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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

APRIL, 1965
(Vol. 29, No. 4)

INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
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Industrial Hygiene Foundation assumes no responsibility for statements in articles abstracted in this Digest or for material from other organizations which may be sent to members from time to time. The Digest's condensation of articles as well as literature not originating within the Foundation, are made available to our members solely for their information, by way of keeping them posted on developments.

INDUSTRIAL HYGIENE FEATURES

The uses and misuses of environmental health standards are discussed in Abst. No. 330.

Abst. No. 332 presents the future of health in industry.

See Abst. No. 341 for correlations between water hardness and cardiovascular deaths.

Abst. No. 343 reports on early oral cancer.

See Abst. No. 348 for environmental aspects of histoplasmosis.

A study of electron microscopy of human pulmonary emphysema is summarized in Abst. No. 353.

Abst. No. 354 is concerned with observations on the natural course of skin cancer.

A short discussion of beryllium as a structural material is given in Abst. No. 368.

Ulcerations of the nasal septum due to inhalation of chromic acid mists are studied in Abst. No. 369.

Abst. No. 370 is about a three-year study of lead poisoning in Chicago.

The experimental and clinical toxicology of kerosene are investigated in Abst. No. 373.

The urinary excretion of phenol by men exposed to benzene is described in Abst. No. 377.

Data on cancers from air-refined and steam-refined asphalt are presented in Abst. No. 380.

A report on the mortality of coal miners from carcinoma of the lung is presented in Abst. No. 382.

Abst. No. 386 gives information on the microscopic identification of toxic dusts.

Abst. No. 398 studies the radiation hazard from contaminated aircraft.

FOUNDATION FACTS

NEW MEMBER. The Foundation is pleased to add the name of Armstrong Paint & Varnish Works, Inc. to its list of members.

TRANSACTIONS OF THE 29th ANNUAL MEETING OF INDUSTRIAL HYGIENE FOUNDATION held in Pittsburgh, last October, have been published in the April, 1965 issue of the Archives of Environmental Health and are being mailed to the membership.

DR. ROBERT T. P. deTREVILLE, Industrial Hygiene Foundation's Managing Director, represented the Foundation at the American Industrial Health Conference held April 5-8, in Bal Harbour, Florida. (see page i). In conjunction with this Conference, the Industrial Hygiene Foundation Nursing and Medical Committees held breakfast meetings in order to plan their part for the 30th Industrial Hygiene Foundation's Annual Meeting to be held in Pittsburgh this fall. Representatives of Industrial Medical Association and American Association of Industrial Nurses participated in these planning meetings. Dr. deTreville attended a meeting of the Central Medical Committee of the American Petroleum Institute immediately following the Conference.

OCCUPATIONAL DISEASE STATISTICAL SECTION. The section on incidence of Occupational Diseases, as reported by certain states, which had been a regular feature of the Digest since 1944, will be omitted in the future. The number of states reporting, always few in number, has decreased. Furthermore, it has been commented by several readers, that the figures reported probably bear no relationship to the actual incidence of occupational diseases, and thus may be misleading. Improved ways of developing occupational disease data from industrial experience are being studied by the Foundation. Suggestions concerning the nature of information desired by the membership would greatly aid our planning and are therefore, earnestly solicited.

MEETING OF NEW CLINICAL DEPARTMENT IN PITTSBURGH. Western Pennsylvania's newest clinical department will present a program at an open meeting of the staff of the Western Pennsylvania Hospital on May 13 from 7:00-9:00 p.m. in the Nurses Home Auditorium. Following a case presentation, involving diagnosis, treatment and disposition of a suspected case of chronic carbon monoxide poisoning, there will be discussions by members of the Occupational Health Department staff. As announced in the July 1964 Industrial Hygiene Digest (Foundation Facts), Dr. deTreville is a member of the consultant staff at Western Pennsylvania Hospital, and will participate in the program. Representatives of Foundation member companies are cordially invited to attend and familiarize themselves with these new clinical facilities which will be available to them in the future.

30th ANNUAL MEETING
OCTOBER 20-21, 1965

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IHF TRUSTEE IS NEW IMA PRESIDENT

JOHN F. SHRONTS, M.D., Minneapolis, Minnesota, is the new President of the Industrial Medical Association. The gavel was turned over to him by Edward J. Schowalter, M.D., Medical Director of Western Electric Co., the retiring President, at the business session of the Association's 50th annual meeting in Bal Harbour, Florida on April 7, 1965.

Dr. Shronds, who is Medical Director for General Mills, Inc., graduated from Northwestern University School of Medicine in 1936. He earned a post-graduate masters degree in hygiene and public health at the University of Michigan in 1938. During World War II, he served as a Captain with the U. S. Navy Medical Corps and in 1946 was Chief of the Division of Industrial Hygiene for the Illinois State Department of Health. His association with General Mills began the following year.

Dr. Shronds is a former director of the Industrial Medical Association and a past president of the Minnesota Academy of Occupational Medicine and Surgery. He is a trustee of the Industrial Hygiene Foundation, a member of the American Academy of Occupational Medicine and is certified in occupational medicine by the American Board of Preventive Medicine.

The annual meetings of the Industrial Medical Association and the American Association of Industrial Nurses constitute the American Industrial Health Conference which was held at the Americana Hotel in Bal Harbour, Florida, April 5-8, 1965. According to Clark Bridges, Industrial Medical Association's Managing Director, approximately 2,000 industrial physicians, nurses, hygienists, safety engineers, health physicists, and management and supervisory personnel attended the meeting. Extensive use of closed circuit color TV allowed detailed presentation of clinical case material and panel discussions, with active audience participation.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

318 Lecture to Honor Dr. Alice Hamilton.

Through the generosity of friends and colleagues of Dr. Alice Hamilton, Assistant Professor of Industrial Medicine, Emerita, the Harvard School of Public Health has established a special fund in her honor. The first use of this fund will be for the Alice Hamilton Lecture to be given by Dr. Harriet L. Hardy who will speak on "Beryllium Disease: Lessons in Control of Man-Made Disease." The lecture will take place May 27, 1965 at 4:30 to 5:30 P.M. in the Auditorium of the Jimmy Fund Building, 35 Binney Street, Boston, Mass. Members of the Industrial Hygiene Foundation or their representatives are cordially invited to attend.

319 National Fire Protection Association Meeting.

About 2,000 fire protection experts from the United States, Canada and foreign countries are expected to attend the 69th Annual Meeting of the National Fire Protection Association in Washington, D.C., May 17-21. In addition to special sessions on aviation fire safety, protection developments in the chemical and petroleum industries, and fire marshals' problems, there will be addresses on a wide range of subjects, including fire protection in our space program, military and industrial fire problems, building design and materials, and the economics of automatic sprinkler protection. Approximately 50 new and revised fire safety standards will be acted upon during the meeting. Among them is a completely revised National Electrical Code, most widely used of the 190 standards developed and issued by the NFPA. Others cover such subjects as the handling and storage of flammable liquids, gases and chemicals, air conditioning installations, aircraft fire safety, automatic sprinkler systems, portable fire extinguishers, signaling systems, fire doors and windows, lightning protection, flammable anesthetics and emergency electrical systems for hospitals, and marine fire protection. All sessions of the 5-day meeting, to be held in the Mayflower Hotel in Washington, are open to nonmembers as well as members of NFPA. However, only members of the Association may vote for standards up for action.

320 AMA Convention Scheduled for June in New York.

The American Medical Association will hold its 114th Annual Convention June 20-24 in New York City. It is expected to be the largest meeting in AMA history with an attendance of 69,500, some 25,000 of them physicians. The last AMA convention in New York, in 1961, was the largest ever, with an attendance of 46,679, including 23,033 MDs. A diverse scientific program covering virtually every medical specialty, will be presented, according to G.C. Engel, M.D., chairman of AMA's council on Postgraduate Programs. He said the 1965 scientific program will provide "outstanding educational opportunities for members of all fields of medicine, including the specialist, and the general practitioner." The program will feature six general scientific sessions. Topics include hearing, adverse reactions, non-narcotic drug addiction, metabolism in growth development and aging, diagnostic cytology, and organ transplantation.

-- AMA News 8, 1 (March 1, 1965)

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321 One-Week Fellowships Available for Occupational Health Nurses.

Since alcoholism affects all occupational groups, from unskilled labor to top executives, a company can only reduce the resulting losses appreciably if it has a program of early identification that reaches all occupational groups and encourages employees with alcoholism to avail themselves of treatment. In 1965, the James S. Kemper Foundation is offering two fellowships (one week) to each of the following Summer Schools of Alcohol Studies: 1. University of Utah, School of Alcohol Studies, P.O. Box 473, Salt Lake City, Utah 84110, June 13-19, closing date: May 13; 2. University of Texas, Institute on Alcohol Studies, Scholarship Committee, 808 Sam Houston State Office Bldg., Austin, Tex., June 27-July 2, closing date: May 27; 3. Northeast Institute, Summer School of Alcohol Studies, Rutgers University, New Brunswick, N.J. 08903, July 18-23, closing date: June 18; 4. Southeastern School of Alcohol Studies, Charles B. Methvin, Director, 1260 Briarcliff Road, N.E., Atlanta, Ga., 30306, Aug. 15-20, closing date: July 15. The awards cover tuition, room and board and roundtrip transportation. Selection of award winners is made by each school from those submitting applications. Application blanks and more detailed information may be secured by writing the school. Applicants should be occupational health nurses in business or industry. The OH nurse has the advantage of being readily accessible and associated with existing health services; the confidential nature of her work is generally well-established and accepted by employees and supervision; her rapport with the employee group is usually of a high order and workers are likely to talk more or less freely with her about personal problems.

-- Notes & Quotes for Occupational Health Nurses 10, 2 (Feb. 1965)

322 Allergy Lab Set Up.

The Allergy Foundation of America Laboratory, the first and only laboratory in the United States devoted exclusively to both research and clinical training in allergy, will be established at The Johns Hopkins Hospital, Baltimore. The Foundation is matching a U.S. Public Health Service grant to assist in the equipping of these facilities, which will be placed under the direction of the Foundation's first post-doctoral fellow. Once in full operation, it is expected that this laboratory will serve as a model for similar installations in other medical schools throughout the country. Located in the heart of the new Hopkins Children's Surgical and Medical Center, it will represent an important resource for the recruitment and training of teacher-investigators and practitioners of pediatric allergy. The Allergy Foundation Laboratory will play a leading role in an on-going research project aimed at finding better ways to care for asthmatic children.

-- J. Air Poll. Control Assn. 15, 58 (Feb. 1965)

COMING EVENTS

- | | |
|-----------|--|
| 323 May 1 | American College of Surgeons, Bloomington, Ind. |
| May 2 | Association for the Advancement of Psychotherapy, Inc., New York, N.Y. |
| May 2 | American Federation for Clinical Research, Atlantic City, N.J. |
| May 2-5 | American Association for Plastic Surgeons, Boca Raton, Florida. |
| May 2-5 | American Society for Clinical Investigation, Atlantic City, N.J. |
| May 3-7 | American Industrial Hygiene Conference, Houston, Texas. |
| May 4 | Society of Cosmetic Chemists, Semi-annual Meeting, New York, N.Y. |
| May 4-5 | Association of American Physicians, Atlantic City, N.J. |
| May 4-6 | 20th Purdue Industrial Waste Conference, Purdue University, Lafayette, Ind. |
| May 6-8 | American Pediatric Society, Philadelphia, Pa. |
| May 9-13 | American Urological Association, New Orleans, La. |
| May 10-13 | National Geriatrics Society, New York, N.Y. |
| May 12-13 | American Society for Testing and Materials, National Forum on the Control of Water Quality, ASTM Headquarters, Philadelphia, Pa. |
| May 13 | Western Pennsylvania Hospital, Department of Occupational Health, Staff Presentation, Pittsburgh, Pa. (See Foundation Facts). |
| May 14 | Industrial Medical Association, Pittsburgh-Cleveland Area Meeting, General Motors Corporation, Euclid Division, Hudson, Ohio. |
| May 14-15 | Association of University Radiologists, Seattle, Wash. |
| May 15 | Central States Dermatological Society, Cleveland, Ohio. |

- May 16-19 American Institute of Chemical Engineers, 56th National Meeting, San Francisco, Calif.
- May 16-20 Institute of Food Technologists, Annual Meeting and Industrial Exhibit, Kansas City, Mo.
- May 17-19 Chemical Specialties Manufacturers Association, 51st Midyear Meeting Drake Hotel, Chicago, Ill.
- May 24-26 Pharmaceutical Manufacturers Association, Annual Meeting, White Sulphur Springs, West Virginia
- May 24-26 Radiation Research Society, Annual Meeting, Philadelphia, Pa.
- May 25-26 American Otological Society, Colorado Springs, Colorado.
- May 25-28 American Association for Contamination Control, 4th Annual Technical Meeting and Exhibits, Miami Beach, Florida.
- May 27-29 American Ophthalmological Society, Hot Springs, Virginia.
- May 30-June 2 National Tuberculosis Association, American Thoracic Society, and National Conference of Tuberculosis Workers, Chicago, Ill.
- May 30-June 3 Medical Library Association, Philadelphia, Pa.

OCCUPATIONAL DISEASE STATISTICS

324 Occupational Disease Statistics. (Cases Reported to the Respective Health Departments.)

	<u>Ind.</u> <u>Feb.</u>	<u>Tenn.</u> <u>Feb.</u>	<u>Total</u>
Allergy (unidentified paint solvent)		1	1
Asphyxiation-ammonia	1		1
Conjunctivitis	4 ⁽¹⁾		4
Dermatitis	33 ⁽²⁾	7	40
Eyeburn	5 ⁽³⁾		5
Heat exhaustion	1		1
Infection-turkeys	1		1
Lead poisoning	5	1	6
Lung irritation-gas	1		1
Poisoning-lacquer vapors	1		1
Respiratory irritation, acetic acid, chemicals	2		2
Ruptured eardrum-air pressure	1		1
Silicosis		1	1
Vibration disease-air hammer	1		1
Totals	56	10	66

Causes are listed as follows:

Indiana:

(1) Buffing compound; grinding dust; oil; chemicals; 1 each.

(2) Acid 6; epoxy resin 4; cause not stated 3; caustic soda 2; chemical; plastic; tar; cement; solvents; bleach; detergents; granoseal; waterproofing paint; oil; nickel; insect bite; electrolytic paste; DDM; bonderlube resin; mold release; lumber; salt; 1 each.

(3) Welding flash 2; acid 1; caustic 1; cement 1.

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LEGAL DEVELOPMENTS

325 Ohio Seeks Motor Vehicle Pollution Control.

Under a bill introduced in the Ohio House of Representatives, all new motor vehicles manufactured after January 1, 1967, and sold in Ohio would have to be equipped with air pollution control equipment. Democratic Rep. William B. Nye has proposed that the state's Public Health Council administer the program. The council would determine the allowed limit on air pollution from autos and trucks and require that control equipment (crankcase or exhaust systems) keep the pollutants below this limit. Now in committee, the bill will probably come up for action next month. According to Rep. Nye, the bill is patterned after the California Motor Vehicle Pollution Control Law. This makes exhaust control devices mandatory on all 1966 model automobiles sold in the state of California. -- Chem. Eng. News 43, 37 (March 15, 1965)

326 More Money for Pesticide Research.

The Interior Department wants more money for pesticide research. Secretary Stewart L. Udall has asked Congress to lift the ceiling that limits spending for this purpose to \$2.6 million a year. He says an increased research program is needed to study the acute and chronic effects of combinations of pesticides on fish and wildlife. In February in his message on pollution and natural resources President Johnson asked Congress to take the same action. Last year both House and Senate passed slightly different versions of a proposal to lift the ceiling on pesticide research; Congress adjourned before the differences could be ironed out. This year the proposal seems likely to win Congressional approval easily.

-- Chem. Eng. News 43, 21 (March 15, 1965)

BOOKS, PAMPHLETS AND NOTICES

- 327 Effect of Electric Shock on the Heart. L.P. Ferris, P.W. Spence, B.G. King, and H.B. Williams. Reprinted in 1965 with permission by the U.S. Department of Health, Education, and Welfare, Public Health Service. AVAILABLE FROM: U.S. Department of Health, Education, and Welfare, Public Health Service, Division of Accident Prevention, Washington, D.C. 20201. 45 pp. PRICE: Not Given.

Relatively few studies of major magnitude on the effects of electric shock have been conducted, and few reports of such investigations are available for use in the development of protective measures and practices. A comprehensive study of this subject was conducted between 1927 and 1935 by the Department of Physiology in Columbia University's College of Physicians and Surgeons in cooperation with the Bell Telephone Laboratories. First published in Electrical Engineering, vol. 55, pp. 498-515, May 1936, the report of this study was reprinted later that year by the Bell Telephone System as "Monograph B-933." Since this report is still a valuable resource to those concerned professionally with preventing and minimizing electric-shock injuries, it is being made available again as a reprint of the Division of Accident Prevention of the U.S. Public Health Service.

-- Cond. from the Foreword

Current rather than voltage is the proper criterion of shock intensity. The stimulating effect of current through the heart can derange its action, causing ventricular fibrillation without damage to the cardiac tissues but resulting in death within a few minutes, unless the fibrillation is arrested. A current just below the threshold for ventricular fibrillation is the maximum to which man safely may be subjected. Based upon numerous tests on animals of several species comparable in size with man, this maximum current is about 0.1 ampere,

for a duration of one second or more and a pathway between an arm and a leg. The threshold fibrillating current is affected by: a. Species and size of animal; b. Current pathway (i.e. arm to leg vs. leg to leg); c. Frequency. For shocks of one second or more in duration, the 25 cycle threshold current is about 25 per cent higher than the 60 cycle value, and the d-c threshold current 5 times the 60 cycle value; d. Time of occurrence of short shocks in relation to cardiac cycle (most sensitive during T wave); e. Duration of shock. The threshold current varies inversely with shock duration but not uniformly, being most sensitive to change as the duration approaches the duration of one heart beat. Successive shocks have no cumulative effect on the susceptibility of the heart to fibrillation. The susceptibility of the heart to fibrillation by short shocks increases with current up to several times the threshold, then diminishes, becoming very small at currents of the order of 25 amperes through the body in the vicinity of the heart. However, other serious injury may be expected from such currents when brought about by accidental contacts. Fibrillation produced by an electric shock will in the majority of cases be arrested by a subsequent electric shock of high intensity and short duration through the heart, allowing the resumption of co-ordinate beating with no permanent damage. Should a counter-shock be applied mistakenly to a co-ordinately beating heart, the liability of its causing fibrillation is small and, should this occur, another counter-shock probably will arrest the fibrillation and bring back co-ordinate heart action. To be successful, a counter-shock must be administered promptly after the fibrillating shock, probably within a few minutes. Artificial respiration in the interval before application of a counter-shock is highly advisable. -- Cond. from conclusions (Editor's Note: A December 1964 Journal of Occupational Medicine article, "Treatment of Cardiac Emergencies in Occupational Practice" by Dr. E.M. Kline of General Electric Company, included several references to defibrillators. See Digest Abstract No. 140, February 1965).

-- RTP deT

328 Labor Department Publishes Compensation Act Summary.

State Workmen's Compensation Laws, Bulletin 161, has been issued by the Bureau of Labor Standards, U.S. Department of Labor, Washington, D.C., and is available from the Bureau at 35 cents. This bulletin, a 1964 revision of No. 161, State Workmen's Compensation Laws, summarizes the main provisions of the State Workmen's Compensation Acts for quick reference by legislators, administrators, insurance carriers, labor and employer groups, students, and others. It is based on analysis of the laws and administrative agencies. The bulletin is not intended to serve as a substitute for the full text of the laws. For detailed information on any particular law, the act itself should be used and the state administrative agency consulted.

-- Notes & Quotes for Occupational Health Nurses 10, 4 (Feb. 1965)

329 Committee on Disaster, Defense Revises Nurse Role Publication.

The American Nurses' Association (ANA) Committee on Nursing in Disaster and National Defense, recognizes its responsibility to assist nurses in assuming their responsibilities in disaster, whether these be man-made or natural and has published a revised version of The Role of the Nurse in Disaster. Included in the publication are such topics as classification of disasters, nurses' responsibilities, the nursing plan, and functions. Comparisons are made on a few of the functions showing their adaptation from a peacetime situation to a natural disaster and to a war-caused disaster. Significant in the revision is the inclusion of additional emphasis on the role of the nurse in prevention and control of environmental health hazards during times of disaster. According to the extent and nature of disasters, nurses must be prepared to co-operate in or be responsible for detecting changes in the environment and for participating in the organization of activities for the elimination or modification of health hazards. The publication is now in line with current civil defense programs and current principles of disaster planning. The publication (Code ND-4) is priced at 50 cents a copy and is available from the American Nurses' Association, Occupational Health Nurses Section, 10 Columbus Circle, New York, N. Y. 10019.

-- Notes & Quotes for Occupational Health Nurses 10, 2 (Feb. 1965)

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INDUSTRIAL MEDICAL PRACTICE

- 330 The Uses and Misuses of Environmental Health Standards. H.I. Shuval.
Am. J. Public Health 54, 1319-1329 (Aug. 1964).

The author concludes that environmental health workers must accept the trend toward more and more standards which will define and limit the environmental risks in our increasingly complex urbanized and industrialized society. Several general principles which can aid in the development of sound, reasonable, and flexible standards are discussed under the following headings: criteria versus standards; case-by-case method; administrative rather than legal standards; performance standards; factor of safety; and frequency of review and evaluation.

-- APCA Absts.

- 331 Convulsions in a Pilot Following Drug Withdrawal. J.R. Dille, P.C. Tang, and S.F. Flynn.
Aerospace Med. 36, 55-58 (Jan. 1965).

Convulsive states affecting airmen should result in immediate grounding pending thorough medical evaluation of each case to determine the cause, or causes, of the disorder. While in-flight convulsions have been survived, serious or fatal consequences are likely when the sole pilot is affected. The actual number of episodes that occur is unknown for there is a tendency to conceal the ones that are survived, and identification of neuropathology in the fatal accidents is often difficult, even when an autopsy is performed. Since three-fourths of those with epilepsy of genetic or idiopathic origin have the onset of seizures in early childhood and adolescence, persons in this group do not frequently become aircrew members. While the incidence of epilepsy in airmen is not known, it is felt to be much lower than the 0.5 per cent prevalence for the population of the United States. Several dozen causes of acquired seizures have been reported. Arteriosclerosis, infections, tumors, trauma, hemorrhage, hypoxia, oxygen intoxication, carbon monoxide poisoning, anaphylaxis, orthostatic hypotension, syncope, carotid sinus reflex, hyperventilation, hydrazines, convulsant drugs, and tranquilizer withdrawal are among the causes most likely to be encountered in aircrew members. These acquired conditions are of particular interest in aerospace medicine because 1) they are seen even in adequately-examined personnel; 2) the correct diagnosis and early treatment are important, particularly in brain tumors, hemorrhage, and infections; and 3) return to flying status may be permitted but the decisions must be individualized and will depend greatly upon the established diagnosis in each case. Withdrawal convulsions have been reported for barbiturates, meprobamate, glutethimide (Doriden), and possibly for imipramine (Tofranil); and as possible for diazepam (Valium) and chlorthalidone HCl (Librium) in the manufacturers' brochures. A case is reported of a pilot who was prescribed three of these drugs and had multiple seizures after the withdrawal of all medications during hospitalization.

- 332 The Future of Health in Industry. M. Schulman.
Ind. Med. & Surg. 34, 234-239 (March, 1965).

With all its complexities, industry is constantly changing; medicine, also undergoing change, is finding greater use for bioengineering techniques and is growing more complex. In terribly inadequate numbers, new occupational physicians are being trained to cope with the challenging interplay of medicine and industry, and at stake is the health of millions of working people. The need for more specialists in occupational medicine is truly tremendous. Unfortunately, the present image of the physician who works full-time for industry is not likely to attract a significant number of capable recruits. Not all, but most of the physicians in other fields, and almost all medical students, are more ignorant of the real substance and challenge of occupational medicine than of any other medical specialty except, perhaps, physical medicine and rehabilitation. As a result, the typical industrial physician too often is thought of as a lazy, bored, security-loving, easily-satisfied nincompoop. What occupational medicine must develop is an intensive public relations program that not only will correct misconceptions about the specialty but will also stress whatever is necessary to attract new recruits. Once attracted,

in adequate numbers, these young men, upon finishing residency training should be furnished placement guidance and financial help. Just as certain isolated communities are now offering financial inducements to new general practitioners, smaller industries must band together and help young occupational specialists establish themselves as private consultants in their areas. There are 45 references.

-- Cond. from author's conclusion

- 333 Calories Still Count. L.C. McGee. J. Occ. Med. 7, 108-111 (March, 1965).

Regulation of the appetite and food intake continues to be the essence of weight control. Minor degrees of obesity can be corrected readily in well motivated patients by: (1) Appropriate and consistent reduction in caloric intake, (2) correction of faulty eating and drinking habits, and (3) suitable increase in physical activity. Failure to maintain this program of living in a degree which is compatible with the recommended weight level leads to a return of the excess poundage. This, unfortunately, is the clinical result in most overweight patients. The control of obesity is an unrelenting lifetime project. There is increasing evidence that a variety of as yet poorly understood metabolic deviations may affect materially the energy balance in man and animals. On this evidence one may postulate so-called intractable (actually "resistant") obesity. The health hazards of such obesity are great. Rigorous measures and individualized, continuing supervision must be applied if these hazards are to be avoided or minimized. Special attention must be given to appetite drives, psychologic disturbances, the nature of the diet as to its caloric mineral and vitamin content, and the approximation of satiety. Different patients do better on different diets and different frequencies in food taking. For success in weight reduction the patient must understand and accept the fact that obesity is basically dependent on a caloric surplus which is turned into adipose tissue.

-- Author's summary

- 334 Suicide and Unemployment in Pennsylvania, 1954-1961. Bonnie Walbran, B. MacMahon, and A.E. Bailey. Arch. Environmental Health 10, 11-15 (Jan. 1965).

In 13 principal labor market areas of Pennsylvania suicide rates for the years 1954-1961 have been compared with unemployment rates in the same period. In spite of substantial geographic and temporal fluctuations in unemployment rates no corresponding variation is evident in rates of suicide in either sex. This finding suggests that "drift" towards unemployment on the part of persons in whom suicide is impending probably accounts for the high proportion of unemployment found among suicide victims, and that, at least in the past decade, unemployment has not been an important factor in the etiology of suicide.

-- Authors' summary

- 335 Parenchymatous Necrosis in Patients With Alcoholic Cirrhosis of the Liver. G. Moretti, J. Staefien, and P. Ballan. Presse med. 72, 3109-3112 (Dec. 5, 1964).

The best results for the study of parenchymatous necrosis in patients with alcoholic cirrhosis of the liver were obtained by the authors with the ornithine-carbamoyl-transferase (OCT) serum test. Parenchymatous necrosis, in its initial stage, is a definite but slow process in which alcohol exerts its intoxicating action directly on the liver. In the course of liver cirrhosis, the activity of parenchymatous necrosis is minimal, intermittent, and of indefinite duration. Although it aggravates insensibly the cirrhotic condition, it does not influence its evolution. Autoptic examination of the liver of cirrhotic patients revealed the presence of small amounts of necrosis and a normal enzymatic state, which indicates that the fatal evolution was a consequence of liver insufficiency, rather than of parenchymal necrosis.

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

- 336 Alcoholic Employees. A Comparison of Psychotic, Neurotic, and "Normal" Personnel. H.M. Trice. J. Occ. Med. 7, 94-99 (March, 1965).

The medical and personnel records of a large eastern public utility for the years 1956-1961 were explored in connection with alcoholics, neurotics, and psychotics. During this period there were 388 diagnosed cases in these three categories. One-half of this number (194)

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served as the sample for exploration. This sample consisted of 72 alcoholics, 83 neurotics, and 39 psychotics. For comparison purposes, another sample was procured of 1% of the company's entire population, chosen on an alphabetical basis, providing 204 subjects. The traits of personality and character and the behavior of the alcoholics, neurotics, and psychotics were compared with each other and with "normals." In over-all consideration, there were many shared characteristics and forms of behavior; on the other hand, there were some unique features within the three categories.

-- Author's summary

- 337 Serum-Cholesterol and Capacity for Physical Work. S. Hernberg.
Lancet 2, 441-443 (Aug. 29, 1964).

In 892 businessmen, the serum-cholesterol level showed a negative correlation with the capacity for physical work in the 30-49 age-group whereas there was no significant correlation in the 50-59 age-group. Smoking did not notably affect the cholesterol level or the capacity for physical work.

-- Aerospace Med. Absts.

- 338 Familial Glaucoma. J.A. Cowan. J. Am. Med. Assn. 191, 526-530 (Feb. 15, 1965).

A study was undertaken to determine the prevalence of chronic simple glaucoma among blood relatives of persons blind from glaucoma, the occurrence of other ocular diseases among these relatives, and the effectiveness of a single tonometer reading in detecting glaucoma. Forty-three persons blind in one or both eyes yielded 173 blood relatives, of whom 136 participated in the study. Nine of these 136 persons, or 6.6%, had glaucoma or borderline glaucoma, three times the expected yield among the general population. One or more ocular diseases (excluding refractive errors) occurred in 53, or just less than 2 out of 5 relatives, but when glaucoma or suspect glaucoma was also excluded, only about one fourth had other ocular diseases. The effectiveness of a single tonometer reading could not be determined because the cases were not newly identified in the study.

-- Author's abst.

- 339 Upper Respiratory Illnesses in Naval Personnel. P.K. Fraser and L.A. Hatch.
Am. J. Med. Sci. 249, 47 (Jan. 1965).

From 1958 to 1961, acute and convalescent phase sera were obtained from 2,323 British sailors admitted to a hospital in Portsmouth, England, with minor respiratory illnesses. Excluding some mixed and unusual infections, complement fixation tests showed a diagnostic rise in titer in 496; influenza A-230, influenza B-63, and adenovirus-203. In a recruit center from 1959 to 1961, 1,608 paired sera were tested from patients with minor respiratory symptoms: 44 were positive for influenza A, 65 for influenza B, 105 for adenovirus, and 48 for psittacosis-lymphogranuloma venereum. Paired sera were tested from 528 patients with streptococcal pharyngitis. Two were positive for influenza A, two for influenza B, 7 for influenza C, and 9 for adenovirus.

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

- 340 Ischemic Heart Disease and Occupation. I.S. Glazunov, et al.
Cor et vasa (Praha) 6, 274-280 (Nov. 4, 1964).

Epidemiological investigation of 679 Moscow clerks and 565 Moscow workers has shown that the diet was the same in both groups. Cholesterol levels in blood were higher in the clerks, and ischemic heart disease occurred 1.5 times more frequently in the latter group, while myocardial infarction occurred 2.3 times more frequently. It is argued that these findings could confirm the view that physical work is a prophylaxis against ischemic heart disease.

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

- 341 Correlations Between Water Hardness and Cardiovascular Deaths in Oklahoma Counties. R.D. Linderman and J.R. Assenzo. Am. J. Public Health 54, 1071-1077 (July, 1964).

Significant negative correlations have been reported between total water hardness and the cardiovascular death disease rates for the states of the United States and the county boroughs of England and Wales. In the state of Oklahoma there is a wide spread in total water hardness

and specific mineral concentrations between the counties in the eastern one-third and those in the remainder of the state. No similar significant negative correlations could be found when the total water hardness and specific mineral concentrations of calcium, magnesium, sodium, and potassium were compared with the age-sex-race-adjusted cardiovascular death rates in Oklahoma counties. There are 13 references. -- Public Health Eng. Absts.

- 342 Mortality of Gasworkers With Special Reference to Cancers of the Lung and Bladder, Chronic Bronchitis, and Pneumoconiosis. R. Doll, et al.
Brit. J. Ind. Med. 22, 1-12 (Jan. 1965).

Mortality rates among retort house workers are higher than among other employees of the gas industry. This is largely due to an increased risk of dying from cancer of the lung or chronic bronchitis. The increase in risk is not large compared with the "normal" risk in employees who were not exposed in retort houses (69% for lung cancer and 126% for bronchitis); both these diseases are, however, common, and the excess mortality among retort house workers that was attributed to them amounted to 17% of the total death rate. In the light of other evidence about the etiology of lung cancer and chronic bronchitis and the degree and nature of the pollution of the air in retort houses, it is concluded that the excess mortality from these causes among retort house workers is occupational in origin. The risk of lung cancer is probably most marked in men who have worked in horizontal retort houses and may be largely confined to them. On the present evidence, however, it is not possible to estimate the size of the relative risks in the different types of retort house with any confidence. Whether there is any appreciable difference in the risk of bronchitis in the different types of retort house is uncertain. Retort house workers also had a slightly greater mortality from cancer of the bladder; in the light of other evidence, it is probable that this also reflects a small occupational hazard. Cancer of the scrotum, long recognized as a hazard of work involving exposure to coal tar, has not yet been entirely eliminated from the industry. Pneumoconiosis occurs occasionally as a cause of death among bricklayers who may be employed on repairing or resetting retorts; it is not a direct effect of exposure to the products of coal carbonization. In some area Boards, the death rate from other causes among long-term employees is low compared with that recorded for all men living in the same region. The reason for this is not known. -- Authors' conclusion

- 343 Recognition of Early Oral Cancer. D.P. Shedd, et al. Ca 15, 21-24 (Jan.-Feb. 1965).

Careful examination should be made of the entire oral mucous membrane in search of such early mucosal changes as have been depicted in this paper. A tentative diagnosis of cancer can be obtained by exfoliative cytology and established by biopsy. Appropriate therapeutic measures can then be carried out, with optimum chances for cure and minimal loss of tissue or function. In view of the easy accessibility of the oral cavity to direct inspection, there exists a great potential for reduction of the several thousand annual deaths from oral cancer by prompt detection of early lesions. The paper includes 11 color plates of premalignant conditions of the mouth.

- 344 Reproducibility of the Technic of Mammography (Egan) for Cancer of the Breast.
R.L. Clark, et al. Am. J. Surg. 109, 127-133 (Feb. 1965).

The twenty-year plateau in the death rate from breast cancer has persisted despite all efforts to reduce it. Surgery and radiation, with present diagnostic methods, seem to have reached their upper limits of salvage. Chemotherapy and hormones, while offering promise, do not present an immediate hope of greatly improving survival. As a result, every avenue is being explored in diagnostic and therapeutic research to increase the survival rate. An improved technic for roentgenography of the breast yielding a higher degree of diagnostic reliability than had heretofore been demonstrated was reported by Egan in 1960. This high milliamperage, low kilovoltage technic, utilizing a special fine grain, industrial type film emulsion, produced a mammogram of high quality with clear detail. His data showed that of the first 1,000 mammographies, 43 per cent had sufficient clinical and mammographic indications to require biopsy; of the 240 breast tumors found among those biopsied, he had correctly diagnosed 238 from a prebiopsy mammogram without the benefit of clinical appraisal.

The findings of this reproducibility study indicate that the technic can be learned by other radiologists, that films of acceptable quality can be produced, and that the interpretations provide information which is useful in the clinical management of breast disease.

- 345 Effect of Cigarette Smoking on Blood Coagulation. J. Ambrus and I. Mink.
Clin. Pharmacol. Therap. 5, 429-431 (July-Aug. 1964).

Eighteen medical students who were not smokers were asked to smoke a cigarette, inhaling as much as possible. Blood samples were obtained before and 5 minutes after smoking. A significant increase was observed in platelet adhesiveness. Whole blood coagulation time, recalcified plasma coagulation time, platelet count, partial thromboplastin time, thromboplastin generation time, and tensile strength of the clot showed changes compatible with increased coagulability; however, these were statistically not significant.

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

- 346 Application of WHO Classification of Lung Cancer to Biopsy Material. R. Yesner, O. Auerbach, and B. Gerstl. Ann. Thorac. Surg. 1, 33 (Jan. 1965).

The tentative WHO classification of lung cancer, adopted in 1958, was applied in a prospective study of 2,897 biopsies of male lung cancer from 16 VA hospitals. A panel of three pathologists independently interpreted each original slide. Category 10 consisted of squamous carcinomas, the commonest (49.1%) and most available to the bronchoscope (49%). Category 20 consisted of undifferentiated small cell carcinomas, second both in numbers (19.2%) and central location (43.3%). Category 30 consisted of adenocarcinomas, third in numbers (15.8%), and seldom central (12%). The diagnosis was made from cervical nodes in 40%. This group included the bronchioloalveolar carcinomas. Category 40 were the large-cell undifferentiated carcinomas (15.5%), a waste-basket group, rarely diagnosed unanimously (10%). It is recommended that so-called poorly differentiated squamous carcinomas, in which neither keratinization nor intercellular bridges are clearly demonstrable, also be placed in category 40. Category 50, the true mixed tumors, occurred in only 0.4% of the biopsy material.

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

- 347 Changes in Cardiopulmonary Functions Related to Abstinence from Smoking. Studies in Young Cigarette Smokers at Rest and Exercise at 3 and 6 Weeks of Abstinence.
R.A. Krumholz, R.B. Chevalier, and J.C. Ross.
Ann. Internal Med. 62, 197-207 (Feb. 1965).

To further evaluate the pulmonary alterations in young smokers and to determine their reversibility after short periods of abstinence from smoking, pulmonary function and some cardiopulmonary responses to exercise were measured before smoking was discontinued and after 3 and 6 weeks of abstinence from smoking in 10 young chronic cigarette smokers. After 3 weeks of no smoking, expiratory peak flow and pulmonary diffusing capacity were significantly increased, and heart rate, oxygen debt, and the ratio of oxygen debt to total increase in oxygen uptake produced by the 5 minutes of exercise were significantly decreased. After 6 weeks of no smoking, functional residual capacity, was decreased, inspiratory reserve volume and maximal voluntary ventilation were increased, and airway resistance was significantly decreased when the functional residual capacity changes were taken into account. Compliance tended to be increased after 3 weeks, with the tendency continuing to be present after 6 weeks of no smoking. These changes after smoking was discontinued are previously shown in function tests to be impaired in young cigarette smokers when compared with a similar group of nonsmokers. This gives further evidence that alterations in lung functions are present in young smokers and that some of the alterations are quickly reversible in the young cigarette smoker with abstinence from smoking. The exact mechanisms by which these alterations are produced are, as yet, not well understood. There are 26 references.

-- Authors' summary

03121851

- 348 Environmental Aspects of Histoplasmosis. M. L. Furcolow.
Arch. Environmental Health 10, 4-10 (Jan. 1965).

Histoplasmosis is a disease of worldwide distribution. It is estimated that all of the river valleys in the temperate and tropical zones of the world, between 45° north and 45° south are infected. It has been estimated that in the United States alone, 30,000,000 people have been infected with this fungus disease, and that half a million a year acquire the infection. In the United States, infection is very prevalent in the central Mississippi river valley and its tributaries. The clinical spectrum of infection with Histoplasma capsulatum is extremely varied. Since the disease has been recognized only recently, it is obvious that its common symptoms must mimic those of other frequent infections, such as influenza. In general characteristics, acute pulmonary histoplasmosis appears to resemble primary tuberculosis. Also, as is true with tuberculosis, histoplasmosis involves a "reinfection" type of disease which develops in later life, particularly after the age of 45. This is characterized by insidious onset, repeated attacks, slow progression, moderate symptoms, bilateral infiltrative and cavitory lesions of the apices of the lungs, and profuse, sometimes bloody, sputum. Evidence from surveys in tuberculosis sanatoria in the United States indicates that perhaps as many as 3,000 to 4,000 patients with cavitory histoplasmosis are admitted yearly to these tuberculosis sanatoria. Therapy is limited to the use of antibiotic, amphotericin B. Treatment with this antibiotic must be prolonged and is usually accompanied by troublesome side reactions. Methods of control of the infection from the environmental point of view would appear to be extremely desirable. When one deals with an infectious agent as an environmental contaminant, one has not only the problem of the inhalation of the agent and its retention in the lungs, but the multiplication of the agent in the body of the host. The environmental hygienist for too long has thought in terms of nonliving air contaminants to the neglect of the living infectious agents, including not only the fungi, but the infectious agents which cause Q fever, psittacosis, and, probably, rabies.

- 349 Leptospirosis in Random and Select Populations. H.S. Goldberg, D.C. Blendon, and J.T. Logue. Arch. Environmental Health 10, 21-23 (Jan. 1965).

A serological survey confirms leptospirosis as the most significant in individuals with occupations exposing them to animals and their products. In particular, the Conservation Commission agent is now added to the list of occupations with a leptospirosis hazard which included the farmer, veterinarian, packing house worker, and meat inspector. This is not to say that leptospirosis is insignificant in the general public. Their 2.6% rate of positive sera indicate that this disease should be of interest to all epidemiologists and public health workers. More than 600 confirmed human cases have been reported in the United States since 1953, emphasizing the importance of this disease. -- Authors' summary

- 350 Nutrition in Pulmonary Emphysema. N.L. Wilson, R.H.L. Wilson, and S.M. Farber.
J. Am. Dietet. Assn. 45, 530-536 (Dec. 1964).

Caloric intakes were studied in outpatient men with chronic pulmonary emphysema. Shortness of breath was an important limiting factor on caloric intake, as was gastrointestinal symptomatology. Forty-three of the patients were given a modified dried skim milk supplement for one month. Thirty who had been gaining or maintaining weight, moderately raised their total caloric intakes. Of 13 patients who had been losing weight, all but one were converted to nonlosers after one month of supplementation. Unsupplemented severely dyspneic patients consumed fewer calories than the moderately dyspneic patients. This study demonstrates that emphysematous patients with weight loss, severe dyspnea, gastrointestinal symptoms, or of low income status, and more particularly with a combination of these factors, will benefit by the availability of a concentrated palatable and easily prepared food supplement.

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

03121852

- 351 Hereditary Deficiency of Serum α_1 -Antitrypsin. F. Kueppers, W.A. Briscoe, and A.G. Bearn. Science 146, 1678-1679 (Dec. 25, 1964).

Deficiency of the serum α_1 -antitrypsin appears to be under genetic control. The level of this protein is reduced to less than 10% of the norm in individuals homozygous for the trait, who may suffer from pulmonary emphysema. Heterozygous individuals have a concentration of serum α_1 -antitrypsin between 50% and 60% of normal, but appear to be in good health. The estimated heterozygous frequency of the trait in a small white population in Georgia is 2.1%.

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

- 352 Electron Microscopy in Pulmonary Emphysema of Rabbits. E.S. Boatman and H.B. Martin. Am. Rev. Resp. Dis. 91, 197-205 (Feb. 1965).

Naturally occurring pulmonary emphysema in rabbits has been studied by means of electron microscopy. Three important findings have been noted: (1) Loss of capillary endothelium; (2) partial or complete filling of capillary lumina with collagen; and (3) frequent recanalization of the damaged capillaries. These findings suggest that the initial lesion in rabbit pulmonary emphysema is blockage of the capillaries, subsequent ischemia causing the breakdown of alveolar walls.

-- Authors' summary

- 353 Electron Microscopy of Human Pulmonary Emphysema. H.B. Martin and E.S. Boatman. Am. Rev. Resp. Dis. 91, 206-214 (Feb. 1965).

Electron-microscope observations on pulmonary emphysema in humans has been described. The findings were similar to those in rabbit emphysema in that there were three changes involving pulmonary capillaries: (1) Loss or damage to the endothelium; (2) partial or complete filling of the capillary lumina with collagen; and (3) recanalization of some of the damaged capillaries.

-- Authors' summary

SKIN DISEASES AND BURNS

- 354 Observations on the Natural Course of Skin Cancer. R. Jackson. Can. Med. Assn. J. 92, 564-570 (March 13, 1965).

An attempt has been made to outline the natural course of various forms of skin cancer based on the author's experience. There is a considerable, usually predictable variation in the natural course of basal and squamous cell carcinomas of the skin. There is a considerable, frequently non-predictable, variation in the natural course of malignant melanoma and lymphomas of the skin. There are definite limitations to the value of the pathological examination of these skin cancers as a guide to their natural course. In many instances information obtained from clinical examination is just as important as that obtained by pathological examination. It is probable that the different rates of growth of any one tumor are due more to host factors as yet unknown than to differences in the virulence of the tumor. Intelligent therapy of skin cancer must be based on what is known—or not known—about the natural course of the lesion, even though this knowledge is at times grossly inadequate.

-- Author's summary

- 355 A New Technique for Epicutaneous Testing With Vapour Emitted by Liquids or Solid Substances. A.I.B. Fernstrom. Acta Dermato-Venereol. 44, 97 (1964).

The investigation of contact dermatitis possibly attributable to vapors necessitates special equipment. A vapor cup is described which is made of glass, measures 13 mm. in height and 21 mm. in diameter at the base, and has upper and lower chambers. The lower chamber is wide, thus permitting steady fixation to the skin. Between the two chambers there

is a central channel through which measured quantities of volatile fluid may be introduced into the upper chamber. The upper chamber serves as a reservoir, permitting vapor to escape through the central channel into the lower section, where it comes into contact with the skin. For highly viscous fluids, solids, and semi-solids, fitting the upper chamber with a ground-in lid permits filling of the cup. Daily routine work has proven the convenience of the method. Disadvantages noted include unsuitability of the back for overnight testing, and nonspecific pressure reactions where the cup touches the skin if the cup is fastened too hard. The cups are small enough to be worn under clothing. The method seems to be a practical approach to the difficult problems of testing the vapors emitted from volatile substances.

-- J. Occ. Med. Absts.

- 356 Nickel Sensitivity and Atopy. G.A. Caron. Brit. J. Dermatol. 76, 384 (1964).

The pathogenesis of nickel sensitivity remains controversial. Most authorities consider that nickel sensitivity is an example of delayed allergic contact sensitivity independent of atopy (an inherited tendency to develop one or more of the following group of conditions: asthma, hay fever, urticaria, infantile eczema, and the specific recognizable pattern of atopic dermatitis). However, other investigators have questioned the mechanism of delayed allergy and proposed the concept of an acquired enzymatic defect. Still others clearly relate nickel sensitivity to atopy. A survey was conducted of the incidence of atopy in 36 women and one man with nickel dermatitis. All were adults, the average age being 41 years. In 21 patients (56%) there was neither personal nor family history of atopy. Four patients (11%) had both a personal and a family history of atopy. Five patients (14%) had a personal history of atopy but no family history. Seven patients (19%) had a family history of atopy but no personal history. Estimates of atopy in the population depending upon rigidity of criteria may vary from 6 to 40%. A more meaningful investigation would be to compare the incidence of nickel dermatitis in a large group of patients with atopy with the incidence in a large group of normal controls.

-- J. Occ. Med. Absts.

- 357 Allergic Contact Dermatitis from a Sulfonated Naphthalene Condensate. M.F. Engel. Dermatol. Digest 3, 67 (Sept. 1964).

A single case of allergic contact dermatitis to both preprocessed and postprocessed Multilith paper is reported. Patch testing to the various materials used in the manufacture of Multilith paper revealed one positive reaction to Blancol, a sodium salt of a sulfonated naphthalene condensate. The substance is used in the paper industry for slime control, to improve sizing, to increase filler and fine retention in open systems, and to prevent sticking at the press roll. In the leather industry, it is used as a bleaching, dispersing, and neutralizing agent. Also, it is used as a peptizing agent in insecticide formulas and as a depressant for fillers in latex emulsions.

-- J. Occ. Med. Absts.

CHEMICAL HAZARDS

- 358 Liver Necrosis Following Anesthesia. R. Herber and N.W. Specht. Arch. Internal Med. 115, 266 (March, 1965).

Postoperative liver dysfunction for a 5-year period is reviewed. Halothane (Fluothane) (2-bromo-2-chloro-1,1,1-trifluoroethane) anesthesia was considered the most important single etiological factor. Of 13 patients in the study, halothane was not used in only one. Postoperative jaundice increased as this agent was more commonly used, occurring at the rate of approximately one case per 800 halothane anesthetics. True drug sensitivity seems unlikely since not all of the patients on subsequent anesthetics with the same agent had evidence of recurrent liver disease. Other factors such as the status of the liver before operation are also important.

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

03121854

- 359 Qualitative Analysis of Light Hydrocarbons in Cigarette Smoke by Gas Chromatography.
J. Caroff, J. Veron, R. Badre, and R. Guillermin.
J. Gas Chromato. 2, 320-322 (Oct. 1964).

Qualitative analysis of the C₁-C₆ aliphatic hydrocarbons in the gas phase of cigarette smoke was carried out by means of two columns, one of hexadecane and the other of dimethyl-sulfolane, and a flame ionization detector. The analysis permitted identification of 25 hydrocarbons and of monochloromethane. There are 16 references. -- Public Health Eng. Absts.

- 360 A Study of the Concentrations of Polycyclic Aromatic Hydrocarbons in Gas Works Retort Houses.
P.J. Lawther, B.T. Commins, and R.E. Waller.
Brit. J. Ind. Med. 22, 13-20 (Jan. 1965).

Measurements of the concentration of 3:4-benzpyrene and other polycyclic aromatic hydrocarbons have been made in gas works retort houses of several types. The tarry fumes which escaped from retorts contained extremely high concentrations of polycyclic hydrocarbons, but in general men were only exposed to these very briefly. The mean concentration of 3:4-benzpyrene determined from long-period samples at sites representative of normal working conditions in 3 works was 3 micrograms/cu.m., over 100 times the normal level in the City of London. Above the retorts in an old horizontal retort house the concentration was over 200 micrograms/cu.m., about 10,000 times that in the City, and the "top-man" working there could be exposed to this in the normal course of his duty. The authors found no working areas in the vertical retort houses where men could be exposed to such massive concentrations of polycyclic hydrocarbons. Apart from defining these special conditions above horizontal retorts the authors' results did not reveal any gross differences in pollution of the general air in horizontal and continuous vertical retort houses. -- Authors' abst.

- 361 Tumor Incidence in A Strain Mice: II. After Divided Doses of Alkylating Agents.
J.T. Duhig. Arch. Pathol. 79, 180 (Feb. 1965).

The effect of divided doses of the alkylating agents, nitrogen mustard and cyclophosphamide, was studied in A/JAX mice. Intact mice, mice thymectomized at 4 to 5 weeks of age, and thymectomized-treated animals who received a thymic implant after treatment from a 4-week-old isologous donor were observed. At the doses given, nitrogen mustard had a marked effect in decreasing the average life span, and the presence of a thymus appeared to alleviate this effect. These changes were not observed after cyclophosphamide. Both drugs gave marked increases in pulmonary tumor incidences. No other tumors appeared to be affected. The presence or absence of the thymus did not significantly alter tumor susceptibility. -- J. Am. Med. Assn. References & Reviews

- 362 The Colorimetric Determination of Blood and Breath Carbon Monoxide. M. Feldstein.
J. Forensic Sci. 10, 35-42 (Jan. 1965).

Recent studies have shown that per cent saturation carbon monoxide hemoglobin (CO Hgb) may be estimated from CO breath concentrations. Care must be taken in obtaining breath samples which are representative of equilibrium concentrations. For concentrations of CO hemoglobin up to 16% saturation using the 20-second breath holding technique, the relationship is expressed in the following formula: % saturation CO Hgb = 0.5 + one-fifth of ppm CO in breath. No attempt was made to arrive at an independent breath-blood CO relationship. The simplicity of the procedure would lend itself well to such studies.

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

- 363 Use of Fluoridated Water in Long-Term Hemodialysis. D.R. Taves, et al.
Arch. Internal Med. 115, 167 (Feb. 1965).

A measurement on the amount of fluoride administered by hemodialysis in which fluoridated tap water is the basis ingredient of the dialysate is reported. Very small quantities, average 10 mg. per dialysis, were absorbed. The concentrations found in the serum and the

bone were much higher than normal, however, suggesting that the patient cleared fluoride poorly and that the dosage values have less significance than do tissue concentrations in determining if a hazard exists. Fluoride concentrations in the tissues were in the range in which early bone changes can be expected, provided, such concentrations are maintained over longer periods than was the case with this patient. Long-term maintenance by periodic hemodialysis of patients in renal failure is being employed more frequently to make physicians in areas with fluoridated water supplies more aware of the possibility of the effects, either good or bad, due to this element.

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

- 364 Poisoning of the Rat by Hydrazine and Alkylhydrazines. R.D. O'Brien, M. Kirkpatrick, and P.S. Miller. *Toxicol. & Appl. Pharmacol.* 6, 371-377 (July, 1964).

The mode of lethal action of hydrazine involves depression, whereas that of unsymmetrical dimethylhydrazine (UDMH) and monomethylhydrazine (MMH) involves convulsions. Pyridoxine antagonizes UDMH and MMH poisoning equally, but is somewhat less effective for hydrazine. Pyridoxal weakly synergizes UDMH and MMH poisoning, but weakly antagonizes hydrazine poisoning. Hydrazine, UDMH, MMH, and the nontoxic symmetrical dimethylhydrazine (SDMH) all elevate blood glucose profoundly, with SDMH the effect is transient.

-- Aerospace Med. Absts.

- 365 A Note on Atmospheric Iodine and Its Absorption in Man. R.L. Vought, W.T. London, and F.A. Brown. *J. Clinical Endocrinol. Metab.* 24, 414-416 (May, 1964).

A simple method for monitoring atmospheric iodine is described. Levels in the outside air were found to range from 0 to 7.4 micrograms/cu.m. The question of iodine absorption from the air was studied by comparing a group of male laundry workers exposed to elevated levels of iodine (through use of an iodophor-containing detergent in the laundry) with a matched group of outside workers. Urinary iodine excretion, serum inorganic iodine, salivary iodine secretion rate, and salivary flow were significantly higher in the laundry workers. It is concluded that iodine in the atmosphere is absorbed in man, but this study does not delineate the portal of entry. The possible significance of this finding is discussed.

-- APCA Absts.

- 366 Estimating the Hazard Due to Radiolytic Products From Air. L.N. Less and A.J. Swallow. *Nucleonics* 22, 58-61 (Sept. 1964).

Data are presented for estimating the production rates of ozone and other compounds produced in the radiolysis of air by large gamma ray sources or high-intensity accelerators. Experiments show that ozone is the principal and most toxic product of the irradiation of air. Ozone production in air by cobalt-60 irradiation is shown to vary with dose rate and relative humidity. Equations for calculating the ventilation requirements for rooms enclosing large gamma ray sources or high-energy accelerators are presented. There are 23 references.

-- Public Health Eng. Absts.

- 367 Changes in Thyroid I-131 Activity in Ozone-Tolerant and Ozone-Susceptible Rats. E.J. Fairchild, et al. *Toxicol. & Appl. Pharmacol.* 6, 607 (Sept. 1964).

The response of rats to ozone is characterized by a depression of the thyroid function, followed by a period of resistance, followed by a phase of thyroid overactivity. The tolerance phenomenon induced by certain irritant gases is associated with, but not necessarily determined by, a resistant phase of thyroid activity and furnishes evidence for humorally mediated mechanisms activated by this gas in concentrations as low as 0.5 ppm.

-- J. Occ. Med. Absts.

03121856

- 368 Beryllium as a Structural Material. W. Hodge. Battelle Tech. Rev. 13, 12-16 (Aug. 1964).

Beryllium's excellent properties are leading to its broadening use even though it can be toxic to humans, is brittle, and is currently costly to produce. The strong, light, heat-absorbing metal is helping to solve many space-age problems, and it is emerging as an important structural material for other applications. There are 11 references.

-- Public Health Eng. Absts.

- 369 Ulcerations of the Nasal Septum Due to Inhalation of Chromic Acid Mist. M. Kleinfeld and A. Rosso. Ind. Med. & Surg. 34, 242-243 (March, 1965).

Examination of 9 workers employed at chrome plating in an industrial establishment showed various degrees of nasal injury. Ulceration of the septum was seen in 7 and in 4 of these the septum was perforated. Injection of the septum was observed in the remaining 2 and in one of these there was an associated congestion of the turbinates. Symptoms included rhinorrhea, nasal itching and soreness and epistaxis. Epigastric pain with remission following change of occupation was reported by one worker. There were no abnormal skin, pulmonary and renal findings in the group. The duration of exposure varied from 2 weeks to one year. Of those that showed septal ulceration, the duration of exposure ranged from one month to one year. The finding of 7 cases of septal ulceration among workers employed at the same general location within the chrome plating plant clearly established chromic acid as the responsible etiologic agent. There are 8 references.

-- Authors' summary

- 370 A Three-Year Study of Lead Poisoning in Chicago. Part I. Epidemiology. J.R. Christian, B.S. Celewycz, and S.L. Andelman. Am. J. Public Health 54, 1241-1251 (Aug. 1964).

The diagnosis of lead intoxication may be tentatively made when one or more of the following signs, symptoms, or laboratory evidence are present: (1) History of pica, (2) X-ray evidence of radio-opaque material in the gastrointestinal tract or of lead lines at the metaphyseal ends of the long bones, (3) elevated blood or urine lead level, (4) signs or symptoms of intoxication of the central nervous system, (5) vomiting or other gastrointestinal disturbances, (6) positive test for coproporphyrin III in the urine, (7) reducing substance in the urine, (8) anemia, and (9) basophilic stippling of the red blood cells. The authors consider 1 and 2 as fairly indicative of lead intoxication, 3 as equivocal, and 4 through 9 as strongly indicative. From 1959 through 1961, of a total of 9,853 cases of accidental poisoning reported to the Chicago Board of Health, 429, or 4.7%, were due to exposure to lead, of which 67 were fatal (79% of total deaths). Pica, with positive history of the ingestion of lead, was found in 59.7% of the cases; in 2.6% of these, the ingestion of lead was not proved. The highest incidence and the highest rate of mortality occurred in children 12 to 36 months old. Peak periods of occurrence were June through September. In December 1959, however, 17 cases of poisoning resulted from the burning of storage batteries, and the inhalation of lead fumes. Neither sex nor race seemed to be a predisposing factor. Since the greatest number of cases came from the slum areas, the environment, in addition to age, is significant.

-- Public Health Eng. Absts.

- 371 Fate of Molybdenum-99 in Man. Betty Rosoff and Herta Spencer. Nature 202, 410-411 (April 25, 1964).

The metabolism of molybdenum-99 in four cancer patients was investigated. Data confirm the animal studies in that most of this radioisotope is excreted by the urinary route. The urine to feces ratio in two of the patients was 6 and 24 respectively. Over a period of 5 days approximately 17% in one patient and 25% in another of the initial administered dose was eliminated in the urine. Samples of plasma and whole blood demonstrated that molybdenum disappeared from the vascular compartment very rapidly; at 8 hours after administration about 1% of the injected dose remained in the blood. The authors conclude that the molybdenum-99 in man is metabolized in a manner similar to that reported previously in animal experimentation. There are 4 references.

-- Public Health Eng. Absts.

03121857

- 372 Sex Difference in Mercury Toxicity in the Rat. M.H. Harber and R.B. Jennings. Arch. Pathol. 79, 218 (Feb. 1965).

Minimally toxic doses of mercury injected intravenously into rats produced a coagulation type of necrosis of the straight portion of the proximal renaltubule. A pronounced sex difference was noted, the male rat being much more susceptible, when doses of 0.4 mg. of mercury per kg. of body weight were used. The renal tubular necrosis usually noted in male rats given small doses of mercury was eliminated by giving prior injections of estrone. On the other hand, testosterone given to female rats prior to mercury injection altered the usual benign response of the female so that marked renal tubular necrosis was produced. Castration with or without hormonal injections also produced changes in the renal response of rats to mercury. None of the castrated male rats who received estrogens showed tubular necrosis when mercury was given. All of the castrated female rats given testosterone prior to mercury injection showed marked renal tubular necrosis.

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

- 373 Kerosine—Experimental and Clinical Toxicology. H.W. Gerarde. Occ. Health Rev. (Ottawa) 16, No. 3, 17-21 (1964).

This paper discusses the chemical composition, physical properties, toxicological effects of kerosine on experimental animals, and incidence, symptomatology, and therapy of kerosine poisoning. The experimental studies conducted on animals indicate that the pneumonitis resulting from the ingestion of kerosine is due to direct aspiration of the hydrocarbon mixture rather than to kerosine absorbed from the gastrointestinal tract. The relatively low oral toxicity as compared with the high toxicity of kerosine aspirated directly into the lungs and the hazard of aspiration which accompanies the induction of emesis or the passage of a stomach tube show that the induction of vomiting and gastric lavage are contraindicated in cases of kerosine ingestion. Positive therapeutic measures consist of the prophylactic use of antibiotics to prevent bacterial pneumonitis and maintaining normal respiration. Additional treatment is symptomatic and supportive.

-- APCA Absts.

- 374 Determination of Alcohols in Body Fluids by Gas-Liquid Chromatography. J.B. Freudiger and J.A. Vignau. J. Forensic Sci. 10, 73-76 (Jan. 1965).

A rapid method for the determination of alcohols in body fluids by gas-liquid chromatography has been described. It resolves the alcohols such as methyl alcohol, ethyl alcohol, and isopropyl alcohol and eliminates any interference from acetone.

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

- 375 Behavioural Response of Rats During Inhalation of Trichloroethylene and Carbon Disulphide Vapours. M.E. Goldberg, et al. Acta Pharmacol. Toxicol. 21, 36 (May, 1964).

Trained rats, 95% efficient in preventing shock on a discrete avoidance behavior schedule, were exposed to 125 ppm of trichloroethylene for 4 hours a day for 5 weeks (5-day week) and to 195 ppm of carbon disulfide for 3 weeks. Significant alterations in behavior occurred with both agents. Carbon disulfide produced a weight loss. Behavioral effects with both vapors were completely reversible during the recovery phase.

-- J. Occ. Med. Absts.

- 376 Toxic Effect of Isopropyl-Benzene Hydroperoxide when this is Applied to the Skin of Experimental Animals. I.A. Medvedev. Gigiena Truda i Professional. Zabolevaniya 8, 12-18 (Aug. 1964). Russian.

Clinical and post-mortem tissue studies of rabbits after skin applications of lethal doses (1,200 milligrams per kilogram of body weight) of isopropylbenzene hydroperoxide revealed necrosis of skin and edema involving subcutaneous fatty tissue. The general toxic effect of the compound was characterized by hemolysis combined with metabolic disturbance resulting in dystrophic changes of internal organs.

-- Aerospace Med. Absts.

- 377 Urinary Excretion of Phenol by Men Exposed to Vapour of Benzene: A Screening Test. S.G. Rainsford and T.A. Lloyd Davies. *Brit. J. Ind. Med.* 22, 21-26 (Jan. 1965).

The metabolism of benzene differs from that of other aromatic hydrocarbons; the excretion of phenol in the urine of workers exposed to ambient benzene bears a linear relationship to the degree of exposure. A semi-quantitative screening test using stable reagents not requiring special apparatus or laboratory facilities permits an estimation of urinary phenolic bodies, and hence the exposure to benzene. The test may be used (a) to determine whether individual workers need further investigation because of exposure to benzene, (b) as a group test to determine whether the environment is acceptable, and (c) to determine whether solvents often regarded as safe contain benzene.

-- Authors' abst.

- 378 The Acute Inhalation Toxicity of Tetrafluorohydrazine. T.R. Carson and F.T. Wilinski. *Toxicol. & Appl. Pharmacol.* 6, 447-453 (July, 1964).

Tetrafluorohydrazine (N_2F_4) is used as an intermediate in the synthesis of more complex nitrogen fluoride compounds. The production, storage, and handling of larger quantities of this gas have increased the potential of human exposures. Rats and dogs were exposed to several concentrations of N_2F_4 , below the previously determined rat LC_{50} 's for 15- and 60-minutes exposures. No histopathologic changes were observed in animals exposed to lethal and sublethal concentrations of N_2F_4 in the 15- and 60-minutes exposures. Some pathologic changes involving the lungs, spleens, and livers, however, were observed in animals exposed to lethal concentrations in the 4-hour exposures. The toxic signs were cyanosis, hematologic changes, and eye and nasal irritation. Rats showed signs of eye and nasal irritation at concentrations causing no such effects in dogs. At these concentrations, however, dogs had a greater increase in methemoglobin than did rats. Nine references are listed.

-- Public Health Eng. Absts.

- 379 Alterations in Serum Enzymes After Repeated Exposure to Malathion. J.L. Grech. *Brit. J. Ind. Med.* 22, 67-71 (Jan. 1965).

The alterations in serum pseudo-cholinesterase, transaminases, and aldolase observed in 12 agricultural workers exposed to the organo-phosphorus insecticide, malathion, over a period of 6 months are recorded. A comparison with a series of unselected controls and a series of manual workers is made. Evidence is produced that the majority of the agricultural workers have been suffering from minor effects of poisoning.

-- Author's abst.

- 380 Cancers from Air-Refined and Steam-Refined Asphalt. M.H. Simmers. *Ind. Med. & Surg.* 34, 255-261 (March, 1965).

C57 black mice were exposed to air-refined and steam-refined petroleum asphalt by application to the skin and subcutaneous injection. The hardness and high melting point of the undiluted air-refined asphalt made intimate and prolonged application to the skin impossible and no cancers resulted. When toluene was used to make the asphalt of a "paintable" consistency, contact was enhanced and cancers formed. In part, the increased cancer production may be due to a cocarcinogenic effect of toluene. Animals painted with the toluene had no cancers, although there was a low incidence of papillomas. Injected steam-refined asphalt caused no cancer whereas 13% of the mice (coming to autopsy) injected with air-refined asphalt developed a variety of cancers at the site of injection. When good contact between tissue and air-refined asphalt was made by subcutaneous injection or rendering the material more liquid with toluene for painting, more cancers occurred. The differences in cancer production by the two kinds of asphalts, if both make equally good tissue contact, undoubtedly lies in the chemical variation between the two. Nine references are given.

-- Author's summary

03121859

- 381 An Epidemic of Polymer-Fume Fever. C.E. Lewis and G.R. Kerby.
J. Am. Med. Assn. 191, 375-378 (Feb. 1, 1965).

An "epidemic" of polymer-fume fever involved 36 of 61 employees in one industry over a 90-day period. All of these involved demonstrated the classic history of an influenza-like syndrome, with fever and chills occurring several hours after exposure to the products of pyrolysis of polytetrafluoroethylene (Teflon). The majority of cases resulted from the smoking of cigarettes which were contaminated with a fine dust of this material. A study of pulmonary function of all workers involved demonstrated changes that could be accounted for only on the basis of smoking habits. Three persons experienced changes in pulmonary function consistent with mild obstruction of the airways, in association with the onset of symptoms. While no serious consequences were observed, the effects of these illnesses upon the health and productivity of the group could have been prevented. There are 18 references.

-- Authors' abst.

INDUSTRIAL DUSTS

- 382 Mortality of Coal Miners from Carcinoma of the Lung. K.P. Goldman.
Brit. J. Ind. Med. 22, 72-77 (Jan. 1965).

The results are presented from an investigation into the mortality of miners and ex-miners employed by the National Coal Board, from a comprehensive survey of respiratory disease in a Welsh mining community, and from a study of the comparative mortality from lung cancer in Welsh mining and non-mining towns. These results, together with previously published data which have been reviewed, show that in Great Britain the death rate of coal miners from cancer of the lung is appreciably lower than the national rate for men of comparable age. This occupational trend is not explicable by any of the factors which are known to influence the prevalence of the disease in the general population. In particular there is much evidence that the cigarette consumption of miners at least equals that of men in other occupations. The exclusion of this and other recognized etiological factors suggests that the reduced mortality of miners from this disease is a specific effect of their occupation. This effect might be a consequence of the inhalation of coal dust, for there is some evidence that the incidence of death from lung cancer is lowest among miners whose exposure to coal dust has been greatest.

-- Author's abst.

- 383 Comparative Assessment of the Effect of Chromium Carbide and Boride Dust on the Body.
T.A. Roschina. Gigiena i Sanit. No. 8, 25-28 (1964). Russian.

A study of the effect produced in the body by the chromium carbide and boride dust revealed changes of hemoglobin content and that of the blood serum proteins (an increase of alpha-fraction). Pathologic lesions were discovered in lung tissues. The effect produced by chromium boride was more marked.

-- Public Health Eng. Absts.

- 384 Aerosol Production and Characterization: Some Considerations for Improving Correlation of Field and Laboratory Derived Data. T.T. Mercer.
Health Physics 10, 873-887 (Dec. 1964).

A comparison of laboratory and field practices indicates that marked differences may occur between laboratory and field aerosols, and that differences in methods of characterization make comparable results difficult to achieve. A review of the electrical properties of aerosols shows that the use of atomization, a favorite laboratory technique for producing aerosols, can lead to very high electrical mobilities that make reproducibility difficult and cause anomalous experimental results. The difficulties involved in extrapolating from a size frequency distribution to a distribution of activity as a function of aerodynamic diameters are discussed. The sampling properties of rectangular jet, single round jet, and multiple round jet impactors are summarized, and approximate relationships on which to base the design of impactors for specific purposes are given. The sampling characteristics of the Conifuge and the aerosol spectrometer are summarized. There are 77 references.

-- Public Health Eng. Absts.

- 385 The Modes of Formation and Properties of Aerosol Particles. K. Stewart.
Health Physics 10, 889-897 (Dec. 1964).

Particulate matter dispersed in the atmosphere to form an inhalation hazard can be formed by a variety of processes. These processes may be divided into two groups based on growth and disintegration processes. Growth processes include the condensation of vapor to form nuclei or onto other nuclei, coagulation, and complex systems in which chemical reactions result in particle formation. Disintegration processes include crushing and grinding of the bulk material, breakdown of material by internal stresses, and the shatter of liquid surfaces. Again chemical reactions can play a vital role. In general, a growth process results in the formation of predominantly submicron particles, more particularly in the case of radioactive species for which the amount of matter present may be extremely small. By contrast, the disintegration processes lead to a wide distribution of particle sizes with perhaps only a small fraction in the submicron range. The controlling features of these processes are discussed. The first important property of an aerosol is the particle size distribution. For irregularly shaped particles, size should be related to aerodynamic properties rather than to equivalent diameters based on surface or projected areas. The behavior of small particle aggregates is also important. Other properties of particular significance are solubility and behavior in a liquid surface. To assess the solubility of a particle in a biological system, it is necessary to consider, for example, the possibility of ionic behavior, reaction at a liquid-solid interface, and transfer of material across membranes. The significance of these properties of particles in the assessment of radiological hazard is discussed. There are 33 references.

-- Public Health Eng. Absts.

- 386 Microscopic Identification of Toxic Dusts. G.C. Crossmon.
Occ. Health Rev. (Ottawa) 16, No. 3, 3-7 (1964).

Information is presented on the identification of toxic dusts by the usual Becke line method using a polarizing or a laboratory type microscope equipped with polarizing accessories. Simplification in identification is possible by the dispersion staining method using either a special dark field microscope or a phase microscope. Dust samples are mounted under a cover glass in liquids of high dispersion equal in a refractive index to the toxic dust for yellow light. Toxic dusts are identified by the dispersion color or colors refracted into the aperture of the objective.

-- APCA Absts.

- 387 Relation Between Quartz and Ash Content of Dust. W.P.M. Matla and J. Terpstra.
Staub 24, 312-314 (Aug. 1964).

A large number of dust samples were taken in the various working operations in mining and the quartz and ash contents determined. The results of the analyses have been processed statistically. A clear relationship was found between the quartz and ash contents of the dust; therefore, the ash content is a good index of the quartz content.

-- Public Health Eng. Absts.

- 388 A Comparison Between Inhaled Dust and the Dust Recovered from Human Lungs. C.N. Davies.
Health Physics 10, 1029-1034 (Dec. 1964).

Experiments on the loss of dust particles during breathing indicate total deposition in the respiratory tract; subsection of the results to qualitative arguments may give information about alveolar deposition. Measurements of insoluble dust recovered post-mortem from human lungs give the absolute retention of dust which was deposited in the alveoli and subsequently shifted, probably to a large extent, to the lymphatic vessels of the lungs. Experimental results for total deposition and absolute retention are discussed in connection with the health risk due to inhaling insoluble particles, such as plutonium dioxide.

-- APCA Absts.

03121861

- 389 Byssinosis and Atmospheric Pollution. Anon. *Lancet* 2, 299-300 (Aug. 8, 1964).

Until recently byssinosis was generally regarded as an industrial disease of the lungs in Lancashire cotton workers, and was attributed partly to inhalation of cotton dust and partly to the polluted atmosphere of the mill towns. Field studies carried out during the past 10 years, however, have shown that byssinosis is common in cotton workers in Europe as well. This short review article, with its bibliography of 21 references to current literature, discusses some of the recent information about this disease. A study just recently completed reports the results of a survey of 414 English and 980 Dutch cotton workers. (*Brit. J. Ind. Med.* 21, 124-134 (April, 1964)). The prevalence of byssinosis was similar in the two countries—13.5 and 17% respectively in English and in Dutch "card and blow rooms"—with the English workers being significantly more prone to persistent cough and phlegm and with a lower forced-expiratory-volume value. Atmospheric pollution was measured for a short but similar period in both countries. Values were considerably higher for both smoke and sulfur dioxide in Lancashire than in the Dutch town of Almelo, which in turn was more polluted than the surrounding rural areas. The authors concluded that the unfavorable situation of the English workers was due to the much higher level of atmospheric pollution in Lancashire. They pointed out that this study supports the hypothesis that atmospheric pollution is an important factor in the etiology of chronic bronchitis (though not apparently of byssinosis). Moreover, since the association was with the earlier manifestations of respiratory disease, they suggest that atmospheric pollution may initiate as well as aggravate bronchitis. -- APCA Absts.

- 390 Byssinosis and Other Respiratory Symptoms in Flax Workers in Northern Ireland. P.C. Elwood, et al. *Brit. J. Ind. Med.* 22, 27-37 (Jan. 1965).

A study of byssinosis and other respiratory symptoms in 2,528 flax workers aged 35 years and over in Northern Ireland is reported. This represented 82.5% of the total available population. Only 3% of workers were not seen because of absence or a refusal to cooperate. Workers were interviewed using a questionnaire based on the Questionnaire on Respiratory Symptoms (Medical Research Council, 1960a) with additional questions relating to respiratory symptoms at work. Byssinosis was found in workers in all stages of the industry, though its prevalence was highest in flax preparers; wet spinners and wet polishers did not appear to be at serious risk of developing the condition. When the effects of other relevant factors had been allowed for, e.g., age, duration of employment, and smoking habits, differences between the prevalence in the two sexes were found to be very small. The associations between byssinosis and the age of workers and their durations of employment in flax-preparing occupations were complex, and it was thought that a selective discharge of affected workers before the study might, in part at least, explain the absence of marked associations between these variables. Marked associations were found between both chronic bronchitis and exertional dyspnea and the type of occupation in the mill. Workers in the early preparing occupations had a considerably higher prevalence of these conditions than expected on a null hypothesis. There were also marked associations between byssinosis and bronchitis, and between byssinosis and dyspnea. The possible importance of these associations with regard to the etiology of byssinosis is discussed, and it is suggested that byssinosis represents an acute, specific effect of certain textile dusts on the respiratory system, superimposed on a non-specific chronic bronchitic process. -- Authors' abst.

- 391 Respiratory Symptoms in Men Who Had Previously Worked in a Flax Mill in Northern Ireland. P.C. Elwood. *Brit. J. Ind. Med.* 22, 38-42 (Jan. 1965).

An attempt was made to assess the importance of selective discharge by death or retirement of workers with respiratory symptoms in a flax mill in Northern Ireland. One hundred and two men who had worked in a flax mill during 1952-1962 and who were aged 35 years or more at the time of leaving were followed up. Fourteen of the men had died and 75 were interviewed. The proportion who had dyspnea on exertion at the time of interview was significantly higher (at $P < 0.05$) in those who had had byssinosis than in those who had not had byssinosis while in the mill, although the proportions with dyspnea in preparers and non-preparers did not differ significantly. The proportion who stated that they had left the mill because of exertional dyspnea of increasing severity was also significantly higher among those who had had byssinosis than among those who had not. Most of the men who had had byssinosis stated that their symptoms had improved after they left the mill, though some thought that work

in the mill had permanently affected their chests, and 2 said that their symptoms had become gradually more severe since discharge. Of the 14 who had died, certificates of the cause of death were traced for 12, in none of which had respiratory disease been entered as a cause of death. In one man who had been a flax preparer, chronic bronchitis had been considered a "significant condition, contributing to the death." The study indicates that any estimate of the prevalence of byssinosis based solely on the examination of workers in the mills underestimates the true magnitude of the problem.

-- Author's abst.

- 392 Precipitin (FLH) Test in Farmer's Lung. J. Pepys and P.A. Jenkins. Thorax 20, 21 (Jan. 1965).

Precipitin reactions to the "farmer's lung hay" (FLH) antigens of moldy hay were obtained in 89% of patients suffering from farmer's lung, 87% being due to the FLH antigens of the thermophilic actinomycete *Thermopolyspora polyspora*. The grade of serologic reaction was significantly related to reactions to extracts of other flora of moldy hay, to the frequency and severity of attacks and to the clinical sensitivity to the dust of moldy hay. In 16 patients with farmer's lung due to other vegetable dusts only 50% gave FLH reactions. In 122 farmers, exposed to moldy hay and not suffering from farmer's lung, weaker FLH reactions were obtained in 18% of 28 apparently unaffected farmers and in 17% of 94 farmers with other lung diseases. No reactions were obtained to *T. polyspora* in tests on 302 sera of subjects not exposed to moldy hay, some being exposed to other vegetable dusts. Inhalation tests with extracts of *T. polyspora* and its antigenic components provoked systemic and pulmonary reactions in affected subjects. The onset of farmer's lung was insidious in 49% of patients, insidious and later typical in 9%, typical in 32% and insidious or typical and later rapid in 10%, the last group having many of the clinical and serologic features of the other groups.

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

- 393 Changes in the Prevalence of Coalworkers' Pneumoconiosis Among Miners and Ex-Miners in the Rhondda Fach 1951-61. A.L. Cochrane, et al. Brit. J. Ind. Med. 22, 49-57 (Jan. 1965).

The changes in the prevalence of pneumoconiosis among miners and ex-miners in the Rhondda Fach in three age groups at three different times (1951, 1953, and 1961) have been investigated. The radiographs were re-read with the dates concealed, in a randomized order, by one observer. Later a stratified sample was classified for technique. The results of the randomized readings, standardized for technique, suggests an increase in prevalence in the older age groups and a slight decrease in the youngest. Further analysis suggests that the changes are not due to differential migration and mortality, and it is concluded that they are probably due to the progression of simple pneumoconiosis. This is thought to be mainly due to dust exposure, but the possibility of progression occurring in the absence of dust exposure is not excluded.

-- Authors' abst.

- 394 Cardiopulmonary Function Studies in Workers Dealing With Asbestos and Glasswool. J. Bjure, B. Soderholm, and J. Widimsky. Thorax 19, 22-27 (Jan. 1964).

Glasswool and rockwool are now being used in insulation work as substitutes for asbestos, which causes the chronic disabling disease asbestosis. To compare the fibrogenicity of these substances the cardiopulmonary function of 8 asbestos workers (Group A) was compared with that of 6 workers using glass and rockwool (Group B). In both groups working conditions and the duration of past exposure were similar, but whereas A had radiological evidence of asbestosis, B were considered normal on clinical examination. Group A had lower vital capacity, lower forced expiratory volume but normal FEV/VC ratio, elevated pulmonary artery pressure and pulmonary vascular resistance, increased stiffness of the lungs (low compliance) decreased diffusing capacity, lower oxygen tension of arterial blood with increased alveolar-arterial gradient and dead-space. There was no increase in airway resistance or impairment in the distribution of inspired air. Physical performance was comparable in the two groups, but A had a somewhat higher respiratory rate for a given work load. In three subjects in A the ECG indicated right ventricular hypertrophy and it is suggested that when found in asbestos workers this type of abnormality indicates the need for further cardiopulmonary studies. Thus, whereas B subjects were essentially normal, A had changes in cardiopulmonary function that are now established as evidence of diffuse lung fibrosis. It is concluded that prolonged exposure to glass and rockwool, unlike exposure to asbestos, does not cause significant impairment in cardiopulmonary function. There are 24 references.

-- Public Health Eng. Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 395 Basal Metabolism and Respiration in Men Living at 5,800 Meters (19,000 Feet).
M.B. Gill and L.G.C.E. Pugh. *J. Appl. Physiol.* 19, 949-954 (Sept. 1964).

Respiratory determinations were carried out on 8 members of the Himalayan Scientific and Mountaineering Expedition 1960-1961 and 3 Sherpas during a prolonged stay at 5,800 meters (19,000 feet). Ventilation and oxygen uptake were similar in both groups, although the Sherpas were smaller men. The Sherpas had lower alveolar ventilation, higher PA_{CO_2} and lower PA_{O_2} values than the scientists. Among 6 of the scientists, mean basal metabolic rate was 10% above the mean value predicted from sea-level standards. There was no increase in the two others, who did not acclimatize. The mean basal metabolic rate in the 3 Sherpas was +21%. The findings were not explained by the extra oxygen cost of increased breathing, changes in body composition, or exposure to cold, although this may have been a factor in the Sherpas. The results were similar to recent South American data on residents at 4,540 meters (14,900 feet). It was concluded that acclimatization to great altitudes in man is associated with increase in basal metabolism, but there is insufficient evidence as to whether this is a response to hypoxia or other environmental factors.

-- Aerospace Med. Absts.

- 396 Assessment of Mean Radiant Temperature in Indoor Environments. Barbara E. Tredre.
Brit. J. Ind. Med. 22, 58-66 (Jan. 1965).

The mean radiant temperature (MRT) is usually assessed as the radiation received at a point (or by a small sphere), but it is clearly important to know how adequately this parameter describes the heat load on a man, for in the presence of hot surfaces his shape and orientation may have significant effects. This paper presents the results of experiments designed to assess the radiant heat received by a man in a controlled temperature room in which non-uniform environments were achieved by locating a heated panel either overhead or on one wall. The MRT was determined with reference to a point using (a) the solid angle and temperature of each surface of the room, (b) a radiation thermopile, and (c) a globe thermometer. The MRT was also determined with reference to (a) a cylinder 68 in. in height and 12 in. in diameter, and (b) models of standing and sitting men. It seems that in indoor environments, where there is no intense radiation from sharply localized sources, the single estimation of MRT with a globe thermometer at 45 in. above the floor will generally give a satisfactory indication of the heat load on a standing or sitting man.

-- Author's abst.

- 397 A Bio-Physical Law Describing Hearing Loss. E.R. Hermann.
Ind. Med. & Surg. 34, 223-228 (March, 1965).

A mathematical formulation of the fundamental manner in which human hearing deteriorates with continuation of excessive noise exposure is presented. A general law is stated: "The rate at which noise-induced hearing loss is experienced is proportional to the amount of hearing remaining to be lost." This law is well supported by audiometric data obtained from puretone threshold responses at 4,000 cycles per second. The conclusion that the detrimental effect of noise on human hearing follows a first-order, first-degree differential equation has broad implications. A bio-physical explanation of how hearing losses occur is suggested. The study indicates areas of research in the fields of anatomy, audiometry, physiology and statistics that should prove fruitful in understanding the mechanism(s) of noise-induced hearing loss.

-- Author's abst.

03121864

RADIOACTIVITY AND X-RADIATION

- 398 Radiation Hazard from Contaminated Aircraft. R. E. Luehrs.
Aerospace Med. 36, 54-55 (Jan. 1965).

Infinitesimal but measurable amounts of radioactive contamination both loose and fixed and presumably due to air testing of nuclear weapons, have been brought back on aircraft which have flown to varying altitudes for varying periods of time during 1963. No person has added significantly to his total body burden of radioactivity during this sampling period. Further sampling of this sort should be undertaken in the event air testing of nuclear weapons is resumed. This paper constitutes a report of empirical sampling of air masses in the Mediterranean area during part of 1963 and in no way approaches the scholarly and definite work of J. L. Kulp and J. L. Dick (Health Physics 4, 133-156) on this subject. At the same time, validity exists for premises set forth herein. Eighteen months had elapsed between beginning of survey and the end of nuclear testing. -- Author's conclusion

- 399 Biologic Effects of Human Radiation Exposure. Report of a Criticality Accident.
P. A. Fuqua, W. D. Norwood, and S. Marks. J. Occ. Med. 7, 85-93 (March, 1965).

The results of extensive clinical and laboratory studies conducted over a period of 2 years on 3 employees exposed to radiation in a criticality accident are presented. The estimated whole-body doses ranged from 19 to 123 rems of mixed gamma and neutron radiation. Evidence of temporary radiation effects was obtained only in the gonads and hematopoietic system. The gonadal effects consisted of impaired spermatogenesis and increased gonadotrophin excretion. Hematologic effects included transitory bone marrow damage, a mild decline in the lymphocyte count in one case, and the production of morphologically aberrant blood cells. A significant increase in chromosome aberrations in the circulating leukocytes occurred. No ocular damage or increase in the urinary excretion of amino acids was observed. There are 28 references. -- Authors' summary

ENVIRONMENTAL MEASUREMENTS

- 400 The Analytical Reference Service. H. P. Kramer.
Am. J. Public Health 54, 1531-1535 (Sept. 1964).

The Analytical Reference Service is a voluntary association of 183 agencies in the U. S. and foreign countries with laboratory responsibilities for the detection, identification, and measurement of contaminants in the environment. They include state, municipal, university, industrial, and private and consulting firms. The Service was organized in 1953 by the Training Program of the R. A. Taft Sanit. Eng. Center at the request of several state agencies which were keenly aware of a need for broad-scale evaluation of methods for water analysis. The initial activities of the service were directed entirely to studies involving water-analysis methodology. Concern for the total environment brought about a concomitant broadening of service activities until they now include studies of water, food, and air. During the first 9 years of its operation, the service has developed these well-defined objectives: Evaluation of analytical procedures, including precision and accuracy, by comparison of the procedures and results reported by participating laboratories; exchange of information regarding method characteristics; and improvement or replacement of existing methods by development of more accurate procedures, and development of new methodology for determination of new pollutional components. Information is given on some of the 18 studies (14 concerned with evaluation of water methods) which have been completed since the inception of the service. -- APCA Absts.

- 401 Odour Perception and Environment Conditions. E. Bocca and M.N. Battiston. Acta Oto-Laryngol. 57, 391-400 (March-April, 1964).

The olfactory threshold for a given substance and a given subject varies in correlation with changes in environment. Experiments were made in order to determine the influence of variations in relative humidity and in temperature on olfactory threshold. The following results were found: (1) Threshold concentration depends on the temperature and on the relative humidity of the air. (2) At constant relative humidity, the threshold rises with the temperature, according to an exponential law. Also, at constant relative humidity, the ratio between values of the olfactory threshold and of the vapor pressure of the odorous substance under examination is a constant. This constant rises with the rise of relative humidity. (3) At constant temperature, the threshold rises when relative humidity rises. The temperature threshold curves for different humidity values show the same slope.

-- APCA Absts.

- 402 Determination and Variations of Olfactory Thresholds. K. Zilstorff-Pedersen. Arch. Otolaryngol. 79, 412-417 (April, 1964).

In quantitative examinations of the sensitivity of a sensory organ it is general procedure to determine the threshold value (the smallest stimulus which is able to produce a response) and the difference threshold (the variation in the intensity of the stimulus which is required to result in a difference in the intensity of the sensation). The specific threshold value is understood as the smallest stimulus which is able to produce the sensation which is characteristic of the stimulus concerned; in the case of smell this is recognition of the odorous substance. In discussing the subject in this paper the author refers to threshold as the general threshold value. Variations of threshold value are discussed under the two broad headings of those due to alterations in external experimental conditions and those due to changes in the test subject. In concluding his considerations on the physiological variations of threshold values, the author states that it is often difficult to ascertain whether small variations in threshold values are significant. It is, at any rate, necessary to compare the results found with the results from controls examined under conditions which differ as little as possible from the conditions prevailing during the experiments on the basis of which the deviations from normal values are to be judged. Moreover, repeated experiments are necessary using test subjects with whose responses the investigator is familiar. Most often in clinical cases the pathologic findings are so pronounced that there can be no doubt of the variation from normal.

-- APCA Absts.

- 403 A Portable Sulphur Dioxide Recorder. D.A. Lloyd and M. Madden. J. Sci. Instr. 41, 622-625 (Oct. 1964).

The development of a novel portable sulfur dioxide recorder, designed for studying atmospheric concentrations of sulfur dioxide in the range 8-80 pphm by volume is described. The absorption measurement cell unit has proved a useful device for the recording of atmospheric sulfur dioxide concentrations with a portable instrument. The main advantages of the system are that it automatically eliminates zero drift, and air and reagent flow rates may be kept low without the disadvantage of a slow response to changes in sulfur dioxide concentration. The sensitivity, accuracy, and response time of the instrument are comparable with existing instruments. It is relatively compact and has an electrical power consumption of approximately 1.5 watts.

-- APCA Absts.

- 404 Determination of Polyphenyls in Working Environments of Organic Reactors by Spectrophotometric Methods. C. Testa and G. Masi. Anal. Chem. 36, 2284-2287 (Nov. 1964).

The analysis of air for polyphenyl vapors present on the components of the nuclear moderator coolants is described. Two analytical procedures were devised for the determination of polyphenyls, a colorimetric and an ultraviolet method. Three types of sampling were also devised to assure control of polyphenyls in different working environments. -- APCA Absts.

IN RE: ABRAMS November 1992

03121866

PREVENTIVE ENGINEERING

- 405 Handling Chlorine. I. Tank Car Quantities. G.L. Danielson.
Chem. Eng. Progr. 60, 86-87 (Sept. 1964).

Handling comparatively large quantities of chlorine routinely requires strict safety training of personnel and careful maintenance of equipment. Frequent scheduled inspection and periodic pressure testing can prevent costly accidents. Remote control valve systems in loading lines may save lives.

-- Public Health Eng. Absts.

- 406 Handling Chlorine. II. Barge and Pipeline Safety. H.P. Nelson.
Chem. Engr. Progr. 60, 88-89 (Sept. 1964).

Properly maintained and well-designed expansion chambers equal to 20% of the pipe volume between valves will safeguard pipelines. Chlorine lines should not be vacuum tested because of displacement of expansion volume air with liquid chlorine. Careful inspection and maintenance of equipment is necessary to prevent costly accidents.

-- Public Health Eng. Absts.

- 407 Cleaning Sinter Plant Gas with Venturi Scrubber. E.R. Harris and F.R. Beiser.
J. Air Poll. Control Assn. 15, 46-49 (Feb. 1965).

This paper deals with the first-known installation of a venturi scrubber on a sinter plant. The project was a step in a program by which the steel industry is cooperating with Allegheny County authorities to improve atmospheric conditions in the Pittsburgh area. The installation was a success from the standpoint of meeting legal air pollution requirements, but many critical problems developed almost immediately in the area of maintenance of the new facilities. The fan rotor and housing, sludge pumps, and other parts of the system showed excessive wear to the point of failure within a comparatively few days, in spite of extensive use of stainless steels and rubber linings. This report covers a description of the cleaning equipment, the problems that developed, and a discussion of the steps that have been taken in an attempt to solve the problems. Many of the troubles have been minimized, but others are still being studied with some questions as yet unanswered.

-- Authors' abst., modified

- 408 The Gravel Bed Filter—A New Approach to Gas Cleaning. H.L. Engelbrecht.
J. Air Poll. Control Assn. 15, 43-45 (Feb. 1965).

The Lurgi-MB-Filter collects dust from industrial gases by mechanical means in a dry state. It works in continuous operation at temperatures up to 660°F. (349°C.) with high dust collecting efficiencies and a low draft loss. The gas to be cleaned passes through a filter bed consisting of abrasion resisting material such as gravel, etc. The captured dust is removed from the filter bed by a patented vibrating system which shakes the spring supported filter bed containers. Simple design and automatic operation ensure low investment and operating costs and give an economic superiority in the fields of cleaning waste air from clinker coolers, conveyors, crushers, pulverizing mills, driers, and preparation plants.

-- Author's abst.

- 409 Fundamentals of Electrode Rapping in Industrial Electrical Precipitators. W.T. Sproull.
J. Air Poll. Control Assn. 15, 50-55 (Feb. 1965).

The electrodes in industrial precipitators collect many tons of dust daily, and the efficient transfer of this dust burden to the hoppers is a challenging problem in mechanical engineering. Many varieties of devices have been tried; hammers, vibrators, scrapers,

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water flushing, gas blasting, etc. Impact devices for this purpose are usually called "rappers." Laboratory experiments described in this paper show that normal (perpendicular) rapping is more effective than shear wrapping; that thick dust layers are more easily removed by rapping than thin ones; that rapping becomes easier with increasing temperature, within limits; and that the electrostatic forces acting upon the precipitated dust layer play an important role. Quantitative data are shown graphically. The relation of these results to previous studies by other investigators is discussed.

-- Author's abst.

COMMUNITY AIR HYGIENE

- 410 Air Pollutant Emissions from Coal-Fired Power Plants, Report No. 2. R. W. Gerstle, et al. J. Air Poll. Control Assn. 15, 59-64 (Feb. 1965).

The Public Health Service and the Bureau of Mines are conducting a joint study to evaluate a number of flue-gas-stream components from coal-burning power plants. Emissions of fly ash, sulfur oxides, nitrogen oxides, polynuclear hydrocarbons, total gaseous hydrocarbons, formaldehyde, certain metals, and carbon dioxide are determined. A previous paper covered air pollutant emissions from vertical-fired and front-wall-fired power plant boilers. This paper includes a comparative evaluation of emissions from a tangential-fired and a turbo-fired power plant boiler.

-- Authors' abst.

- 411 The Potteries—Progression to a Cleaner Atmosphere. G. E. Earnshaw. Smokeless Air (London) No. 130, 313-320 (Summer, 1964).

This paper describes the progress made in the last 30 years in the abatement of atmospheric pollution from the pottery industry in England. It discusses the pollutant picture 50 years ago and points up the effect of the Clean Air Act on the industry, which is centrally located in Stoke-on-Trent. Abatement was initially attempted through the use of gas- and oil-fired tunnel ovens; the emphasis since 1960 has been on electric ovens. Also mentioned are the heavy clay industries in the area, which abated pollution by the aforementioned technique of conversion to gas, oil, or electric kiln firing. It is estimated that the equivalent of 9,000 tons of smoke per year have been eliminated from the area's atmosphere at a capital investment of approximately £15 millions.

-- Public Health Eng. Absts.

- 412 Status of Control of Motor Vehicle Emissions in California. D. A. Jensen and E. P. Grant. J. Air Poll. Control Assn. 14, 483-486 (Dec. 1964).

The State of California, because of an acute air pollution problem, has been forced to move ahead on a pioneer basis to control motor vehicle emissions. The Golden State's program, as put into operation by the Motor Vehicle Pollution Control Board, is discussed in detail. Inspection-installation stations, enforcement and legal requirements relating to crankcase control devices and other facets of the program are presented. Of particular importance is the experience gained by the Board in requiring devices on all new vehicles registered in California and its used vehicle program, affecting vehicles back to the 1950 model year. Recent developments in exhaust control, anticipated installation requirements, and scheduling, as well as an indication of staff long-term planning is also outlined. California's program is based on the principle that the motor vehicle must be controlled and that sewage no longer can be dumped into the air, if the public health is to be preserved.

-- Authors' abst.

- 413 Air Pollution Administrative Trends—The Canadian Scene. H. A. Belyea. J. Air Poll. Control Assn. 14, 500-502 (Dec. 1964).

A re-organized local agency for the administration of an air pollution by-law in a group of adjoining municipalities now employs professional staff together with laboratories for air

quality analyses, source testing, and applied research and new ideas in the development of improved fuel-burning and control equipment. The agency functions to prevent new sources of pollution, to disseminate information and advice and to provide leadership in the community. Its administrative activities include the use of consultants and outside research organizations for special problems and subjects of a political or controversial nature. However, to deal with the rare and complex contaminants which may be harmful to health now necessitates some assistance from the higher governments. The practices discussed have been employed for several years with general success in the Municipality, following closely the recommendations of a Select Committee of the Legislative Assembly of the Province which traveled and held hearings 1955-1957 in the major cities of the U.S.A. and Canada. -- Author's abstr.

ACCIDENTS AND PREVENTION

- 414 A Case-Book of Welding Accidents. H. Entwistle.
Ann. Occ. Hyg. (London) 7, 207 (Sept. 1964).

The records of several hundred welding accidents, mostly burns and eye flashes, are summarized by individual accident and type of operation. Review of the variety of circumstances giving rise to the accidents makes little mention of hazards responsible for the diseases associated with welding. -- J. Occ. Med. Absts.

- 415 Explosive Hazard of Arabinogalactan Dust. B. V. Ettling.
Northwest Sci. 38, 88-94 (Aug. 1964).

A drum drier produced arabinogalactan powder of 20 mesh to less than 325 mesh. The minimum ignition temperature (511°C.) and the minimum ignitable concentration (0.13 oz./cu. ft., thermal or 0.22 oz./cu. ft., spark) are higher than those of starch, wood flour, cellulose acetate, and other similar substances. The spark energy required to ignite arabinogalactan (AG) dust is greater than that required for starch, cellulose acetate, and similar substances. The maximum explosive pressure (52 psig) is slightly less than that for similar substances. AG dust is slightly less explosive than wood flour, starch, cotton flock, or cellulose acetate. Nevertheless, if AG dust is ignited in a closed space, a pressure of 7,500 lb./sq. ft. may be developed. -- Public Health Eng. Absts.

- 416 Delay in Restarting Respiration After Experimental Electric Shock.
W. R. Lee, S. Zoledziowski, and I. Dingwall Fordyce.
Brit. J. Ind. Med. 22, 43-48 (Jan. 1965).

When respiration is arrested by a 50 c/s alternating current passed between the forelimbs of rabbits there may be a delay between the end of the shock and the spontaneous resumption of respiration. This paper examines the relation of such a delay with the duration of shock and the current magnitude independently and in terms of two physical concepts: (a) the product of shock duration and current magnitude, called here "charge equivalent"; and (b) a quantity proportional to the energy input. The influence of the shock duration apparently exceeded that of the current. Furthermore, delay was strongly associated with both "charge equivalent" and energy input. When temporary circulatory arrest due to ventricular fibrillation occurred, an additional mechanism appeared to operate. Although protracted, the delay showed similar associations with the shock duration and current magnitude. An interesting observation was that the interval between spontaneous defibrillation and the resumption of respiration also showed a strong association with shock duration. The restarting of respiration appears to depend on the circulation. It may be that when the circulation restarts, after a period of ventricular fibrillation, blood-borne inhibitory substances, which accumulated during the period of circulatory arrest, could affect the respiratory center. -- Authors' abstr.

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MISCELLANEOUS

- 417 Symposium on Joint vs. Separate Treatment of Municipal and Industrial Wastes.
A. F. Gaudy, Jr., et al.
J. Water Pollution Control Fed. 36, 345-361 (March, 1964).

This symposium discusses legal, technical, and economic considerations, with particular emphasis on legal, involved in joint treatment of municipal and industrial wastes. Division of financial responsibility, difficulties encountered in municipal-industrial contracts, and various practical considerations are discussed in detail. Major legal problems derive from the application of legal formulas to provide a "fair distribution" of the charges and costs of joint operation. Upon acceptance of the industry's waste the municipality assumes full public responsibility for its treatment. Technical considerations, as related to the objective of minimizing the total costs involved in joint treatment, include preparation of wastes, dilution, equalization of hydraulic loading, and advantageous use of municipal sewage nutrients and experienced personnel. The final decision on whether an industry should undertake a joint or separate waste treatment program reduces to a consideration of three critical items: Waste volume, its pollutorial strength, and the method of financing the treatment facilities. Seven references are given.

-- Public Health Eng. Absts.

- 418 Contamination of Water by Viruses. D.M. McLean.
J. Am. Water Works Assn. 56, 585-591 (May, 1964).

Water-borne virus infections may result from recreational bathing facilities or from drinking water supplies. The results of studies of virus survival and clinical infections in bathing areas and in drinking water supplies are described. The author concludes that super chlorination followed by de-chlorination would substantially treat the water supplies. There are 16 references.

-- Public Health Eng. Absts.

- 419 Process for Disposal of Chlorinated Organic Residues. R.G. Woodland, M.C. Hall, and R.R. Russell. J. Air Poll. Control Assn. 15, 56-58 (Feb. 1965).

A continuous process for the disposal of halogen-containing organic residues has been developed. This process is based on the decomposition of wastes into gaseous byproducts by high temperature reactions with air and steam. The exit gases, which are essentially carbon dioxide, nitrogen, and hydrogen halides, can be scrubbed with water, thereby completely eliminating atmospheric pollution. A unique refractory-lined recuperative heat furnace has successfully operated in this fashion to dispose of more than 20 million pounds of liquid residues (average decomposition: 60% chlorine; 35% carbon; and the remainder oxygen, hydrogen, and others) during the last year. This process is cheaper than most conventional disposal methods (i.e., ground burial) and offers the added advantage of complete and permanent disposal.

-- Authors' abst.

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