov. 29-Dec. 4 Radiological Society of North America, Chicago, Ill.
 Nov. 30-Dec. 1 Food Law Institute and Food and Drug Administration Conference, HEW Auditorium, Washington, D.C.
 Nov. 30-Dec. 3 American Nuclear Society and Atomic Industrial Forum, Joint Winter Meeting and Atom Fair, San Francisco, California.

LEGAL DEVELOPMENTS

947 Compensation Law Changes Suggested.

The California Medical Association proposed changes in the state's workmen's compensation law to improve medical treatment and to provide maximum rehabilitation for injured workmen. The CMA proposed that a medical administrative division be established within the state's Industrial Accident Commission. The division would be directed by a medical administrator who would be responsible to the IAC for supervision of all aspects of the workmen's compensation law related to medical care, physical rehabilitative services, determination of disability, establishment of fair fees for doctors and determination and certification of medical facts in each litigated case. Dr. Carl E. Anderson, chairman of the CMA Council, said that in the absence of substantial contrary evidence, the division's findings would be binding upon referees and the IAC. Primary objectives would be: Prompt, efficient medical and vocational rehabilitation for the injured. Conservation of the medical dollar by avoiding delays, over-

utilization and other abuses of the law. Establishment of reasonable fees to eliminate physicians' complaints that fees are "grossly inadequate" in the field. Reduction of litigation based on disagreement over medical facts by using medically designated, promptly utilized and adequately paid impartial medical examiners and expert medical panels. Creation of a climate in which many MDs now uninterested in handling workmen's compensation cases would be willing to participate fully. To provide a free choice of physicians for injured workers and to "combat a present reluctance on the part of insurance companies and industrial firms to offer a free choice." To ease the burden on physicians caused by excessive paper work.

-- AMA News 7, 11 (Aug. 17, 1964)

948 Medicolegal Definition Sought for Epilepsy.

The Oklahoma Epileptic Association presented an \$8,000 grant to the National Epilepsy League to support efforts to establish a legal definition of epilepsy. Plans for a national conference to develop the definition were initiated by the NEL following the controversy over the medical and legal implications of epilepsy that arose out of the Jack Ruby trial in Dallas, Texas. Maurice A. Melford, Chicago, director of the NEL, said at the time of the trial that the lack of clear medicolegal definition of the disorder has a profound effect on the lives and welfare of the nation's 1,800,000 epileptics because of widespread public misunderstanding and myths as to its causes, symptoms and treatment.

-- AMA News 7, 13 (Aug. 17, 1964)

949 Medicolegal Decision: Air Conditioner.

The Appellate Division in Albany, New York, ruled that a bank clerk was entitled to workmen's compensation for a neck ailment resulting from the draft from an air conditioner. The clerk contended that the cold draft at her bank post caused her to hold her neck and shoulders in an unnatural position. She said this resulted in muscle spasms and irritation and aggravated a previous arthritic condition. A compensation board found that she had suffered "a gradual injury" and was entitled to \$441 for 10 weeks of lost employment.

-- AMA News 7, 13 (Aug. 31, 1964)

950 Amendments to Regulations on Pesticide Marketing.

Two new amendments to government regulations on pesticide marketing will require U.S. Department of Agriculture registration numbers on labels of pesticides shipped interstate, and ban misleading safety claims on labeling. The new rules, which go into effect on October 28, apply to new as well as old products. Manufacturers of products already registered with USDA must comply with the new rules by July 1, 1965.

-- Chem. Eng. News 42, 23 (Sept. 7, 1964)

BOOKS, PAMPHLETS AND NOTICES

- 951 Symptomatology and Therapy of Toxicological Emergencies. William B. Deichmann and Horace W. Gerarde. Available From: Academic Press, Inc. 111 Fifth Ave., New York, N.Y. 10003. 605 pp. (1964) Price: \$18.00.

This volume, entitled "Symptomatology and Therapy of Toxicological Emergencies," was written to make available for ready reference new data which have appeared since publication in 1958 of the second edition which was entitled "Signs, Symptoms, and Treatment of Certain Acute Intoxications" (Charles C. Thomas, Springfield, Illinois). This is not intended to be a textbook of pharmacology, and therefore, not every class of drugs is covered. As in

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the second edition, the authors have attempted to present new and up-to-date information. When compared with the second edition, this volume covers a considerably larger number of drugs and chemicals, presents urgently needed information on poisonous plants, lists the compounds implicated in blood dyscrasias, and includes accepted threshold limit values for chemicals, the maximum permissible concentrations of various chemicals in food, drugs, and cosmetics, as well as tables on the acute toxicity of numerous chemicals. Chapter V—Tabular Summaries is a unique collection of data which should be of great use to toxicologists and industrial hygienists. Sections on medical aspects of toxicological emergencies will be very helpful to physicians and the volume will undoubtedly find itself on the ready reference shelf in many physician's offices, next to that very useful volume, the annually revised, "Physicians Desk Reference (PDR)". As in the case of the PDR, this reference should be revised periodically. The American Conference of Governmental Industrial Hygienists', Threshold Limit Values change annually: e.g. the 1 ppm value published herein was tentatively lowered to 0.1 ppm in the 1964 American Conference of Governmental Industrial Hygienists' list. Its cost of \$18.00, while merited by its beautiful printing and binding, will inhibit its use by many of those for whom it is intended. A "paper back" edition would be useful, especially in view of the desirability of frequent revisions. -- R. T. P. deTreville

- 952 An Outline of Pulmonary Function and Pulmonary Emphysema. E. Rosenman.
Available From: Charles C. Thomas, Springfield, Illinois. 137 pp. (1964) Price: \$6.50.
Reviewed by R.F. Johnston, M.D.

Pulmonary emphysema is receiving increasing recognition as one of the country's major health problems. The prevalence of bronchitis and pulmonary emphysema has been estimated as 13 per thousand, meaning that over 2 million people in this country have these diseases. Unfortunately, many American physicians are not sufficiently aware of this problem nor do they understand the pathophysiology of this disease. A book such as Dr. Rosenman has attempted, designed to present in clear and simple terms the essence of pulmonary physiology and describe the abnormal physiology and treatment of pulmonary emphysema, could be a valuable aid to the medical student and clinician. Unfortunately, the result of Dr. Rosenman's attempt is far from satisfying. The student or physician not well-acquainted with pulmonary physiology will profit from reading Part I of this book. However, the volume as a whole offers much less than it promised.

-- Ann. Internal Med. 61, 376 (Aug. 1964)

- 953 Occupational Disease in California, 1962. State of California, Department of Public Health, Bureau of Occupational Health. 20 pp. Available From: California State Department of Public Health, 2151 Berkeley Way, Berkeley 4, California, Price: Not given.

The data summarized in the tables of this report do not differ markedly from previous years and are primarily for use of the local health departments and other official agencies in California concerned with the health of workers. The tables summarize 17,757 reports of occupational disease from among the over 5 million persons covered by the California workmen's compensation law in 1962, a decrease of 4% from 1961. This is the second year in which a decrease in the number of reports has been noted. As usual, agriculture led all industrial divisions with the highest rate of occupational disease, 10.9 reports per 1,000 workers; followed by construction, 6.4; and manufacturing, 4.7. The rate for agriculture increased 11% over figures published for the previous year, despite a decrease in the number of reports of occupational disease received. This is largely a result of the downward revision of estimates of agricultural employment made by the State Department of Employment following the 1960 Census, and also partly a continuation of a long-term downward trend in the number of persons working in agriculture in California. Within the manufacturing division, rates fluctuated from 13.1 for rubber and miscellaneous plastic products to 1.6 for petroleum products and 1.6 for printing, publishing and allied products. Most occupational disease fell into the traditional categories of skin conditions, 77%; respiratory conditions, 7%; and systemic effects of toxic materials, 5%. Hazards most frequently implicated were poison oak, 22%; food products, 6%; agricultural chemical, 5%; plastics, 5%; and soaps and detergents, 5%. In California, 30,767 men and 16,648 women of working age (15-64) died during 1962. Only a small proportion of these deaths were finally classified as due to occupational disease. Nearly two-thirds of the 461 deaths classified as occupational were cardiovascular, and over a quarter were pneumoconiosis. For the first time in 1961, all deaths with mention of pneumoconiosis on the death certificate were counted. This section of the fatality table and the total occupational disease deaths for 1962 are comparable to 1961 only.

- 954 Pneumatic Conveying of Agricultural Dusts. NFPA No. 66. National Fire Protection Association. 27 pp. (1964). Available From: National Fire Protection Association, 60 Betterymarch Street, Boston, Mass., 02110. Price: 60 cents.

The 1964 edition of this work covers the handling of feed, flour, grain and other agricultural dusts and has been extensively revised as a result of comments received during its tentative status as a standard last year. Applicable to pneumatic handling of grains, flour, starch, sugar, cocoa, animal feeds, spices and other processed and unprocessed dry food materials, its purpose is to recommend procedures to prevent dust explosions or fires, and to minimize the effect of any explosion or fire that may occur during pneumatic handling. Officially adopted by the National Fire Protection Association at its 1964 annual meeting, the revised standard was developed by the NFPA Sectional Committee on Grain and Food Processing Dusts under the chairmanship of Thomas T. Singer of the Western Actuarial Bureau.

INDUSTRIAL MEDICAL PRACTICE

- 955 Epidemiologic Approach to Chronic Diseases. M. Terris. Arch. Environmental Health 9, 209-215 (Aug. 1964).

In 1900, the leading causes of death in the United States were pneumonia and influenza, tuberculosis, diarrhea, and enteritis. Today, these have been replaced by heart disease, cancer, and cerebrovascular disease. At present coronary heart disease is the greatest single cause of death in the United States. It is not only far more important than lung cancer, but the prospects for control appear considerably brighter. The control of lung cancer is hampered by the difficulty of persuading smokers to give up their habit. This obstacle is also operative to some extent in coronary heart disease. However, if dietary regulation proves to be a significant control method, it should be possible to introduce changes in food processing to provide a variety of foods that retain nutritive and taste values of present diets while reducing atherogenic potential. Such changes have already taken place to a limited extent even though they are premature. This brief and selective review has excluded discussion of considerable significant epidemiologic work done in such areas as chronic bronchitis, cervical and breast cancer, leukemia, and other chronic diseases. Nevertheless, it indicates some remarkable contributions which have resulted from the use of the epidemiologic approach. The need, now, is for epidemiology to become more widely appreciated as a basic medical science by medical educators and physicians generally to be recognized more fully by agencies granting funds for training and research, and to be applied more intensively to the many unsolved chronic diseases which still plague mankind. There are 33 references.

- 956 The In-Plant Physician. J. Ryan. Arch. Environmental Health 9, 252-254 (Aug. 1964).

The in-plant doctor's main function is the examination, diagnosis, and treatment of employees who suffer occupational illness or injury. In this very difficult field, he is an expert. He is well aware that a patient who suffered an industrial injury is more difficult to treat and cure than he would be if the same injury had occurred while he was water skiing or working in his yard. It is the rule, rather than the exception, to overtreat an industrial injury. Only in this field are the demands of a patient supported legally. Only in this field are patients paid while going to the doctor for treatment. It must be strongly and persistently driven home that although the medical department does not make a profit, it does more than pay for itself in money saved due to reduction of lost time cost, treatment cost, and transportation cost to outside clinics. The basic concept of the in-plant doctor's function should be, "If we take good care of the employees of the company, the employees will take good care of the company." To this end, the doctor should avoid any tendency toward becoming a "Company Doctor" and remain the patient's doctor. He must avoid at all cost the feeling of resentment toward an employee who hurts himself on the job through sheer stupidity and disregard of safety orders or who fails to recover even though medically there is no reason for the persistent complaints.

- 957 The In-Plant Nurse. Bertha Kosche. Arch Environmental Health 9, 247-251 (Aug. 1964).

The quality of industrial health services is vitally affected by the understanding and respect that personnel, medicine, and nursing have for each other's roles. Too little use is made of available data on the nurses' functions, qualifications, and performance standards when selecting an industrial nurse. Industry should strongly compete for its share of well educated nurses and permit them to make a professional contribution toward the quality of industrial health services, otherwise they will be shortchanged. Nursing programs will remain in the kindergarten stage of industrial health unless these disciplines work together cooperatively.

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

- 958 Health Examinations of Senior Staff in Industry. Susan H. Meadows. Brit. J. Ind. Med. 21, 226-230 (July, 1964).

Of 228 senior staff participating in schemes for their health supervision who were asked for their opinions on the examinations, 26% said they had derived a lot of benefit, 53% a little, 20% no benefit, and 1% were unable to express an opinion. The degree of benefit felt was influenced by the number of routine examinations; age was relatively unimportant. Detection of hidden illness was considered the most important objective of the examinations, and the value of reassurance, usually in the absence of abnormal clinical findings, was mentioned by 65% of the respondents. Ten per cent admitted to being worried by the idea of the examinations before they took place, and 32% said retrospectively, that the examinations had reduced their concern about health. There was little criticism of the content of the examinations or the way the scheme was organized. The time given was considered to be of fundamental importance, as were also the personal qualities and interest of the examining doctor.

-- Author's abst.

- 959 Malpractice Liability in Pre-Placement Examinations. L. J. Warshaw and J. V. Thornton. J. Occ. Med. 6, 353 (Aug. 1964).
The Case Beadling v. Sirotta, 71 N. J. Super. 182, 176A. 2d 546 (1961), 39 N. J. 34, 186A. 2d 680 (1962).

A patient who had been x-rayed in the course of a preplacement examination brought suit against the roentgenologist, claiming that the x-ray report was erroneous. The Superior Court of New Jersey held that the roentgenologist had to defend this suit even though the report had been made for the information of the prospective employer of the plaintiff and not at the request of the plaintiff or for purposes of treating him. The court stated that "where physical health is a factor in the determination of qualifications, the worker has a right to have the state of his health diagnosed with reasonable care and reported with reasonable accuracy and correctness." The court further held that "the relationship of physician and patient is readily implied and did exist between the defendant and the plaintiff, with consequent duty on the part of the defendant to exercise reasonable care in the examination and diagnosis he was called upon to make." The physician has a responsibility to be as careful when examining an applicant for employment as he is with any other examination, to be as thorough in such an examination as circumstances reasonably warrant, and to report to the applicant any condition that is disclosed for which treatment or some course of action appears advisable. It does not matter that the examining physician does not have, or wish to have, responsibility for administering the treatment. The fact that the examination is being paid for by a prospective employer of the examinee or by some other third party does not exempt the physician from this responsibility.

- 960 Pathological Malingering: The Painful Disabled Extremity. R. S. Shaw. New Engl. J. Med. 271, 22 (July 2, 1964).

Pathological malingering is a definite clinical entity, involving severe pain and disability. When manifested in the extremity as Sudeck's atrophy, reflex sympathetic dystrophy, or traumatic arteriospasm it lends itself to ready separation from other diseases in which motivation is not an etiological factor. Removal of the motivation to remain disabled must be

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accomplished before other therapy can be effective. Usually the motive is financial and has its roots in our social and legal system. The key to the solution of this complex social problem lies in the consistent recognition of pathological malingering by the medical profession.

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

- 961 Training Public Health Nurses in Mental Health. J.R. Dorsey, et al.
Arch. Gen. Psychiat. 11, 214 (Aug. 1964).

The shortage of trained psychiatric personnel has focused attention on the problem of the most effective use of other types of care-giving professional workers in the treatment of mental disorders. The Division of Social and Community Psychiatry of the Albert Einstein College of Medicine organized a Consultation and Diagnostic Service to improve the knowledge and skills of a variety of care-taking agencies and individuals in the community, such as the clergy, public health nurses, teachers, and police. An evaluation of such a training program for public health nurses conducted over a 5 month period and the preliminary results are described.

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

- 962 LSD in Chronic Alcoholism. P.O. O'Reilly and A. Funk.
Can. Psychiat. Assn. J. 3, 258 (June, 1964).

Since 1959, 68 alcoholics were treated with lysergic acid diethylamide (LSD). A follow-up survey that was done 3 years after the inception of LSD treatment on the ward is described. LSD was administered to the patient in a typical dose of 200 micrograms. Three sources of follow-up information were used: (1) a questionnaire completed by the patient, (2) a questionnaire completed by a close friend or relative, and (3) data from other agencies or sources such as the patient's physician and the Bureau of Alcoholism. The 2-month period following treatment was selected to show the response immediately following LSD. Twenty-six patients (38%) were found to be abstaining from alcohol in the 2 months preceding the follow-up, without any disastrous side effects. The improvement established immediately following the treatment tended to be maintained. The nature of the experience appeared to bear an independent relationship to abstinence. In many of the successful cases, the LSD experience seemed to introduce a new way of looking at one's life with a loss of previous defensive meanings or perceptions of oneself.

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

- 963 Caloric Expenditure at Two Types of Factory Work. H.A. Bliss and J.S. Graettinger.
Arch. Environmental Health 9, 201-205 (Aug. 1964).

Indirect measurement of caloric expenditure in men doing heavy or light factor work demonstrated that a graded physical demand index, previously assigned to each job by the employer, validly characterized the relative intensity of exertion required in that particular job. In a group of subjects, all doing the same kind of work which did not require lifting, caloric expenditure was related to body weight. Pulmonary ventilation depended closely on energy expenditure. Therefore, determination of pulmonary ventilation can be recommended under some circumstances as a substitute for oxygen consumption measurement.

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

- 964 Racial Differences in Hip Fracture Mortalities. L. Adelson and R. Oseasohn.
Arch. Environmental Health 9, 206-208 (Aug. 1964).

An analysis of the influence of race upon mortality related to hip fractures in the 5-year interval from 1958 to 1962 in Cuyahoga County (Ohio) indicates that the risk of death associated with hip fracture is similar among white and nonwhite persons.

-- Authors' summary

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- 965 Pulsed Ultrasound—Illustrations of Clinical Applications. J. Ambrose.
Brit. J. Radiol. 37, 165 (1964).

Experience at St. George's Hospital, London, England, indicates that pulsed ultrasound is a harmless, painless, and not particularly time-consuming method of investigating intracranial disease. A normal record shows echo components from each major layer of brain covering and such intracerebral structures as the septum pellucidum and the lateral walls of the ventricles. The width of the third ventricle can be measured and shift of midline structures determined. Clinically this procedure has been useful in indicating the presence of extradural and subdural hematomas, and in the positioning of burr holes when such lesions are discovered. However, bilateral hematomas or single frontal or occipital ones may not be demonstrated. Tumor tissue rarely gives an abnormal echo. More commonly a tumor is indicated by shifting of other structures or by ventricular dilation. Cerebral atrophy can also be demonstrated. The procedure is proving useful as a guide to the need for and the selection of more formidable investigative procedures.

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

- 966 Fetal Cephalometry by Ultrasound. J. Willcocks, I. Donald and T.C. Duggan.
J. Obstet. Gynaec. Brit. Cwlth. 71, 11 (1964).

A method of measuring the biparietal diameter of the fetal head in utero by ultrasonic echo sounding has been developed and has had extensive practical trial. An industrial ultrasonic flaw detector is used to project a beam of pulsed ultrasound through the maternal abdomen and to detect echoes from reflecting objects in the path of the beam. Characteristic echoes from each side of the fetal head can be identified and have simultaneous maximum amplitude when the beam of ultrasound is directed along the biparietal diameter. The time between the arrival of echoes from the near and far sides of the fetal head is measured and, as a result of experimental work, the biparietal diameter in centimetres can be calculated. On the basis of the work done it is believed that the speed of ultrasound in the living brain of the newborn child is 1,525 meters per second, a figure which is in good agreement with other published work. After birth, alterations in the biparietal diameter have been observed in the first day of life, when a decrease is not uncommon; thereafter, the diameter does not change appreciably during the first week of life. This method compares favorably with cephalometry by radiography and can be used in a number of situations where x-ray cephalometry is impossible—where the head is high or there is a malpresentation. The examination is simple and safe, and the result is immediately available to the clinician.

-- Cond. from Can. Med. Assn. J. Absts.

- 967 Present Status of Corneal Contact Lenses in Medical Practice.
J.A. Pratt-Johnson and D.M. Warner. *Can. Med. Assn. J.* 91, 439-441 (Aug. 29, 1964).

Common indications for and contraindications to corneal contact lens wear are outlined. The processes of adaptation of the cornea to a correctly fitted contact lens are described. Biomicroscopic examination of the cornea revealed that 29 of 250 eyes in the authors' series showed small abrasions at some time during the fitting period. The dangers of infection of a simple corneal abrasion by such pathogens as Pseudomonas aeruginosa are stressed. Prophylactic treatment of abrasions with a topical antibiotic preparation containing polymyxin is recommended. Serious criticism is leveled at the practice of estimating the fit of a contact lens by the fluorescein pattern only, and repeated keratometry readings combined with biomicroscopy are considered to be essential. It is proposed that the evaluation, fitting and after-care of the contact lens patient should be the responsibility of an ophthalmologist.

-- Authors' abst.

- 968 State-Wide Mouth Cancer Program to be Initiated. R. Voglesong.
Conn. Health Bull. 78, 183-186 (Aug. 1964).

Many people die from mouth cancer each year in Connecticut. In an effort to decrease the number of these deaths, the Connecticut State Dental Association and the Connecticut State Department of Health are going to initiate a state-wide mouth cancer program. This new program, made possible by a recent United States Public Health Service grant, will introduce the oral exfoliative cytology technique—the oral smear—to dentists throughout the state. Mouth

cancer in Connecticut is a significant problem. During the 17 year period of 1935 to 1951 in Connecticut an average of 143 persons died each year from cancer which originated in the mouth. Since that period of time, Connecticut has had its share in population growth and it is fair to assume the current number of deaths caused each year from mouth cancer is now substantially higher. Early detection and early treatment of mouth cancer increases the cure-rates of mouth cancer patients. Since a large percentage of the general population does seek periodic dental care, it is the dentists who are in a particularly advantageous position to play a leading role in early detection of mouth cancer. The new program will be focused on dentists in private practice in Connecticut. Approximately 1,800 in number, this group—more than any other—each year has the best opportunity for providing the largest number of comprehensive mouth examinations in the state. However, the program will definitely not be limited to just dentists in private practice. Also to be invited to participate will be all physicians in the state, including local directors of health, as well as staff members of all hospitals and institutions—especially those caring for the chronically-ill and aged population.

- 969 Medicinal Arsenic Poisoning and Lung Cancer. A. O. Robson and A. M. Jelliffe.
Brit. Med. J. 2, 207-210 (July 27, 1963).

Six cases of bronchogenic carcinoma are reported in patients who had previously developed arsenical skin changes following the therapeutic administration of arsenic. The average interval between the administration of arsenic and the development of cancer was 32 years. All the tumors were anaplastic in type. Although the relationship between the therapeutic administration of arsenic and the later development of lung cancer is unproved, these cases suggest that such a relationship exists. -- Am. Rev. Resp. Dis. Absts.

- 970 An Index of the Fate of Circulating Cancer Cells. W. I. B. Onuigbo.
Lancet 2, 828-831 (Oct. 19, 1963).

Carcinoma of the lung was selected for study because it commonly infiltrates small branches of the pulmonary vein. Metastatic involvement of the renal glomeruli is relatively infrequent, and special attention was focused on this site. One hundred cases of carcinoma of the lung were investigated: a detailed examination of all organs was carried out with a 2- to 3-cm. block from the kidney, which included the capsule, cortex and medulla, and a part of any metastatic lesion present. Of the 100 cases, there was discrete involvement of one or more glomeruli in 10, but there was little difference in the distribution of metastatic lesions in the liver, adrenal, bone, brain, opposite lung, kidney, pancreas, thyroid, spleen, and extra-thoracic muscle, whether or not the renal glomeruli were involved. Because the kidney receives about 25% of the resting cardiac output, many cancer cells must pass through the glomerular capillaries, hence justifying the term "circulating cancer cells." Further investigation of carcinoma metastasis is necessary, and the writer suggests that the blood stream itself should be examined for factors which may determine the fate of the "circulating cancer cells." -- Am. Rev. Resp. Dis. Absts.

- 971 Bronchogenic Carcinoma in Women. R. Buchberger and R. H. Jenny.
Wien. Klin. Wochschr. 75, 718-723 (Oct. 18, 1963). German.

In the last few years the frequency of bronchogenic carcinoma has increased in women as well as in men. Between 1948 and 1960, 120 women were seen with histologically proved bronchogenic carcinoma. Forty-four women underwent resection (20, lobectomies; 24, pneumonectomies), 33 were found inoperable at thoractomy, and 43 were considered inoperable. In the same period of time 974 resections and 445 thoractomies were done in men with histologically proved bronchogenic carcinoma, and 508 men were considered inoperable. In the 1,927 men there were 442 (23%) peripheral tumors; in the 120 women there were 42 (35%) peripheral tumors. Adenocarcinomas were found considerably more frequently in women than in men. The life expectancy of the operated women is slightly better than that of the operated men; the difference is statistically only slightly significant. -- Am. Rev. Resp. Dis. Absts.

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- 972 Cancer of the Lung in a Rural Alpine District in Switzerland Free of Atmospheric Contamination.
O. Gsell and C. Jung. *Deut. med. Wochschr.* 89, 909 (May 8, 1964).

The incidence of lung cancer in the Canton Glarus, an alpine region in Eastern Switzerland, is relatively low. Smoking habits in this region are correlated with the death rate from lung cancer between 1941 to 1961. Of the persons who died of bronchiocarcinoma, 96% smoked at least 20 cigarettes a day or the equivalent. In 25% of the cases, only cigarettes were smoked; 60% smoked cigars and pipes exclusively, but the average occurrence of lung cancer in this group was 10 years later than that in cigarette smokers. The investigations seemed to indicate that the low incidence of lung cancer was due not to the absence of air pollution but to the low percentage of heavy smokers. The sex and age distribution in lung cancer is given.

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

- 973 Pharmacological Effect of Tobacco Smoke. M. S. G. Clark and M. J. Rand.
Nature 201, 507-508 (Feb. 1, 1964).

In the anesthetized cat, the injection of nicotine causes a reduction of the reflexly elicited contraction of the patellar tendon and a transient rise in blood pressure. Inhalation through a tracheal cannula of a puff of smoke from an unfiltered cigarette, which had been previously smoked for half its length, produced effects on the spinal reflex and blood pressure equivalent to those induced by 5 micrograms of injected nicotine. Smoke from filtered cigarettes was less effective, and removal of the filter enhanced the pharmacologic action. The administration of beta-erythroidine antagonized the inhibition of spinal reflexes caused by nicotine or tobacco smoke, but had no effect on the temporary hypertension. These observations are relevant to findings that the knee jerk, ankle biceps, and abdominal reflexes are less active in smokers than in nonsmokers.

-- Am. Rev. Resp. Dis. Absts.

- 974 Tumor-Promoting Activity of Extracts of Unburned Tobacco.
F. G. Bock, G. E. Moore, and Shirley K. Crouch. *Science* 145, 831-833 (Aug. 21, 1964).

Both an aqueous barium hydroxide extract and an acetone-benzene extract of unburned cigarette tobacco produced skin tumors when painted on mice previously treated with 125 micrograms of 7,12-dimethylbenz (a) anthracene. The extract from as little as 0.5 cigarette per day was effective. The data are of interest in connection with epidemiological evidence that tobacco chewing is a cause of oral cancer. The data also suggests that tumor-promoting agents in cigarette smoke may have their source in the unburned tobacco.

-- Authors' abst.

- 975 On the Recognition and Therapy of Simian Woolsorter's Disease.
W. S. Gochenaur, Jr., et al. *J. Hyg.* 61, 317-322 (Sept. 1963).

An experimental model closely simulating woolsorter's disease (anthrax) was achieved by giving rhesus monkeys a course of penicillin inadequate for complete prevention after causing them to inhale anthrax spores. Some of the animals died of septicemia without significant pulmonary or mediastinal lesions, but half of the animals showed widening of the mediastinum on roentgenography. This widening preceded the fulminating terminal illness by 12 to 90 hours; and treatment with penicillin, started when the roentgenogram became abnormal, was successful in 8 to 10 monkeys. Penicillin-resistant *Bacillus anthracis* was isolated from one of the 2 animals in which penicillin was ineffective. Two of 3 monkeys treated with tetracycline survived. Lung cultures from all the survivors of these experiments, killed 55 to 84 days after exposure, were positive for *B. anthracis*. This evidence of prolonged spore retention underlines the importance of combining treatment with active immunization.

-- Am. Rev. Resp. Dis. Absts.

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- 976 Pulmonary Manifestations of Parasitic Infestations. M. Lenczner, W.B. Spaulding, and D.E. Sanders. Can. Med. Assn. J. 91, 421-434 (Aug. 29, 1964).

Parasitic infestations in man may cause transient or permanent pulmonary lesions. The lesions occur during migration and evolution of the parasites, during parasitemia, or during the final habitat. These manifestations, though infrequent in Canadian medical practice, present difficulties in diagnosis. Life cycles, mode of entry, and migration of parasites in the human body are described and illustrative case histories presented. A case of amebiasis is presented illustrating the latent stage of infestation which lasted several decades before the organism spread from bowel to para-aortic nodes, to the lumen of the inferior cava, thence to the radicles of the portal vein and lung.

-- Cond. from authors' abst.

- 977 Pulmonary Aspergillosis. Medical Department, Ministry of Pensions and National Insurance. Brit. J. Ind. Med. 21, 246-247 (July, 1964).

Pulmonary aspergillosis is a disease caused by fungal infection of the lungs. The pathogenic member of the species is usually Aspergillus fumigatus although exceptionally other species may be responsible for the disease. This fungus proliferates on decaying organic matter and the spores have a world-wide distribution in both rural and urban air. The fungus is a common pathogen of birds, both wild and in captivity, but in the vast majority of instances inhalation of spores by man causes no disability. If the exposure is excessive a temporary inflammation of the main lung airways may develop but this leaves no after-effects. There are three types of infection which may occur in man: saprophytic, allergic, and disseminating. Each of these is described briefly. Diagnosis and incidence are also discussed. As indicated, A. fumigatus is normally nonpathogenic and it is not known why an allergic response should occur in a minority of individuals exposed to it. Presumably, however, this is a further example of an abnormal and genetically determined reaction to a foreign protein.

- 978 Studies on the Mechanism of Anaphylaxis: A Possible Basis for a Pharmacologic Approach to Allergy. G.B. West. Clin. Pharmacol. Therap. 4, 749-783 (Nov.-Dec. 1963).

According to the latest and best estimates, 10% of the population suffers from major allergic illness and 20% more are affected with minor allergies. Allergy is largely an inherited disease, and an increase in the total number of cases in the future is possible. The introduction of thousands of new foods, drugs, synthetic materials and consumer goods has multiplied the number of allergic victims, and more people than ever have household pets, which are also major sources of allergens. This review considers some of the mechanisms of anaphylaxis: antigen-antibody combination, types of anaphylaxis, biochemical mechanisms of anaphylaxis, anaphylaxis and histamine, anaphylaxis and mast cells, anaphylaxis and 5-hydroxytryptamine, slow-reacting substances, anaphylaxis and accessory agents, the anaphylactoid reaction, anaphylaxis and hormones, and physiologic significance of histamine and 5-hydroxytryptamine.

-- Am. Rev. Resp. Dis. Absts.

- 979 Pulmonary Emphysema. W.M. Thurlbeck. Am. J. Med. Sci. 246, 332-353 (Sept. 1963).

Within the last decade, the most notable contributions to the pathology of emphysema have been in the fields of accurate descriptive morphology and simple clinicopathologic studies. Two functionally important forms of emphysema, centrilobular and panlobular, are recognized. If sufficiently widespread and severe, these two forms generally produce the clinical syndrome of emphysema. In general, there appears to be a reasonably good correlation between structure and function. A good deal still has to be learned concerning the relationship between structure and function. Reflex adjustment of perfusion and of ventilation make it unlikely that a simple, complete correlation will be found between pulmonary function and structure in emphysema. Adequate correlative studies will depend on objective morphometry of structure and adequate clinical assessment of pulmonary function. The etiology of the important types of emphysema is obscure and their pathogenesis is unknown. The importance of chronic bronchitis, bronchiolitis, and broncho-pulmonary infections in the production of emphysema has become more apparent. Elucidation of the etiology and pathogenesis of emphysema will depend upon the discovery of suitable experimental models, together with investigation of the nature of the lung and its response to injury.

-- Am. Rev. Resp. Dis. Absts.

SKIN DISEASES AND BURNS

- 980 Occupational Dermatoses in Ontario, 1955 to 1962. H. Blejer-Prieto.
Can. Med. Assn. J. 91, 319-324 (Aug. 15, 1964).

In Ontario in 1962, with a compensation-eligible labor force of 1,814,000, 10 out of each 1,000 workers received compensation for some occupational dermatosis, as defined here; 36 out of each 1,000 workers received compensation for some cause. Contact dermatitides made up 5,042 of 7,448 cases of occupational disease for which compensation or medical aid was paid in 1955 and 1956. In 8 years, 1955 to 1962 (inclusive), of a total of 534,557 "compensation only" cases, 7,023 received payment for contact dermatitis. The average yearly cost of compensation of a worker with a contact dermatitis was estimated at \$1,113; the annual total cost, at \$900,000. The average cost of an occupational dermatosis was \$368; the total cost \$10 million. Occupational dermatoses account for almost one-third of all compensation costs. The cost of "medical aid only" is excluded from all these estimates. In contact dermatitis, primary irritants (chemicals) are still the main causative agents. Skin sensitizers, the epoxy resins particularly, have become more prominent in recent years. There is no all-purpose barrier cream or protective clothing. Proper personal hygiene remains the most effective preventive agent in industry.

-- Author's abst.

- 981 Morphological Demonstration of Virus in Warts and Pointed Condylomas.
S. Zimmer, R. Bahnsch, and C. Grimm. Dermatol. Wochschr. 149, 490 (May 9, 1964).

An electron microscopic study of two verrucae planae juveniles, two verrucae vulgares, and six condylomata acuminata is presented. In the pointed and the usual warts distinct, spherical particles were observed, the diameter of which varied from 50 to 100 millimicrons. They were localized mainly in the nucleus. The pointed condyloma cells demonstrated virus-like particles which were 30 to 80 millimicrons in diameter and predominated in the cytoplasm.

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

- 982 Menthol Hypersensitivity. C.M. Papa and W. B. Shelley.
J. Am. Med. Assn. 189, 546-548 (Aug. 17, 1964).

Investigation of urticaria in a young woman disclosed a hypersensitivity to menthol. Innocent systemic or percutaneous exposure to this very common substance had also elicited "hot flashes" over several years, but recognition of the symptom as an urticarial equivalent required hindsight. Production of these clinical manifestations and of a histamine headache followed different provocative tests. This was associated with a diagnostic drop in the number of circulating basophil leukocytes.

-- Authors' abst.

- 983 Burned Epileptics. E.O. Maisles and B.V.M. Corps.
Lancet 1, 1298 (June 13, 1964).

A prospective study was carried out on all epileptics admitted to a burns unit during a period of 22 months. During this period there were 351 admissions to the unit for recent burns, of which 34 (about 10%) were the direct result of an epileptic seizure. Epileptics were involved in 14% of burns sustained at home. It was found that only 17% of the epileptics had an aura, suggesting that an aura might serve as a protective mechanism. There was a striking failure among the epileptics to use adequate fireguards in their homes.

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

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- 984 Gastric Burn After Fiberoptic Photography. J.F. Panish.
Gastroenterology 47, 85 (July, 1964).

This report describes the occurrence of a gastric ulcer after 35 mm. photography of a gastric tumor through the fibroscope. The lesion occurred twice following gastroscopy and photography and was found each time at exploratory laparotomy and gastrotomy. The microscopic picture differed from the usual benign ulcer in that there was coagulation necrosis in the base of the ulcer which resembled thermal injury. It is felt that this ulcer resulted from prolonged exposure of the gastric mucosa to an overheated metal tip of the fibroscope. Brief suggestions are reviewed as to how this complication may be avoided in the future.

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

CHEMICAL HAZARDS

- 985 Inhibition of Carcinogenesis. The Effect of Polycyclic Hydrocarbons and Related Compounds. H.L. Falk, P. Kotin, and Sandra Thompson.
Arch. Environmental Health 9, 169-179 (Aug. 1964).

The activity of carcinogenic hydrocarbons can be inhibited by closely related pure compounds or by crude mixtures including a spectrum of polycyclic aromatic hydrocarbons when both carcinogen and anticarcinogen are administered simultaneously. Though this effect is maximum when the agents are administered simultaneously, inhibition can also be observed when the anticarcinogen is administered several days before or after the administration of the carcinogen. Both the potency of the carcinogen and the degree of inhibition are significantly related to the vehicle used, the dose of the carcinogen, the ratio of the anticarcinogen to the carcinogen, and the structural relationship of the anticarcinogens to carcinogens. A single paradoxical observation in which phenanthrene was shown to enhance the carcinogenicity of dibenz (a,h)-anthracene (DBA) was made using triethylene glycol as vehicle. Finally, studies on anticarcinogenesis provide one additional tool for studying mechanisms of carcinogenesis. The mechanism of action, specifically, competition for receptors, be they -SH groups or others, offers a possible explanation for the observations in most of the authors' experiments. It appears inadequate, however, to explain the inhibition of benzo (a) pyrene (BaP) carcinogenesis by related aromatic polycyclic hydrocarbons at a molar ratio of anticarcinogen to carcinogen of less than one. There are 32 references.

-- Authors' summary

- 986 Phosgene Poisoning as an Example of Neuroparalytic Acute Pulmonary Edema: The Sympathetic Vasomotor Reflex Involved. F. Ivanhoe and F.H. Meyers.
Diseases of Chest 46, 211-218 (Aug. 1964).

Conditions of acute pulmonary edema are classified into two great groups, according to certain empirically useful anatomic, physiologic, pharmacologic, clinical and radiologic criteria. The hyperactive-sympathetic group is characterized by diffuse lung hyperemia, pulmonary hypertension, amelioration by sympatholytic agents, systemic hypertension and uniformly dense lung fields; it includes epinephrine toxicity and brainstem irritation. The hypoactive-sympathetic or neuroparalytic group is characterized by patchy lung hyperemia, pulmonary normo- or hypotension, non-amelioration by sympatholytic agents, systemic normo- or hypotension and generalized reticulogranular images in the lung fields; it includes vagal section, so-called high altitude pneumonia, hyaline membrane disease, explosive recompression, probably paroxysmal nocturnal dyspnea, and phosgene poisoning. The basic assumption of this classification, specifically in relation to the neuroparalytic group, is tested by direct assay of total electrical activity of the right cervical sympathetic nerve in the rabbit before and after a lethal dose of phosgene. An immediate abrupt marked drop in systemic sympathetic outflow which precedes the lung changes occurs in phosgene poisoning in the rabbit. Other data are marshalled to establish that the sympathetic neuroparalysis of phosgene poison-

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ing is reflex in nature and associated with vasoconstriction of the lung vascular bed, such pulmonary shutdown being essentially a post-capillary phenomenon. The autonomic sensorimotor negative feedback reflex thus identified as controlling the vascular dynamics of the lung is presented as coursing afferently with the vagus, synapsing at the bulbar reticular formation, and coursing efferently with the upper thoracic sympathetics. -- Authors' summary

- 987 Explosive Limits of Hydrogen Peroxide Vapor. J.M. Monger, et al.
J. Chem. Eng. Data 9, 119-124 (Jan. 1964).

The published vapor phase ignition limit of hydrogen peroxide water mixtures as function of temperature, pressure, and concentration was extended to lower and to higher pressures; the total available data now include pressure range from 0.1 psia to 1,000 psia; a correlation was derived which is in agreement with experimental data.

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

- 988 SO₂ Absorption in the Respiratory Tract. Studies on the Absorption in Rabbit. Its Dependence on Concentration and Breathing Phase. L.G. Strandberg.
Arch. Environmental Health 9, 160-166 (Aug. 1964).

It is not possible to establish definitely the reason for the discrepancies in the literature concerning the absorption of SO₂. It is clear, however, that the sampling technique is of great importance. Too great a deviation from the prevailing physiological conditions during breathing, for example, through taking an excessive number of air samples per unit time, may involve a drying out or a concentration of dissolved gases in the mucous membrane. This will inhibit further absorption and result in misleading values. With the sampling technique described in this paper the conditions during sampling correspond more or less to the prevailing physiological conditions. The inspiration samples can thus be used in the study of absorption in the upper respiratory tract up until the moment of sampling, while the expiration samples provide evidence of the composition of the alveolar air when the content was lowest. The absorption differences found at high and low SO₂ content in these experiments could not be explained, however, by differences in the sampling technique; nor could the large differences, in certain cases, between two experiments at the same concentration level. A possible explanation is that, at such low concentrations, the SO₂ may dissolve relatively slowly in water.

-- Cond. from author's comment

- 989 Fatal Sulfur Dioxide Inhalation. M. Galea.
Can. Med. Assn. J. 91, 345-347 (Aug. 15, 1964).

The following report concerns an unfortunate accident arising from accidental inhalation of sulfur dioxide fumes by two men for an interval of about 15 to 20 minutes in a pulp and paper plant. The first patient involved was a 45-year-old man who was a heavy smoker. Pulmonary function tests carried out 4 months after the accident revealed a satisfactory vital capacity of 86% (normal: 4.04 liters) but a delayed chronometric vital capacity and a prolonged expiratory phase. He also showed evidence of hyperventilation at rest and a ventilatory equivalent of 39 liters (normal: 25-35 liters), indicating marked respiratory fatigue. It was inferred that, while this patient would manifest no dyspnea at rest, his capacity for exertion would be markedly restricted. Further follow-up tests on this patient are being carried out. The second patient, 35 years of age, previously in excellent health, a non-smoker and non-drinker, was admitted complaining, like his partner, of slight ocular irritation and pain on deep breathing. His clinical condition was sufficiently satisfactory that he was discharged a few days later. Ten days thereafter he was readmitted complaining of dry, irritable and tiresome cough, dyspnea and a copious amount of mucus. Despite the administration of antibiotics, oxygen, corticoids, and later ouabain and aminophylline, his condition progressively deteriorated, necessitating a tracheotomy on the seventh day of his readmission. He died the following day, the total course of his illness from the date of the accident being 17 days. Autopsy findings, both gross and microscopic appeared to be unremarkable with the exception of those in the respiratory organs. There were no pleural adhesions or effusions. Both lungs were uniformly of striking marble appearance, voluminous, feathery and pillowy in consistency. Histological findings are described in detail. The fundamental lesion of extensive peribronchiolar fibrosis and bronchiolitis obliterans was presumably responsible for the acute emphysematous changes consistent with the immediate cause of death.

- 990 Multiple Carcinomata Following Ingestion of Medicinal Arsenic. S. Minkowitz.
Ann. Internal Med. 61, 296-299 (Aug. 1964).

A 21-year-old white male was admitted to the Kings County Hospital Center in 1947, because of a painless ulcer of his tongue that had first been noticed 6 weeks earlier. Past history revealed that he had had Sydenham's chorea between the ages of 7 and 16 and that he had taken 10 minims of undiluted Fowler's solution (1%, calculated as As_2O_3) daily between the ages of 7 and 10 on the advice of his family physician; a total dose of 7.8 g. of As_2O_3 as Fowler's solution over a 3-year period during his childhood. He finally bore about 3 dozen warty lesions scattered over the entire body. Many were present on the palms, soles, and trunk. Nine of his lesions were found to be individual primary epidermoid carcinomata. Two of these arose on mucosal surfaces. Seven of the biopsied lesions contained foci of Bowen's disease and one had the histologic characteristics of a keratoacanthoma. Fowler's solution, extensively used for innumerable disorders in the past, has been the medicinal form of arsenic most frequently incriminated in carcinogenesis in the literature. Even relatively minute doses of arsenicals have occasionally been reported to be followed by typical tumor formation. Widely ranging tissue levels of this element in similar lesions from different patients, and a considerable variation among different specimens taken from the same patient, have been found. The quantity of arsenic present in the tissues appears to bear no precise relationship to the dose and duration of the arsenical exposure and to the lapse of time after the exposure. It has been suggested that the presence of this element in a given specimen cannot be regarded as proof of its having an etiological relationship to the lesion at hand, just as its absence cannot justify its being excluded as a causative factor. A brief review of the pertinent literature is presented.

- 991 Carcinogenic Risk of Iron-Dextran. Editorial. Brit. Med. J. 1, 1583 (1964).

In 1960 Imferon, a complex of colloidal ferric hydroxide and low molecular weight dextran, was removed from the market following the demonstration of its carcinogenicity in rats, mice and hamsters. Because the experimental doses were large, it was felt that the risk of therapeutic doses was small and the drug was reintroduced. At that time Haddow felt that carcinogenicity could not be excluded until treated patients were followed up for 15 to 20 years. Haddow's recent demonstration of carcinogenicity in rabbits, followed for 4 years, emphasizes again that iron-induced tumors may not appear in man for another decade. Suggestive evidence that iron may be carcinogenic for man is found in the cause of hemochromatosis, in which there is a higher incidence of carcinoma of the liver than with other types of cirrhosis. Iron is readily removed from the injection site in the presence of anemia, and it is possible that this factor, coupled with the use of doses in the therapeutic range, and changing sites of inoculation, will prevent tumor development in man. Hemosiderosis of the liver with anemia is not accompanied by carcinoma. Whether Imferon can induce tumors in anemic animals remains to be determined. With our present state of knowledge Imferon, administered intramuscularly, should be given only for the treatment of resistant anemias when the immediate benefit outweighs possible future carcinogenicity, and for elderly patients when insufficient time would be likely to elapse for development of tumors even if the risks exist.

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

- 992 Toxicological and Biochemical Studies on Some Trialkylgermanium Compounds.
Jill E. Cremer and W.N. Aldridge. Brit. J. Ind. Med. 21, 214-217 (July, 1964).

The toxicity of triethyl- and tri-n-butyl-germanium acetates has been studied after their administration to rats. Both compounds had a low toxicity. Triethylgermanium had less than one-tenth of the toxicity of triethyltin or triethyllead and, unlike them, it did not appear to have a predominant action on the central nervous system. In biochemical studies *in vitro*, tri-n-butylgermanium was found to be more active than trimethyl-, triethyl- or tri-n-propyl-germanium in inhibiting both glucose oxidation by slices of rat brain cortex and processes involved in oxidative phosphorylation by rat liver mitochondria. All the germanium compounds tested had less than one-hundredth the activity of the corresponding trialkyltin and trialkyllead compounds.

-- Authors' abst.

IN RE: ABRAMS
November 1992

03121598

- 993 Distribution and Excretion of Methyl and Phenyl Mercury Salts. J.C. Gage.
Brit. J. Ind. Med. 21, 197-202 (July, 1964).

The distribution, metabolism, and excretion of phenyl mercury acetate (PMA) and of methyl mercury dicyanidamide (MMD) has been studied in the rat during the repeated subcutaneous administration of small doses over a period of 6 weeks, and for several weeks after a single dose. The results indicate that PMA is absorbed unchanged into the circulation from which it is mainly removed by the liver and kidneys where it is metabolized and excreted in the feces and urine mostly as inorganic mercury. During repeated dosage the rats reached a steady state by the end of the second week when excretion approximately balanced intake. No measurable amount of mercury was found in the central nervous system. After repeated dosage with MMD there is no clear indication of a steady state being reached after 6 weeks. There is an accumulation of organic mercury in all tissues, particularly in the red cells, and a progressive increase in the brain concentration. MMD is more slowly released from the tissues than PMA and the breakdown to inorganic mercury is low. The control of human exposure to alkyl and aryl mercury salts is considered in the light of these experimental observations. The recommendation that the concentration of alkyl mercury salts in the atmosphere should not exceed 0.01 mg./cu.m. seems justifiable, but there appears to be no reason to establish the figure for aryl mercury salts below the 0.1 mg./cu.m. recommended for inorganic mercury vapor. -- Author's abst.

- 994 Mercury Exposure in a Chlorine Plant. C.M. McGill, et al.
J. Occ. Med. 6, 335-337 (Aug. 1964).

Possible health hazards in a mercury-cell chlorine plant were studied by means of physical examinations, air analyses, and determinations of mercury in urine and blood. Under conditions prevailing in this plant there was no evidence of dangerous absorption of mercury. The analysis of blood for mercury did not yield any useful information in this study. A proper industrial medical program will provide adequate protection for workers exposed to mercury vapors. There are 10 references. -- Authors' summary

- 995 Industrial Hygiene Problems in the Production of Metallic Thallium and Its Salts.
T.S. Tikhova. Gigiena i Sanit. No. 2, 23-28 (1964).

The author conducted sanitary and hygienic investigations of industries producing thallium and its salts as well as crystals and alloys containing thallium. The comparative toxicity of $TlCl$, Tl_2CO_3 , and Tl_2SO_4 and the character of their action were studied. All the thallium compounds were found to be highly toxic. In cases of chronic thallium poisoning with a mildly marked clinical picture, various disturbances such as depression of enzymic activity (phosphotase), changed serum protein ratios, and a fall of SH-group content developed. No significant difference could be detected between the toxic effects produced by Tl_2SO_4 and those produced by Tl_2CO_3 . -- Public Health Eng. Absts.

- 996 Thorotrast Tumors of the Liver. G. Moebius and Karin Lembcke.
Zentr. Allgem. Pathol. Pathol. Anat. 105, 41-56 (Nov. 30, 1963).

Three new cases are reported in which primary liver malignancies developed in association with deposition of thorotrast (ThO_2) in the organ. The first case concerns a 63-year-old woman in whom a parenchymal cell carcinoma was found 26 years after intravenous injection of thorotrast for diagnostic studies of liver blood vessels. In the second case the 57-year-old male patient developed a hemangioendothelioma 19 years following thorotrast arteriography of the femoral artery. A similar procedure had been carried out in the third patient, a 49-year-old woman, 32 years before she was diagnosed as having a liver tumor, shown later to be a malignant endothelioma. Histopathologic studies conducted at autopsy are given in detail for all 3 subjects, and radioautography in one case demonstrated alpha-particle tracks emanating from deposits of ThO_2 in the liver. -- Cond. from Nuclear Sci. Absts.

03121599

- 997 Stannosis in Hearth Tanners. C.W.D. Cole, J.V.S.A. Davies, M.D. Kipling, and G.L. Ritchie. *Brit. J. Ind. Med.* 21, 235-241 (July, 1964).

There have been no published reports on stannosis in tanners. In this paper its occurrence in hearth tanners is described. In hearth tinning molten tin is poured into heated iron hollow-ware and smoothed over the internal surface with a cork bat. Ammonium chloride powder is used as a flux. It is considered that fumes arising in the process from the reaction of the flux and the tin caused a concentration of tin compounds in the atmosphere, and this was the mechanism by which stannosis was produced. The literature on stannosis and tinning is reviewed.

-- Authors' abst.

- 998 Use of Single Urine Samples for the Assessment of Lead Absorption. M.K.B. Molyneux. *Brit. J. Ind. Med.* 21, 203-209 (July, 1964).

The variation of urinary lead concentration (microgram lead/liter) of short-period samples has been studied in a group of men exposed to inorganic lead dust. The urinary specific gravity was used to correct for the variation in urinary volume, but the residual variation was still too great to assess the mean lead concentration. The effect of creatinine correction was studied as an alternative, but there is no statistical difference between either method of correction. It is shown that the variation of lead concentration is related to the time of day. The highest concentration occurs at approximately 4:00 P.M. in day workers. The diurnal rhythm of the lead excretion rate (microgram lead/minute) is described in day and night shift workers. The rate of excretion rises to a maximum at approximately 5:00 P.M. in the former but decreases in night workers, falling to a minimum at approximately 2:00 A.M. The rhythm is independent of immediate exposure and is thought to be physiological in origin. The plasma lead clearance is estimated at 1.4 ml. plasma per minute. This suggests that only a small proportion of plasma lead may be ultrafiltrable and that little lead is secreted by the tubules.

-- Author's abst.

- 999 An Early Sign of Lead Poisoning. W.G. Pearce and W.A. Reynard. *Brit. J. Ind. Med.* 21, 247 (July, 1964).

In the *New Engl. J. Med.* 269, 779 (Oct. 10, 1963), (See Abst. 362 IHD April, 1964) N. Sonkin described Retinal Stippling—A New Physical Sign in the Early Diagnosis of Lead Poisoning. In this paper Sonkin described stippling around the optic disc which consisted of glistening gray discrete spots that he considered to be lead pigment. This was noted to be present in 8 men who had been mixing various lead compounds for the manufacture of wire insulation. These deposits were present in all of the men even though urinary lead values in some of the men were not significant. Sonkin considered that this sign may be present before there is laboratory evidence of lead toxicity. In many industrial processes involving a lead hazard, the industrial medical officer has need of every possible sign that might assist him in drawing the most difficult line which separates lead absorption from lead intoxication. It was therefore felt that this new retinal sign should be investigated in a group of workmen known to be exposed to lead and, in varying degree, to be absorbing lead. In a factory manufacturing motor car bodies, approximately 800 men are working in an atmosphere containing finely divided solder dust. Every 2 months they receive a clinical examination. Each day a batch of men is examined, and these are selected at random from all parts of the factory. It was decided to examine the fundus of each man presenting in the daily batches until 100 had been examined, the other tests being continued collaterally. Of the 102 men examined, 11 showed evidence of lead absorption to a degree that caused them to be removed from the process. Not one of the 102 men examined, including the 11 with signs of excessive lead absorption, showed the discrete gray deposits around the optic disc described by Sonkin. Having failed to find retinal stippling in men known to be absorbing lead to a degree which tests at present in use cause us to grade as excessive, the authors cannot recommend that examination of the fundus has any place in the medical control of workmen exposed to lead absorption.

03121600

- 1000 Extracorporeal Dialysis in Methanol Poisoning. D.L. Cowen.
Ann. Internal Med. 61, 134 (July, 1964).

A patient with exceedingly high blood levels of methanol treated with artificial kidney dialysis is presented. It is noteworthy that blindness was reversed on two occasions without residual. The use of ethanol to slow the metabolism of methanol and the use of sodium bicarbonate to combat the acidosis of methanol poisoning, the more traditional therapy, is discussed.
-- J. Am. Med. Assn. References & Reviews

- 1001 Accidental Exposure to Ethylenimine and N-Ethylethylenimine Vapors.
J. Weightman and J.P. Hoyle. J. Am. Med. Assn. 189, 543-545 (Aug. 17, 1964).

Five college students in Lewisburg, Pa., were accidentally exposed to two highly toxic chemicals, ethylenimine and N-ethylethylenimine, for two hours in a poorly ventilated fraternity-house room. Their complaints, delayed in onset from 3 to 7 1/2 hours after exposure, were severe soreness of the throat, severe eye irritation, vomiting and coughing. Consistent clinical findings were conjunctivitis, upper and lower respiratory tract inflammation, transitory polycythemia, leukocytosis, eosinophilia, and albuminuria. Treatment included antihistamines, hydration, topical and systemic steroids, antibiotics, cough preparations, and enzyme therapy. All 5 students were free of symptoms within 6 months. -- Authors' abst.

- 1002 Salicylate Intoxication in Children—Experience With Peritoneal Dialysis and Alkalinization of the Urine. R.L. Summitt and J.N. Etteldorf. J. Pediat. 64, 803 (June, 1964).

Thirteen children with salicylate intoxication were studied. Seven patients were treated with intravenous fluids and alkali alone and six were treated with a combination of intravenous fluid and alkali and with intermittent peritoneal dialysis by means of 5% albumin in an iso-osmotic buffer. With full cognizance of its potential dangers, liberal amounts of sodium bicarbonate were used and no complications were encountered. As has been shown by others, sodium bicarbonate promoted renal excretion of salicylate. However, the combination approach was significantly more effective in removing salicylate from the body. The additional use of peritoneal dialysis is recommended in the treatment of those patients in whom more rapid removal of salicylate is desirable.
-- J. Am. Med. Assn. References & Reviews

- 1003 Acute Salicylate Poisoning in Adults. G.W. Beveridge, et al.
Lancet 1, 1406 (June 27, 1964).

The authors present their experience of the clinical and biochemical assessment of salicylate poisoning in adults with special reference to the indications for hemodialysis. In 208 patients, 3 of whom died, the initial treatment consisted of careful gastric lavage and a regime of intravenous fluids sufficient to maintain an alkaline urine with a flow of over 500 ml. per hour. Nine patients were considered, and 4 selected for hemodialysis. It is concluded that most patients respond to forced diuresis, but only by concurrent clinical and biochemical assessment can the patients requiring hemodialysis be selected. Deterioration in level of consciousness, hypotension, and serum salicylate values over 100/mg./100 ml. are grave signs.
-- J. Am. Med. Assn. References & Reviews

- 1004 Excretion of p-Nitrophenol and p-Aminophenol in the Urine of a Patient Exposed to Nitrobenzene.
M. Ikeda and A. Kita. Brit. J. Ind. Med. 21, 210-213 (July, 1964).

An account is given of a patient who had had chronic exposure to nitrobenzene and in whom the metabolites, p-nitrophenol and p-aminophenol, were present in the urine. A method of separative determination of these two substances in urine is described. -- Authors' abst.

03121601

- 1005 Metabolism of N, N'-Di(Acetoacetyl)-o-Tolidine. H.M.L. Dieteren.
Arch. Environmental Health 9, 167-168 (Aug. 1964).

This study was made in a chemical plant in which workers were exposed to the dye intermediate, N,N'-di(acetoacetyl)-o-tolidine. Analysis of the urine of these workers indicated that they excreted o-tolidine. The possibility of the presence of a metabolite of o-tolidine was left open. -- Author's summary

- 1006 Parathion Residue Poisoning Among Orchard Workers. T.H. Milby, F. Ottoboni, and H.W. Mitchell. J. Am. Med. Assn. 189, 351-356 (Aug. 3, 1964).

Following an outbreak of illness among peach harvesters, 186 peach orchard workers were studied in relation to pesticide application practices and fruit harvesting procedures representative of the orchards in which they worked. It was necessary first to establish a diagnosis of organic phosphate poisoning and then to associate observed illness with the intensity of parathion application. Information obtained revealed that, although parathion could easily be recovered from all elements of the orchard environment, it was not present in amounts sufficient to account for the observed illness. This inconsistency suggested the presence in the spray residue of a compound evolved from parathion alteration which was considerably more toxic than parathion, but identifiable by routine analytical procedures only as parathion. Paraoxon was considered a likely suspect and was postulated as a prime cause of the outbreak. -- Authors' abst.

- 1007 Relative Hepatotoxicity. Pentane, Trichloroethylene, Benzene, Carbon Tetrachloride. Z.T. Wirtschafter and M.W. Cronyn. Arch. Environmental Health 9, 180-185 (Aug. 1964).

Experimental data on the hepatotoxicity of 4 types of solvents were observed and recorded. The 4 selected were not within a homologous series, but were halogenated, unhalogenated, aromatic, and aliphatic hydrocarbons. The authors' purpose was to determine the relative hepatotoxicity of this heterogeneous group of organic chemicals. A relative order of hepatotoxicity on a molar basis was found to be: carbon tetrachloride > benzene = trichloroethylene > pentane. A new hypothesis is proposed to explain this relative order and degree of hepatotoxicity. -- J. Am. Med. Assn. References & Reviews

- 1008 Free Radical Mechanism for Solvent Toxicity. Z.T. Wirtschafter and M. W. Cronyn. Arch. Environmental Health 9, 186-191 (Aug. 1964).

A free radical mechanism is proposed for the initial mode of the reaction of hydrocarbons and halogenated hydrocarbons in the biological organism. This hypothesis is suggested by the metabolic products, relative toxicities, and chemical characteristics of these substances. Chain transfer constants are suggested as more appropriate indices of potential radical reactivity than are thermodynamic bond energies. There are 30 references. -- J. Am. Med. Assn. References & Reviews

- 1009 Poisoning in Man From Eating Poisonous Plants. Present Status in the United States: Preliminary Report. Shirley B. O'Leary. Arch. Environmental Health 9, 216-242 (Aug. 1964).

Plant poisons are among the world's most ancient (prussic acid from peach, ancient Egypt; henbane, aconite, conium, fungi were known to Meander of Colophon, 204-138 B.C.; Dioscorides, 40 B.C. to 90 A.D. knew opium, henbane, conium, aconite, and colchicum). The present series, based mainly on ingestion reports which did not always give data on symptoms or their absence, suggests the need for further information regarding plant toxicity to man. A number of plants were found, from reports to the National Clearing House for Poison Control Centers, to cause serious discomfort, requiring hospitalization, when taken

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internally, including such previously unsuspected species as bird of paradise (*Caesal-pina gilliesii*, not *Strelitzia*), the elephant ear group, and *Wisteria*. The danger of severe poisoning from plants varies according to such conditions as : degree of ripeness of the plant or part; quantity eaten; whether the hard coat of a plant seed has been cracked by chewing, softened by digestion, or pierced for bead-stringing, permitting release of the poison; whether the poison is then absorbed into the system; and age and general health of the victim. Special, inherited susceptibility and blood composition are sometimes important. Some plants usually cause severe vomiting and automatic removal of much of the poison. In other instances, hours or days may elapse before alarming symptoms appear, by which time a fatal amount of poison may have been absorbed (as sometimes happens with *Abrus precatorius*, *Ricinus communis*, and *Amanita phalloides*). The ability of birds to eat dangerous berries such as pokeweed is thought to be due to the fact that the seeds, where the poison is probably concentrated, are not digested. The paper contains two very long tables listing ingestions of plants, cases of plant poisoning and deaths in man in the United States. There are 29 references.

INDUSTRIAL DUSTS

- 1010 Dust in Card Rooms: A Continuing Problem in the Cotton-Spinning Industry.
C.H. Wood and S.A. Roach. *Brit. J. Ind. Med.* 21, 180-186 (July, 1964).

The results are given of environmental and clinical investigations in 4 card rooms where one of the latest systems of exhaust ventilation to control dust has been installed. The concentration of air-borne coarse dust particles, larger than 2mm., was reduced by between 80% and 90% around the carding engines. The card rooms consequently looked less dusty. However, the concentrations of medium and fine sized dust particles were not always reduced and were actually increased in some places. In one mill, when the control system had been running for 3 years, there was found to be no reduction in the prevalence of non-specific chest symptoms, and there was an increase in the number of those with chest tightness on Mondays, a symptom characteristic of byssinosis. Evidence is given of a similar failure to reduce the dust sufficiently in 3 other mills where the same exhaust system is installed. There is an urgent need to extend the limited investigations reported here to a larger number of mills. Meanwhile there is a continuing morbidity and mortality from byssinosis. Until work in card rooms has been made safe and proved to be so, it is necessary to have regular measurement of dust conditions and for the workers to have periodical medical examinations to enable managements to be advised about the hazards in their mills and advice to be given to the individuals affected by the dust.

-- Authors' abst.

- 1011 Endemic Byssinosis in an Egyptian Village. M.A. El Batawi and M. Hussein.
Brit. J. Ind. Med. 21, 231-234 (July, 1964).

Previous epidemiological surveys of flax byssinosis may have underestimated the incidence of permanent pulmonary disability by failing to reach those who have had to leave work. In the present study a representative sample of the inhabitants of a village where flax is processed both in the homes and in small plants was examined for byssinosis. The one in 5 random sample included a total of 190 male family heads living in the village. Dust exposure was evaluated. The study showed that 48.4% of the sample had byssinosis, and this included 92.5% of those working with flax in their homes and 75% of those working in plants. Permanent disability from byssinosis was present in 2.6% of the total sample and 12.1% of those exposed to dust for more than 20 years, whereas 75.8% of the latter group had symptoms of the earlier grades of byssinosis. It is concluded that prolonged exposure to flax dust did not result in a high incidence of permanent disability, and that this disability is not necessarily an eventual outcome in flax byssinosis. The absence of air pollution in the village may play a role in lowering the probability of workers becoming disabled by byssinosis in spite of the high prevalence of symptoms.

-- Authors' summary

03121603

1012 Exposure to Grain Dust. I. A Survey of the Effects.N. Williams, A. Skoulas, and J.E. Merriman. *J. Occ. Med.* 6, 319-329 (Aug. 1964).

A study of the incidence of respiratory and other symptoms associated with exposure to grain dust was made by interviewing a random sample of 502 country grain elevator agents in Saskatchewan, using a standard questionnaire. Fifty-four per cent had a history of one or more symptoms which they associated with exposure to dust, the commonest symptom being cough (34.9%) followed by wheezing (18.5%), breathlessness (15.5%), dermatitis (13.9%), and grain fever (6.1%). The influence of smoking on the incidence of respiratory symptoms is apparent. That allergy plays a role in the etiology of respiratory symptoms is suggested by the higher incidence of these symptoms in those with a past history of allergies. Dust exposures of the agents while doing some jobs can be very heavy. Dust analyses are reported. The results of the survey are discussed, and it is considered that there is a health hazard, primarily respiratory, which justifies further investigation. The clinical investigation of selected groups of these agents, with conclusions and suggestions for preventing severe symptoms are reported in Part II. There are 22 references.

--- Authors' summary

1013 Pulmonary Function Studies in Patients With Farmer's Lung. J. V. Williams.*Thorax* 18, 255-263 (Sept. 1963).

Sixteen patients with farmer's lung were studied; all had recovered from the acute illness and none had been in contact with moldy hay for 3 weeks. Twelve of the patients had persistent dyspnea and 3 of the 12 had bilateral diffuse reticulo-nodular shadows in the chest roentgenogram; all 12 had reduction of the diffusing capacity, measured by the carbon monoxide method. The ventilatory function was normal or only slightly impaired, and there was no evidence of airway obstruction. The static compliance of some patients was reduced, indicating that the lungs were stiffer than normal. There was oxygen desaturation of the arterial blood at rest and more so after exercise, but the saturation increased to 100% when pure oxygen was breathed. These findings are compatible with the diagnosis of "alveolar-capillary block syndrome", and because they are often present when the chest roentgenogram is normal, they are useful in the diagnosis of farmer's lung and in evaluating the degree of disability.

-- Am. Rev. Resp. Dis. Absts.

1014 Farmer's Lung. Thermophilic Actinomycetes as a Source of "Farmer's Lung Hay" Antigen.J. Pepys, et al. *Lancet* 2, 607-611 (Sept. 21, 1963).

The antigen of farmer's lung disease (FLH antigen) can now be distinguished from fungal antigens by immunoelectrophoresis. This has allowed clarification of some aspects of the previous reports of this group of workers. Extracts of moldy hay were tested for the presence of FLH antigen by agar-gel double diffusion and immunoelectrophoresis. FLH antigen was identified in hay after inoculation with mixed microbial suspensions from antigenically active hay, by inoculation, at pH 7.0, with mixed suspensions of pure cultures of thermophilic actinomycetes and by inoculation, at pH 7.0 with pure cultures of *Thermopolyspora polyspora* or with *Micromonospora vulgaris*. Inoculation with fungi only or with other actinomycetes did not produce FLH antigen. The richest source of FLH antigen yet found is *T. polyspora*, and inhalation of an extract of it produced symptoms of farmer's lung in susceptible people.

-- Am. Rev. Resp. Dis. Absts.

1015 Environmental Exposure of British Coal Miners. J.W.J. Fay and J.R. Ashford.*Arch. Environmental Health* 9, 144-159 (Aug. 1964).

The procedures for measuring dust concentrations and for assessing "time at risk" in the National Coal Board's Pneumoconiosis Field Research (PFR) are described. Individual dust exposures were calculated for each of the 30,000 men under observation at 25 selected collieries in Great Britain. The methods are illustrated by use of the data obtained at one colliery in the 4-year period between two successive radiological examinations of the population. The results emphasize the wide variations in cumulative dust exposures among men ostensibly working in the same general environment over the same period. These differences justify the detailed and complicated methods which are employed in the PFR for the assessment of individual exposures, as compared with alternative epidemiological procedures based upon the examination of groups of men.

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

- 1016 Pleural Calcification as a Sign of Asbestosis. J. Lawson.
Clin. Radiol. 14, 414-417 (Oct. 1963).

The usual chest roentgenographic abnormalities in asbestosis include: (1) pin-point mottling, (2) ground glass homogeneous veiling of mid-lung fields, (3) accentuation of lung markings, causing "wire mesh net" appearance, (4) shaggy outline of heart, and (5) pleural thickening in costophrenic angles. Recently, calcified pleural plaques have been identified in asbestos workers. Three cases are presented in which this entity was observed. Similarity is noted to the roentgenologic picture found in Karelia, Finland, where there are two anthophyllite-asbestos mines. Differences in pleural calcification incidence between reported series are ascribed to geographic variations in chemical and physical properties of asbestos.

-- Am. Rev. Resp. Dis. Absts.

- 1017 Prevalence of Pneumoconiosis in Cornish Kaolin Workers. G. Sheers.
Brit. J. Ind. Med. 21, 218-225 (July, 1964).

In 1961, 553 Cornish china clay workers had been exposed to kaolin dust for periods exceeding 5 years, and evidence of kaolinosis was seen in 48 (9%). No kaolinosis was found in men who had been exposed for less than 5 years. Workers in the more heavily-exposed jobs of milling, bagging, and loading showed a prevalence rising from 6% in those with between 5 and 15 years' exposure to 23% in those exposed for more than 15 years. Men who had been intermittently and less heavily exposed in the older, out-dated drying plants needed 25 years' exposure before reaching the highest prevalence of 17%. Massive fibrosis has been observed in two cases in the industry and also in two men who have left the industry. Six men needed anti-tuberculous chemotherapy, but none had a positive sputum. Preventive measures now include pre-employment chest examination but the problems of dust control have not yet been satisfactorily solved.

-- Authors' abst.

- 1018 Electron Microscopic Study of Certain Cellular Aspects of Pulmonary Fibroadenomatosis With Impairment of Diffusion. (Discussion of the Etiologic Role of Cobalt and Tungsten Carbide). A. Collet, et al. Rev. tuberc. (Paris) 27, 357-381 (April, 1963). French.

The development of an acute febrile respiratory episode in a 54-year-old patient with occupational exposure to cobalt and tungsten carbide dust led to the discovery of diffuse pulmonary abnormalities of an unusual type. After a brief remission dyspnea increased to a point which made all professional activity impossible. Functional studies revealed marked impairment of alveolar-capillary diffusion. Pulmonary biopsy showed the lesions to be histologically benign fibroadenomatosis. In view of electron-microscopic findings in the biopsy specimen, the writers have analyzed the morphologic anomalies of the alveolar-capillary wall and compared some of the special features in this case with those usually described in the course of malignant cellular processes.

-- Am. Rev. Resp. Dis. Absts.

- 1019 Hygienic Assessment of Vanadium-Bearing Slag. I. V. Roschin.
Gigiena i Sanit. No. 12, 23-30 (1963).

A complex study of the dust factor, an experimental investigation of the effect of dust on animals, and an examination of workers' health proved that possible development of pneumoconiosis hazards is due to the effect of dust formed by the grinding of vanadium-bearing slag. The slag-dust pneumoconiosis is characterized by moderate x-ray-detectable lung lesions, by pronounced changes in the mucous membrane of the upper respiratory tract, and by chronic bronchitis. The affection of the respiratory tract mucous membrane precedes the pneumoconiosis development. The author suggests that the maximum permissible concentration of vanadium-bearing slag dust in the air should be 4 mg. per cu.m. Data from industrial, hygienic, experimental, and clinical investigations served as hygienic background for the elaboration of a complex of preventive measures.

-- Public Health Eng. Absts.

03121605

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1020 Efficiency at Sorting Cards in Compressed Air. E.C. Poulton, M.J. Catton, and A. Carpenter. Brit. J. Ind. Med. 21, 242-245 (July, 1964).

At a site where compressed air was being used in the construction of a tunnel, 34 men sorted cards twice; once at normal atmospheric pressure and once at 3 1/2, 2 1/2, or 2 atmospheres absolute pressure. An additional 6 men sorted cards twice at normal atmospheric pressure. When the task was carried out for the first time, all the groups of men performing at raised pressure were found to yield a reliably greater proportion of very slow responses than the group of men performing at normal pressure. There was reliably more variability in timing at 3 1/2 and 2 1/2 atmospheres absolute than at normal pressure. At 3 1/2 atmospheres absolute the average performance was also reliably slower. When the task was carried out for the second time, exposure to 3 1/2 atmospheres absolute pressure had no reliable effect. Thus compressed air affected performance only while the task was being learned; it had little effect after practice. No reliable differences were found related to age, to length of experience in compressed air, or to the duration of the exposure to compressed air, which was never less than 10 minutes at 3 1/2 atmospheres absolute pressure.

-- Authors' abst.

- 1021 Evidence of Decompression Sickness During Flights at 20,000 to 24,000 Feet Above Base. D.H. LeMessurier and R. Baxter. Med. J. Australia 1, 188 (1964).

Evidence is presented to show that decompression sickness has been uncovered in 11 of 38 men flying a supercharged DC3 between 20,000 feet and 24,000 feet. Unusual symptoms not widely described at these altitudes, namely chest pains, both in flight and after, coupled with complaints of undue or unnatural fatigue, are believed to be associated with persons with a low initial altitude tolerance, or whose tolerance may have changed under repeated exposure. Complaints of undue fatigue or exhaustion may be indicative, on the other hand, of a person likely to suffer a decompression incident in the air, and if this idea can be confirmed, it may be of value in identifying and removing such persons before repeated or serious incidence occur.

-- Diseases of Chest Abst.

RADIOACTIVITY AND X-RADIATION

- 1022 A Radiologist Looks at Radiation Protection Procedures. L.H. Garland. Radiology 82, 963-971 (June, 1964).

The biological effects of radiation in man are reviewed with emphasis on effects on the gonads. Radiation protection of patients during diagnostic radiographic examinations is discussed. It is pointed out that surveys show that at least half the x-ray examinations in this country are performed by nonradiologists, while only radiologists are required to have training in radiation use and protection. The registration of x-ray machines and radiation sources is suggested as a possible protective measure.

-- Nuclear Sci. Absts.

- 1023 Radiation Control: Standardization Versus Freedom. R.F. Brown. Radiology 82, 972-976 (June, 1964).

The present status of radiation control of the physical standards of x-ray equipment and accessories used in the practice of medicine in the U.S. is reviewed. Proposals for state regulation of x-ray equipment and operators of such equipment are discussed.

-- Nuclear Sci. Absts.

- 1024 Sequelae of Radical Radiotherapy of Carcinoma of the Lung. S. Hellman, et al.
Radiology 82, 1055-1061 (June, 1964).

Survival data are presented for 132 patients with primary carcinoma of the lung treated by x-radiation for a total tumor dose of 5,000 to 6,000 r in 5 to 6 weeks. A second group of 24 patients treated with radical supervoltage radiation therapy followed by thoracotomy in 4 to 8 weeks is considered separately. Emphasis is placed on late complications and sequelae in the patients. It is concluded that aggressive radiotherapy for carcinoma of the lung can be administered without excessive morbidity. The combined radiation and surgical treatment seemed to augment survival.

-- Nuclear Sci. Absts.

- 1025 Jaundice After Halothane and Radiotherapy. J.W. Ashton, K.J. O'Connor, and G.L. Williams.
Brit. Med. J. 2, 811 (Sept. 28, 1963).

Three cases are reported in which acute liver injury developed after use of halothane (2-bromo-2-chloro-1, 1, 1-trifluoroethane) as an anesthetic during the intracavitary implantation of radium for treatment of uterine carcinoma. In view of these findings it is suggested that the combination of radium and halothane is more likely to cause liver damage than the administration of halothane alone.

-- Cond. from Nuclear Sci. Absts.

- 1026 Jaundice After Halothane and Radiotherapy. J.S.W. Chambers, P.F.J. Sewell, and H.B. Young.
Brit. Med. J. 1, 562 (Feb. 29, 1964).

It is suggested that the combination of radium treatment and halothane anesthesia is more likely to cause liver damage than the administration of halothane alone. A case history is reported in which the combination of repeated halothane administration, radium implantation, and hysterectomy were associated with the development of fatal massive necrosis of the liver. Histologic examination showed massive necrosis without any cellular proliferative or lymphocytic or histiocytic reaction. This case seems strikingly similar to an earlier one reported in which jaundice appeared the day after operation and radiotherapy and was associated with massive necrosis of the liver. (See the previous abstract). -- Cond. from Nuclear Sci. Absts.

- 1027 Leakage Radiation Through Lead Glass in Fluoroscopic Screen Assemblies.
E.D. Trout and J.P. Kelley. Radiology 82, 977-985 (June, 1964).

The recommendations of the National Committee on Radiation Protection and Measurements (NCRPM) concerning the lead equivalent of lead glass over fluoroscopic screens are discussed in terms of maximum permissible radiation doses to the lens of the eye. The difficulties encountered in measuring radiation above a fluoroscopic screen and the contribution of scattered radiation to the total dose are discussed. The radiation transmitted through lead sheets of thicknesses in the range of the recommended lead equivalents was measured in an effort to bring into a single reference information relative to the transmitted radiation through a fluoroscopic screen. The measurements were made with the chamber at a position where the eye would usually be when using a fluoroscopic screen assembly. Data were taken with kilovoltages from 100 to 150 kvp with no phantom and with a unit density phantom of up to 8-inch thickness. The lead glass was removed from the screen frame and the lead sheet inserted in its place. The data may be used to calculate the dose to the eye for various conditions of operation and workload when the fluoroscopic equipment system complies with the recommendations of the NCRPM as stated in Handbook 76. It is concluded that the NCRPM recommendations assure adequate protection for the eye of the operator using fluoroscopic equipment. -- Nuclear Sci. Absts.

- 1028 Leukemia Following Irradiation. F.W. Gunz and H.R. Atkinson.
Radiology 82, 1067-1071 (June, 1964).

The world literature on radiation leukemogenesis is reviewed for evidence of the relation between the radiation dose and leukemia induction. It is pointed out that there is no decisive evidence of a threshold dose for leukemia induction. It is suggested that age, radiation dose size, dose rate, the degree of fractionation may all affect leukemogenesis. It is concluded that there is insufficient evidence to assess the precise extent of leukemia danger from medical radiation. Criteria for the medical use of radiation are discussed.

-- Nuclear Sci. Absts.

- 1029 Skin Decontamination. H. Scheel. Kernenergie 7, 197-203 (April, 1964). German.

Radiation injuries from adsorption of radioisotopes on the skin are considered. Mechanisms for percutaneous sorption of radioisotopes are described. Protection of skin from contamination and the general principles of skin decontamination are discussed. Uses of soap, complex formers (such as EDTA), titanium dioxide, potassium permanganate, and acids as decontamination agents are described. There are 55 references.

-- Nuclear Sci. Absts.

- 1030 Safe Procedures in Radiation. N. Simon.
J. Oklahoma State Med. Assn. 56, 425-430 (Sept. 1963).

Radiation hygiene applicable to the practice of radiology for diagnostic and therapeutic purposes are discussed. Evidence relating to the possible leukemogenic action of radiation is reviewed with reference to the increase in leukemia incidence in American radiologists, leukemia incidence in patients treated with radiotherapy for arthritis, leukemia incidence in survivors of atomic bombing, leukemia incidence in children irradiated for enlargement of the thymus, and leukemia incidence in children irradiated in utero during pelvimetry. It is concluded that leukemia is induced by radiation at high doses, but not necessarily at low doses. No increase in leukemia was found in the survivors of radium-treated cancer of the cervix, which suggests that the distribution of radiation in the body may be an important factor in leukemogenesis. Doses of radiation received in the diagnostic use of x-rays are too low to account for a discernible increase in the incidence of leukemia; however, there is no apparent threshold below which mutations do not occur. For this reason the physician should protect the gonads of young individuals from radiation.

-- Cond. from Nuclear Sci. Absts.

- 1031 Current Objectives in Bioastronautics and Aerospace Medicine. B.A. Strickland, Jr.
Military Med. 129, 33-37 (Jan. 1964).

Some problems in aerospace medicine under study by the Air Force are discussed, including protection against radiation fields in outer space and against some effects of nuclear explosions. One problem of radiobiology considered is radiation injury that can be produced by various sources, especially from ambient space radiation such as that encountered in the Van Allen belts. The problem of flash blindness is discussed with reference to the hypothetical situation of a pilot flying a high-performance vehicle who is suddenly confronted with a nuclear detonation in his direct line of vision. It is concluded that considerable additional work will be required to develop a fool proof, standardized system for eye and vision protection. Also considered are aerospace problems concerning weightlessness, deceleration, recycling metabolic waste products, effect of drugs on astronaut performance, and handling of rocket fuels.

-- Nuclear Sci. Absts.

- 1032 Thorotrast-Induced Cholangioma With Hypercalcemia as a Prominent Feature.
F. Bekheit, et al. J. Egypt. Med. Assn. 46, 63-77 (1963).

A case history is described of a 50-year-old man who developed a pain in the right abdomen and who, upon radiologic examination of this region, revealed opacities of unusual type in the liver area. This history indicated an injection of thorotrast 26 years earlier for hepatosplenography. The patient died after an exploratory laparotomy which revealed tumor-like masses in the liver. Post mortem examination showed these whitish masses, about 5 cm. in diameter, to be composed of dense fibrous tissue. X-ray diffraction of ashed tissue showed the presence of calcium thorate and calcium thorophosphate in addition to thorium dioxide. The literature relating to thorotrast-induced tumors and the nature of thorium-emitted radiation are discussed.

-- Cond. from Nuclear Sci. Absts.

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PREVENTIVE ENGINEERING

- 1033 Chemical Handling, Storing, Transporting and Processing. W.H. Melvin.
J. Am. Soc. Safety Eng. 9, 15-19 (Aug. 1964).

Accidents in chemical plants and chemical processes occur only when someone makes an error, a piece of equipment fails or some material believed to be safe proves to be dangerous. Each safety engineer should determine what chemicals are used, stored, transported, handled or processed by his company and the hazards associated therewith along with the precautionary measures necessary. Rigid rules should be formulated, distributed and enforced based on the characteristics of the materials involved. No substance should be considered harmless under all circumstances of handling and use. Compatibility charts should be prepared for use by storage and operating personnel to avoid accidental combining. Adequate records should be established so that materials do not exceed their shelf life and become hazardous for this reason. Operations should be studied to determine what hazards are likely to develop due to operations. Operations manuals should be prepared and thoroughly checked by the Safety Department for adequacy. Quantity limits should be established for sensitive or toxic materials and personnel limits established for operations or locations involving sensitive or toxic materials in order that the least number of persons will be exposed to the least amount of material. Provide for personnel training. Ascertain that employees know hazards of materials handled and necessary precautionary measures. Emphasize necessity for following established procedures without variation. Retrain periodically as routine and special as corrective measure.

- 1034 Electrical Hazards in Fighting Fires. Anon.
Safety Maintenance 128, 32-34 (Sept. 1964).

Firemen are frequently exposed to danger from electricity during fire fighting operations. They are not expected to be electricians nevertheless, every fireman should know how to protect himself from the dangers of electricity when fire fighting or rescue work involves possible exposure to electrical equipment or circuits. Fires in energized electrical equipment present a condition in which the use of a fire stream may expose the nozzle operator and other firemen on the hose line to electrical shock. Numerous tests have been conducted on this subject and from these tests certain facts have been deduced. These are: (1) A stream of water will carry current back to the nozzle. This current may be sufficient to injure or kill a person. (2) The amount of current reaching the nozzle will depend upon: (a) The voltage of the wire or device. (b) The distance from the nozzle to the electrically charged line or device. (c) The purity of the water in the stream. (d) The size of the stream. (e) Whether the stream is solid or broken. The application of hose streams on electrical equipment and wires should be avoided whenever possible. Nevertheless, in fire fighting operations hose streams must frequently be used in the vicinity of electrical circuits. Therefore, certain procedures are suggested to minimize the hazard. For ordinary lighting wires, with voltage of 120 volts to ground, any type of nozzle can be used within a few inches of the charged wire without endangering the fireman. The distance at which a straight stream nozzle can be held without discomfort is 3 to 4 feet from a wire carrying 550 volts. It is well for firemen to consider every wire as one carrying high voltage because of the possibility of contact or crosses with high voltage wiring. A table gives the minimum distances between straight stream nozzles and electrical wire or equipment carrying voltages higher than 600 volts to avoid danger of fatal shock to firemen at the nozzle or on the hose line.

- 1035 Design and Evaluation of a Ventilated Garment for Use in Temperatures up to 200°C.
G.W. Crockford and R.F. Hellon. Brit. J. Ind. Med. 21, 187-196 (July, 1964).

The protection of personnel against high air and radiant temperatures is a problem that has been confronting industry for many years now, and for many industrial situations it still has not been solved. The experiments reported here were intended to determine the most suitable form of insulation for a hot entry suit for use primarily in furnace wrecking where mean radiant temperatures of 200°C. (392°F.) are met and where heat-reflecting garments are unsuitable

due to the rapid deterioration of the reflecting surface. From a preliminary consideration of the problem it was concluded that a ventilated garment was required and that conventional ventilated garments in which air is induced to flow parallel to the body surfaces (axial ventilation) are basically unsound in design as the air is not utilized for the transfer of heat in the most efficient manner. A new form of ventilation was therefore developed in which air flows out through a permeable suit (radial ventilation). This form of ventilation produces what is called dynamic insulation, and this method of insulation, when compared with two alternative methods on a physical model, was found to be very effective. The model experiments were confirmed by comparative trials of 3 ventilated suits each using one of 3 different forms of insulation thought to be suitable for use in heat-protective clothing. Physiological measurements made on the subjects and physical measurement made on the suits confirmed that dynamic insulation is the most suitable insulation for a hot entry suit for furnace wrecking. With the air flow used in these experiments, dynamic insulation had a thermal conductance one-fifth that of conventional static insulating, and sweat losses and oral temperature rises were reduced by one-third and one-half respectively.

--- Authors' abst.

COMMUNITY AIR HYGIENE

- 1036 Maintenance of Air Quality Through Performance Standards. E. J. Cassell.
J. Occ. Med. 6, 330-334 (Aug. 1964).

The difficulties inherent in conventional air quality standards as exemplified by the California standards have been discussed. They are: (1) Present evidence relating specific pollutant levels to specific effects is inadequate. (2) They indicate a problem already present rather than prevent the problem. (3) A number of major technical problems are associated with their use. (4) They attempt to define in individual terms a chemically dynamic situation. (5) They are not related to the other interrelated problems of industrialization and urbanization. The concepts of the air resource, air performance standards, process emission rates, and zoning principles necessary to air pollution control are presented. The arguments in favor of air pollution zoning are advanced.

-- Author's summary

- 1037 New Devices Trap Exhaust Gases. Anon.
Am. Soc. Civil Eng., Sanitary Eng. Div. News 90, Pt. 2, 36-7 (Aug. 1964).

Faster progress in the continuing battle against air pollution from automotive exhaust gases will result from two new research developments that promise to help solve the problem of how to obtain representative samples of exhaust gases. Exhaust samples are essential for basic studies underway at the Bureau of Mines Petroleum Research Center, Bartlesville, Oklahoma, to identify and control harmful substances issuing from the tailpipes of automobiles, trucks, and buses. However, fluctuations in the speed at which gases exhaust have made it difficult to draw off large samples from a laboratory test engine at a constant rate—say, one-thousandth of the total exhaust volume. This inability to obtain truly representative samples has hindered research. Two new methods for overcoming this obstacle are now under development. One method varies the sampling rate to correspond with exhaust velocity changes. Exhaust velocity is a function of engine speed, and engine speed is reflected in the air taken in by the carburetor. This sampling mechanism uses a device to monitor the air intake. When the intake changes, the sampling automatically adjusts to compensate. The other approach consists of supplementing the flow of exhaust gas so that its speed is constant as it passes the sampling point. This device draws the exhaust gas, after it leaves the tailpipe, through a blower running at a fixed velocity. When the exhaust begins to slow down, pressure inside the blower drops sucking air in and thus maintaining the flow at a constant speed. Later, when the samples come up for analysis, chemical procedures make allowances for the air content. The second method, although simpler than the first, is less accurate. The Bureau is still refining both techniques to improve their sensitivity.

- 1038 Application of Acoustics in Air Pollution Problems. J. C. F. Chow.
J. Sanit. Eng. Div., Proc. Am. Soc. Civil Engrs. 90, Pt. 1, 59-75 (Aug. 1964).

A (mathematical) study is made of the particle displacement and the attenuation in an acoustic field with suspended particles to provide the theoretical basis for the experimental determination of the size and concentration of the particles in air pollution. Special attention is given to the case of small particles for which the effect of the surface tension is not negligible. Both the particles and the surrounding medium are considered to be viscous and thermal conducting. The particles are allowed to execute large translational motion and to undergo a small deformation from a spherical shape. The effect of surface tension is found to be important in the suspension of gaseous bubbles in liquid for small particles and is negligible in the case of a gaseous medium containing liquid particles. The explicit forms for particle displacement and attenuation are given for the case which is applicable to a gas containing liquid and solid particles. The calculations based on the theoretical attenuation are compared with the experimental results of Zink and Delsasso and good agreement is found. The result shows that a pollution counter using the acoustic properties could be designed to determine the size and concentration of dusty particles in air pollution problems.

-- Author's synopsis

MANAGEMENTS ASPECTS

- 1039 Relationship of Personnel Department to the Medical Department—The Personnel Director.
A. V. Engel. Arch Environmental Health 9, 243-246 (Aug. 1964).

The necessity for having a clearly written medical policy statement which should include the company's concept of its occupational health program, objectives, principles, and responsibilities of the medical director and his department and seeing to it that these things are understood by the organization is stressed. The necessity of giving full managerial support to adequately staffing the medical department, in both quantity and quality is also important. Providing the kind of working quarters, related facilities, and working conditions that will foster the attainment of objectives is desirable. The relationship between the medical department, employees and supervisors, and the employees' personal physicians should stay within the scope of company policy. Keeping all medical personnel on the team and informed currently on broad company problems, objectives, and policies is necessary. Encouragement of professional medical personnel to keep up to date in their field of occupational medicine is a must.

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

ACCIDENTS AND PREVENTION

- 1040 The Neurological Sequelae of Electrical Injury. J. Silversides.
Can. Med. Assn. J. 91, 195-204 (Aug. 1, 1964).

Electricity is a potentially very dangerous commodity. Community safeguards, however, result in remarkably efficient control of this hazard. Mortality figures appear to be small and constant. No satisfactory morbidity figures are available with regard to general and neurological complications in non-fatal cases. Study of relevant features of such electrical phenomena as voltage level, resistance factors, current pathway, current diffusion and grounding reveals many difficulties in reconstruction of the sequence of events involved in these injuries. These features underline our frequent inability to understand the mechanisms of initia-

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tion of unconsciousness and even of differentiation between death by cardiac arrest and death by respiratory paralysis. Fourteen cases of electrical injury with a variety of neurological complications and sequelae are discussed, and the findings in these cases are compared with those of other observers. An attempt is made to present a comprehensive picture of immediate, secondary and late neurological effects, and to illustrate some of the pathological findings in electrocution material. There are 14 references. -- Author's abst.

- 1041 Coal Mine Disasters: Frequency by Month. R. F. Boyer.
Science 144, 1447-1449 (June 19, 1964).

Major coal mine disasters (5 or more fatalities per accident) in the United States over the past 150 years have tended to occur primarily in the winter months from November through April. Minor accidents (zero to four fatalities per accident) occur at a fairly uniform rate throughout the year. This peak for major disasters is ascribed to effect of barometric minima on the methane content of mine air, to the effect of dry polar air masses in reducing the moisture content of coal dust, and, possibly, to cyclic fatigue of rock structures from cycling barometric pressure. Obvious safety practices are suggested. -- Author's abst.

- 1042 Creative Problem Solving: Its Application to Accident Prevention. E. D. Heath.
J. Am. Soc. Safety Eng. 9, 9-14 (Aug. 1964).

The subject is discussed under the following subheadings: Creative problem solving, the creative process defined, brainstorming, and the Gordon technique. Creative problem solving is being used more and more in the scientific and the business world. It is difficult to read extensively in any publications medium without coming across one or more references to its application. The author gives several examples. Quite often there is a tendency to think we have the answer to a problem, when we may have only an answer—and perhaps not the better one at that. Almost anyone can perceive more freely without a priori expectations about what ought to be there, or what must be there, or what has always been there. There is no simple solution to a complex problem. There must be a total solution if the total problem is to be solved. Accordingly, it is not suggested that a few creativity sessions are going to solve the total accident problem. But the application of creative problem solving techniques on a broad scale will bring about ideas, the implementation of which will result in improved accident prevention programming.

- 1043 Do Plant Safety Committees Serve a Useful Purpose? British Safety Officer Says No!
N. C. Harvey. J. Am. Soc. Safety Eng. 9, 17-20 (May, 1964).

This article commenced by laying emphasis on the vital importance of managements' desire to provide for the safety of their employees. Without this desire nothing is ever going to be achieved, and the worsening of the overall accident situation during the last few years might suggest that much more needs to be done in this direction. This wish might, for instance, be stimulated by an all-out drive to impress management with the facts of industrial accident costs, in this way showing that investment in safety has a very real financial return. By whatever means this may be brought about, the author has hoped to show that the type of organization needed to give effect to an accident prevention policy is unimportant compared with the spirit that must inspire it, and that it is both logical and desirable that whatever organization exists for the attainment of business ends, insofar as it is successful, is also the most appropriate for promoting the safety of employees. Nine references are given.

-- Author's conclusion

- 1044 How Well Do Gloves Protect Hands Against Solvents? Tests at Argonne National Laboratory Reveal Some Surprising Results. D. R. McFee.
J. Am. Soc. Safety Eng. 9, 11-16 (May, 1964).

Even though a more sophisticated approach could have been made to the problem and a more rigorously accurate methodology adopted, results of the described tests were adequate for the information desired. The thin disposable gloves used in the tests were found unaccept-

able for protection against any of the test solvents except water. Test gloves made of natural rubber, neoprene, buna-N, and polyvinyl chloride were found too permeable with respect to most of the solvents except water. Samples of butyl rubber gloves proved best in over-all performance because they exhibited the least in the way of unfavorable effects from the solvents. They were found to be quite permeable to 1, 1, 1-trichloroethane and toluene, but less permeable than many of the other specimens. The polyvinyl alcohol samples turned in the next best performance inasmuch as they showed relatively few deficiencies caused by the solvents. They demonstrated a much greater resistance to penetration by trichloroethane and toluene than did the butyl rubber gloves. However, they were rated unacceptable for water and acetone. Only the gloves made of butyl rubber and polyvinyl alcohol were deemed acceptable for protection against allyl glycidyl ether and phenyl glycidyl ether. The test findings also lead to a corollary conclusion regarding the use of gloves as protection against solvents. This conclusion stemmed from a comparison of data given in the literature of several glove manufacturers and test results. Numerous discrepancies were regarded as pointing to a need for improved standards and use of specifications consistent with them with respect to permeability to solvents. Lacking accurate standardized specifications or discrimination based on such specifications, purchasers and users are too often at a loss to make a reliable choice between gloves.

-- Author's summary

MISCELLANEOUS

- 1045 Here's How Petrochemical Companies Dispose of Wastes. H. S. Pylant.
Oil Gas J. 61, 118-120 (Nov. 4, 1963).

The petrochemical plant of Dow Chemical Co. at Bay City, Michigan, produces ethylene, propylene, butadiene, and crude benzene by cracking gasoline and kerosene obtained from a nearby company-owned refinery. As a result of these operations, many waste products are formed that cannot be released into the neighboring Saginaw River without prior extensive treating. To satisfy stringent requirements of the Michigan Water Resources Commission, an elaborate waste-treating plant was designed and put into operation at a cost of more than \$500,000. The system is satisfactorily meeting requirements and when planned modifications are completed it will do an even better job. The plant operations are described.

-- Public Health Eng. Absts.

- 1046 How Monsanto Handles Its Petrochemical Wastes. R. D. Sadow.
Wastes Eng. 34, 640-644 (Dec. 1963).

Wastes originating from the cracking of light crude oils, separation and handling of hydrocarbon streams, and phenol-acetone production and minor amounts of cooling waters and domestic wash waters are effectively being handled at Monsanto Chemical Company's new chemical complex near Alvin, Texas. Two completely different processes, high-pressure deep-well injection and trickling filter-activated sludge treatment, are successfully being employed to eliminate petrochemical wastes pollution. There are 28 references.

-- Public Health Eng. Absts.

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