

IN RE: ABRAMS November 1992



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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

See Abst. No. 534 for information on the health and sociomedical problems related to the employment of women.

Information on the use of contact lenses in industry is given in Abst. No. 541.

Consult Abst. No. 548 in regard to tenosynovitis in women in industry.

For a report on golf-course dermatitis due to thiram fungicide, see Abst. No. 559

Abst. No. 560 is concerned with skin carcinoma in the process of "Stanford jointing."

Data on lung cancer in a fluorspar mining community are given in Abst. Nos. 562 and 563.

Abst. No. 572 discusses renal tubular malfunction and pulmonary emphysema in cadmium pigment workers.

Lasers as tools for embryology and cytology is the title of Abst. No. 594.

See Abst. No. 598 for a description of radiation safety in industry.

For sampling methods for oil mist in industry see Abst. No. 606.

The medical problems of wearing a coal miner's safety helmet are reported on in Abst. No. 611.

FOUNDATION FACTS

NEW MEMBERS: The Foundation is pleased to announce the names of two new members: Merck & Company, Inc. and National Ready Mixed Concrete Association.

THE PRESIDENT'S CONFERENCE ON OCCUPATIONAL SAFETY will be held in Washington, D.C., June 23-25. The Workshop dealing with Leadership in the Control of Environmental Hazards will be moderated by Dr. Robert T. P. deTreville, Managing Director, IHF. The scope of this workshop includes a general exposition of the kinds and extent of environmental hazards in workplaces and surrounding areas, and Panelists will discuss environmental hazard control programs today and the probable long-range situation. The opening paper in the session deals with Today's Problems and will be presented by Dr. Thomas S. Ely, Assistant Professor of Preventive Medicine and Director of the Occupational Medicine Program at the University of Rochester. The approaches of industrial organizations and regulatory bodies and the work of American research organizations will also be covered. Others participating in this workshop who are affiliated with IHF are: Dr. John A. Zapp, Jr. Director of Haskell Laboratory, E. I. duPont de Nemours & Co. and a member of the IHF Board of Trustees and Chem-Tox Committee who will discuss Product Safety. Dr. Herbert E. Stokinger, Chief Toxicologist, Public Health Service, Division of Special Health Services, also a member of the IHF Chem-Tox Committee will present Research and Regulatory Approaches. Dr. Stokinger, who is also chairman of the American Conference of Governmental Industrial Hygienists Threshold Limit Values Committee, will talk at the 29th Annual Meeting of IHF on "What Industry Can Contribute to the Development of Threshold Limit Values."

DR. PAUL GROSS, the Foundation's research pathologist, presented a paper on "Ozone Toxicity Studies: Destruction of Alveolar Septa—A Precursor of Emphysema?" at the 7th Aspen Conference at Aspen, Colorado, June 10-13; he also speaks at the 57th Annual Meeting of the Air Pollution Control Association in Houston, Texas, June 21-25 on "Anent The Relationship of Chronic Lung Disease to Community Type Air Pollution."

MR. ANDREW TREVOR JONES, Scientific Officer, Division of Occupational Health, New South Wales Department of Public Health, Australia, visited this country under training grants provided by the Agency for International Development, World Health Organization, and other international groups. The itinerary for his 8-day Pittsburgh visit was arranged through the Foundation. Mr. Jones was particularly interested in methods of assessment, instrumentation, and control of hazards.

NEW REPRINT available from the Foundation upon request. "Pulmonary Adenoma: The Fibrogenic Potential of Its Epithelium," by Paul Gross, M.D. and William Poel, Ph.D. Arch. Pathol. 77, 424-428 (April, 1964).

29th ANNUAL MEETING

October 21-22, 1964

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E. K. DAVISON ELECTED BOARD CHAIRMANANDDR. ANNA M. BAETJER AND ANDREW KALMYKOW ELECTED VICE CHAIRMEN

At the Board of Trustees meeting on May 8, Mr. E. K. Davison, President, Davison Sand and Gravel Company, was elected Chairman of the Board of Trustees of Industrial Hygiene Foundation. Mr. Davison succeeds Dr. Blaine B. Wescott, President of MPC Corporation, who has served as Chairman since 1961. At the same time, Dr. Anna M. Baetjer, Professor of Environmental Medicine at the Johns Hopkins School of Hygiene and Public Health, Baltimore, and Mr. Andrew Kalmykow, Manager of the Casualty Department of the Association of Casualty and Surety Companies, were elected Vice Chairmen of the Board of Trustees.



Mr. Davison has been a member of the Board of Trustees since 1958, and has served in the capacity of Secretary and Vice Chairman of the Board recently. He represented his company at the founding meeting of IHF in 1935.

Mr. Davison received his B.S. degree in Engineering in 1932 and his degree in Civil Engineering in 1933 from Princeton University. He has been with the Davison Sand and Gravel Company since his college graduation as Plant Superintendent, Chief Engineer, and President since 1956.

He is a member of the American Society of Civil Engineers; American Society for Testing Materials; and the American Concrete Institute. He is a former director of the National Ready Mixed Concrete Association; past president and director for life of the National Sand and Gravel Association; past president and director of The Pittsburgh Coal Exchange (an organization for the promotion of commercial navigation of the rivers of the Pittsburgh area); director of the National Waterways Conference; and former councilman and presently in his second term as Mayor of the Borough of Fox Chapel, Pennsylvania.

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DR. ANNA M. BAETJER, Professor, Department of Environmental Medicine, School of Hygiene & Public Health, Johns Hopkins University, has been associated with IHF since 1949; as a member of the Chemical-Toxicological Committee until 1953; Chairman of that Committee until 1961; and a member of the Board of Trustees since 1958.

Dr. Baetjer received her B.A. degree from Wellesley College; her Sc.D. from Johns Hopkins; and an Honorary D.P.H. degree from Woman's Medical College of Pennsylvania. She is on the Editorial Board of the American Journal of Hygiene and the Archives of Environmental Health, and is serving as Consultant to the Department of the Army, Office of the Surgeon General, Preventive Medicine Division, Army Environmental Hygiene Agency. Dr. Baetjer is a member of the following organizations: Radiation Control Advisory Board of the Maryland State Health Department; Commission on Environmental Hygiene, Armed Forces Epidemiological Board; Permanent Commission and International Association on Occupational Health; and the Committee on Sanitary Engineering and Environment, and is also Chairman of the Subcommittee on Atmospheric and Industrial Hygiene of the

National Research Council, Division of Medical Sciences. She is affiliated with the following professional and scientific societies: American Physiological Society; American Public Health Association; American Conference of Governmental Industrial Hygienists; and American Industrial Hygiene Association which presented her the 1964 Cummings Memorial Award. Dr. Baetjer is certified in Toxicological Aspects of Industrial Hygiene by the American Board of Industrial Hygiene. She has also authored various chapters and research papers in scientific journals.



MR. ANDREW KALMYKOW, Manager, Casualty Department, Association of Casualty and Surety Companies, also has a long affiliation with IHF. He has been a member of the Legal Committee since 1944; Secretary of this Committee since 1956; and a Member of the Board of Trustees since 1958.

Mr. Kalmykow was graduated from Columbia University College and Law School. For many years he specialized in insurance law, particularly workmen's compensation and occupational diseases, and has appeared before and been consulted by many Study Commissions and Legislative and other interested groups. Mr. Kalmykow is a member of the New York Bar, the Advisory Committee on Workmen's Compensation of the U.S. Department of Labor, Advisory Committee which revised Pennsylvania Workmen's Compensation Law in 1955, the Director's Advisory Committee of the Pennsylvania Bureau of Vocational Rehabilitation, and the Advisory Council of Association of Rehabilitation Centers. He is also a member of the Workmen's Compensation Committee, Atomic Industrial Forum and Workmen's Compensation Committee of the Council of State Governments which

has prepared a model workmen's compensation law. He has served on the Committee on Uniform Laws and Ordinances of American Standards Association.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

521 American Conference on Occupational Medicine.

The 4th International American Conference on Occupational Medicine will meet at the Fontainebleau Hotel, Miami, Florida, August 24-27, 1964. Papers are solicited for new developments in the fields of air pollution, water pollution, pesticides, ionizing and microwave radiation, newer diseases of the lungs, blood dyscrasias, etc. The conference is sponsored by the University of Miami School of Medicine with the cooperation of the University of Puerto Rico School of Medicine. Further information may be obtained from Dr. William B. Deichmann, University of Miami, School of Medicine, Coral Gables 34, Florida.
Am. Ind. Hyg. Assn. J. 25, 204 (March-April, 1964)

522 Biological Effects of Asbestos.

A meeting on the Biological Effects of Asbestos will be held in New York from October 19 to 21, 1964, under the auspices of the New York Academy of Sciences. Topics of discussion will include: Recent advances in knowledge about the structure and ultrastructure, and composition of the principal types of fiber, also the content and composition of natural waxes adsorbed on the fiber; studies of prevalence of asbestosis related to occupation and type of fiber; studies of the association of bronchial, pleural, and other tumors with exposure to asbestos; investigations of the inhalability of asbestos fibers and experimental asbestosis in animals; methods of dust control and sampling. The Conference is by invitation. Applications to attend may be made to the Secretary, The New York Academy of Sciences, 2 East Sixty-Third Street, New York 21, N. Y.
Brit. J. Ind. Med. 21, 166 (April, 1964)

523 Hygienic Guide Series.

The following additional Hygienic Guides are now available: Tellurium, and Ethyl Acetate. They are given in the March-April AIHA Journal pp. 198-203, and can be obtained from the American Industrial Hygiene Association, 14125 Prevost, Detroit, Michigan 48217, at 25 cents each.
Am. Ind. Hyg. Assn. J. 25, 198-203 (March-April, 1964)

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OCCUPATIONAL DISEASE STATISTICS

524 Occupational Disease Statistics. (Cases reported to the respective Health Departments).

	Colo. Jan. -Apr.	Conn. Mar.	Pa. Apr. -May	Tenn. Apr.	Total
Bronchial asthma			1		1
Carbon tetrachloride exposure			6		6
Chlorine gas poisoning				1	1
Conjunctivitis, paint fume				1	1
Dermatitis	58	31*	33	18	140
Fumes (unidentified)			6		6
Inflammation of stomach			1		1
Lead poisoning	1			1	2
Poisoning from solvents	2				2
Respiratory irritation			2		2
Silicosis	4			1	5
" suspected			9		9
Tenosynovitis				1	1
Tuberculosis			6		6
Vanadium dust reaction	1				1
Other	24				24
Total	90	31	64	23	208

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to oils and greases (and metal cutting compounds) 5; occupational dermatitis due to solvents 8; occupational dermatitis due to other chemicals: alkalies 1, chromium compounds 1, dyes 1, plating chemicals 1, synthetic resins or resin (plastic) compounds 5, undetermined 1; occupational dermatitis—other: fibrous glass 1, infection 2, miscellaneous 1, multiple causes 2, soaps or detergents 2.

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COMING EVENTS

- 525 July 1-4 National Society of Professional Engineers, Annual Meeting, Asheville, N.C.
 July 10-11 Rocky Mountain Cancer Conference, Denver, Colorado.
 July 19-23 American Veterinary Association, Chicago, Ill.
 July 20-22 Conference on Magnetic Resonance in Biological Systems, House of the
 American Academy of Arts and Sciences, Boston, Mass.
 July 24 American Diabetes Association, Toronto, Canada.
 July 26-Aug. 1 International Congress of Biochemistry, New York, N.Y.
 July 27-30 Technical Association of the Pulp and Paper Industry, Seattle, Wash.
 July 27-31 American Crystallographic Association, Annual Meeting, Bozeman, Mont.
 July 27-Aug. 21 Engineering Foundation, Research Conferences, Proctor Academy, Andover,
 N.H.

LEGAL DEVELOPMENTS

526 Bill to Regulate Production of Pesticides.

A bill to regulate the production of pesticides has been introduced by Senator Abraham Ribicoff (D.-Conn.); he proposed such a bill earlier. S. 2792, now referred to the Agriculture Committee, would require all manufacturers and packagers of pesticides to register with the Department of Agriculture and submit to regular plant inspections by USDA. It would also subject pesticides to seizure or injunction against shipment if plant facilities or methods did not conform to "current good manufacturing practices" and would require every manufacturer and packager to obtain a federal waste disposal permit to ensure that the manufacturing process did not pollute air or water near the plant. Meanwhile Senator Ribicoff's bill to outlaw registration of pesticides under protest (S. 1605) has cleared Congress and awaits the President's signature.

Chem. Eng. News 42, 21 (May 11, 1964)

527 Public Health Service Wants to Curb Wells.

In a recent announcement, Surgeon General Dr. Luther L. Terry called for state legislatures to curb the use of private water systems such as are used in thousands of homes in suburban and outlying areas. According to Plumbing-Heating-Cooling Information Bureau, Chicago, his recommendations were based on a report of an advisory commission which, in turn, was based on "limited research" that failed to take into consideration the majority of thousands of wells that deliver unrestricted supplies of pure, safe water. Water Systems Council, the Bureau states, is opposed, but wants to cooperate in model legislation to ensure proper installations.

Air Cond. Heat. & Vent. 61, 10 (May, 1964)

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BOOKS, PAMPHLETS AND NOTICES

- 528 Rehabilitating the Disabled Worker. A Platform for Action. Report of the National Institute on Rehabilitation and Workmen's Compensation. M. Berkowitz, Editor. 180 pp. (June, 1963). Available from: U.S. Department of Health, Education, and Welfare, Vocational Rehabilitation Administration Washington, D.C. 20201. Price: not given.

This report was compiled from a series of papers presented by recognized authorities in various aspects of the workmen's compensation field, and from the discussions of seminar groups at the Institute held in Ann Arbor, Michigan, June 11-13, 1962. The contents represent a composite viewpoint based on the thoughtful deliberations of the various participants. The points of view expressed and recommendations made were solely those of the individual participants. The purpose of the Institute was to develop a platform incorporating practical recommendations which all of those concerned with the needs of disabled workers could support. Each of the recommendations of the seminars was made only after general concurrence of the participants who were representative of all those concerned with the problem. In addition, each of the seminars suggested guide lines for action leading to the implementation of the platform.

- 529 Guide to Job Placement of the Mentally Retarded. The President's Committee on Employment of the Handicapped in cooperation with National Association for Retarded Children and the U.S. Employment Service, Bureau of Employment Security, U.S. Department of Labor. 16pp. (1963). Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: not given.

The U.S. Employment Service of the Bureau of Employment Security, which over the years has been deeply concerned with jobs for the handicapped, has witnessed a change of attitude. The new attitude is expressed in the familiar slogan, "It Pays to Hire the Handicapped." Progress in the rehabilitation of the mentally retarded is gaining recognition. Employers who in the past did not consider hiring the mentally retarded may now think of employing them with profit. Profitable employment of the mentally retarded requires the same careful selection and placement involved in employing other workers. This booklet presents some of the important considerations growing out of the experience of rehabilitation workers and employers in dealing with the mentally retarded. The Bureau is glad to join with other organizations in the publication and distribution of this booklet with the hope that it will make jobs and self-support accessible to many more mentally retarded, but occupationally qualified individuals.

INDUSTRIAL MEDICAL PRACTICE

- 530 The Political Good Fortune of Medical Research. Two Strategically Placed Legislators Regularly Assure Congressional Generosity for the NIH Budget. M. Viorst. Science 144, 267-270 (April 17, 1964).

Congress' generosity in the field of medical research stands in sharp contrast to its response to other domestic welfare needs. Every year, for example, little is done to meet the problems of unemployment, air pollution, urban congestion, and education. Though the existence of these problems is generally acknowledged, Congress continues to argue about how to resolve them but reaches no consensus. Since the war, however, medical research has

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been a congressional favorite, almost as sacrosanct as national defense. While the proponents of other good causes plead vainly for dollars, medical researchers have had no such problem. The figures record the story: In 1940 Congress voted \$3 million for health-related research. By 1957 the figure had reached \$186 million. Last year, it exceeded \$916 million and will, in this year's budget come close to \$1 billion. In 1957 private sources provided more funds than government for medical research. Last year, though private contributions had almost tripled, the government provided nearly twice as much money as private sources. In other terms \$1 out of every \$4000 of federal expenditures went to medical research in 1940; last year the proportion was almost \$1 out of every \$100. Without vigorous champions, one in the House and one in the Senate, each fortuitously placed to exercise his leadership, medical research might be just another federal project. Credit for the government's massive support of medical research belongs to two men, Representative John E. Fogarty, Democrat of Rhode Island, and Senator Lister Hill, Democrat of Alabama. Each is chairman of the subcommittee of the Appropriations Committee for the Department of Labor and the Department of Health, Education, and Welfare (HEW). They make up perhaps the most effective leadership team on Capitol Hill. Hill invariably recommends a bigger appropriation than Fogarty, because it is easier for him to do so. In 1957 the Administration asked for \$126.7 million for the National Institutes of Health. Fogarty's committee voted \$135.7 million. Hill raised the figure to \$183.2 million, which was the amount on which the House and Senate ultimately agreed. Last year the Administration asked for \$780 million. Fogarty brought out a recommendation, which the House approved, of \$840.8 million. Hill had the Senate vote \$900.8 million. The final figure accepted by both bodies was \$880.8 million. Hill, in defense of congressional largesse for medical research, has glowingly predicted the imminent arrival of a "Golden Age of Medicine." He insists that "within a relatively few short years the world will see a tremendous breakthrough of medical knowledge that will enable us to overcome the dread diseases that have plagued and baffled mankind through the ages. There is reason for confidence," he asserts, "that this breakthrough will yield the answer to heart disease, cancer, mental illness, the virus diseases, and the many other crippling degenerative ailments." His prophecy of a "relatively few short years" may be unduly optimistic, and as pressures grow on the overall federal research budget, medical research is, for the first time in a decade, experiencing a few unaccustomed pinches. But when viewed in perspective, it is clear that the medical research budget occupies one of the most enviable positions in the U.S. Congress, a fact for which the gentlemen from Alabama and Rhode Island are in large part responsible.

- 531 Chronic Disease Research in Industry. A. Ciocco.
Arch. Environmental Health 8, 422-426 (March, 1964).

Research on disease conditions, chronic or acute may be approached in three directions:—through the laboratory, through the clinic or sick persons, through population groups containing the sick and well. It is this last type of research which is considered in this paper. The author has outlined some of the means by which data for field research on chronic disease can be collected on industrial population groups for and by industrial medical departments. Based on his experience and that of others, he has pointed out that such collection of data involves appropriate utilization of pre-employment and periodical examination records available in the medical department; it involves use of data collected for administrative purposes in other departments of a plant; it involves data which can be obtained only by going beyond the walls of the plant to seek information on the subsequent health status of individuals who have left the plant. The potential for contributing to a better understanding of the factors which bear on the onset and progression of chronic disease undoubtedly exists through the utilization of such data. The rapidity with which this potential becomes actual achievement depends on issues many of which have little to do with biostatistics. One of these is the extent of interest in chronic disease research on the part of industry, and the extent of its willingness to stimulate and finance such research.

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- 532 The Development and Present Tendencies of Occupational Medicine Throughout the World. L. Parmeggiani. *Ind. Med. & Surg.* 33, 130-131 (March, 1964).

The factors that can influence the practical development of occupational medicine are of an economic and technical nature, viz. social factors and medicine proper. On the scientific level, occupational medicine is a complex specialty of vast scope and, therefore, necessitates the application of methods derived from several other fields of science. Though it is an independent and specialized branch of medicine there is some overlapping between its field of study and that of other medical specialties. It is evident that occupational medicine does not face a future entirely free from risks; especially there exists a danger of its becoming fragmented into over-specialized branches. Also, it may well be that the medical aspects become neglected as the administrative burden of the medical officer increases. Nevertheless, occupational medicine can become a science that integrates biological and technical data in order to protect the worker. That is exactly what it should strive to attain.

- 533 Advances in the Pathogenesis of Some Occupational Diseases. E.C. Vigliani. *Ind. Med. & Surg.* 33, 132-133 (March, 1964).

The subject is discussed under the following subheadings: Silicosis, Pulmonary Diseases Due to Inhalation of Vegetable Dusts, Toxic Hemolysis, Metal Fume Fever, and Carbon Tetrachloride. In this paper the author considers very briefly only occupational diseases the etiopathogenesis of which he studied recently at the Clinica del Lavoro of the University of Milan.

- 534 Women at Work: Health and Sociomedical Problems Related to the Employment of Women. S. Forssman. *Ind. Med. & Surg.* 33, 125-129 (March, 1964).

The problem of female employment is not a health problem, but a general problem of labor policy. It is, however, the duty of occupational medicine to study the special health ~~and sociomedical problems~~ related to the employment of women and to make suitable recommendations for preventing health hazards to them and also to preserve their health. Health Services at places of employment are of special value for women at work. Pre-employment and regular health examinations are useful to discover diseases and signs of maladjustment at an early stage. Concerning adjustment of women to work, it should be mentioned that very heavy manual labor generally should be avoided for women, and that during pregnancy women should avoid too much standing and if possible have a few short rest periods during the working day. During pregnancy exposure to certain occupational hazards should be especially avoided. Otherwise, there does not seem to be any special occupational hazards for women different from those for men. Physical and mental working capacity of women, and their usefulness at work is the same as for men if women are given the same opportunities, especially concerning education and vocational training. There may, however, be important sociomedical and social problems for women at work, that differ according to age. The double burden of married women at work and at home should especially be considered. The organization of part-time work for married women has proved very useful and is probably also of value in preventing stress and overloading. In some places of employment two women are jointly responsible for one full-time job. As a rule they both work half time, and when one is absent due to illness or other causes, the other will occasionally work full-time. There are 23 references.

- 535 Evaluation of Psychiatric Disability and the Concept of Regression. J. Lerner. *J. Am. Med. Assn.* 188, 369-370 (April 27, 1964).

In view of thousands of psychiatric reports submitted in connection with applications for disability benefits under the social security law, it was found that many of these reports did not consider the concept of regression in evaluating the impact of the psychiatric illness. The author's experience with physiological regression is illustrated by two cases which emphasize the concept that loss of function for an extended period of time should be

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associated with concomitant evidence of physiological regression. This furnishes a reasonable basis for the conclusion that the psychiatric impairment has resulted in a substantial and persistent loss of functional capacity.

-- Author's abst.

- 536 Alcohol-induced Hypoglycemia. V. Marks and W.E. Medd.
Brit. J. Psychiat. 110, 228 (March, 1964).

A case of unconsciousness due to hypoglycemia in an alcoholic is described, and its relationship to alcohol ingestion confirmed. The syndrome of alcohol-induced hypoglycemia is particularly liable to occur in chronic alcoholic subjects who also suffer from malnutrition. The blood glucose should be measured in any patient who becomes unconscious, or fails to regain consciousness, after drinking alcohol. The authors' experience shows that hypoglycemia can result from pure alcohol ingestion, and there is evidence to support this in the literature. The relationship between alcohol and hypoglycemia is, however, still poorly understood. The possible mechanisms responsible for the hypoglycemia and the difficulties attached to its subsequent experimental reproduction are discussed.

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

- 537 Chronic Alcoholism With Fatty Metamorphosis of the Liver.
D.J. Svoboda and R.T. Manning. Am. J. Pathol. 44, 645 (April, 1964).

Electron microscopic study of needle biopsy specimens from the livers of patients with moderate to marked fatty metamorphosis and evidence of excessive alcohol consumption for several years disclosed a number of abnormalities in mitochondrial structure. The most conspicuous change was the presence of crystal-like inclusions resembling "myelin degeneration," often accompanied by marked mitochondrial enlargement. Other changes included the presence of abnormally large dense bodies in the mitochondrial matrix, cavitation of mitochondria and rearrangement of cristae. Crystalline inclusions in mitochondria may be related to alterations in the hydration state of liver cells or to disordered phospholipid metabolism in mitochondria. They are found in a variety of human liver disorders and, like the other mitochondrial changes described in this study, probably represents a nonspecific degenerative phenomenon. -- J. Am. Med. Assn. References & Reviews

- 538 Work Physiology. D. Minard. Arch. Environmental Health 8, 427-436 (March, 1964).

Until recently little attention was given to stresses in the work environment which imposed strain on physiological and psychological capacities of the worker. Thus, high temperature, humidity, thermal radiation, noise, poor illumination, as well as excessive physical and psychological effort demanded by poorly designed work methods, lead to fatigue which in essence is an impairment in man's capacity to adapt to his environment. Fatigue not only reduces productivity and increases accident rates but also is a contributing factor in increased absenteeism, job turnover, and poor social adjustment. The role of the industrial physiologist and physician is to assess the work demands and environmental stresses in terms of resulting strains and to decide whether these are tolerable or excessive. Because diseases and disabilities not recognized as occupational in origin constitute by far the largest cause of sickness absence and ineffectiveness of workers, the great challenge now and in the future to occupational health as a professional discipline is to discover and control complex interactions between man and factors in his working environment which lead to increased susceptibility both to acute infectious disease and to the chronic degenerative diseases of aging. From the proposed research, results may be expected which will aid industrial medical departments in providing better health services to the individual worker and the industrial community as a whole.

- 539 The Influence of Gross Body Weight on Oxygen Consumption and on Physical Working Capacity of Manual Labourers. C.H. Wyndham, et al. Ergonomics 6, 275 (July, 1963).

The oxygen intake and oxygen consumption during physical tasks were correlated with the gross body weight of men. Regression curves were given for the oxygen consumption

plotted against work rates of 88 men and for maximum oxygen intake against gross body weight for another 338 men. From these curves it could be estimated that 95% of men weighing above a calculated value will have a maximum oxygen intake of at least 2.0 liters per minute and consequently would be capable of a moderate rate of work.

-- J. Occ. Med. Absts.

- 540 Resuscitation Experience Within the Hospital. Dorothy Jordan, T. Lavin, and W. Hamelberg. J. Am. Med. Assn. 188, 181-182 (April 13, 1964).

In 1957, the anesthesia department of the Ohio State University Hospital reported its experience with acute respiratory problems occurring outside the operating room. In that study, 38 of the 100 patients treated recovered. Since that time, external cardiac massage has been introduced and is now used by this department when indicated. The results of this same emergency service were analyzed for the year 1962. There were 279 emergency calls made during the year. A majority of these calls were for respiratory problems and 52 of these patients recovered. The other 100 patients had some form of acute circulatory problem requiring external cardiac massage in addition to airway management. Of these 100 patients, 3 recovered while 14 others were returned to pretreatment status but later died of their basic disease.

-- Authors' summary

- 541 Use of Contact Lenses in Industry. American Medical Association, Council on Occupational Health. J. Am. Med. Assn. 188, 397 (April 27, 1964).

The use of contact lenses by industrial workers sometimes compounds eye hazards already associated with certain jobs. Such use should alert industrial physicians to the need for emphasizing careful eye hygiene, repeated visual examination, and systematic recording of pertinent findings. The wearing of contact lenses is contraindicated in certain jobs that require critical emergency action or that expose the worker to unusual hazard of injury to the eyes. The job placement of each applicant who wears contact lenses must be determined only after thorough evaluation of job hazards and visual needs. Contact lenses are not in themselves protective devices and in fact may increase the degree of injury to the eyes. The same eye-protective devices used by other workers should be worn by contact lens wearers in similar employment.

-- Authors' summary

- 542 Color-Vision Defects in American School Children. H. C. Thuline. J. Am. Med. Assn. 188, 514-518 (May 11, 1964).

A study of color-vision using Ishihara plates and the pseudoisochromatic plates designed by Hardy, Rand, and Rittler (HRR) was made of 10,341 students in all grades in an American school district. The tests were compared and the Ishihara plates were found more accurate for detecting defects, and the HRR more apt to give problems in interpreting results for borderline situations. The HRR was found more useful in classifying the type of red-green color-vision defect present in severely affected cases and for detection of defects in perception involving blues and yellows. Among the 5,263 boys, 6.2% had a defect, and 0.55% of the 5,078 girls had a defect. An unexpected ancillary finding was the lack of student, parental, and teacher recognition of the presence of color-perception problems in a majority of those identified.

-- Author's abst.

- 543 Frequency of Glaucoma in Three Population Groups. H. Packer, et al. J. Am. Med. Assn. 188, 123-127 (April 13, 1964).

Early recognition of subclinical glaucoma offers the best hope of minimizing its role as a leading cause of blindness. A glaucoma detection program based in the City of Memphis Hospitals provided an opportunity to compare frequency rates for glaucoma in three population groups. Analysis of the results of screening tests for glaucoma upon 9,243 persons and complete ophthalmologic examinations upon 712 persons revealed estimated frequency rates of 3.0% in health card applicants, 6.4% in persons attending the medicine outpatient clinic, and 13.3% in persons with visual complaints attending the eye clinic.

-- Authors' abst.

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- 544 Pulmonary Adenoma. The Fibrogenic Potential of Its Epithelium. P. Gross and W. Poel. Arch. Pathol. 77, 424-428 (April, 1964). Reprints Available from Industrial Hygiene Foundation Upon Request.

The histogenesis of the pulmonary adenoma of mice is traced from the immature poorly differentiated form with thickened alveolar walls similar to those seen in chronic interstitial pneumonitis to the typical mature circumscribed papillary gland-like tumor. In immature tumors, papillae and partitions are composed of uniform small cuboidal cells associated with a prominent reticulin network which enmeshes the individual cells. As maturation proceeds, the cells in the center of the papillae are replaced by a homogeneous matrix in which reticulin fibers undergo condensation while the peripheral cells become radially oriented, lose their associated reticulin fibers, and assume a columnar shape. It is not uncommon to find otherwise mature adenomata containing foci which have various degrees of immaturity. The intimate association of reticulin fibers with the immature epithelium sets this tissue apart from other epithelia in the body and confirms Waddell's theory of the multipotential nature of pulmonary alveolar cells. There are 15 references.

-- Authors' conclusions

- 545 Pulmonary Edema by Ascending to High Altitudes. E. Marticorena, et al. Diseases of Chest 45, 273-283 (April, 1964).

Acute pulmonary edema was observed in 36 young healthy persons after ascending to altitudes 13,700 feet or more above sea level. Most of them were born and living permanently at high altitudes and developed pulmonary edema on returning to the mountains after a relatively short stay at lower or sea levels. The clinical manifestations were usually severe and rapidly progressive disappearing in 24 to 48 hours with oxygen administration. The predominant roentgenologic appearance was a coarse mottling exudate, more confluent in both parahilar regions. The heart size remained normal. The electrocardiogram showed acute right ventricular overloading and primary disturbances of repolarization probably related to right ventricular myocardial ischemia. Cardiac catheterization performed in one patient during the recovery at sea level, revealed normal pressures in the pulmonary artery and capillary bed. Necropsies performed in two patients showed severe pulmonary edema, extensive areas with hyaline membrane, thrombosis of distal arteries and septal capillaries and multiple preterminal arterioles. The left atrium and ventricle were normal and there was a moderate right ventricular hypertrophy usually found in the high altitude resident. Pulmonary edema of high altitude appears to be the result of a magnification of the hemodynamic changes occurring during a rapid exposure to an environment of hypoxia and low temperature. These changes would be an increase in cardiac output and pulmonary blood volume, pulmonary vasoconstriction at pre-capillary level with secondary pulmonary hypertension, and increased pulmonary capillary permeability. Twenty-seven references are listed.

-- Authors' summary

- 546 Efficacy of Immunization Reminder Cards. E. Fowinkle, N. Guthrie, and J. Hagood. Arch. Environmental Health 8, 471-473 (March, 1964).

A study was conducted to determine the effectiveness of immunization reminder cards sent by mail to Negro mothers of three-month-old infants. Conclusions were based on the frequency with which immunization had been begun when the infant was four months of age. No significant difference could be demonstrated between the two groups, one of which received the reminder card and one which did not. Of the questionnaires mailed to Negro mothers, 52% were answered and returned. These completed questionnaires accounted for 65% of those on whom information was secured by any means. Telephone numbers were not frequently available, but, when they were, attempting to reach the mother by telephone resulted in securing the desired information about 50% of the time, accounting for 5% of all information secured. Home visiting attempted for 294 mothers who had not been reached by questionnaire or telephone produced the desired information in 60% of attempts and accounted for 30% of all information secured. The benefits, if any, of sending immunization reminder cards to Negro mothers when their latest child is three months of age do not appear to justify the expense and effort involved in sending such cards in Memphis and Shelby County, Tennessee.

-- Authors' summary and conclusion

- 547 Comparison of Blood Pressure in the Arms and Legs. E.F. Pascarelli and C.A. Bertrand. New Engl. J. Med. 270, 693 (April 2, 1964).

This study was undertaken to resolve the controversy in the literature and among physicians regarding the comparison of blood pressures in the arms and legs in man. Prevailing opinion is that the systolic pressure is considerably higher in the legs than in the arms. Brachial and femoral artery blood pressures were recorded by the intra-arterial method in 50 supine subjects. Statistical analyses were performed utilizing an IBM 1401 data processing unit. All measured components of arm and leg blood pressures were found to be essentially the same.

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

- 548 Tenosynovitis in Women in Industry. S. W. Hartwell, Jr., R.D. Larsen, and J.L. Posch. Cleveland Clinic Quart. 31, 115-118 (April, 1964).

Tenosynovitis about the hands and wrists in industrially employed women is most commonly associated with an occupation that requires rapid repetition of a motion several thousand times daily. There is a higher incidence of posttraumatic tenosynovitis in women in industry than there is in a population at large. This condition is most common in the fifth and sixth decades of life and is rare under the age of 30 years. Tendons of the thumb are much more commonly involved in posttraumatic tenosynovitis than are other tendons of the upper extremity. Most women with this problem will respond favorably to conservative treatment. The early results of operation are almost uniformly gratifying; failures after operation may be due either to improper motivation on the part of the patient who desires continued income from the insurance carrier, or to return to the type of work that produced the original difficulty. Symptomatic women should not return to the same traumatizing work, and knowledge by the clinician of the industrial job is necessary in making recommendations about returning them to their work. Nine references are given. -- Authors' conclusion

- 549 Personality Differences Between Smokers and Nonsmokers. A Study of School Children. Eva J. Salber and Joan E. Rochman. Arch. Environmental Health 8, 459-465 (March, 1964).

A total of 304 senior students attending the Newton Public High School were given a group psychological test, the Minnesota Counseling Inventory, in an attempt to measure personality differences between those who smoked, had stopped smoking, or who did not smoke. Among boys, smokers, and particularly heavy smokers, were found to have less satisfactory relationships with authority in general and parents in particular than did non-smokers. Girls who smoked heavily gave a picture similar to that of all boys who smoked. However, girls who smoked were apparently more cheerful and self-confident than those who did not smoke. Item analysis of the inventory shows marked differences in response to questions by sex and smoking category of student. A very important social drive in this age group is the need for status or prestige. Children who are less well adjusted in the field of family relations and adult authority are more likely to seek security in the company of their peers and to use a cigarette which at one and the same time symbolizes adulthood, superiority, and defiance. Thirteen references are cited.

-- Authors' summary

- 550 The Challenge of Cancer. W.M. Silliphant. J. Occ. Med. 6, 115-121 (March, 1964).

Cancer today ranks second only to cardiovascular renal disease as a cause of death in the United States. Over 800,000 Americans are currently afflicted. About a half-million new cases will have been disclosed in 1963, and in over half of these the patient will die of the disease. Cancer is found in all races of man, but there are marked differences in the prevalence of various types of cancer, not only in populations living under widely differing socioeconomic conditions but also within segments of specific populations. The ultimate control of any disease—including cancer—lies in its prevention. Cancers capable of being initiated by known carcinogens should be preventable by avoidance of contact with such agents. The cancer process, once begun, goes on automatically. Human cancer may not manifest itself clinically for 5-40 years after exposure to a carcinogen. In a monkey,

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it takes 6-7 years; in a mouse or a rat, only a matter of months. The time required is roughly proportional to the life span of the species. There are many cancer-preventive measures, the application of which lie within the province of various industrial concerns and governmental agencies. Among these may be mentioned measures to reduce air pollution, to protect food and water supplies, and to safeguard workers engaged in occupations where carcinogenic agents are known to be a hazard. There are some preventive measures, too, in which the individual has personal choice of control; prominent among these is the decision not to smoke cigarettes. There are 26 references.

- 551 The Natural History of Lung Cancer. Katharine R. Boucot, et al.
Am. Rev. Resp. Dis. 89, 519-527 (April, 1964).

Symptoms preceded roentgenographic changes in four-fifths of the 67 men who developed "new" lung cancer while under observation for 6 months to 10 years in the Philadelphia Pulmonary Neoplasm Research Project. Dyspnea and chronic cough were the most common symptoms. Meticulous clinical, cytologic, and roentgenologic studies should be carried out on older men with respiratory symptoms even if single roentgenograms appear normal. This is especially true for smokers, as all the "new" lung cancers developed among them. More than half of the "new" cancers developed in men who had roentgenologic evidence of previous pulmonary or pleural disease, emphasizing the importance of careful follow-up observation of men with such findings. These data add clinical support to the pathologists' concept of "scar cancer." Attention is called to the possibility that pleural symphysis may predispose to bronchogenic carcinoma by interfering with the bellows mechanism of the lungs and thus with the bronchial toilet, a situation which may be aggravated by the adverse effect of smoke on ciliary action. Study of a sample of smokers and a sample of nonsmokers matched to the cancer cases revealed that the smokers were so similar to the cancer cases in symptoms and roentgenographic abnormalities as to suggest that they were a homogeneous group, some of whom had latent and others manifest lung cancer.

-- Authors' summary

- 552 From the Zoo-- to the Workplace-- to the Industrial Physician. D.P. Discher.
J. Occ. Med. 6, 195-198 (April, 1964).

The expansion of international trade and tourism and the extensive use of animals in industrial research laboratories present new challenges for the industrial physician in the control of zoonoses. However, most occupational physicians seldom report infectious occupational disease, probably because they do not recognize the widespread industrial health implications of these diseases. Traditionally the industrial physician views occupational zoonoses as a concern in meat-and food-processing industries. Now many industrial physicians must face the full spectrum of zoonoses. The author discusses the subject under the following headings: Viral Agents, Bacterial Agents, Helminth Agents, Protozoan Agents, Rickettsial Agents, Fungal Agents, and Unknown Agents.

- 553 Pulmonary Schistosomiasis. R. Coura, et al.
Hospital (Rio de Janeiro) 63, 993-1012 (May, 1963). Portuguese.

Five cases of pulmonary schistosomiasis are presented in their different forms, with a complete roentgenologic, electrocardiographic and pathologic study. The first case reported is one of the toxemic form, showing a picture of acute bronchitis, with cough without expectoration. The second case-- also of the toxemic form-- presents the interesting picture of "pneumonia by the dead worm," with little nodular shadows on chest roentgenograms, fever, and eosinophilia during treatment with miracid D. The next case reported is one of pulmonary schistosomiasis associated with military tuberculosis; the writers point out the difficulty in the differentiation between those diseases. Finally, two cases of chronic pulmonary schistosomiasis are described in which cardiac catheterization has been performed; in one of them pulmonary hypertension was observed, probably due to schistosomotic pulmonary arteritis and, in the other, chronic cor pulmonale with arteriovenous fistulas in the lungs of probable schistosomotic etiology was present.

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

- 554 Recent Trends in Tetanus. R.L. Hewitt, H.B. Wren, and E.T. Krementz.
Arch. Surg. 88, 768 (May, 1964).

A review of 80 cases of tetanus from 1957 through 1961 was undertaken to bring attention to the continuing problem in diagnosis and treatment of this preventable disease. Eighteen deaths among the 65 patients with traumatic tetanus occurred, with more than one half of the deaths by the fourth hospital day. Pulmonary complications, confirmed by necropsy, accounted for all but one of the deaths. There were 11 deaths among the 15 patients with tetanus neonatorum. In each group, the prognosis was more favorable if the incubation period was greater than the median value of seven days. Treatment routinely included thorough debridement of the wound, tetanus antitoxin, antibiotics, and muscle relaxants. Sixty-one of the 65 patients with traumatic tetanus required tracheostomy, and a mechanical respirator was considered an essential adjunct to the treatment of such patients.

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

- 555 Bronchiolar Emphysema. A Report of a Necropsied Case of Diffuse Bronchiolectasis and Review of the Literature. L.M. Jerry and A.C. Ritchie.
Can. Med. Assn. J. 90, 964-969 (April 18, 1964).

Bronchiolar emphysema is a rare, insidious, progressive, bilateral pulmonary fibrosis with diffusion defect. Death follows in 5 to 10 years after the onset of symptoms because of respiratory failure, cor pulmonale or pneumothorax. In the 20 cases reviewed, the lungs typically showed bosselation of their pleural surfaces, giving the appearance and consistency of a liver involved by Laennec's cirrhosis. Cross sections showed honey-combing chiefly along the lung margins. Microscopically cystic dilatation of terminal bronchioles was present, with obliteration of the remaining peripheral lung tissue by a dense pulmonary fibrosis. Hyperplasia of smooth muscle and elastica was prominent. Bronchiolar emphysema is a clinicopathologic entity, the etiology of which is unknown and likely multiple. Bronchiolectasis and superimposed recurrent infection are essential in its pathogenesis. Thickening of alveolar walls may play a decisive role in determining the characteristic site of the bronchiolar dilatation.

-- Authors' abstr.

SKIN DISEASES AND BURNS

- 556 Aetiological Analysis of 100 Patients With Dermatitis Claiming to Suffer From Prescribed Disease. D.C. Devine. Brit. J. Ind. Med. 21, 145-149 (April, 1964).

Since the National Health Service came into force in 1948, there has been a steady flow of patients referred by the Ministry of Pensions and National Insurance to dermatologists. These patients claim to suffer from a Prescribed Disease, and the dermatologist has to determine whether they have a skin condition produced by certain occupational agents prescribed by the Minister. Basically these have always been dust, liquid, and vapour occurring in occupations where these substances are encountered. Before 1959 Prescribed Disease relating to skin conditions was numbered 24b, but since then it has been numbered 42. This numerical change also carried with it a modification of the definition of the disease and in effect specifically limited diagnosis to cases of non-infective dermatitis. As Prescribed Disease claimants with skin conditions present a constant diagnostic problem, a survey was made of 100 copies of consecutive reports on patients who had claimed to have Prescribed Disease 24b; to determine the chief etiological factors involved in this type of dermatological case and to see to what extent the dermatologist could solve the diagnostic problem and how relevant to the issue is non-infective dermatitis as it applied to Prescribed Disease 42. Patients were within the working age group, 63 being men and 37 women. In 56 patients, in whom the etiological factors were clearly constitutional or attributable to non-occupational external

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causes or to industrial injury, Prescribed agents could be firmly excluded as causes of their skin conditions. In 34 cases, Prescribed agents, which were mainly dusts and liquids, could reasonably be implicated as causes. In the remaining 10 cases, however, evidence for and against these agents as causes was about equal, and the diagnosis was settled by giving them the benefit of the doubt. On a dermatological basis, therefore, 90% of the diagnostic problem could be solved. Nine patients in the series were diagnosed as having infective dermatitis due to minor skin trauma initiated by liquids encountered at work. This diagnosis was also in accord with a diagnosis of Prescribed Disease 24b. Since 1959, however, a diagnosis of infective dermatitis has been incompatible with one of Prescribed Disease 42 because this is defined as a non-infective dermatitis. It seems therefore that the definition could be more flexible so as to embrace certain cases of infective dermatitis which can develop from minor skin trauma due to occupational agents.

-- Author's abst.

- 557 Allergic Dermatitis Due to Shoes. H. R. deVries. *Dermatologica* 128, 68 (1964).

Nine female patients suffering from bilateral eczematous dermatitis of the feet are described. In all the cases, the dermatitis was caused by parts of their footwear. In 5 patients, rubber chemicals were the causal agents, and in 4 patients, eruption resulted from reactive phenol resins added to neoprene adhesives. During these investigations, a series of substances for patch testing was completed. Three patients became sensitive to 4,4-dioxy-diphenyl antioxidant in the rubber toe-cap. Two patients showed cross-sensitization to benzothiazole accelerators. Reactive phenol resins caused reactions in dilutions of 1:1,000,000 and in one case in a dilution of 1:10,000,000. One patient showed reactions to these resins only 3 weeks after removing the test. Six weeks later, the same series was tested again with the same results. It is evident that the latency becomes longer as the dilutions become higher.

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

- 558 Dermatitis From Alcohols. S. Fregert, et al. *J. Allergy* 34, 404 (Sept.-Oct. 1963).

A case of an allergic eczematous contact dermatitis after the use of ethanol is reported. On patch testing, even chromatographically pure ethanol produced the eruption, as did ethanal (acetaldehyde). The possibility of ethanol being converted to ethanal and that being the sensitizer remains.

-- J. Occ. Med. Absts.

- 559 Golf-Course Dermatitis Due to Thiram Fungicide. Cross Hazards of Alcohol, Disulfiram, and Rubber. W. B. Shelley. *J. Am. Med. Assn.* 188, 415-417 (May 4, 1964).

Contact dermatitis developed in a golfer who had allergic sensitization to a thiram fungicide used on the golf greens. Thiram and related compounds are components of numerous fungicides, insecticides, seed disinfectants, larvacides, germicidal soaps, lotions, ointments, rubber goods, and disulfiram (Antabuse). Ethanol-sensitization reactions also occur; in contrast to the reported eczematous contact sensitivity, these are nonallergic in nature. They include erythema, urticaria, and pruritus developing shortly after alcohol is taken by persons who ingest disulfiram or have topical exposure to thiram.

-- Author's abst.

- 560 Skin Carcinoma in the Process of "Stanford Jointing."
M. S. Spink, A. H. Baynes, and J. B. L. Tomblinson.
Brit. J. Ind. Med. 21, 154-157 (April, 1964).

Three cases of squamous carcinoma resulting from exposure to mineral oil in the process of treatment of pipes known as "Stanford jointing" are described, being the first to be noted in this process. In the Stanford jointing process earthenware pipes are made for underground electrical conduit, one end of each having a wider bore than the other, so that these pipes can be joined in series, the smaller male end fitting into the larger female end. In the jointing process a special jointing compound, which has the properties

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of being waterproof and slightly elastic, is applied to each end of a pipe, so that a permanent, waterproof, and moderately flexible seal is produced when one pipe is joined to the next. The jointing compound consists of tar 20%, sulfur 30%, and filler 50%. Tar and sulfur are melted together at 180°C. (356°F.) and when they have blended the cold filler (sand, crushed earthenware, or similar material) is stirred in. This brings the temperature of the compound down to about 120°C. (248°F.), at which temperature it is poured into the pipes which are held in metal molds, so that the jointing compound forms a layer half an inch thick outside the narrow end and inside the wide end of each pipe. Parts to which the compound must not stick, e.g., the metal mold and most of the pipe, are smeared with mineral oil known as brick oil or brick core-oil. There seems little reason for skin contamination with tar as thick gloves are worn because of the heat, and a long-handled ladle is used. Skin contamination with oil occurs as the operator slops it over both mold and pipe with a dripping rag, and splashes go on to his arms and clothing. The work is about 2-3 feet from the ground, and thus the thigh and groin areas are particularly exposed to splashes, as well as the arms. In the course of lifting the heavy pipes oil gets on the lap area. This also may cause friction of oil clothing against the scrotum. Men have been inclined to stay on this work for many years, in one case for approximately 35 years. As regards the materials, the tar is an ordinary coal tar and, as such, would be potentially carcinogenic. The oil is a home-refined naphthenic crude, solvent refined, known as 100 tale spindle oil, almost similar in type to that formerly used in mule-spinning. As far as can be ascertained, this type has always been used in the jointing industry, whereas the mule-spinning industry has gone over to "non-carcinogenic" oils since 1953.

- 561 Collagen as a Temporary Dressing in Severe Skin Burns and as a Blood Vessel Replacement.
H. B. Benjamin, E. Pawlowski, and A. B. Becker. Arch. Surg. 88, 725 (May, 1964).

The treatment of massive third degree burns has advanced very little because of the absence of a proper tissue dressing. A better substitute for vascular replacement also falls into this category as a better substitute is still wanting. The authors decided to try collagen autografts as a skin and vascular replacement. Sheets of either nylon, marlex, or stainless steel wire mesh were implanted in the panniculus carnosus. In one half of a group of dogs so treated, a polyethylene tube was placed alongside the femoral vessel to form a tube cast. Recovery of the sheets suggested that nylon mesh is the most effective tissue bed, and marlex caused the least amount of collagen to be laid down. The collagen deposited upon the polyethylene tube was quite durable, suggesting the possibility of its use as a substitute vessel. The autogenous graft of marlex, although quite flexible and impervious to fluid loss, did not last beyond seven days. This study is merely the intermediate step in the eventual goal of using collagen from bovine animals to provide a dressing for massive third degree burns. The dressing would have the advantages of storability, easy stockpiling, and unlimited availability as to quantity and dimension.

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

CHEMICAL HAZARDS

- 562 Lung Cancer in a Fluorspar Mining Community. I. Radiation, Dust, and Mortality Experience.
A. J. deVilliers and J. P. Windish. Brit. J. Ind. Med. 21, 94-109 (April, 1964).

Since 1952 two to three deaths from primary cancer of the lung have occurred regularly each year among the male inhabitants of the small fluorspar mining community of St. Lawrence, Newfoundland. These constituted 23 of the 51 deaths that occurred during the 10-year period 1952-61 among employees with one or more years of underground mining experience. A shift to a younger average age at death from lung cancer and an association between age at entry into risk and age at death were observed. Comparisons between the mortality experience of the inhabitants of St. Lawrence, of a control community of comparable size in the same geographical

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region, and of the population of the rest of Newfoundland confirmed the probability of an occupational factor, the observed death rate from lung cancer being about 29 times the expected. The outstanding environmental finding in the fluorspar mines was the discovery of concentrations of radon and daughter products in the air well in excess of suggested maximum permissible concentrations. On the basis of these concentrations and other considerations, it is suggested that underground workers were probably exposed to an average potential alpha-energy to complete decay of between 2.5 and 10 times the previously suggested working level of 1.3×10^5 Mev per liter of air (Holaday, Rushing, Coleman, Woolrich, Kusnetz and Bale (1957) Control of Radon and Daughters in Uranium Mines and Calculations on Biologic Effects. U.S. Public Health Service Publication No. 494). That these levels were obtained in mines in which no radioactive ore bodies have been found is of exceptional interest. The findings at St. Lawrence are compared with those reported in the literature for uranium mines.

-- Authors' abst.

- 563 Lung Cancer in a Fluorspar Mining Community. II. Prevalence of Respiratory Symptoms and Disability. W.D. Parsons, A.J. deVilliers, L.S. Bartlett, and Margaret R. Becklake. Brit. J. Ind. Med. 21, 110-116 (April, 1964).

A survey of respiratory symptoms, lung function tests, and chest radiography was carried out among the fluorspar miners of St. Lawrence, Newfoundland, in whom the incidence of carcinoma of the lung (deVilliers and Windish, 1964, see previous abstract) had previously been shown to be 25 times greater than for the rest of the province. The incidence of pneumoconiosis among the exposed population was low (1.93%) and the incidence of "chronic bronchitis" comparable to that reported for miners elsewhere, enabling one to dismiss these as a relevant factor in the high incidence of carcinoma. The relevance of smoking is less easy to assess in these miners, among whom there are few nonsmokers and many heavy smokers. Extrapolation from the data of Doll and Hill (1956) (Brit. Med. J. 2, 739 (1950); ibid., 2 1071 (1956)) suggests, however, that the prevalence of heavy smoking among the miners cannot be the sole factor responsible for the higher incidence of carcinoma compared with the rest of Newfoundland, but it might well be a contributory one. It appears therefore that the main factor causing the high incidence of carcinoma among these miners was the high level of radioactivity in the air and water in the mines (deVilliers and Windish, 1964, see previous abstract). The reduction in lung function tests appeared to be more closely related to the presence of bronchitis than to dust exposure, but the incidence of chronic bronchitis was apparently higher in men exposed for any length of time to dust risk than in men with insignificant exposure.

-- Authors' abst.

- 564 Carcinogenicity of Epoxides, Lactones, and Peroxy Compounds. B.L. Van Duren, et al. J. Natl. Cancer Inst. 31, 41 (July, 1963).

The results of studies in the mouse of skin painting with a number of epoxides, lactones, peroxides, and hydroperoxides are presented. Among the epoxides tested, 5 induced cancers (styrene oxide; 1-ethyleneoxy-3,4-epoxycyclohexane; 1,2-epoxybutene-3; dl-and meso-1,2,3,4-diepoxybutane). Delta-Butyrolactone was weakly active and 1-hydroperoxy-1-vinylcyclohexene-3 was definitely active. It is concluded that specific structural features as well as one or more epoxide functions are required for carcinogenic activity and this feature may be associated with physical properties as well as chemical reactivity. It is further concluded that the presence of strained lactone rings also favors carcinogenicity, although other requirements obviously exist. Data are also included on low tumor incidences seen in controls treated with benzene, acetone or 1-vinylcyclohexene-3, in untreated controls, and in positive controls treated with benzpyrene solutions.

-- J. Occ. Med. Absts.

- 565 Toxicology of Industrial Chemicals. H.F. Smyth, Jr. Arch. Environmental Health 8, 384-392 (March, 1964).

During the past 50 years our industry has become highly versatile, producing and utilizing new chemicals at an astounding rate. During this period toxicological information on industrial chemicals has changed, very largely because of the informed self-interest of

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industry. It has ceased to be largely a compilation of observations of physicians on poisoned persons. Now it is chiefly conclusions based upon animal experiment, performed before new chemicals are allowed to enter commerce. The laws are just beginning to enforce what industry has long been doing voluntarily in this area. Seventeen references are listed.

-- Author's summary

- 566 Industrial Toxicology in the Soviet Union—Theoretical and Applied. H. J. Magnuson, et al. Am. Ind. Hyg. Assn. J. 25, 185-197 (March-April, 1964).

Theoretical, laboratory, and field aspects of industrial toxicology in the Soviet Union were observed by the authors during a one-month visit to the U.S.S.R. under the U.S.-U.S.S.R. exchange agreement. The apparent discrepancies between U.S. and U.S.S.R. maximum allowable concentrations derive not only from theoretical differences but differences in industrial hygiene practices as well.

-- Authors' abst.

- 567 The Occupational Carbon Monoxide Hazard of Commercial Vehicle Drivers. W. A. Cook. Ind. Med. & Surg. 33, 118-120 (March, 1964).

Present traffic conditions in the city of Detroit produce insufficient carbon monoxide to constitute a hazard, either to health or to driving ability. Statistical treatment of the findings indicate, however, that a combination of increased traffic load and meteorological conditions favoring accumulation of exhaust gas may result in excessive concentrations of carbon monoxide.

-- Author's conclusions

- 568 Boric Acid Poisoning: Report of 11 Cases. L. C. Wong, et al. Can. Med. Assn. J. 90, 1018-1023 (April 25, 1964).

Boric acid poisoning in 11 infants occurring in the newborn nursery as a result of the accidental and inadvertent use of 2.5% boric acid in the preparation of the formulae, is reported. Five of the infants died. All except two exhibited the classical symptomatology of acute boric acid poisoning, namely, diarrhea, vomiting, erythema, exfoliation, desquamation of the skin, and marked central nervous system irritation. Early manifestations of poisoning were non-specific, and one patient died before skin manifestations were noted. Peritoneal dialysis, instituted in 9 cases, was found to be the most effective method of treatment. It is recommended that boric acid, which is of doubtful therapeutic value, should be completely removed from hospitals, dispensaries and pharmacopoeias.

-- Authors' abst.

- 569 Synergism Between Sulphur Dioxide and Carbon Particles. Studies on Adsorption and on Ciliary Movements in the Rabbit Trachea In Vivo. T. Dalhamn and L. Strandberg. Intern. J. Air and Water Poll. 7, 517 (Aug. 1963).

Two types of active carbon with predominant particle sizes of less than 0.06 mm. and 0.1-1mm. respectively, were found to adsorb considerable amounts (approximately 26%) of available sulfur dioxide even at low SO₂ concentrations. A portion of the adsorbed SO₂ is rapidly converted to sulfuric acid even at room temperature. Adsorbed SO₂ can easily be re-dissolved in water and presumably also in the moisture of mucous membranes. Adsorption properties of different types of carbon vary considerably and are not directly dependent on particle size; porosity appears to be an important factor. In-vivo exposure of rabbit trachea showed that carbon alone did not affect the frequency of ciliary movements. A reduction in their velocity was found with simultaneous exposure to carbon and SO₂, but the reduction was no greater than that reported earlier for SO₂ alone at the same concentration (approximately 100 ppm). At 200 ppm, SO₂ alone caused complete cessation of ciliary movements in half the animals after 15 minutes of exposure. An increase in mortality was observed in animals exposed to SO₂ plus carbon which did not occur with exposure to either substance alone. While suffocation as a cause of death is not ruled out, the authors conclude that the deaths were in fact related to exposure.

-- J. Occ. Med. Absts.

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- 570 A Carcinogenicity Evaluation of Potassium Arsenite and Arsanilic Acid. R.K. Boutwell.
J. Agr. Food Chem. 11, 381 (Sept.-Oct. 1963).

When tested in mice in conjunction with a skin tumor initiator (DMBA) and a promoter (croton oil), potassium arsenite did not contribute to tumor incidence in either capacity. Benign and malignant skin tumors were induced in skin-tumor-susceptible mice by single applications of DMBA followed by repeated applications of croton oil, both agents being used in amounts determined to be submaximal with respect to tumor yield. The influence of arsanilic acid and potassium arsenite on tumor yield was tested by adding them to the diet of mice concurrently with exposure to DMBA or croton oil. Neither compound elicited a change in tumor incidence.

-- J. Occ. Med. Absts.

- 571 Chronic Beryllium Disease. A Follow-Up Study. J.A. Dattoli, J. Lieben, and J. Bisbing.
J. Occ. Med. 6, 189-194 (April, 1964).

A report on 37 old and 7 newly discovered cases of berylliosis is presented. The natural course of the disease and the environmental influences are discussed.

-- Authors' summary

- 572 Renal Tubular Malfunction and Pulmonary Emphysema in Cadmium Pigment Workers.
G. Kazantzis, F. Flynn, J. Spowage, and D. Trott.
Quart. J. Med. 32, 165-192 (April, 1963).

Prolonged exposure to very low concentrations of cadmium oxide dust or cadmium fume may cause chronic cadmium poisoning. Dyspnea, pulmonary emphysema, proteinuria, rhinitis, anoxemia, ulceration of nasal mucosa, yellow discoloration of teeth, and anemia are all reported as resulting from chronic cadmium intoxication. The writers surveyed a factory where cadmium pigments are manufactured. Extensive data are reported for 12 subjects. The 6 men employed for more than 25 years all had proteinuria. Three exhibited mild but definite impairment of ventilatory function, and one had died with respiratory insufficiency and cor pulmonale. Autopsy findings are presented. The lung contained 500 micrograms of cadmium per gram wet weight of tissue, a value much larger than any previously reported. Men employed for less than 14 years were clinically well. However, 3 of the 4 had increased protein excretion in the urine. "Tubular" proteins were found, and other evidence for tubular malfunction was present.

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

- 573 Lead Neuropathy in Childhood. J.M. Freeman.
Am. J. Diseases Children 107, 337 (April, 1964).

A case of peripheral neuropathy because of lead intoxication occurring in childhood is presented. The patient had normal blood and urine lead levels, lead lines in the metaphyses, elevated urinary coproporphorin, and increased delta-amino levulinic acid levels. A 1,000 fold increase in urinary lead excretion occurred after administration of versenate. Nine previous cases of lead neuropathy in children are reviewed, and possible etiological mechanisms are discussed.

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

- 574 Toxicological Studies on Hydrocarbons. X. The Aspiration Hazard and Toxicity of Hydrocarbon Aerosols. H.W. Gerarde and Dorothea B. Ahlstrom.
Med. Bull. (Std. Oil N.J.) 23, 115-117 (July, 1963).

The purpose of this study was to determine the acute toxicity of aerosols of 4 hydrocarbon solvent mixtures. One ml. of hydrocarbon mixture was administered as an aerosol to each of 4 groups of 5 male albino rats weighing from 265-305 grams. Two of the solvents, Isopar H and Isopar M, were high-purity, isoparaffinic mixtures with boiling ranges of 350-387°F. and 403-480°F. respectively. The other two, chiefly paraffinic, have boiling ranges of 321-384°F. (Varsol 1) and 317-350°F. (SPN-special petroleum naphtha). There were no deaths in any of the groups 24 hours after dosing. None of the Isopar-dosed animals showed

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any clinical signs of pulmonary irritation; pulmonary injury was observed grossly at autopsy in one rat dosed with Isopar M. Animals dosed with SPN showed immediate signs of respiratory distress, and pulmonary edema and hemorrhage were observed on gross lung examination. Lung weights in the rats were increased, but not beyond a level previously shown to be consistent with survival and recovery. Varsol 1 was less irritating to the lungs than SPN. The data are interpreted as confirming the lack of acute aspiration hazard associated with hydrocarbon aerosols.

- 575 Sequence Comparison Between Kidney and Liver Lesions in the Rat Following Carbon Tetrachloride Poisoning. H.A.B. Lundh.
J. Occ. Med. 6, 123-128 (March, 1964).

Carbon tetrachloride was administered to rats in single subcutaneous injections of 0.4 and 4 cc./kg. One group of animals received multiple injections of 0.4 cc./kg. at 3-day intervals. The following observations were made: (1) The renal tubular cells regenerate sooner than the liver cells in the same animal following injections with carbon tetrachloride. This was not dose-dependent in the doses employed, although regeneration took longer in the high-dose group. (2) Involvement of the arteriolar vessel wall was seen. Particularly in the 4 cc./kg. single-injection group was there a noticeable disappearance of arterioles shortly following injection. It is suggested that this phenomenon contributes to the ischemia in the more severe cases of carbon tetrachloride poisoning. (3) Multiple 0.4 cc./kg. injections produced chronic kidney damage after about 2 weeks of injections.

-- Author's summary

- 576 Hepatotoxicity of Inhaled Trichloroethylene, Tetrachloroethylene and Chloroform. Single Exposure. B. Kylin, et al. Acta Pharmacol. Toxicol. 20, 16 (June, 1963).

Mice were exposed for 4 hours to the vapors of trichloroethylene, tetrachloroethylene, and chloroform in order to compare the extent of hepatotoxicity. Liver effects were evaluated by histological examination, liver fat extraction, and ornithine carbamoyl transferase activity in serum (S-OCT). No marked evidence of liver damage was observed in mice exposed to trichloroethylene at concentrations up to 3,200 ppm. Tetrachloroethylene and chloroform exposures resulted in moderate fat infiltration at 200 ppm and 100 ppm respectively, and both caused an increase in the amount of liver fat at 400 ppm. Only chloroform induced necrosis and increased S-OCT activity, and the presence of liver cell necrosis was found to be almost invariably associated with markedly increased S-OCT activity. On the basis of the degree of fatty infiltration, hepatotoxicity of the three chemicals was approximately in the ratio of 1:10:20 for trichloroethylene, tetrachloroethylene, and chloroform, respectively.

-- J. Occ. Med. Absts.

- 577 A Note on the Toxicity and Solvent Properties of Dimethyl Sulphoxide.
V.K. Brown, J. Robinson, and D.E. Stevenson.
J. Pharm. and Pharmacol. 15, 688 (Oct. 1963).

The toxicity of dimethyl sulfoxide was studied to ascertain its general usefulness as a solvent for chemical compounds under toxicological evaluation. Its physical and solubility characteristics are described. The oral LD₅₀ for rats and mice approximates or exceeds 20 ml./kg.; the oral LD₅₀ for guinea pigs is greater than 10 ml./kg. and approximately 12.5 ml./kg. for chickens. No toxic effects attributable to the solvent were found in rats fed up to 10 ml./kg. in the diet 5 days per week for 2 weeks. Dimethyl sulfoxide neither irritated nor sensitized guinea pig skin and was not irritating to rabbit eyes on direct instillation. Specific advantages and contraindications of its use in toxicity testing are discussed.

-- J. Occ. Med. Absts.

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- 578 Retrobulbar Neuritis Following Exposure to Vinyl Benzene (Styrene).
J.A. Pratt-Johnson. *Can. Med. Assn. J.* 90, 975-977 (April 18, 1964).

Vinyl benzene (styrene) is a colorless, inflammable, oily liquid which is used in the synthetic rubber and fiberglass industry. The powerful odor and irritating nature of the fumes guard against dangerous exposure to the vapor. However, irritation of the conjunctiva and respiratory system may be noted with a concentration as low as 400 ppm. Direct contact of the liquid causes irritation, drying and cracking of the skin. A case of toxic retrobulbar neuritis, associated with long exposure to vinyl benzene is reported. Initially, painless deterioration of vision to 20/400 and centrocecal scotomata were noted in each eye. Treatment included the prolonged administration of Vitamin B compound and nicotinic acid by mouth for 6 months. The visual acuity and visual fields improved slowly, recovery being complete within a year. The present case is reported because there are no previous descriptions of retrobulbar neuritis associated with exposure to vinyl benzene.

- 579 Immunochemical Aspects of Toluene Diisocyanate (TDI) Toxicity.
L.D. Scheel, R. Killens, and A. Josephson.
Am. Ind. Hyg. Assn. J. 25, 179-184 (March-April, 1964).

The method for synthesis of antigens composed of crystalline egg albumin conjugated to toluene diisocyanate (TDI) is described. Using the immunologic techniques of the precipitin ring test, percutaneous anaphylaxis in guinea pigs, Ouchterlony plates and immunoelectrophoresis, it has been shown that TDI spontaneously reacts with protein to produce an antigen with TDI specificity. It has further been shown that, as the amount of TDI reacting with the protein increases, the protein structure changes and the antigenicity of the protein is masked. It is also reported that small quantities of TDI injected intravenously into rabbits and rats will produce a pharmacodynamic response which causes a body temperature increase sufficient to be classed as a fever response.

-- Authors' abst.

- 580 Hematological Complications of Phenylbutazone Therapy: Review of the Literature and Report of Two Cases. D.D. McCarthy and T.M. Chalmers.
Can. Med. Assn. J. 90, 1061-1067 (May 2, 1964).

Two examples of hematological toxicity following phenylbutazone therapy are described, one of agranulocytosis and one of aplastic anemia. In the first case, prednisolone in a dosage of 20 mg. daily restored neutrophil percentage and the total leukocyte count to normal, but the patient with aplastic anemia, having shown no response to corticosteroid therapy, became dependent on repeated blood transfusions. The English literature on the hematological toxicity of phenylbutazone is reviewed. Ten fatal cases of agranulocytosis have been recorded, as have 8 cases of aplastic anemia, of which 5 proved fatal. Other toxic effects noted have included leukopenia, depression of erythropoiesis, megaloblastic anemia, thrombocytopenia and leukemia. There are 60 references to the literature.

-- Authors' abst.

INDUSTRIAL DUSTS

- 581 Studies of Hydrocarbons on Mineral Dusts. The Elution of 3:4-Benzpyrene and Oils From Asbestos and Coal Dusts by Serum. J.S. Harington and Marianne Smith.
Arch. Environmental Health 8, 453-458 (March, 1964).

Chrysolite asbestos adsorbed 100% 3:4-benzpyrene from solution after 48 hours at 37°C. compared with 40% and 47% for crocidolite and coal, respectively, and 10% for amosite. No correlation was found between the degree of adsorption of 3:4-benzpyrene and the extent to

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which it was eluted by serum. Serum eluted the naturally occurring oils more effectively from coal dust than it did from crocidolite fiber and was slightly more effective than cyclohexane in eluting 3:4-benzpyrene from coal and crocidolite. 3:4-Benzpyrene was eluted more easily from "natural" coal and crocidolite than it was after it had been freshly adsorbed on dusts previously freed of their naturally associated hydrocarbons. These findings are discussed in relation to the pathogenesis of coal workers' pneumoconiosis and asbestos malignancy. There are 12 references. -- Authors' summary

- 582 The Efficiency of Membrane Filters. W.J. Megaw and R.D. Wiffen.
Intern. J. Air and Water Poll. 7, 501-509 (Aug. 1963).

Experiments with aerosols of potassium permanganate and radioactive tungsten are described in which the efficiency of type AA Millipore filters was determined at a particle diameter of 0.02 microns. No significant penetration of the filter was detected either by particle-counting techniques with a Pollak counter or by radioactive methods. These results contradict those reported earlier by Fitzgerald and Detwiler. It is shown that the performance of the filter in this size range is not dependent on electrostatic effects and is predictable theoretically if it is assumed that diffusion is the sole filtration mechanism. Larger particles that are still smaller than the filter pores, however, and for which diffusion processes are ineffective are also trapped with efficiencies of 100%. Removal of the electrostatic charge of the filter does not alter its efficiency and it is concluded that such particles must be trapped by impaction in the filter pores. -- Public Health Eng. Absts.

- 583 Determination of Free Silica: Gravimetric and Spectrophotometric Procedures Applicable to Air-Borne and Settled Dust. N.A. Talvitie.
Am. Ind. Hyg. Assn. J. 25, 169-178 (March-April, 1964).

Refinements contributing to the precision and accuracy of the phosphoric acid method can be made by the use of commercially available apparatus comprising a rotator and a voltage-controlled heater. Additional refinements include optimizing the conditions of analysis by digestion of orthoclase with phosphoric acid for varying lengths of time, use of correction curves to compensate for loss of quartz, and identification of undissolved minerals by means of a polarizing microscope. An 8-year study of the precision of the phosphoric acid method gave a mean standard deviation of 0.34 in the analysis of typical samples containing from 3 to 50% quartz. The recovery of quartz from the less-than-5 micron fraction of air-borne dust is about 95% when the digestion time is reduced to 8 minutes. The method can be extended to samples of air-borne dust as small as 2 milligrams by spectrophotometric determination of the quartz as molybdisilicic acid. -- Author's abst.

- 584 Electrostatic Cyclone Separator. F. Molyneux.
Chem. & Process. Eng. 44, 517-519 (Sept. 1963).

The author reviews three major types of conventional gas-cleaning equipment, i.e., filters, cyclones, and electrostatic precipitators, and compares their removal efficiencies and the minimum particle size that can be collected in them. He suggests that a cyclone electrostatic precipitator would be cheap to build and would have considerable potential in the treatment of smokes and tars. Fitted to the exhaust system of diesel lorries, and powered from the lorries' electrical systems, the cyclone electrostatic precipitator could discharge tars and carbon downward while the clean exhaust is emitted from the top. -- Public Health Eng. Absts.

- 585 A Study of Byssinosis, Chronic Respiratory Symptoms, and Ventilatory Capacity in English and Dutch Cotton Workers, With Special Reference to Atmospheric Pollution.
B. Lammers, et al. Brit. J. Ind. Med. 21, 124-134 (April, 1964).

An epidemiological survey of 414 English and 980 Dutch male cotton workers was undertaken to determine the prevalence of byssinosis and respiratory symptoms, and to com-

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pare the ventilatory capacities in the two populations, with particular reference to the influence of air pollution. The English workers were employed in 6 mills in Lancashire and the Dutch workers in 3 mills in Almelo spinning similar grades of cotton. The methods used included a questionnaire on respiratory symptoms and illnesses, the collection and examination of sputum, and the measurement of the forced expiratory volume over 0.75 sec. Concentrations of smoke and sulfur dioxide were measured in the English and Dutch towns. The crude rates for byssinosis were similar, 13.5% and 17% respectively in the English and Dutch card and blow rooms, and 1.5% and 1.6% respectively in the spinning rooms. The English workers had significantly higher prevalences of persistent cough and persistent phlegm and significantly lower indirect maximum breathing capacities. These findings were supported by the results of a sputum survey. Nearly twice as many English produced specimens, and the mean volume of sputum was greater for the English workers. The prevalence of bronchitis, defined as persistent phlegm and at least one chest illness during the past 3 years, causing absence from work, was higher in the English than in the Dutch workers in both types of workroom, but not significantly so after standardizing for differences in age. Since there are important differences in the social security systems of the two countries, which may encourage more absence from illness among the Dutch, a comparison of bronchitis thus defined is likely to be invalid. The higher prevalences of respiratory symptoms and lower ventilatory capacities in the English are unlikely to be due to observer error. They are discussed in relation to smoking habits, exposure to cotton dust, and air pollution. The most likely explanation of the unfavorable picture presented by the English workers is the much higher level of air pollution in Lancashire.

-- Authors' abst.

- 586 The Origin of the Term "Byssinosis." A. Massoud.
Brit. J. Ind. Med. 21, 162 (April, 1964).

The Departmental Committee on Compensation for Cardroom Workers adopted in 1939 the term "byssinosis." Since then it has appeared extensively in literature dealing with respiratory disease of textile workers. It connotes an affection of the chest, characterized by the "Monday tightness" found in those exposed to the inhalation of the dust of cotton, flax, jute, or hemp. The term is derived from the Greek or Latin. Its use by various writers is illustrated by examples.

- 587 Rheumatoid Factors and Pneumoconiosis. E.C. Vigliani, B. Pernis, and G. Gambini.
Med. lavoro 54, 241 (1963).

Comparing the pathogenesis of coal workers' pneumoconiosis to silicosis is, a difference is brought out in the relative importance of rheumatoid reactivity and dust effect between the two diseases. In coal pneumoconiosis the dust effect is probably secondary in importance to the rheumatoid genetic orientation, at least in regard to the development of pulmonary round shadows. In silicosis, the dust effect prevails and perhaps could primarily induce a rheumatoid reactivity which in turn manifests itself clinically through the significant incidence of arthritis in this population. -- Cond. from J. Occ. Med. Absts.

- 588 Substances Acting as Inhibitors of the Silicotic Process. H.W. Schlipkoter.
Med. lavoro 54, 405 (1963).

The most important measures providing biological protection against tissue injury from dust exposure were determined in a review of the literature. The stimulation of alveolar clearance and the reduction of dust retention by the respiratory system appear to be the most realistic and effective methods. Attempts to modify the crystalline surface of deposited dust particles by the application of metallic dust, amorphous silica, histamine-releasing agents, etc., do not seem to offer yet a practical application. The protection of phagocytes from the necrotic effect of the ingested silica had apparently received much attention, and the use of polyvinyl-pyridine-N-oxide (P-204) seems to have provided the most interesting results in experimental silicosis only. The use of pharmacological substances with the intent of decreasing tissue reaction to dust has not so far yielded encouraging results. Treatment by polyvinyl-pyridine-N-oxide, may limit the necrotic effect of quartz on tissues and consequently interrupt the fibrogenic activity of this dust. (Note: An impressive bibliography encompassing 91 papers from the world literature accompanies this paper and proves to be a great help for those interested in this intriguing subject.)

-- J. Occ. Med. Absts.

- 589 Specific Immunological Factors in Relation to the Susceptibility to Pneumoconiosis. J.J. Jarry, E. Quinot, and C. Claeys. Med. lavoro 54, 438 (1963).

Several immunological and serum protein values obtained in two groups of people exposed to silica and coal dust, may be significant in regard to susceptibility to pneumoconiosis. One group, called "pneumoconiosis resistant," consisted of miners exposed to the pneumoconiotic risk for at least 30 years who did not present radiological evidence of the disease. The second group was composed of people exposed to dust and presenting clear evidence of the disease before the age of 30. The values of serum isoagglutins serum complement, properdin, glycoglobulins, and gammaglobulins were found consistently higher than normal in the second group, composed of people with pneumoconiosis. On the contrary, in those exposed for a long time without evidence of pneumoconiosis on chest x-ray, the values were all within normal limits and sometimes lower than normal. The pneumoconiotic subjects may present an important immunological characteristic which could be interpreted as either a primary factor leading to an exaggerated susceptibility to the dust effect, or conversely, as a secondary reaction which would accompany the direct dust injury.

-- J. Occ. Med. Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 590 Environmental and Clinical Investigation of Workmen Exposed to Diesel Exhaust in Railroad Engine Houses. M.C. Battigelli, R.J. Mannella, and T. Hatch. Ind. Med. & Surg. 33, 121-124 (March, 1964).

Within the limits of exposure to diesel exhaust products of locomotive repairmen in three representative railroad engine houses over a period up to 15 years (average duration—10 years), 210 workers (average age—50 years) did not show any significant difference in pulmonary function performance from a group of 154 railroad yard workers (average age—50 years) of comparable job status but without history of exposure to diesel exhaust products. Environmental studies in two engine houses revealed levels of exposure to several known constituents of diesel exhaust which were well within the tolerable limits of these substances considered as separate agents. These low values support the negative medical and physiological findings. In contrast, this investigation suggests higher frequency of respiratory complaints, physical examination abnormalities of the chest, and decreased pulmonary function and performance of cigarette smokers compared to nonsmokers regardless of occupation.

-- Authors' summary

- 591 Sealed Environments in Relation to Health and Disease. J.H. Schulte. Arch. Environmental Health 8, 438-452 (March, 1964).

The general health aspects of life in a sealed environment are related primarily to habitability and atmospheric control. The control of the atmosphere involves: (a) Some means to provide the continual addition of oxygen in sufficient quantity to support life and preserve health, and (b) methods to effect the continuous removal of carbon dioxide, carbon monoxide, and other atmospheric contaminants to prevent them from gradually increasing to concentrations which could produce illness. The habitability of a sealed environment is maintained within a comfortable and healthful range by the addition or removal of heat and water vapor. Most of the experience gained in the problems related to health and disease during prolonged existence in a sealed environment has been obtained from the operations of nuclear-powered submarines. These submarine cruises have demonstrated the number, type, and amount of atmospheric contaminants which are produced by man and his equipment within the sealed environment. The progress that has been made in analyzing the atmospheric content of a sealed environment has been reiterated. A number of the atmospheric constituents have been discussed in greater detail in regard to their source, effects

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upon health, and methods of control. The need for control of temperature and humidity and for protection from radiation has been included in the discussion. These needs and methods for controlling the atmospheric constituents, temperature, humidity, and radiation exposure in a sealed environment have been projected to the future space vehicle. There are 27 references.

-- Author's summary

- 592 Diurnal Body Temperature Curves in Shift Workers. J.H. Van Loon.
Ergonomics 6, 267 (July, 1963).

For the purpose of investigating the adaptability of the regular diurnal rhythm to the changed pattern of life, the diurnal rhythm of body temperature was studied under the conditions of night-shift employment in young men performing usual factory work. A significant difference was established between the temperature curves during the day and the night. On the whole, the night pattern appeared flatter. The external temperature, which in the day-shift had the same effect as activity on body temperature, showed an opposite effect in the night-shift. Various patterns of adaption involving an immediate, long-term, or irregular change from the night pattern to the day pattern were observed in the studied individuals.

-- J. Occ. Med. Absts.

- 593 Monday Morning Auditory Threshold in Weavers. G.R.C. Atherley.
Brit. J. Ind. Med. 21, 150-153 (April, 1964).

The view is questioned that 5:00 P.M. on Friday to 8:00 A.M. on Monday constitutes an adequate interval for the recovery of occupationally induced temporary threshold shift. Group mean pure tone thresholds were determined for a group of young weaving shed operatives on a Monday morning and compared with those obtained from the same group, after a 16-day absence from noise. The 16-day thresholds were lower than the results on a Monday morning; the largest mean difference was at 4 kc/s and amounted to 7.3dB. It was concluded that the Monday morning threshold of these weavers had a component of temporary threshold shift, the exact magnitude of which is unknown.

-- Author's abst.

- 594 Lasers as Tools for Embryology and Cytology. K.R. Lang, et al.
Nature 201, 675 (Feb. 15, 1964).

The most important difference between a laser and an ordinary light source is the coherence. By coherence, we mean the ability to specify the relation between the magnitude and polarization of the light wave. The advantages and limitations of the helium-neon laser and the pulsed ruby laser are contrasted. The continuous, monochromatic helium-neon laser operating in a simple axial mode with a gaussian amplitude distribution provides one of the most coherent optical beams available, permitting nearly ideal optical resolution. If the helium-neon laser is driven sufficiently hard so that it oscillates in more than one mode, the diffraction effects become substantially worse, and the spot size increases several fold. This problem is particularly troublesome with a pulsed ruby laser, a solid-state laser. The main advantage of the solid-state laser is the higher power densities and the wide range of frequencies which are available either directly or via the Raman effect. The high-power density can cause large thermal effects at a small localized region of a cell even if the components absorb visible red light to only a small degree. The actual output energy of the ruby laser is proportional to the input energy to the optical pumping system. For the cell-biologist, the ideal microbeam would permit selective destruction within an organelle of a particular class of compounds. These requirements can be met with the helium-neon laser when brought in through one eyepiece of a binocular microscope. There are still difficulties in obtaining a uniformly illuminated field, however, when a phase contrast microscope is used.

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

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RADIOACTIVITY AND X-RADIATION

- 595 Cesium-137 Metabolism in Man. B. Rosoff, S.H. Cohn, and H. Spencer. Radiation Res. 19, 643 (Aug. 1963).

The urinary and fecal excretion of Cs-137 was determined in 9 patients with neoplastic disease and in 2 patients with pulmonary disease. Cesium metabolism was shown to be similar after either intravenous or oral administration. It disappears rapidly from plasma and is taken up by red blood cells. The concentration is fairly uniform in soft tissues by 10 days. The biological half-life of cesium in man, determined in 2 patients, was found to be 50 and 60 days. The main excretory path is via the kidney. The urinary: fecal excretion ratio is approximately 10:1. The use of diuretics, corticosteroids, and ion-exchange resins did not increase the excretion rate. -- J. Occ. Med. Absts.

- 596 Excretion of Pu-239 in a Patient With a Plutonium-Contaminated Injury. F. Swanberg, Jr., and R.C. Henle. J. Occ. Med. 6, 174-178 (April, 1964).

Contaminated minor injuries are to be expected in large-scale radionuclide-manufacturing operations. Early medical treatment to reduce the retention of radioactive materials can be achieved by a close-at-hand working team of medical and radiation-protection specialists. Administration of chelating agents, with resultant elevated excretion rates of radionuclide, make assessment of the body burden difficult. Treatment may affect excretion rates for as long as 200 days after administration of diethylenetriamine pentaacetic acid (DTPA), requiring long-term follow-up of such cases. The fecal-excretion rate of plutonium after the initial course of treatment is influenced much less than the urinary-excretion rate by subsequent treatment with chelating agents. The marked variability in the fecal-excretion rate precludes use of these data for evaluating the body burden in this case, but they are of value as indicators of the quantity of plutonium excreted during medical treatment. Relying on the urinary-excretion data, the authors conservatively conclude in this case that 400 days after the exposure, the internal deposition of soluble plutonium does not exceed 10 nc. (25% of the maximum permissible body burden (MPBB)). -- Authors' summary

- 597 Determination of Concentrations of Airborne Radioactivity. G.L. Helgeson. Health Physics 9, 931-942 (Sept. 1963).

Airborne radioactivity may be measured by three main methods: Sampling techniques followed by suitable monitoring, sampling techniques concurrent with suitable monitoring, or by directly measuring the radioactivity from a known volume of air. This paper discusses the interpretation of air sampling and monitoring data obtained with the first two techniques, including the effect of half-life on sample radioactivity. Subjects covered are: Derivation of air sampling equations; evaluation of data from fixed collecting-medium continuous air monitors; evaluation of data from moving collecting-medium continuous air monitors, with immediate counting or with post collection counting; evaluation of data for the above air monitoring instruments when (a) the half-life is short compared to the sampling interval of concern, (b) the half-life is long compared to the sampling interval of concern, and (c) the half-life is similar to the sampling interval of concern. The effect of changes in concentration as a function of time is also discussed. Examples are given for each condition. -- Public Health Eng. Absts.

- 598 Radiation Safety in Industry. M. Kleinfeld. J. Occ. Med. 6, 179-183 (April, 1964).

A radiation safety program can be successfully administered by a state labor department. In New York State, the regulation of industrial sources of radiation is simply an extension of the Department's responsibility for occupational health and safety. An industrial

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code can be an effective administrative tool in guiding industry toward achieving safe operating standards. It was found in New York that, in spite of the strict enforcement of safety rules and regulations regarding sources of radiation, these rules have not been a deterrent to industrial users in the development of peaceful uses of atomic energy. The safety record of this industry, as demonstrated by the accident, injury, and compensation data of the federal government and of New York State indicates that the industry is one of the safest. The benefits arising from the proper use of radiation far outweigh its potential risks. In a world faced with a rapidly expanding population, possessed of limited hydroelectric power capacity and shrinking resources of conventional fuels, the peaceful uses of nuclear energy are essential to the future well-being of mankind.

-- Author's conclusions

- 599 Radiation Protection in Canada. Part I. P.M. Bird.
Can. Med. Assn. J. 90, 1024-1030 (April 25, 1964).

The current status of radiation protection in Canada has been summarized in the present paper, the first of a three-part series. Particular emphasis has been placed on the role of the Radiation Protection Division of the Department of National Health and Welfare. Somatic and hereditary effects of radiation exposure are briefly discussed as a basis for an understanding of the radiation protection standards which have been developed at national and international levels. The rapid increase in use of radioactive materials and x-ray apparatus in medicine, industry and research, and the extensive atmosphere testing of nuclear weapons have led to the development of comprehensive radiation protection activities in Canada, especially in the Department of National Health and Welfare. Well-established lines of communication and liaison exist among the various agencies responsible for these activities.

-- Author's abst.

- 600 Radiation Protection in Canada. Part II. The Role of the Radiation Protection Division in Safeguarding the Health of Radiation Workers. P.M. Bird.
Can. Med. Assn. J. 90, 1075-1080 (May 2, 1964).

The current status of radiation protection in Canada is discussed in the second of a three-part series and particular emphasis is placed on the role of the Radiation Protection Division of the Department of National Health and Welfare. Administrative and operational control procedures have been developed, involving prior approval of health safeguards in the radioisotope user's facilities and techniques, and systematic monitoring and inspection. Where necessary, a medical follow-up of accidents and excessive radiation exposures is carried out. In 1963 more than 1,600 radioisotope licenses were issued. Film-monitoring service was provided to about 15,500 isotope and x-ray workers. Semi-automatic handling procedures have been developed to meet the increasing demand for film-monitoring services. Monitoring and inspection services have been provided for x-ray workers, and a committee has been formed to develop administrative procedures for health and safety control in x-ray work. Committees have also been set up to review the health and safety aspects of the operation of nuclear reactors and particle accelerators.

-- Author's abst.

- 601 Radiation Protection in Canada. Part III. The Role of the Radiation Protection Division in Safeguarding the Health of the Public. P.M. Bird.
Can. Med. Assn. J. 90, 1114-1120 (May 9, 1964).

The current status of radiation protection in Canada is discussed in the last of a three-part series. Particular emphasis has been placed on the role of the Radiation Protection Division of the Department of National Health and Welfare. A radioactive fall-out study program has been established involving the systematic collection of air and precipitation samples from 24 locations, soil samples from 23 locations, fresh-milk samples from 16 locations, wheat samples from 9 areas and human-bone specimens from various hospitals throughout Canada. A whole-body-counting facility and a special study of fallout in Northern areas have also been initiated. For any age group, the highest average strontium-90 concentration in human bone so far reported has been less than 4 picocuries per gram of calcium compared with the maximum

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permissible level of 67 derived from the International Committee on Radiation Protection (ICRP) recommendations. By the end of 1963 a general downward trend of levels of radioactivity detected in other parts of the program has been observed. Programs to assess the contribution to the radiation exposure of members of the population from medical x-rays, nuclear reactor operations and natural background-radiation sources have also been described. The annual genetically significant dose from diagnostic x-ray examinations in Canadian public hospitals has been estimated to be 25.8 mrem. Results from the reactor-environment monitoring programs have not suggested the presence of radioactivity beyond that contributed from fallout.

-- Author's abst.

- 602 Planning for Care of Injured Radiating Patients. W.D. Norwood.
Arch. Environmental Health 8, 474-479 (March, 1964).

The possibility of the occurrence of accidents which would result in injured radioactive employees in an atomic energy installation has been discussed. Emergency temporary type facilities which have been made available for handling such an event are described. The more permanent type facility recommended for dealing with such an event is also considered. Because of the cost, much thought is required to insure a reasonably adequate facility at justifiable cost. Plans are discussed for quickly assembling the medical and supporting team required to deal with such a catastrophe.

-- Author's summary

- 603 Current Concepts in Radiation Protection. Part II. Radioiodine Intake, 1961-1962.
L.L. Terry and D.R. Chadwick. J. Am. Med. Assn. 188, 343-350 (April 27, 1964).

Fresh fluid milk is the principal source for human ingestion of I-131 resulting from nuclear testing. Data were accumulated on average daily I-131 concentrations per liter of composited milk in areas monitored by the Federal-State Pasteurized Milk Network during the 1961 and 1962 periods of atmospheric nuclear testing, and estimates of I-131 dosages to the thyroid gland of infants consuming such milk were made. With 3 exceptions, all the 12-month doses were below the Radiation Protection Guide recommended by the Federal Radiation Council for normal peacetime operations of nuclear industry. Because of wide variation of I-131 in milk from different herds, some children probably received somewhat higher doses. The National Advisory Committee on Radiation has studied various counter-measures for reducing I-131 exposure, and the FRC has reported on health effects.

-- Authors' abst.

- 604 Detection and Quantitation of Fallout Particles in a Human Lung.
Audrey V. Wegst, C.A. Pelletier, and G.H. Whipple.
Science 143, 957-959 (Feb. 28, 1964).

Portions of an adult human lung were studied by autoradiography in order to detect the presence of fallout particles. The radioactivity in the remainder of the tissue was determined with a gamma-ray spectrometer. Four particles were found and their activities were determined. From the measurement for total-fission-product activity in the lung tissue it was calculated that there were approximately 264 particles in the right lung at the time of death.

-- Authors' abst.

- 605 Radioactivity in the Atmospheric Effluents of Power Plants That Use Fossil Fuels.
M. Eisenbud and H.G. Petrow. Science 144, 288-289 (April 17, 1964).

Analysis of the fly ash produced by combustion of pulverized Appalachian coal has shown that a 1000-megawatt coal-burning power plant will discharge into the atmosphere from about 28 millicuries to nearly 1 curie per year of radium-226 and radium-228. An oil-burning plant of similar size will discharge about 0.5 millicurie of radium per year. Comparison of these data with data on the release of fission products from nuclear-powered generating stations shows that when the physical and biological properties of the various radionuclides are taken into consideration, the conventional fossil-fueled plants discharge relatively greater quantities of radioactive materials into the atmosphere than nuclear-powered plants of comparable size.

-- Authors' abst.

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ENVIRONMENTAL MEASUREMENTS

- 606 Sampling Methods for Oil Mist in Industry. H.E. Ayer.
Am. Ind. Hyg. Assn. J. 25, 151-157 (March-April, 1964).

Satisfactory reproducibility, sensitivity and efficiency were found in samples for oil mist concentration taken by either the electrostatic precipitator or by glass fiber filters. Membrane filters and standard laboratory filter papers were unsuitable. Determination of size frequency distributions by stage weights from a commercial cascade impactor gave most promise as a routine field sampling method; membrane filter sheet was used on the impactor slides as a collecting reservoir. Microscopic methods for size frequency distribution were more tedious and the collection of suitable samples was more difficult. Light scattering photometers give the most convenient and accurate size frequency distribution where concentration is not too high.

-- Author's abst.

- 607 Inhalation Toxicology of Oil Mists. I. Chronic Effects of White Mineral Oil.
W.D. Wagner, P.G. Wright, and H.E. Stokinger.
Am. Ind. Hyg. Assn. J. 25, 158-167 (March-April, 1964).

Five species of laboratory animals (dog, rabbit, rat, hamster, mouse), were exposed daily for periods of from one year to 26 months to a petroleum base mineral-oil mist at closely controlled concentrations of 5 mg./m³, the current threshold limit value and at a level 20-times this value, 100 mg./m³. Control groups were used throughout the duration of exposures. At no exposure level did changes in body-weight gain, hematologic variables or respiratory function values deviate significantly from the control data. Studies with a spontaneous pulmonary-tumor susceptible strain of mouse presented equivocal evidence of an altered rate of tumor formation at the 100 mg./m³ concentration. Biochemical studies showed a significant increase in basic and magnesium-activated phosphatase activities in the blood serum and lung tissue of serially sacrificed dogs and rats exposed at 100 mg./m³. Detailed histologic evaluation of tissues of serially sacrificed exposed and control animals presented a significant pulmonary alveolar and hilar lymph node oil deposition or lipid granuloma formation after approximately 12 months of exposure in the dogs and rats exposed at 100 mg./m³. It was indicated that continued exposure of these animals to a similar high concentration of oil mist would increase the susceptibility of the animals to a pulmonary inflammatory process and presumably bring about reduced respiratory function. These findings suggest that the 5 mg./m³ mineral oil mist concentration would present no toxic hazard upon prolonged exposure. It would appear, however, that protracted exposure at approximately 100 mg./m³ would in time produce harmful physiologic effects. Nineteen references are given.

-- Authors' summary

- 608 A Comparison of Polycyclic Aromatic Hydrocarbon Emissions From Diesel- and Petrol- Powered Vehicles in Partially Segregated Traffic Lanes. J.L. Sullivan and G.J. Cleary.
Brit. J. Ind. Med. 21, 117-123 (April, 1964).

As a result of special traffic conditions at a point in Sydney, diesel-powered vehicles are partially segregated in one of 10 road lanes during the peak evening period. Because of this, it was found possible to sample simultaneously in two of the road lanes, about 40 feet apart, only one of which was carrying diesel vehicles. For approximately one month samples were collected for part of the evening traffic peak period and were then pooled and analyzed for polycyclic aromatic hydrocarbons. Because it was also necessary for vehicles to stop briefly, all were accelerating past the sampling point. An association was established between traffic containing diesel vehicles and the concentrations of smoke, 1,2-benzpyrene, 3,4-benzpyrene, 1,12-benzperylene, and coronene.

-- Authors' abst.

03121516

- 609 Some Observations of Noise at Airports and in the Surrounding Community. A. Cohen and H.E. Ayer. Am. Ind. Hyg. Assn. J. 25, 139-150 (March-April, 1964).

The results of two airport noise studies were reported with specific attention being given to an evaluation of : (a) the noise conditions found in different airport working environments, (b) the relationship between hearing losses of airport workers and their occupational noise exposure, and (c) the community noise exposure associated with aircraft activity. Noise conditions in the ramp areas and in the jet and propeller engine testcells reached the highest observed levels and were believed hazardous to hearing. The audiometric data of unprotected airport employees having a history of excessive exposure to operational aircraft noise showed greater hearing losses than those reported for a comparable group of persons with minimal noise exposure. Measurements of flyover noise in areas surrounding an airport indicated the flyovers of jet aircraft to be more intense, more disruptive of speech, and more annoying than that of piston engine aircraft.

-- Authors' summary

- 610 Improved Methods for Determining Fluoride in Water. A.T. Palin. J. Inst. Water Engrs. 17, 347-355 (July, 1963).

A modified reagent in which the sulfuric acid of the Lim reagent is replaced by bisulfate to give a normality of 0.043 is proposed. The change gives the advantage of working with more intense colors at normalities below 0.05 without departing significantly from the desired linear relation between color intensity and fluoride concentration. A further advantage is that the modified reagent is used in stable, solid form, being dispensed as a powder or, for greater convenience, as compressed tablets.

-- Public Health Eng. Absts.

PREVENTIVE ENGINEERING

- 611 Medical Problems of Wearing a Coal Miner's Safety Helmet. R.H. P. Fernandez. Brit. J. Ind. Med. 21, 158-161 (April, 1964).

A survey of 324 men, who voluntarily reported an injury to that part of the head normally covered by a miner's safety helmet, took place at 18 collieries (16,732 men) during the period March 31 to September 30, 1962. The most prevalent site for injury was the top of the head in surface workers, and the forehead in underground workers. Normally surface workers do not wear a helmet. Underground workers expose their forehead when they wear their safety helmets in an upwards-tilted position. One reason for this practice is that the helmet has become too small due to shrinkage of the sweat-dampened leather headband which occurs after the helmet has been left for some time in the hot pit-head bath lockers. A helmet which had a wide, unshrinkable, easily adjustable head-band made of smooth material was worn by 31 men who had dermatitis or soreness of that part of the skin normally covered by a safety helmet. After 6 months 26 of these men had no signs or symptoms, confirming that the main cause of helmet dermatitis is friction. A direct relationship between skin rash and sweating was observed in only 4 of these men.

-- Author's abst.

03121517

COMMUNITY AIR HYGIENE

- 612 Acid Droplets in Town Air. R.E. Waller.
Intern. J. Air and Water Poll. 7, 773-778 (Oct. 1963).

Slides impregnated with indicators have been used in a cascade impactor to detect acid droplets in urban air. Acid droplets have been found at all times in London and are most numerous during fog. Much of the acid is contained in droplets of less than 1 micron diameter, but larger ones do occur and acid "rain" has been observed in some atmospheric conditions.

-- Public Health Eng. Absts.

- 613 An Instrument for Determining Sulphur Oxides in Flue Gases. M. Hissink.
J. Inst. Fuel 36, 372-376 (Sept. 1963).

A portable instrument for the accurate and simultaneous determination of sulfur trioxide and sulfur dioxide in flue gases has been developed. The instrument operates by cooling the sampled gases to a temperature between acid and water dewpoint, and collecting the condensed mist of sulfuric acid in a G4 glass filter. The sulfur dioxide is absorbed in hydrogen peroxide solution. The sampling period is about 30 minutes and the analysis is finished by two simple acid titrations. The performance of the instrument has been checked with the aid of an apparatus for the preparation of a stream of synthetic flue gas of known composition. The results showed good agreement when the sulfur trioxide content was in the range of 5 to 40 ppm by volume, while 600 to 1,000 ppm of sulfur dioxide was present. No interference from components normally present in flue gases has been found.

-- Public Health Eng. Absts.

- 614 Air Pollution, Lung Cancer, and Chronic Lung Disease. R.E. Eckardt.
J. Occ. Med. 6, 184-188 (April, 1964).

As indicated in the opening paragraphs of this review, it is not the intent to imply that correlations between health effects and air pollution might not exist, but only to bring an awareness of frequently overlooked reports which suggest that the state of our knowledge at this moment is far from complete. Suggestions have been made which warrant further intensive investigation, but it is far too soon to draw any positive conclusions. It is hoped that those who are putting forth the "overwhelming persuasive, and deceptive propaganda" will give pause to their efforts and take cognizance of these reports before they precipitate costly undertakings which may not be effective. There are 24 references.

-- Author's conclusion

- 615 Polluted Urban Air and Related Environmental Factors in the Pathogenesis of Pulmonary Cancer. P. Kotin and H.L. Falk.
Diseases of Chest 45, 236-246 (April, 1964).

Data from several spheres of laboratory investigation lend support to the belief that the epidemiologic association between urban residence and lung cancer is of pathogenetic significance. Admittedly, the identification of carcinogenic agents in pollutant sources and in the atmosphere does not inevitably connote an adverse biologic effect. Nevertheless, despite significant omissions in the authors' data and despite the limitations imposed by the absence of or deficiencies in certain analytic and biologic techniques, their chemical, physical, and biologic data unite to form a constellation that strongly implicates the atmosphere as one dominant factor in the pathogenesis of lung cancer. The data are accorded additional significance by virtue of their congruity with the epidemiologic pattern of lung cancer. Epidemiologically, a reduction in lung cancer incidence may be properly anticipated as a result of

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reducing or eliminating the concentration of any of the environmental factors discussed. It is the authors' belief, however, that predictions as to the extent of reduction when but one of the factors is eliminated are meaningless in light of the multiplicity of factors described. It is wholly unwarranted to anticipate a quantitative reduction in lung cancer rates equal in number to the percentage showing a statistical association with any environmental source or specific carcinogenic agent. While atmospheric pollution is advanced as but one potential source of agents carcinogenic to the lung, proper evaluation of its contribution to the pathogenesis of lung cancer will be possible only in terms of its relation to the action of other significant environmental sources. There are 21 references.

-- Authors' conclusion

MANAGEMENT ASPECTS

- 616 Labor Interests. A.E. Brown.
Arch. Environmental Health 8, 415-417 (March, 1964).

Industry must have the cooperation of its employees if it is to do a proper job in the fields of safety and health. Cooperation, education, and communication play a big part. Cooperation is the key. Once this is attained, success in education and communication are determined only by effort. How is cooperation obtained in the area of health and safety? First, the desire must be indicated to make this part of the relationship with employees of mutual benefit to both—protection to the worker, reduction of the number of replacements, and retraining of ill or injured workers, a saving to the consumer by reducing the cost of the product. Plant safety and industrial health programs must be tied directly to the plant bargaining unit. There should be complete understanding between the parties concerned that this phase must be kept separate from contractual grievances. The committee which deals with plant grievances should not be the same committee which deals with safety or health or the issues become so confused that good judgment does not prevail, results are not forthcoming, and the program is stalemated.

- 617 Management Aspects of Industrial Hygiene. J.L. O'Marra.
Arch. Environmental Health 8, 404-409 (March, 1964).

The nature of our economic system is such that management must pursue the goal of profits but to stay successfully in business over the long run, management must be responsive to the needs of its customers, employees, and the community as well as its shareowners. The real art in management is striking the proper balance in the allocation of resources to meet the needs of these various groups which have an interest in the conduct of the enterprise. This concept of responsible and responsive management represents both a challenge and an opportunity to those working in the field of industrial hygiene. The challenge is to insure that this field contributes all that it can to meeting managements obligations to its employees and to the community. To do this effectively requires adopting a very broad perspective as to the legitimate scope of the field and also the development of new knowledge in many uncharted but vital management areas. The opportunity for service is present in a management environment which recognizes new responsibilities and new needs along with a new high level of receptivity for your special contribution of industrial hygiene. According to the author, two basic questions deserve the concerted attention of management and industrial hygienists: (1) Are we making optimal use of the already available knowledge and techniques in the field of industrial hygiene, and (2) Will we be able to cope adequately with new needs rapidly emerging so that problems in the future will be minimized? More than 50 million Americans are employed in American industry. They share with management daily experiences in the operation of business. Through this daily contact each individual has the opportunity to reach his own conclusion about the value of our free enterprise system. The employee may find his work experience satisfying and equitable, or upsetting and unfair, or perhaps something in between. There will be no reason to be concerned with threats to our system because the people who collectively hold the power to change the system, employees and the public, won't have any reason to want to change.

-- Cond. from author's conclusion

- 618 Group Health Programs. J.H. Sterner.
Arch. Environmental Health 8, 418-421 (March, 1964).

Members of management, industrial relations people, and particularly including industrial physicians, must move into community health activities with greater energy and purpose if they would hope to influence the medical care costs to which their company is committed. Service with hospital boards, community health agencies, Blue Cross and Blue Shield plan boards, and more recently with community health service planning and coordinating groups, are important activities in which management people must become involved if they are to develop an understanding and authority in health matters. The industrial physician must participate in medical society and community hospital activities if he is to develop the rapport and acceptance which will enable him to relate most effectively to the medical community.

- 619 Sick Absence for Men and Women by Marital Status. P.E. Enterline.
Arch. Environmental Health 8, 466-470 (March, 1964).

Data are presented on the average annual number of days of sick absence per person per year by age, sex, and marital status for the entire United States for the 2-year period July, 1959-June, 1961. The higher sick absence among women as compared with men, noted in other studies, is characteristic only of persons who are or have been married. Among single persons, after accounting for age differences between working men and women, sick absence is higher among men rather than among women. The highest female sick absence appears where the spouse is absent or the marriage has been dissolved, either by death or divorce. It is hypothesized that responsibility for child rearing is an important factor in the higher female sick absence. Were it possible to remove the influence of this and other sociocultural factors, females would no doubt have a superior sick absence record when compared with men.

-- Author's summary

- 620 Automation: A Clinical Study. D.H. Goldstein and C.R. Hulsart.
J. Occ. Med. 6, 169-173 (April, 1964).

There are many problems involved in automation. It is doubtful that there are any serious mental health implications, although those who react poorly to life's stress will need help and guidance. The human adaptability to change is amazing and never to be underestimated. There are real implications both to the individual and to the group, at work, at home and, indeed, in the community as well, even if one excludes the economic implications of automation. Automation has increased the demands of unions for a reduction in the work week and an increase in leisure time. Opportunities should be expanded for physical activity in leisure recreation to compensate for the loss of physical activity in some of the tenders of automated machinery. The social scientists and the medical profession must strive to extend the knowledge and understanding of both individual human behavior and group human behavior. Efforts should be devoted to promoting job satisfactions and a good self-image at work. Most important is the task of aiding workers to consider themselves as integral parts of the production process, with a pride in performance. Finally, the introduction of automated equipment must not be allowed to detract from the recognition of the importance, the needs, and the dignity of the worker. -- Cond. from authors' summary

ACCIDENTS AND PREVENTION

- 621 Hazards to Health. The Hazards of Farming. J.H. Powers.
New Engl. J. Med. 270, 839-841 (April 16, 1964).

Agriculture is annually responsible for more occupational deaths than any other major industry in the United States: 3100 lives were lost while men and women were living and working

on farms in this country in 1962. Furthermore, fatal accidents comprise only a small proportion of the total; for every fatality there are approximately 100 serious, disabling, crippling injuries. By recognition of the inherent dangers to which workers in other industries are exposed and by the institution and encouragement of measures to promote safety, by both management and labor, other industrial death rates have declined significantly in the past decade and a half; but the occupational death rate among farmers has actually risen during the same period. The incidence of all rural accidents rises rapidly during the summer months and then falls abruptly with the departure of tripping tourists from the highways, the completion of the harvest and the return of children to school. The seasonal variation of agricultural accidents alone follows a very similar pattern. The peaks during July and August are composed largely of mishaps due to harvesting hay, grain and corn, filling silos, and repairing buildings and equipment, and those in which children are involved while playing about machinery in operation, men at work, farm animals and farm buildings. Urban children turned loose on farms during the long summer vacation to roam and play at will without supervision, totally ignorant of the hazards to which they are thereby constantly exposed, often become involved in serious and occasionally fatal accidents. In a review of 3134 patients admitted to the Mary Imogene Bassett Hospital, Cooperstown, New York, because of serious injuries sustained in all types of rural accidents, 658, or 20 per cent, were due to the hazards of farming. Half these occurred in the barn or barnyard. Fractures comprise approximately a third of all serious injuries sustained in farm accidents. Lacerations and division of tendons, nerves and blood vessels and amputations of fingers, toes and forearms, usually caused by sharp cutting instruments, rotary buzz saws or ensilage cutters, are next in order of frequency. Contusions, incised or punctured wounds, abrasions, concussions, dislocations, burns and frostbites follow in that order. Tetanus is an uncommon complication despite the disinclination of many farmers to submit to prophylactic immunization for themselves or the members of their families. In a review of 1779 rural accidents reported in 1958 half the patients had received no treatment whatever before arrival at the hospital despite the serious nature of their injuries. After admission to the hospital, the value of an accurate historical account of the accident and the events immediately preceding it cannot be overemphasized. A complete physical examination is fundamental. All systems should be quickly and efficiently surveyed to determine the presence or absence of injuries other than those immediately apparent and the role that they may assume in relation to surgical therapy.

- 622 Traffic Accidents—Epidemiology and Medical Aspects of Prevention. N. Williams.
Can. Med. Assn. J. 90, 1099-1104 (May 9, 1964).

Injuries and deaths from traffic accidents are a public health problem of epidemic proportions and justify intensive epidemiological research. The human factor is responsible for the majority of traffic accidents. The literature concerning the human factor is reviewed, and it is concluded that psychosocial influences are most important, though medical conditions may be responsible for 3 to 4% of accidents. Problems concerning the medical examination of drivers are discussed and the need is emphasized to find some means of removing from the road those drivers who continue to drive in spite of repeated medical advice not to do so. Some of the medical conditions influencing driver safety are discussed. It is recommended that each Division of The Canadian Medical Association should publish a guide for physicians who examine drivers. The advantages of a uniform guide in Canada are stressed.

-- Author's abst.

- 623 Effects of Electric Shock on Respiration in the Rabbit. W. R. Lee and S. Zoledziowski.
Brit. J. Ind. Med. 21, 135-144 (April, 1964).

Death from electric shock has been investigated on and off for just over 200 years. By the turn of the present century the three main methods of immediate death had been described. They are tetanic contraction of the respiratory muscles, ventricular fibrillation, and respiratory arrest. Since then there has been controversy over the relative importance of the last two as modes of death. For over half a century the first-aid treatment advised has been artificial respiration based on the assumption that respiratory arrest is

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common in the usual limb to limb shock. The evidence for this assumption is reviewed and found to be open to question. An experimental investigation of the effect of forelimb to forelimb electric shock on respiration in rabbits has shown that, with currents up to about 200mA, respiratory arrest appears to be due solely to muscular contraction. Larger currents produce respiratory arrest, usually followed by a delay before spontaneous resumption of respiration. The experimental currents have been taken up to 1 ampere, and at this level they resulted in considerable heating of the tissues. This resulted in marked macroscopic and histological changes in the forelimbs, despite which the animal breathed again spontaneously if ventricular fibrillation had not occurred. -- Authors' abstr.

MISCELLANEOUS

- 624 Launderette Waste Treatment Processes. J.M. Flynn and B. Andres.
J. Water Pollution Control Fed. 35, 783-798 (June, 1963).

Launderettes in Suffolk County, New York, produce 150 million gallons per year of wastes containing 500,000 pounds of detergents and other washing compounds. These wastes were formerly discharged untreated into leaching pools and then into a shallow aquifer that constitutes an important water supply source. Severity of pollution of ground water by launderette wastes led to the adoption of strict standards for quality of discharged wastes. Imposition of standards was followed by treatment studies, which resulted in proposals for installation of systems utilizing flotation, upflow clarification, and vacuum diatomite filtration. Various combinations of detention, flocculation, pH adjustment, and carbon adsorption were used with these primary processes. A modified vacuum diatomite filtration system was found to satisfy best the criteria established for launderette waste treatment. Advantages and disadvantages of each treatment scheme are discussed, cost data are given, and future development needs are outlined. -- Public Health Eng. Absts.

- 625 Significant Physiological Characteristics of Organic Pollutants.
O.J. Sproul and D.W. Ryckman.
J. Water Pollution Control Fed. 35, 1136-1145 (Sept. 1963).

This investigation was undertaken to determine the organoleptic and toxicologic properties of organic chemical pollutants from various sources. The industrial sources sampled included brewery, chemical, corn refining, metal fabrication, meat packing, oil refinery, paint, pharmaceutical, and soap plants. A domestic wastewater also was sampled. The pollutants were recovered by the modified carbon filter technique. Quantitative data on the industrial plants sampled, the threshold odor of the organic chemical pollutants, the odor quality of the waste and river and stream samples, results from the initial fish bioassay study, and a bioassay test in which meat packing waste and a river sample were used are presented in tables. Conclusions are given on the acute toxicity of industrial organics; the odor potential of the total organics; and the total organic material in brewery wastes, meat packing wastes, and crude oil wastes. "Organic pollutants with detrimental organoleptic and physiological responses remain after extensive application of all the forces under stream purification conditions. It appears that the control of this problem will encompass both the elimination of some of these pollutants at their sources and the development of improved methods of treatment." There are 15 references. -- Public Health Eng. Absts.

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- 626 Water Pollution Control Activities of the Central Ontario Lakeshore Refineries.
A.J. Harris. J. Water Pollution Control Fed. 35, 1154-1165 (Sept. 1963).

A brief background is given of the responsibility and duties of the Ontario Water Resources Commission, along with a description of the liquid-waste control activities of four refineries on the shores of Lake Ontario between Toronto and Hamilton. Waste treatment facilities are described for the Shell Oil Company at Oakville, the Cities Service Company near Bronte, the British American Oil Company at Clarkson, and the Regent Refining Company at Port Credit.
-- Public Health Eng. Absts.

- 627 Fluoridation and the Water Industry. J.R. Collins. Effluent and Water Treat. J. 3, 268 (May, 1963)

The author is the water engineer and manager at Watford, which is one of the three original fluoridation installations in Great Britain. The chemicals, feeding equipment, and analytical procedures used are described as well as the costs. Public relations aspects, particularly the techniques used by people to oppose fluoridation, are remarkably similar to those in the United States. The legal status of the measure has not yet been tested in British courts.
-- Public Health Eng. Absts.

- 628 Status of Fluoridation in the United States and Canada, 1961. Task Group 2620 P Report.
J. Am. Water Works Assn. 55, 571-580 (May, 1963).

This report lists the communities that began to fluoridate their water and the trends and developments that occurred in fluoridation in 1961. At the end of the year, 1,329 communities serving over 43.7 million persons in the United States and Canada, were adding fluorides to their public water supplies. Maryland, where 91% of the state's population uses fluoridated water, leads all other states in adoption of this measure.
-- Public Health Eng. Abst.

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Arlindo De Assis
Caixa Postal 2785
Rio de Janeiro, Brazil

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