

NOVEMBER 1992

IN RE: ABRAMS



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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

AUGUST, 1957

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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FOUNDATION FACTS

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a nonprofit association of industries for the advancement of healthful working conditions.

Volume 19

August, 1957

No. 8

NEW MEMBERS OF I-H-F

Three companies have newly affiliated with Industrial Hygiene Foundation, and are welcomed to membership. They are:

The American Metal Company, Ltd.
Ingersoll-Humphries Division of
Borg-Warner Corporation
Laclede Steel Company

HATCH LECTURING IN EUROPE

Theodore F. Hatch, Research Adviser to Industrial Hygiene Foundation, is currently in Europe where he is surveying industrial health programs and lecturing. Under a Rockefeller Travel Fellowship he is devoting three months to visiting various research institutions, universities and industries in Sweden, Finland, Norway, Denmark, Germany, Austria, Switzerland and England. He has been invited to lecture in the majority of those countries. From September to December, under a Fulbright Lectureship, he will present a series of lectures at the London School of Hygiene and Tropical Medicine.

While in Finland Mr. Hatch attended the International Congress on Occupational Health, at which he participated in a Symposium on Human Engineering.

TWENTY-SECOND ANNUAL MEETING OF I-H-F

Remember the dates of the fast-approaching 22nd Annual Meeting of Industrial Hygiene Foundation—October 30 and 31, 1957. We hope that each and every member company will be represented at the management and technical conferences. Registration material and programs will be mailed shortly.

ANNUAL REPORT OF I-H-F

The Annual Report of Industrial Hygiene Foundation for the year ending May 1, 1957 was distributed recently. Additional copies of this bulletin are available.

NEW REPRINTS AVAILABLE

Reprints may be obtained upon request of the Donald E. Cummings Memorial Lecture for 1957, "Growth and Progress in Industrial Hygiene," by Dr. H. H. Schrenk.

A limited number of reprints have been obtained of two papers which appeared in the Transactions of the 21st Annual Meeting of Industrial Hygiene Foundation. They are:

"Legal Aspects of Industrial Medical Practice", by William A. Challener, Jr.
and Francis S. McQuilkin.

"Research and Development of Equipment for Cleaning of High Temperature Gases", by Leslie Silverman.

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INDUSTRIAL HYGIENE FEATURES

Second edition of reference book on industrial toxicology contains revisions and new features. Abstract No. 946.

Cooperative small plant medical program solves economic problem for six small plants in New Haven. Abstract No. 956.

The medical director and the safety director get to the root of problems together. Abstract No. 957.

Management development in medicine could enhance the tremendous potential in the field of preventive medicine. Abstract No. 960.

Investigations of contamination of drinking fountains indicates need for reconsideration of fountain design and service factors. Abstract No. 969.

Simple method of analysis of skin cleansers for constituents which may cause dermatitis. Abstract No. 972.

Low-toxicity aliphatic amines as cross-linking agents for polyepoxy resins. Abstract No. 973.

Synergistic and antagonistic physiological effects of exposure to multiple air contaminants. Abstract No. 979.

An extensive review and discussion of the pneumoconioses. Abstract No. 1004.

The acuteness of the noise compensation problem. Abstract No. 1014.

Radiation protection for the general practitioner who uses x-rays as a diagnostic tool and for his patients. Abstract No. 1018.

Can an automatic blood cell counter be modified for use in dust counting? Abstract No. 1040.

Modifications in design of precipitators used in open hearth plants part of one company's air pollution control program. Abstract No. 1052. Methods of testing open hearth precipitators. Abstract No. 1054.

Odor control—learning the facts, methods of measurement, and planning for abatement on the basis of the most economical scheme. Abstract Nos. 1055 through 1058.

Health, safety and fire protection are goals in required reviewing of new industrial buildings and reconstruction in New York. Abstract No. 1061.

Static electricity—the problem and how to combat it in industry. Abstract Nos. 1070 and 1071.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

935 Noise Abatement Symposium.

The Eighth Annual Noise Abatement Symposium, sponsored jointly by the Armour Research Foundation and a number of organizations in the acoustic, industrial hygiene, and safety fields, will be held October 10-11, 1957, at the Sherman Hotel, Chicago, Ill. The program will cover: factory noise, cause and cure; community noise; and acoustical treatments and their limitations. A panel discussion on noise reduction concepts and practices will be a feature of the meeting. Additional information can be obtained from the Conference Secretary, Armour Research Foundation, 10 West 35th St., Chicago 6, Ill.

936 American Public Health Association Meeting.

The 85th annual meeting of the American Public Health Association will be held in Cleveland, Ohio, November 11 to 15. More than 40 related organizations will hold simultaneous meetings. Attendance of 4,500 is expected, and about 400 papers will be presented. Among the topics considered are quality of medical care, health services for industrial workers, medical care for the mentally ill, problems connected with the health of children, health problems of the aging population, epidemiology of accidents, water fluoridation, air pollution, and community mental health. Additional information can be obtained from Dr. Reginald M. Atwater, Executive Director of the Association, 1790 Broadway, New York 19, N. Y.

937 Hygienic Guide Series.

The following additional Hygienic Guides included in the June number of the American Industrial Hygiene Association Quarterly are: vanadium pentoxide; xylene (xylo!, dimethyl benzene); ethylene glycol monomethyl ether; phosphoric acid; and toluene (toluol, methyl benzene). They can also be obtained separately from the Association's headquarters, 14125 Prevost, Detroit, Mich., at 25 cents each.

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OCCUPATIONAL DISEASE STATISTICS

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

	Colo. June 1957	Conn. June 1957	Ind. June 1957	Mo. June 1957	Pa. June 1957	Total
Brucellosis		1				1
Carbon monoxide	1					1
Dermatitis	11	39*	8*	16*	29	103
Dye poisoning				2		2
Lead	4				2	6
Lung infection (plating fumes)			1			1
Pneumoconiosis					51	51
suspected					20	20
Respiratory irritation					1	1
Silicosis					77	77
suspected					44	44
Tuberculosis					2	2
suspected					2	2
Miscellaneous N. O. C.	1					1
Total	17	40	9	18	228	312

* Causes of dermatitis are listed in the following reports:

Connecticut: poisonous plants, 14; oils, fats and waxes, 7; abnormalities of humidity, chemicals N. O. C., plastic apron, plating solutions, soap solutions, glue, etc., solvents N. O. C., synthetic resins and chemicals, tar and allied substances, 1 each; N. O. C., undetermined, 7 cases.

Indiana: paint 2; lysol, oil, molding compound, glue, 1 each; not stated, 2 cases.

Missouri: poison ivy, 5; poison oak, 1; chemicals, 1; not specified, 9 cases.

COMING EVENTS

- 939 Sept. 8-13 American Chemical Society, 132nd National Meeting, New York, N. Y.
Sept. 8-13 American Congress of Physical Medicine and Rehabilitation, Los Angeles, Calif.
Sept. 9-13 Illuminating Engineering Society, 51st Annual National Technical Conference, Atlanta, Ga.
Sept. 9-13 Instrument Society of America, 12th Annual Instrument Automation Congress, Cleveland, O.
Sept. 16-21 Congress of International Union of Railway Medical Services, Paris, France.
Sept. 16-Nov. 8 Course in Occupational Health, Institute of Industrial Medicine, New York University. (See news item in April Digest)
Sept. 23-24 Steel Founders' Society of America, Fall Meeting, Hot Springs, Va.
Sept. 23-25 American Society of Mechanical Engineers, Fall Meeting, Hartford, Conn.

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- Sept. 29-Oct. 3 World Medical Association, 11th Annual Meeting, Istanbul, Turkey.
 Oct. 9-11 Gray Iron Founders' Society, Annual Meeting, Chicago, Ill.
 Oct. 10-12 Eighth Annual Noise Abatement Symposium, Chicago, Ill. (See news item)
 Oct. 16-17 Second Annual Sanitation Show and Conference, New York, N. Y.
 Oct. 17-18 Magnesium Association, Annual Convention, New York, N. Y.
 Oct. 18-19 Association of American Pesticide Control Officials, Washington, D. C.
 Oct. 21-24 National Pest Control Association, Annual Convention, Louisville, Ky.
 Oct. 21-25 National Safety Conference and Exposition, 45th, Chicago, Ill.
 Oct. 27-Nov. 1 Atomic Industrial Forum, Fourth Annual Meeting, New York, N. Y.
 Oct. 29-31 American Nuclear Society, Third Annual Meeting, New York, N. Y.
 Oct. 30-31 Industrial Hygiene Foundation, 22nd Annual Meeting, Pittsburgh, Pa.
 Nov. 4-7 American Dental Association, 98th Annual Meeting, Miami, Fla.
 Nov. 7-8 National Foundry Association, Annual Meeting, New York, N. Y.
 Nov. 11-15 American Public Health Association, 85th Annual Meeting, Cleveland, O. (See news item)
 Nov. 13-14 Armour Research Foundation and Midwestern Air Pollution Prevention Association, Chicago, Ill.
 Nov. 13-15 National Conference on Standards, San Francisco, Calif.
 Nov. 14-16 American Society of Refrigerating Engineers, Semiannual Meeting, Chicago, Ill.
 Nov. 18-21 Air-Conditioning and Refrigeration Institute, 10th Exposition of the Air-Conditioning and Refrigeration Institute, Chicago, Ill.
 Nov. 18-22 Pan American Medical Association, Inter-American Congress, Mexico City, Mex.
 Nov. 19-21 Investment Casting Institute, Annual Fall Meeting, Chicago, Ill.
 Nov. 26 Manufacturing Chemists' Association, 7th Semiannual Meeting and Winter Conference, New York, N. Y.
- 1958
 May 19-24 Second World Congress on the Prevention of Occupational Accidents, Brussels, Belgium. (See news item in July Digest)

LEGAL DEVELOPMENTS

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940 New Legislation.

Compensation benefits have been increased in Connecticut, Illinois, Missouri, New Hampshire, North Carolina, Oregon, Texas, and Wisconsin. In Illinois, an amendment to the occupational diseases law increases the occupational diseases benefits in the same amounts as in the workmen's compensation law. The amendment also provides that diseases caused by atomic radiation and berylliosis must have caused disablement within three years from the date of the last exposure in order to be compensable. The North Carolina amendment increases compensation for silicosis and asbestosis. The time within which a claim must be filed is reduced in North Carolina and Florida. The compensation period for occupational deafness has been increased in Wisconsin. The disability waiting period has been reduced in Connecticut.

-- Cond. from Commerce Clearing House Reports

941 Berylliosis—Coverage by Act—Common-Law Action—Statute of Limitations.

This common-law action for damages for injuries allegedly resulting from the negligence of decedent's former employer in exposing decedent to beryllium while she was in its employ and for damages for such employee's death from berylliosis is barred on either one of two counts: (1) Assuming that the employee suffered no bodily impairment as a result of the beryllium until on or after January 1, 1950, the cause of action is barred by

amendments to the Workmen's Compensation Act effective then and extending coverage of the act to occupational diseases, even though the last time the employee was exposed to beryllium was in the year 1949; or (2) assuming that the employee suffered a definite bodily impairment as a result of the beryllium prior to January 1, 1950, the cause of action is barred by the two-year statute of limitations since, while the beryllium poisoning did not develop or was not manifest or diagnosed until 1951, the wrongful act necessary to bring suit occurred in 1949 when she was last exposed to beryllium. Thus, under either point the common-law action is barred and summary judgment for defendant is affirmed. Biglioli v. Durotest Corporation. New Jersey Superior Court, Appellate Division. No. A-502-55. March 4, 1957. -- CCH

942 Practice and Procedure—Silicosis—Medical Testimony—Function of Medical Board.

In denying an award of compensation for disability due to silicosis, the Medical Board may apply its own expert knowledge and experience to the medical evidence before it, including x-rays, in determining whether or not the claimant is suffering from an occupational disease and may make findings contrary to the express opinion of the only medical witness testifying before the Board. Where the insurer asked that the issue be determined as to whether or not the claimant had contracted a compensable occupational disease a medical issue was "controverted" even though neither the employer nor the insurer called any medical witness to testify in opposition to the claimant's medical witness. The Medical Board is not precluded from applying its own expert knowledge to the data before it simply because no medical witness appeared to offer testimony controverting the deductions, conclusions or opinions of the only medical witness whose views were offered in evidence. Further, there was medical evidence to which the Board could apply its expert knowledge to arrive at the findings made. Affirmed. Duncan v. McNitt Coal Company. Maryland Court of Appeals. No. 67. March 1, 1957. -- CCH

943 Silicosis—Cause of Death—Required Notice to Employer and Insurer—Delay in Giving—Reasonable Excuse.

An award for the death of an employee due to silicosis was properly made and affirmed, even though notice of the employee's disease was made long after the required statutory period, in view of the fact that there was a reasonable excuse for such delay. The doctor diagnosed the cause of the employee's death as pneumonia and heart trouble and it was not until after such death that results of x-rays taken revealed silicosis. However, the results of such x-rays were not communicated to the employee's beneficiary or family. The discovery was brought about by a discussion between decedent's brother and fellow employees during which someone suggested that he might have had silicosis or some disease growing out of his employment. As a result of this discussion counsel was employed and he investigated the matter and discovered, about five and one half months after death, that the death was caused by silicosis. Notice was immediately given to the employer and this suit resulted. Decedent's beneficiary is his 80-year old uneducated father, who had no reason to question the doctor's diagnosis of death or to suspect that his son had silicosis, a disease of which such father had no knowledge. Further, there is no proof in the record that the employer or insurer were in any way prejudiced by the failure to give this notice within 30 days of the death of the employee. They do not contend that the deceased did not have silicosis. Affirmed. Lampley v. St. Paul Mercury Indemnity Co. Tennessee Supreme Court. March 8, 1957. -- CCH

944 Chemical Poisoning—Dermatitis—Arising out of and in Course of Employment—Statute of Limitations.

While plaintiff employee had been treated as early as 1951 for an acute inflammatory condition of the left leg, a combination of phlebitis and dermatitis of which his employer had knowledge, the evidence sustained the Chancellor's finding that plaintiff was disabled as of October, 1954, due to the fact that he had an occupational disease (chemical poisoning) which arose out of and in the course of his employment and judgment was properly granted in favor of plaintiff. The Chancellor found as a fact that plaintiff was in good health when hired in 1947, that his job required him to handle angle irons while working on a foot

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punch press that punched or drilled holes through the iron, that the iron was coated with a rust preventive compound, that he first came down with dermatitis about June, 1950, and the doctor testifying for the defendant gave a history of occupational dermatitis. With respect to the question of application of the statute of limitations, the date when this injury resulted in disability must be determined and this was found to be October, 1954. Plaintiff had suffered from the old injury for three years prior to 1954 and the employer had notice of this prior disability. The statute of limitations was not tolled until the injury resulted in the plaintiff's disability and was for this reason unable to carry on his usual vocation. Thus, as to the injury of 1954, the statute does not operate as a defense. The award of \$28 per week from October, 1954, until the sum of \$8,500 is paid is affirmed. Underwood v. Combustion Engineering, Inc. Tennessee Supreme Court. February 8, 1957.

-- CCH

945 Silicosis—Extent of Impairment.

An award that plaintiff employee take nothing by way of compensation for an occupational disease known as silicosis resulting from exposure to silica dust prior to termination of his employment in August, 1952, was properly made. The board might reasonably have found that during the last period of his employment plaintiff did not sustain any permanent partial impairment. Affirmed. Poke v. Peerless Foundry Company. Indiana Appellate Court. No. 18825. March 26, 1957.

-- CCH

BOOKS, PAMPHLETS AND NOTICES

- 946 Industrial Toxicology. Second Edition. Lawrence T. Fairhall.
Williams and Wilkins Co., Mt. Royal & Guilford Aves., Baltimore, Md.
376 pp. (1957). \$10.00

The first edition of this book, published in 1949, has become a standard reference work for the industrial hygienist and a handy source of information for the pharmacologist and the physician. As in the first edition the text material is divided into two groups: (1) inorganic substances, and (2) carbon compounds, and the substances in each group are arranged alphabetically, with information on characteristics, industrial uses, toxicity, analysis, and references for each substance. In the inorganic group, sections have been added on decaborane, hydrazine, hydrogen peroxide, kaolin and ochre, and lithium. About 30 additions have been made to the carbon compounds, including the most commonly used insecticides and a number of other compounds which have become industrially important. A number of minor changes have been made and additional references have been included in a number of the sections. Another new feature is an appendix consisting of a number of tables, including a conversion table for gases, end products of detoxication, threshold limit values, and comparative toxicities.

-- FFR

- 947 Atmospheric Pollution. Its Origins and Prevention. Second Edition. A. R. Meetham.
Pergamon Press, 122 East 55th St., New York 22, N. Y. 302 pp. (1956). \$9.50.

Since the publication of the first edition of this book in 1952, a considerable amount of new information has been brought to light and has been incorporated into the present edition. The book begins with a history of air pollution, and an account of the origin of natural fuels. An extensive discussion is given of the various natural and artificial fuels and the industrial and domestic boilers and furnaces used for their combustion. Major emphasis is placed on smoke resulting from fuel combustion as primary source of air pollution, but sulfur dioxide, hydrogen sulfide, and other gaseous pollutants

are discussed briefly. Methods of measurement of smoke, ash, sulfur dioxide, grit, and visibility are described. Results of recent British surveys of pollution distribution are reviewed. Cyclic variations and those caused by weather are discussed. A chapter deals with the effects on human and animal health, effects on vegetation, and property damage. Current pollution abatement technology, control legislation, and enforcement methods practiced in England and the United States are discussed and pertinent portions of several laws are given in full. The final chapter deals with recent developments, including: mortality attributed to smog, physics of fogs, trends in atmospheric pollution in Britain, pollution from petroleum products, and pollution from nuclear reactions. Selected bibliographies are appended to each chapter, and a feature of the present edition is a classified general bibliography.

-- FFR

- 948 Chronic Illness in the United States. Vol. I. Prevention of Chronic Illness. Commission on Chronic Illness. Published for the Commonwealth Fund by Harvard University Press, 79 Garden St., Cambridge 38, Mass. 338 pp. (1957). \$6.00.

This is the first of a series of four volumes dealing with the problems of chronic illness, and is concerned with prevention aspects. The Commission consists of a number of members and technical advisers who are prominent in the field; and a number of medical and public health organizations have contributed to the support and work of the Commission. Part 1 of this volume presents 21 conclusions and recommendations adopted by the Commission. Prominent among these recommendations are: fuller secondary prevention through screening and periodic health examinations; community planning; revision of medical school curricula to include chronic disease prevention; adoption of fluoridation of water supplies; recruitment of trained personnel to staff official and voluntary prevention programs; and greater efforts on the part of government. The roles of industry and labor in providing health examinations are recognized, but so far only a small proportion of workers have benefited. Part 2 presents summaries of information on prevention of selected chronic illnesses and contributory factors. One chapter relates to chronic disease in industry, both occupational and nonoccupational, and in several other chapters such as those on cancer and hearing loss, occupational factors are discussed among the causes. Although the material of the book is directed mainly toward public health personnel and the medical profession in general, its application to industrial medicine is obvious.

-- FFR

- 949 Health Manpower Chart Book. G. St. J. Perrott and M. Y. Pennell. Public Health Service Publication No. 511. 57 pp. (1957). For sale by Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. 25 cents.

Statistics are given on occupation of workers in the labor force, increase of employment in selected occupations, growth of selected health professions, and many other items concerning health occupations, including length of work year, income, number of students, regional distribution of physicians, ratios of physicians to population, and similar figures for dentists and nurses.

-- FFR

- 950 Water Fluoridation: Facts, Not Myths. L. I. Dublin. Public Affairs Pamphlet No. 251. Public Affairs Committee, 22 East 38th St., New York 16, N. Y. 28 pp. (1957). 25 cents.

This pamphlet, written in non-technical language and intended for the general reader, summarizes the evidence that water fluoridation is beneficial and disposes of many arguments against it. It is noted that every advance in preventive medicine has met with opposition, but that the opposition has finally become almost negligible. Water fluoridation is not a panacea, and can do nothing for tooth cavities already existing, but the evidence is overwhelming that it prevents tooth decay when the fluoridated water is consumed early in life. Much evidence on the safety of fluoridation is also presented.

-- FFR

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- 951 Annual Report of the Chief Inspector of Factories for the Year 1955. G. P. Barnett. Ministry of Labour and National Service. 275 pp. (1956). Obtainable from British Information Service, 30 Rockefeller Plaza, New York 20, N. Y. Price on application.

This report deals exhaustively with progress in safety in British factories. Among the subjects considered are: safety in the use of ionizing radiation; accident statistics; accidents due to flammable liquids; gas and dust explosions; exhaust ventilation; lighting; lead poisoning; anthrax; chrome ulceration; pneumoconiosis; study of x-ray workers; and chemical hazards in factories. The manufacture of heavy and fine chemicals and oil refining have greatly expanded over the past few years. With the extended use of chemicals in all branches of industry, the hazards associated with the chemical industry can be found almost anywhere, and the managers of non-chemical works are not always fully aware of the dangers associated with the materials that they handle. The control of chemical hazards in factories is given considerable attention.

-- Cond. from extensive summary in Bull. Hyg.

- 952 The Effects of Arts, Trades, and Professions, and of Civic States and Habits of Living, on Health and Longevity. Second Edition. C. Turner Thackrah. 238 pp. (1832). (In the same volume), The Life, Work, and Times of Charles Turner Thackrah, Surgeon of Leeds (1795-1833). A. Meiklejohn. E. & S. Livingstone, Ltd., Edinburgh and London (1957). 25 shillings (plus postage).

This work by one of the pioneers in industrial medicine is reproduced in full. It is prefaced by a biography of Thackrah, compiled by extensive research into original documents. The description of a wide variety of diseases found in many occupations, including lead poisoning, dermatitis, lung diseases, and many others, shows that they were recognized at that early date but little was done toward their prevention. The volume is of decided interest to those concerned with the early development of industrial hygiene and medicine.

-- FFR

INDUSTRIAL MEDICAL PRACTICE

- 953 Growth and Progress in Industrial Hygiene. Donald E. Cummings Memorial Lecture. H. H. Schrenk. Am. Ind. Hyg. Assn. Quart. 18, 113-118 (June 1957). Reprints obtainable from the Foundation.

The phenomenal growth of research, expenditure for which reached 4 billion dollars in 1955, has resulted in numerous new materials and industrial processes, with the concurrent introduction of new hazards to the workers. This growth presents a challenge to the industrial hygienist to keep pace with this development. Progress is reviewed in the fields of analysis and instruments, biological research, and engineering control. Future needs are then discussed. The field of industrial hygiene must be made sufficiently rewarding; problems in industrial hygiene should attract workers in allied fields; and industrial management must be made to recognize that control of the working environment is an essential component of plant design and operation. More effective recruitment of persons at the graduate level is needed to provide a continuing supply of trained industrial hygienists. Future pre-eminence in the field of industrial hygiene requires continuous and aggressive research both fundamental and applied, to be prepared for the economic and social changes which are occurring at an ever-increasing pace. Industrial hygienists are confronted with a dynamic challenge, for it is doubtful if any group so small in numbers has the opportunity to contribute so much to so many. (This paper was also summarized in Foundation Facts, April 1957 Digest).

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- 954 The Expanding Scope of Occupational Medicine. C. A. D'Alonzo.
Arch. Ind. Health 16, 1-7 (July 1957).

The history of the growth of occupational medicine in the duPont organization is reviewed as an example of progress in that field. Among the important developments are the use of psychiatry and biostatistics and an alcoholic program. Various phases of the medical program are illustrated by charts. Health examinations are a fundamental part of the preventive medical program. They are only as monotonous or dynamic as the examiner chooses to make them. A poorly performed physical examination is worse than none at all, since false security may result. Many of the advances in toxicity research have resulted from the keen clinical observations that plant physicians have been shrewd enough to make, record, investigate, and follow.

- 955 Health and Work Efficiency. R. F. Schneider. Med. Trabajo 22, 92, 94, 96-100 (Apr. 1957).

The history of occupational medicine is reviewed briefly, with attention to gradual development of the present concept of the relationship between the health of the employee and his work efficiency. The medical programs of several companies and their results are reviewed. Three typical and diversified cases are described. A constructive health program can effectively bridge the gap between the employee of today and the potential executive of tomorrow, if there is a mutual understanding and appreciation of the problem. The doctor in industry plays the neutral role, with equal interest in the employer and the employee. Certain individuals who have limitations which they understand and who are willing to live within them make excellent employees. They are perhaps better than many who have no known limitations, but who take on extracurricular activities that may adversely affect their health and well-being. Inevitably the scope of the doctor in industry will be more along educational lines and less along curative lines. More and more he will deal with the normal physiology and psychology of the employee and less and less with his aches and pains. The primary effort will be to keep the fit fit, rather than trying to make the unfit fit.

- 956 New Haven Small Plant Medical Program. Doris M. Thompson.
Mgmt. Rec. (National Industrial Conference Board) 19, 202-205, 224, 225 (June 1957).

A medical program is described in which six companies, with 100 to 300 employees each, have cooperated for 2 1/2 years. The companies share the expenses for the services of one doctor, each paying according to the time devoted to the company's needs. Each company permits its facilities to be used by another in case of emergency. The physical layouts and equipment have been kept to a minimum. The doctor's regular scheduled plant hours are in the first half of day, but actually he devotes a large part of his time to the industrial services. The confidence of community doctors and of employees was gained by diplomacy and full explanation of the plan. Each of the participating firms has a coordinator who is responsible for the program's business administration. Each company has reported benefits such as decreased absenteeism, fewer injuries, and lower insurance costs.

- 957 The Doctor and You. B. J. Podzius. Natl. Safety News 75, 28, 29, 125-128 (June 1957).

When the medical director and the safety director use each others' services, their respective jobs will be less difficult and management and employees will benefit. Examples of such cooperation as practiced in General Motors plants, are described. Medical department records on eye injuries are used by the safety department in an eye conservation program. A high incidence of chrome ulcers in a plating plant was traced to the use of too much dichromate in the tanks, and the condition was corrected by appropriate measures. Another field of cooperation is the investigation of doubtful claims of injury. Several instances are given. This policy of cooperation has greatly reduced accident frequency and severity rates.

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- 958 The Periodic Evaluation of Health. N. J. Roberts.
Med. Bull. (Standard Oil N. J.) 17, 1-22 (Mar. 1957).

Evidence exists that the periodic measurement of the health of supposedly well individuals often leads to the discovery of significant, previously unrecognized disease, that such a disease is frequently asymptomatic, and that, as would be expected, better results are frequently enjoyed when these diseases receive attention in their early stages. Most patients obtain any medical observation or treatment indicated. A number of questions about the need and benefits of periodic examinations are discussed in some detail. Several tables show the extent of abnormalities discovered in several types of examinations. The wider advocacy and performance of health maintenance examinations is urged. A copious bibliography is appended.

- 959 Preemployment and Periodic Physical Evaluation Programs in the Metropolitan Detroit Area. M. Raskin and Norma G. Silver. Arch. Ind. Health 16, 52-54 (July 1957).

A survey of 198 firms employing 195,000 persons who replied to a questionnaire is reported. The returns represent 60% of the firms to which questionnaires were sent, but only 37% of the total employees. Pre-employment examinations were made by 78% of the firms reporting, but only 21% reported the inclusion of many of the standard examination procedures established by leaders in the field of industrial medicine. Periodic follow-up examinations are provided for supervisory and executive personnel more frequently than for other categories of employees. In some cases follow-up examinations are done only before the employee returned to work after absence due to illness. Both types of examinations are provided in a greater percentage of the larger firms than of the smaller firms. The use of existing community services is recommended for smaller plants, and the benefits of physical evaluation programs are discussed.

- 960 Management Development in Medicine. The Sappington Memorial Lecture. F. J. Curtis. Ind. Med. & Surg. 26, 318-322 (July 1957).

The main theme of this discussion is the lack of executive administration in hospitals and medical organizations in industry or outside of industry, and possibilities of developing executive administration. The author describes the plan of management development in his company in the hope that these procedures can be translated into medical fields. The author suggests as a distant but attainable goal a management study of hospitals and clinics, the construction of management development systems for non-medical trainees, and the establishment of the ideal of putting the institution on a profitable basis without depending upon charity. The medical profession, when teamed up with public and industrial health, has a tremendous potential in the field of preventive medicine. These goals can best be realized by self-study and self-criticism, and by aiming for radical changes rather than the light fringe issues.

- 961 Medico-Legal Evidence in Workmen's Compensation Cases. E. D. McBride. Compens. Med. 8, 12-16 (Dec. 1956-Feb. 1957).

The causal relation of constitutional disorders to injury is probably the most difficult situation that comes before an industrial court. This paper discusses this phase of disability evaluation, including the following subjects: (1) pre-existing physical impairment and its influence on disability allegedly due to trauma; (2) psychogenic manifestations which create exaggeration that masks the true extent of disability; (3) differential diagnosis in the causal relation of injury to disease; (4) consideration of the disease as the cause of the accident; and (5) injury as an added disability to some unrelated disease condition. Evaluation of the disability for which compensable factors are responsible should not be difficult after making decisions on other phases of apportionment. The final rating of disability will be a compromise, but should be reasonable if all factors are weighed in the balance of compensable responsibility.

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962 The Cardiac Problem. H. Ehrlich. *Compens. Med.* 9, 7-13 (Mar.-May 1957).

This paper is an appendix to the report of the Moreland Commission concerning costs, operations, and procedures under the Workmen's Compensation Law of the State of New York. The opinions of 398 physicians on the basis of 7 hypothetical questions are summarized. The great majority of the physicians agreed on these 4 points (93.9% on the first to 82.9% on the fourth): (1) Work does not produce heart disease; (2) Some form of coronary disease must have pre-existed in an individual who suffers a coronary disease and myocardial infarction; (3) Performance of the same type of moderately heavy work without engaging in unusual exertion or strain has no injurious effect on the heart; and (4) Subsequent attacks of myocardial infarction are not causally related to the first attack, but to the underlying pathology of the coronary vessels. Opinion on the effect of strenuous physical exertion or emotional disturbance upon the heart was almost evenly divided. The general opinion was that the emotional factor plays a more important role in bringing on such an attack than the physical. Opinion was also nearly evenly divided on whether a person has a permanent partial disability after he has recovered from his myocardial infarction and returned to work.

963 Vocational Rehabilitation of Cardiac Surgical Patients. Dorothy A. Oates, W. F. Hickey, Jr., and M. J. Bellinger. *J. Am. Med. Assn.* 164, 1079-1084 (July 6, 1957).

The effectiveness of a program for the vocational rehabilitation of cardiac patients was tested by studying the records of 101 persons who had undergone cardiac surgery in the course of the program of the Massachusetts Division of Vocational Rehabilitation. Ten patients died during the operation or within 16 months after surgery, and two survived without benefit from the operation. Of the 89 patients in whom surgery was successful, 74 are at work and the others are expected to go to work in the near future. Vocational guidance and training, together with the alleviation of the financial problems imposed by long illness and cardiac surgery, are shown by this study to have given commendable results.-- Cond. from editor's and authors' summaries

964 The Rehabilitation of Patients with Myocardial Infarction. H. Abendroth. *Munch. med. Wochschr.* 99, 178-181 (Feb. 8, 1957). German.

The author, who is connected with sickness insurance of workers in the mining industry, is particularly concerned with the rehabilitation of patients with myocardial infarcts. It is not sufficiently realized in general practice that myocardial infarction may take an atypical course, as its pathogenesis is quite complex. Functional disturbances may precede the attack. Some patients with emotional instability seem predisposed to myocardial infarction and to react to it more severely than others. On the basis of a case history, the author shows that a severe emotional upset may bring on an infarction. Since psychological factors may play a part in the causation, psychotherapy should not be neglected in the treatment. Cooperation between the family physician, the physician representing the company holding the sickness insurance, and the employer or industrial physician is necessary for the recovery and rehabilitation of the patient. Prevention of psychological shock and strain is important after the patient returns to work. The author recently observed two patients who died from a recurrent infarct that developed after a psychological shock on returning to work. Of 95 employees in an industrial plant who were treated for myocardial infarction between 1949 and 1956, 52 have survived, and 30 of these were still in industrial employment. -- Cond. from *J. Am. Med. Assn.*

965 The Limitations of Physical Therapy and the Concept of Teamwork in the Management of the Industrial Back. O. Fliegel and S. G. Feuer. *Compens. Med.* 8, 9-11 (Dec. 1956-Feb. 1957).

Low back disorders may have a number of causes, which are difficult to distinguish. Thorough history, examination, and observation, are essential to diagnosis. The orthopedic surgeon, physiatrist, neurologist, neurosurgeon, urologist, gynecologist, and psychiatrist should participate in this detailed evaluation. This particularly holds true in chronic cases, that are too often treated with physical therapy endlessly, and finally have to be weaned from this therapy and rehabilitated by other means. There

is no routine treatment and no short-cuts to the treatment of low back disorders. A number of suggestions are given for treatment of acute and chronic cases. The causes of failure of physical therapy are summarized. Most of these failures could be prevented or at least mitigated by frequent re-examinations and re-evaluation by a team of experienced physicians.

- 966 Environmental Cancer and Its Relationship to Industry, the Physician, and the Community. R. E. Eckardt. N. Y. State J. Med. 56, (Aug. 15, 1956); Med. Bull. (Stand. Oil N. J.) 17, 23-30 (Mar. 1957).

The interest of industry in the problem of environmental cancer is based on the potential liability for occupational cancers and the sickness absenteeism they may cause, although the human factor is also present. Before paying the heavy cost of prevention, industry must know the facts about occupational cancer and the preventive steps which can be taken with some assurance of success. The same considerations apply in general to the community's interest in cancer that may be caused by air pollution. In contrast, the physician's approach differs from industry's or the community's because of what they may teach him about cancer in general. The many phases of the experimental work on cancer are reviewed. The information about possible causes of cancer, including hydrocarbons, radiation, tobacco smoking, and air pollutants, is shown to be far from sufficient to establish definite causes of human cancer. It will require many years of extensive research before the facts are well established. As community members, we must not let ourselves be stampeded into hasty actions by the quantity or nature of newspaper headlines. We owe it to ourselves, as community members, and to our patients, as physicians, to be quite sure of all the facts first.

- 967 Brain Tumor: A Diagnostic Challenge. J. J. Thorpe. Med. Bull. (Stand. Oil N. J.) 17, 36-57 (Mar. 1957).

Nineteen cases of clinically proved brain tumors were diagnosed in employees or annuitants of the Esso Standard Oil Co. during the period 1950-1954. Seventeen of these were proved at operation or autopsy. Problems in differential diagnosis encountered included psychoneurotic patterns, degenerative vascular disease, trauma, epilepsy, syphilis, and otitis media. The physician in industry has a unique opportunity to diagnose brain tumors in their earlier stages. A balanced awareness of their possible occurrence, adequate history taking, attention to the fundamentals of an emergency, neurologic and ophthalmoscopic examination, and referral to a neurologic specialist when the diagnosis is still in question should make his diagnostic score a presentable one. -- Cond. from author's summary

- 968 Recovery of Bacillus Anthracis from the Nose and Throat of Apparently Healthy Workers. E. A. Carr, Jr. and A. R. Rew. J. Infectious Diseases 100, 169-171 (Mar.-Apr. 1957).

Anthrax is a hazard to those working with animal hair and hides. Recent modifications in the technique of culture of pharyngeal washings were used to determine whether exposed workers may be carriers. The method is described. Anterior nasal swabs, throat swabs, and pharyngeal washings were taken from each of 101 apparently healthy mill workers employed in processing raw goat hair. Seven nasal swabs and seven pharyngeal washings yielded *Bacillus anthracis* by bacteriological culture. No subject yielded the bacillus from both nasal and pharyngeal washings. All of the 50 controls were negative. The proportion of positive samples was higher in workers engaged in the earlier steps in the processing than in those engaged in the later steps. -- Cond. from J. Am. Med. Assn.

- 969 Potential Infection from the Drinking Fountain. W. L. Mallmann and A. K. Fontes. Arch. Ind. Health 16, 77-81 (July 1957).

The literature on contamination of drinking fountains is reviewed, and investigations made by the authors are reported. The methods of investigation are described. The results are reported in tables which are substantially the same as in the authors' earlier paper (IHJ Abst. 1411, Dec. 1956) but a fuller discussion is given. They show that streptococci in varying numbers can be found in any drinking fountain, whether of the bubble, unshielded angle jet, or shielded angle jet type. It is also shown that a fountain can become

contaminated after use by one person, and that the principal mechanism of contamination is the rinsing of the mouth of the user and spread from the bowl by the formation of an aerosol. Aerosol contamination of the immediate neighborhoods of drinking fountains may be one factor in the high rate of nuisance ailments or absenteeism. Since it can be dealt with expeditiously and inexpensively by a reconsideration of fountain design and service factors, the effort would seem to be well worth while to industrial hygienists.

SKIN DISEASES AND BURNS

- 970 Examination of the Patient with an Industrial Dermatitis. F. C. Combes. Ind. Med. & Surg. 26, 337-342 (July 1957).

In a dermatosis, especially one suspected to be of industrial origin, it is essential that the medical history be complete, correct, and comprehensive. It is advantageous to have available a standard questionnaire, preferably typed and kept before the interrogator during the examination. A form for the questionnaire is suggested. The subjects of malingering, distinction between primary irritation and allergic sensitization, and non-industrial dermatitis are discussed extensively in their relation to accurate diagnosis. Comprehensive, accurate medical histories and physical examinations will aid in solving the problems of industrial origin and are highly appreciated by industrial compensation boards and insurance carriers.

- 971 Atopic Dermatitis: A Discussion of Its Pathogenesis. J. S. Strauss and A. M. Kligman. New Eng. J. Med. 256, 1002, 1003 (May 23, 1957).

In susceptible persons the intranasal, subcutaneous, and surface application of specific protein allergens may cause a flare-up of an existing area of contact dermatitis due to fixation of the protein antigens in the site of inflammation. This patch of dermatitis may even be transformed into an area of neurodermatitis after prolonged scratching. The relations of this reaction to the dermatitis seen in the atopic state are discussed.

-- Authors' summary

- 972 Skin Cleansers. F. H. Pretsch. Med. Bull. (Stand. Oil N. J.) 17, 78-81 (Mar. 1957).

It has been estimated that 10 to 12% of all occupational dermatitis may be attributed to skin cleansers. Constituents of soaps or cleansers which may cause dermatitis include excessive alkali, abrasives, solvents (in waterless hand soaps), builders, and occasionally several other materials. An evaluation of skin cleansers has been conducted since 1952. There are many methods of analysis of soaps, but tests for the following were selected as simple and sufficient: (1) pH of 1% solution; (2) insoluble matter; (3) macroscopic examination of powdered materials; (4) microscopic examination; (5) steam distillation followed by tests for organic solvents, chlorine, aromatics, and boiling range; and (6) combined test for free alkali or acid. The finding of any one of the following causes a cleanser to be rejected: (1) pH over 10.5; (2) free alkali; (3) organic volatile solvents; (4) inorganic abrasives, except borax; (5) organic abrasives that are extremely harsh; (6) ammonia; (7) insects (in powdered soaps); (8) excessive water-insoluble residues; and (9) caking or adverse flow characteristics. Not much work has been done on the newer soapless detergents or on the antiseptic soaps. There is little to indicate that they will cause dermatitis.

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- 973 Low-Toxicity Aliphatic Amines as Cross-Linking Agents for Polyepoxy Resins.
A. K. Ingberman, R. K. Walton, C. F. Pitt, and M. N. Paul.
Ind. Eng. Chem. 49, 1105 (July 1957).

A hazard in the manufacture and use of epoxy resins is exposure to the polyamines, such as diethylenetriamine, used as cross-linking agents. They are among the most potent primary skin irritants, causing edema and, in severe cases, necrosis. This skin irritation is frequently complicated by allergic skin sensitization; diethylenetriamine sensitizes about three-fourths of the people exposed to it. It has been found that the hydroxyalkyl derivatives of diethylenetriamine do not produce sensitization, and are equal to or better than the conventional cross-linking agents in formulating the product. A low-toxicity hardener containing 30 parts of bisphenol A and 100 parts of N-hydroxyethyl diethylenetriamine is now marketed.

- 974 Sensitivity to Hair Dyes. F. Reiss, M. Gahwyler, and B. Lustig.
J. Allergy 28, 134-141 (Mar. 1957).

Patch tests were performed with solutions of certain black hair dyes on 1,024 hospitalized patients with tuberculosis, rheumatism, arthritis, and cardiovascular and neurological diseases who were free from any skin disorders and did not have a history of allergic disease. None of the patients tested had previously used hair dyes. Two of the three test solutions contained as main ingredients paraphenylenediamine, paratoluylenediamine, respectively, and the third contained soaps, detergents, ammonia, and resorcinol, but no aromatic amines, and was used for control. Of the eight persons found to be sensitive (three men and five women), three reacted only to paraphenylenediamine, four only to paratoluylenediamine, and one to both. Only one of 516 patients 50 years or younger was found sensitive to paraphenylenediamine. In the other seven, cross-sensitization was evident in four. The patch test, therefore, is essential to any person contemplating hair dyeing. The erythema in the patients with positive reactions was evident 24 hours after the application of the patch test. Repeated tests made at intervals later gave the same results, except that the patient under 50 gave continuously weaker reactions. The chemical composition of hair dyes now in common use and the mechanism of the conversion of the para compounds into hair coloring pigments are discussed.

-- Cond. from J. Am. Med. Assn.

- 975 Chlorpromazine Dermatitis in Nurses. R. H. Seville.
Brit. J. Dermatol. 68, 332-335 (1956).

Twelve cases of contact dermatitis from chlorpromazine hydrochloride are described. Exposure to sunlight was apparently synergistic. Cross-sensitization to Pacatal (a phenothiazine derivative) was found in three cases.

-- J. Chem. Absts.

- 976 Contact Dermatitis Due to Hydrocortisone Ointment. W. M. Sams and J. G. Smith, Jr.
J. Am. Med. Assn. 164, 1212, 1213 (July 13, 1957).

In a case of contact sensitivity to a hydrophilic ointment base, the presence of 1% hydrocortisone in the ointment base did not prevent the development of allergic contact-type sensitivity. The sensitivity was the result of allergy to free and sulfated higher alcohols. These substances, especially sodium lauryl sulfate, are widely used in ointment bases, cosmetics, detergents, and other preparations which come into contact with the skin. Because of the common occurrence of contact dermatitis, and since many preparations contain the substances listed and other offenders, information concerning the ingredients of preparations for topical use should be more readily available.

-- Authors' summary

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- 977 Granulomatous Reactions to Deodorant Sticks. C. Sheard, Jr., F. E. Cornia, S. C. Atkinson, and E. L. Worthington. J. Am. Med. Assn. 164, 1085-1087 (July 6, 1957).

Cutaneous lesions in the axilla were observed in four persons. The lesions were papular or nodular in gross appearance; on microscopic examination of biopsy specimens obtained from three of the patients the lesions were found to have a granulomatous structure containing epithelioid and giant cells and infiltrated with lymphocytes. In each case the patient had been using a deodorant stick containing sodium zirconium lactate. Therapy with solid carbon dioxide was moderately effective.

-- Cond. from editor's summary

- 978 Sweat Band Dermatitis Due to Thiokol (or Thioprene). V. Pirila. Med. Trabajo 22, 110, 112-115 (Apr. 1957).

The author reports six additional cases of dermatitis shown to be caused by thiokol which is used to impregnate sweat bands (see IHF Abst. 334, Mar. 1957). Earlier cases of sweat band dermatitis are reviewed. The dermatitis does not appear until some time after the first exposure, so the cause is often unsuspected. The cases are fully described. After the cap was no longer worn, the dermatitis generally healed easily when a weak protective liniment or ointment was applied. The development of new cases can be prevented only by abandoning the use of thiokol bands in the cap industry, and manufacturers are discontinuing their use. (Ed. note - The author uses the term "thioprene" to distinguish this polyethylene polysulfide from a medical preparation called thiokol, but the term "thioprene" is apparently not used in this country.)

CHEMICAL HAZARDS

- 979 Synergistic and Antagonistic Physiological Effects of Exposure to Multiple Air Contaminants. H. Brieger. Ind. Med. & Surg. 26, 315-317 (July 1957).

Physiologic synergism and antagonism of multiple air contaminants are theoretically and practically important, yet little is known of them. The comparatively few papers on synergism in animal and clinical experiments are reviewed. Joint physiologic action does not necessarily mean integration of two or more actions but may consist of two or more independent processes leading to a common effect. Synergism is either simply additive or potentiating; the latter holds the greater interest. Antagonism is subtractive. However, according to pharmacodynamic conceptions and findings, both synergism and antagonism may produce quantitative but not qualitative changes.

- 980 Tolerance for Residues of Hydrogen Cyanide. Anon. Federal Register 22 1980 (Mar. 26, 1957).

A tolerance of 250 ppm is established under the Federal Food, Drug, and Cosmetic Act for residues of hydrogen cyanide from postharvest fumigation in or on a wide variety of spices. Buckwheat and oats are added to the grains which have a previously established tolerance of 25 ppm.

-- Cond. from Chem. Absts.

- 981 The Influence of Aerosols upon the Respiratory Response of Guinea Pigs to Sulfur Dioxide. Mary O. Amdur. Am. Ind. Hyg. Assn. Quart. 18, 149-155 (June 1957).

The increase in pulmonary flow resistance caused by an hour exposure has been used to study the response of guinea pigs to sulfur dioxide alone and in combination with sulfuric acid mist and sodium chloride aerosols. The degree of response to a mixture of

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sulfuric acid of sub-micron particle size and sulfur dioxide was greater than could be accounted for on the basis of simple addition. This was not the case when sulfuric acid of 2.5 micron particles was used. Sub-micron aerosols of sodium chloride, inert alone, increased the response to all concentrations of sulfur dioxide studied. The potentiating effect was much greater at concentrations below 25 ppm sulfur dioxide than would have been predicted on the basis of data obtained from the higher concentrations.

-- Author's summary

- 982 Emergency—Arsine Poisoning. W. J. McKinstry and J. M. Hickes. Arch. Ind. Health 16, 32-41 (July 1957).

Arsine poisoning is an infrequent emergency, calling for heroic and immediate measures if the hemolytic and toxic effects of this gas are even hoped to be overcome. Arsine may be evolved whenever contaminated ores containing arsenic come in contact either with acid or with aluminum used as a wetted dross, or even when moisture from the air reacts with metallic sulfides containing small amounts of arsenic. Eight new cases are described, four of which have been probable exposures without presenting valid symptoms or definite findings. The other four, who presented severe symptoms and complaints upon admission, died between the third and 14th days. Dimercaprol is considered to be of no benefit. Early exchange transfusion is advocated as a possible method of approach until some other less radical form of treatment has proven to be effective. The importance of the part that industry and other responsible agencies must play in prevention is stressed. In sublethal doses, complete recovery is apparently the rule. Electrocardiographic changes are felt to be important in the diagnosis of even minimal exposure cases.

-- Cond. from authors' summary

- 983 Cadmium Poisoning. Report of a Fatal Case, with Discussion of Pathology and Clinical Aspects. F. C. Christensen and E. C. Olson. Arch. Ind. Health 16, 8-13 (July 1957).

A fatal case of cadmium poisoning is presented. As in many other fatal cases, the patient did not know that he was exposed to cadmium oxide fumes. Cadmium is very toxic by inhalation and carries a mortality of 15 to 16%. The mortality is 100% if the exposure is concentrated or prolonged. The most pronounced symptoms are cough, severe constricting pain in the chest, and dyspnea. Physical examination may or may not reveal rales in the chest. The chest x-ray picture suggests bronchopneumonia usually out of proportion to the physical findings. The pathological findings include great edema of the lungs, with marked cuboidal metaplasia of the alveolar spaces, and thickening and edema of the septa. Fibrosis of the walls, septa, and bronchi is present. Food poisoning epidemics from ingestion of cadmium are reviewed; these are different from other food poisoning epidemics. Cadmium probably has the most lethal potentialities of any of the metals.

-- Cond. from authors' summary

- 984 Deposition and Distribution of Cadmium in Man in Chronic Poisoning. L. Friberg. Arch. Ind. Health 16, 27-29 (July 1957).

Cadmium analyses were performed on organs from four workmen dying after prolonged exposure to cadmium dust in the manufacture of alkaline accumulators. High cadmium contents were demonstrated, particularly, in the kidneys (1-8 mg. per 100 gm. wet substance), liver (2-14 mg.), pancreas (4-8 mg.), and thyroid (6-8 mg. per 100 gm. wet substance), notwithstanding that the victims during the last three to nine years before death had not been handling material containing cadmium. No cadmium (less than 0.01 mg.) was found in the kidneys, liver, and pancreas of two "normal subjects" examined.

-- Author's summary

- 985 Proteinuria in Chronic Cadmium Poisoning after Comparatively Short Exposure to Cadmium Dust. Report of Two Cases. L. Friberg. Arch. Ind. Health 16, 30, 31 (July 1957).

An account is given of two cases of proteinuria in chronic cadmium poisoning after comparatively short periods of exposure to cadmium dust. The possibility of symptoms of poisoning developing even after cessation of exposure to cadmium is pointed out.

-- Author's summary

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- 986 Changes in Lung Tissues Following Intratracheal Injection of Manganese and Chromium Oxide. W. Massmann and K. Pilgrim. Arch. Gewerbepathol. Gewerbehyg. 15, 203-212 (1956). German.

In earlier investigations (IHF Abst. 1318, Oct. 1956) the authors have shown that intratracheal injection of vanadium compounds caused acute inflammatory changes in the lungs and that iron oxide is much less injurious. The behavior of manganese dioxide and chromic oxide has now been studied. Suspensions of the two compounds in distilled water were injected into the trachea of rats, which were killed at intervals varying from 2 hours to 12 months; sections of the lungs were examined and in some animals the manganese and chromium contents were estimated. Both oxides caused a moderate inflammatory reaction with relatively little phagocytosis, which could not be regarded as a specific chemical reaction, such as is produced by vanadium oxide. The reaction was more severe in the case of chromic oxide; there was some hyperplasia of the bronchial epithelium and elimination was much slower. Chromic oxide was still present in the lungs after 12 months, while manganese dioxide disappeared after 3 months. Elimination is therefore apparently not dependent on water solubility.

-- Cond. from Bull. Hyg.

- 987 A Re-Examination of the Picture of Plumbism. R. T. Johnstone. Ind. Med. & Surg. 26, 323-326 (July 1957).

The literature describing plumbism is voluminous and dates back to antiquity. Each passing generation added to the picture observations which were often unscientific. The need today is to remove some of the daubs and dust that this entity has collected. Students and inexperienced physicians should be viewing a more realistic canvas than that which is presently held before their eyes. The observations made in this paper represent over 20 years intimate experience with lead intoxication during which time there has been a marked transition in the industrial hygiene control of exposure to lead and a more alert attitude on the part of management and the worker. All this has resulted in industrial plumbism being, with rare exceptions, a mild gastroenteric type.

-- Cond. from author's summary

- 988 A New Leadless Typographic Alloy. P. T. Tikhonoff, O. Y. Moligevskaya, and V. M. Demidova. Gigiena i Sanit. No. 1, 35-38 (1957). Russian.

A typographic alloy containing 94% zinc, 4% aluminum, and 2% magnesium has been used experimentally in a Russian newspaper printing house. The typesetting machine has been reconstructed and a new linotype has been made for adaptation to the new alloy. Its great advantage naturally is the exclusion of lead for the printing process. The concentrations of zinc and zinc oxide in the air of the working places were found to be well below those which would produce metal fume fever.

-- Cond. from Bull. Hyg.

- 989 Diagnosis and Treatment of Manganese Intoxication. Report of a Case. R. Penalver. Arch. Ind. Health 16, 64-66 (July 1957).

A case of a miner with severe manganese intoxication is presented. Before treatment was instituted, the patient displayed paralysis of the lower extremities, mask-like facies, tremors, mental disturbances, and torticollis. He received edathamil calcium disodium, caramiphen, mephensin, and a vitamin C preparation, with almost complete recovery. A program is suggested to help establish early diagnosis, treatment, and differential diagnosis of manganese poisoning.

-- Author's summary

- 990 Industrial Hygiene Control in the Manufacture of Alkyl Mercury Compounds. E. Franke and K. D. Lundgren. Arch. Gewerbepathol. Gewerbehyg. 15, 186-202 (1956). German.

Alkyl mercury compounds, in which the organic constituent is a methyl, phenyl, or methoxyethyl radical, are used chiefly in the preservation of seed. Their toxic action, as reported in the earlier literature, is exerted on the skin and mucous membranes, but chiefly on the nervous system both central and peripheral. The most frequent symptoms

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are those of neurasthenia, paresthesia of the lips, tongue, fingers, and toes, followed by ataxia with dysphagia, dysarthria, and difficulty in walking; some cases show restriction of the visual field. A type of encephalopathy, characterized by irritability and severe tremor, has also been reported. These symptoms have been attributed to atrophic lesions of the cerebral cortex, particularly of the cerebellum; they may follow relatively slight exposure and appear several weeks after exposure has ceased. The authors have found estimation of urinary mercury to be the most effective procedure in controlling the hazard by periodical medical investigation. These investigations have been carried out over a period of 10 years in a factory employing 13 men in the manufacture of a mordant and 10 men in the chemical-biological laboratory. A basic hygienic level of 30 to 50 micrograms per liter was established, and men were transferred to work not involving exposure when their urinary excretion reached this level. Values of 100 micrograms per liter were found at hazardous sites before the program was established. Encephalography was found not to be a good method of diagnosis.

-- Cond. from Bull. Hyg.

- 991 Industrial Medical Observations on Phenyl-Mercury-Pyrocatechin. W. Massmann. Zentr. Arbeitmed. Arbeitsschutz 7, 9-13 (Jan. 1957).

This is a report on an investigation of the toxicity of phenyl-mercury-pyrocatechin, a substance used in the fumigation of seeds. The chemistry of the substance and its manufacture are described. A table lists the amounts of mercury found in the air at different points in the factory. Clinical particulars of 26 workers are given with records of any symptoms and abnormalities discovered and the amounts of organic and inorganic mercury excreted in the urine. The main conclusion is that after years of work with the substance no certain toxic symptoms could be demonstrated in the workers in spite of the fact that high concentrations of mercury were found in the factory air (0.24-3.2 mg. per cu. m.) and in the urine (0.25-6.0 mg. per liter). The excreted mercury was mainly in organic form. This substance was therefore shown not to have the high toxicity of other mercury compounds used for the treatment of seeds. It was found, however, that bullous dermatitis was common with these as with other workers with organic mercury compounds.

-- Cond. from Bull. Hyg.

- 992 Metal-Fume Fever from Inhaling Zinc Oxide. L. C. Rohrs. Arch. Ind. Health 16, 42-47 (July 1957).

Metal-fume fever due to zinc oxide is an acute, transitory, inhalant illness. Irritation in the throat, substernal tightness, malaise, headache, muscle cramps, chills, and fever occur following exposure and usually disappear in 6 to 24 hours without ensuing complications or sequelae. Three cases manifesting metal-fume fever due to zinc oxide are reported. One case was typical in that it followed exposure to the fumes produced in welding galvanized iron. Two cases are described which occurred following inhalation of dust formed when an abrasive steel-wire buffing machine was used in cleaning zinc-coated water tanks. In the literature reviewed, confirmation of zinc oxide as an etiologic factor of this illness was found. Of the theories of pathogenesis, that which attributes the symptoms to the absorption of proteins formed following the destructive action of zinc on the alveoli is most tenable. Supportive treatment is recommended. Preventive measures consist of reducing fume concentration, limiting exposure, maintaining adequate ventilation, and using mechanical-filter respiratory devices.

-- Author's summary

- 993 Poisoning from Petroleum Distillates: The Hazards of Kerosene and Furniture Polish. A. B. Soule, Jr. and J. C. Foley. J. Maine Med. Assn. 48, 403-410 (Apr. 1957).

Ingestion of kerosene and other petroleum products is a frequent cause of poisoning in small children; 160 cases have occurred in northwestern Vermont since 1953, and three were fatal. Two of the deaths resulted from drinking kerosene and one from furniture polish. The characteristic lesion of kerosene poisoning is an acute fulminating and hemorrhagic bronchitis, the pathology of which is described. In poisoning from liquid furniture polish, the onset of symptoms is delayed and the toxic effects are more prolonged. The course of the poisoning is described. Oxygen was the most valuable single agent used especially in the treatment of respiratory distress and cyanosis. The authors advocate educational campaigns on the toxic hazards of petroleum distillates.

-- Cond. from J. Am. Med. Assn.

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- 994 Tolerances for Residues of Inorganic Bromides Resulting from Fumigation with Ethylene Dibromide. Anon. Federal Register 21, 7212 (Sept. 22, 1956).

A tolerance of 50 ppm is established under the Federal Food, Drug, and Cosmetic Act for residues of inorganic bromide (calculated as Br) in or on barley, corn, oats, popcorn, rice, rye, sorghum (milo), and wheat that have been fumigated with ethylene dibromide. A tolerance of 10 ppm is established in or on string beans, Momordica charantia, Cavendish bananas, citrus fruits, cucumbers, guavas, mangoes, papayas, bell peppers, pineapples, and Zucchini squash which have been fumigated with ethylene dibromide in accordance with the Mediterranean Fruit Fly Control Program. -- Chem. Absts.

- 995 Acute Poisoning from Inhalation of Symmetrical 1,2-Dichloroethane. H. Menschick. Arch. Gewerbepathol. Gewerbehyg. 15, 241-252 (1957). German.

Four painters applying a protective coating on the concrete inner walls of a large container became ill in spite of warning labels on the paint and a supply of compressed air. The solvent was found to consist of symmetrical 1,2-dichloroethane. Latent poisoning was evident in two of the painters. The symptoms differed, but included muscle spasms, vomiting, acute conjunctivitis, acute inflammation of the air passages, intestinal cramps, anxiety, cardiac pain, and enlargement of the liver in one or more cases. Increased hemoglobin values were found in all cases. Absorption of dichloroethane by inhalation must be considered in industrial hygienic practice with respect to prophylaxis, and the maximal allowable concentration should be revised.

-- Cond. from J. Am. Med. Assn.

- 996 Experimental Toxicological Study on Various Halogenated Compounds Usable as Fire Extinguishers. M. Valade. Arch. maladies profess. 18, 14-26 (Jan.-Feb. 1957). French.

An experimental study of five halogenated products used as fire extinguishers showed that all are toxic on inhalation, causing severe hepatorenal and nervous system lesions. Methyl bromide is the most toxic of the substances, but since it is the most effective, its use should be regulated rather than prohibited. It should not be used in confined spaces. A warning gas should be added so that its presence can be easily detected. A study of inhalation toxicity of the halogenated compounds to dogs, guinea pigs, and rats is reported. Effects on the liver, kidneys, and central nervous system are described. The mechanism by which the halogenated hydrocarbons produce their toxic effects is still undetermined, but the possibility that their affinity for the cerebral lipids plays a significant part deserves special attention. The toxicity of these compounds, particularly of methyl bromide, is so great that special precautions must be taken to limit the number of accidents due to their use.

-- Cond. from J. Am. Med. Assn.

- 997 More than 100 Cases of Benzene Poisoning in a Shoe Factory. M. Savilahti. Arch. Gewerbepathol. Gewerbehyg. 15, 147-157 (1956). German.

Following the occurrence of aplastic anemia in a shoe factory where benzene (benzol) was used as the adhesive solvent, the entire personnel, consisting of 98 men and 49 women were examined and the blood findings were compared with those of 200 healthy controls. The benzene concentrations in the atmosphere had been estimated six months previously as 318 to 470 ppm (The American MAC is 35 ppm). Blood abnormalities were present in 75% of the exposed workers; thrombocytopenia, leucopenia, and anemia were frequent findings; eosinophilia was present in a smaller percentage, but neutropenia was not significantly more frequent than in the controls. Two or three of these conditions were simultaneously present in many of the workers. The bone marrow, examined only in the seven most severe cases, varied from hyperplasia to hyperemia. The prognosis is poorest when anemia, leucopenia, and thrombocytopenia are present at the same time. Out of 107 persons affected, about half recovered one month after removal from exposure, and 70% after three months; 21 showed some abnormality after 12 months; one died, and one is still under hospital treatment. Treatment by transfusions, liver extract, cortisone, and corticotropin was not effective; the most important therapeutic measure is removal from exposure. Percentages and degrees of severity of the various blood abnormalities are given.

-- Cond. from Bull. Hyg.

03120390

- 998 Health Hazards Associated with Unsymmetrical Dimethylhydrazine. B. S. Shook and O. H. Cowart. Ind. Med. & Surg. 26, 333-336 (July 1957).

The acute human toxic effects of unsymmetrical dimethylhydrazine are reviewed. A program of medical control is outlined, with resulting evaluation. Even though the results may not be in statistically adequate numbers, 11 of 11 individuals showing unquestionable evidence of hepatocellular changes, by laboratory methods alone, indicate that further evaluation and reporting of human experience are warranted. -- Authors' summary

- 999 How Dangerous is Pentachlorophenol? D. Gordon. Med. J. Australia 2, 485-488 (Sept. 29, 1956).

Pentachlorophenol or its sodium salt is used as a weed killer on pineapple farms. It is dissolved in water to about 1% of the active ingredient, and sprayed in various ways. It may be inhaled or absorbed through the skin. It has been regarded as comparatively safe, but the author reports nine cases of poisoning, five of which were fatal. The clinical picture included pain, nausea, vomiting, profuse sweating, and rapid pulse. In the fatal acute cases death occurred within about 30 hours. Unless large specimens of organs are taken for analysis, pentachlorophenol is not likely to be identified. Prevention entails the wearing of a suitable mask and full protective clothing, but this is difficult in a hot climate. -- Cond. from Bull. Hyg.

- 1000 Metabolism of Chlorophenothane (DDT). Intestinal Lymphatic Absorption. C. F. Rothe, A. M. Mattson, Rose Marie Nueslein, and W. J. Hayes, Jr. Arch. Ind. Health 16, 82-86 (July 1957).

Of the intestinally absorbed radioactive DDT administered orally to rats with their thoracic lymph ducts cannulated, 47 to 65% was recovered in the chyle. Furthermore, 14 to 46% of the absorbed DDT-derived materials found in the chyle were dehydrohalogenated into a neutral material (DDE). -- Authors' summary

- 1001 Control of Insecticide Exposure in Employment. A Guide to Physicians for Dealing with Organic Phosphates. Irma West. Calif. Med. 86, 325-330 (May 1957).

The basic procedures through which effective medical supervision of cases of poisoning by organic phosphate insecticides are outlined. They include pre-employment examinations and periodic cholinesterase tests (weekly when exposure is considerable). The patient should stop work when either plasma or red cell cholinesterase activity drops to below 50%, and a rise of both plasma and red cell cholinesterase activity is an indication for return to work. The question of whether employees should carry atropine for emergency use is discussed. Records should be kept of each case. Workers should be instructed to report any signs or symptoms that may indicate exposure.

- 1002 Tolerance for Residues of Captan. Anon. Federal Register 20, 5417 (July 29, 1955).

A tolerance of 20 ppm is established under the Federal Food, Drug, and Cosmetic Act for residues of captan (N-(trichloromethylthio)-4-cyclohexene-1,2-dicarboximide) in or on a wide variety of fruits and vegetables. -- Cond. from Chem. Absts.

- 1003 Tolerance for Residues of Zineb. Anon. Federal Register 22, 2147 (Apr. 2, 1957).

A tolerance of 25 ppm is established under the Federal Food, Drug, and Cosmetic Act for residues of zineb (zinc ethylenedisithiocarbamate) in or on beet tops, Chinese cabbage, collards, endive, kale, lettuce, mustard greens, spinach, and Swiss chard. -- Chem. Absts.

03120391

INDUSTRIAL DUSTS

- 1004 Residual Problems Relating to the Pneumoconioses. G. W. H. Schepers.
Presented at Eighth Conference of McIntyre Research Foundation on Silicosis, Oct. 22-24, 1956.
24 pp. (1957).

This paper is an extensive review and discussion of the pneumoconioses; the subjects include nomenclature, definition, classification, etiology, pathogenesis, biochemistry, physiology, sequelae, disability, diagnosis, prophylaxis, therapy, legislation, labor relations, and research. Special attention is given to unsolved problems under nearly all these headings. Among these unsolved problems are: extension of classification to include agents to include materials of which there is little knowledge; individual susceptibility; the selective action of various dusts on different parts of the lungs; the pathogenicity of some silicates; the relation of emphysema to pneumoconiosis; vascular damage as a factor in disability; lack of correlation between physiological and anatomical studies; relation of cancer to various pneumoconioses; and carcinogenicity of a number of substances; assessment of disability; several questions concerning radiographic diagnosis; diagnosis and classification of the stages of pneumoconiosis; efficacy of aluminum in prophylaxis; value of aluminum therapy and other types of therapy; legislation for compensation or for prophylaxis; and the role of the physician. A number of lines of research are suggested; basic research is greatly needed, and its results should be fully published.

- 1005 Role of the Physician in Combating Pulmonary Occupational Disease. S. E. Miller.
Presented at Eighth Conference of McIntyre Research Foundation on Silicosis,
Oct. 22-24, 1956. 4 pp. (1957).

The physician's role in the control of occupational pulmonary disease is outlined. Obtaining proper information on exposure is essential. The physician should also be alert in detecting those individuals that are more likely to develop pulmonary occupational disease. Spirogram tracings of the three-second timed vital capacity and the maximal breathing capacity have been demonstrated to be useful screening tests to detect early abnormalities even before x-ray changes occur. Favorable results with aluminum therapy have been reported, but the evidence is not complete and it should not replace adequate dust control. Long-term antibiotic aerosol therapy for chronic bronchitis, bronchiectasis, and infectious asthma appear to be a useful agent in decreasing disability where such infectious diseases complicate occupational pulmonary disease.

-- Cond. from author's summary

- 1006 Basic Questions from Silicosis Research. Report on the Conference of the Society for Silicosis Research. Arranged by the Mining Association in Bochum, December 2 and 3, 1955. Beitr. Silikose-Forsch. 252 pp. (1956). German.

This report is a special volume which includes 15 papers contributed to the conference and extensive discussions which followed each paper. The first eight papers deal with the properties of silica particles, including: surface structure and adsorption properties of silica; occurrence of solution of stable silica modifications; theoretical aspects of solution of silica preparations and minerals; rate of hydrolysis of condensed silicic acid; colloidal silicic acid in lung residues; silicogenic activity of amorphous silica (quartz glass); crystallographic experiments on the behavior of quartz and other minerals; and animal experiments on silicosis. The second series comprises four papers on the formation and structure of collagen fibers. The third series consists of three short papers on respiratory function, including: new points of view on the physiology of respiration; processes of gaseous exchange in the lung; and the alveolar epithelium and the pulmonary vascular anastomoses. The report as a whole represents

significant advance in the study of silicosis, especially in its relation to the solubility of silica. A summary of the conference, including abstracts of each paper, is given in Bull. Hyg. 32, 455-458 (May, 1957).

- 1007 Experiments on Diatomaceous Earth Pneumoconiosis. 1. Natural Diatomaceous Earth in Guinea Pigs. B. D. Tebbens and R. R. Beard. Arch. Ind. Health 16, 55-63 (July 1957).

Fine natural diatomaceous earth particles were suspended in air by a method which is described. Guinea pigs were exposed 40 hours per week to such an atmosphere for periods ranging up to 50 weeks. The silica content of the lungs increased progressively from less than 0.1% to almost 3% on a dry-weight basis. High mortality from pericarditis and pneumonia was observed in the first eight weeks; it was uncertain whether this was attributable to dust exposure. Animals killed after surviving 37 to 50 weeks had shown continued weight gains and appeared vigorous and healthy. Infiltration of the alveoli by macrophages and multinuclear cells filled with dust was recognizable microscopically after five weeks of exposure. Gross hilar lymphadenopathy was evident after 37 weeks of exposure. Changes in the lung were not grossly visible, but microscopic examination showed dense infiltration of the alveolar septa by macrophages, numerous multinuclear cells filled with dust particles, and epithelization of the alveoli. The peribronchial and hilar lymph nodes and spleen showed extensive infiltration of dust-laden macrophages. There was no connective tissue proliferation in these lesions.

-- Cond. from authors' summary

- 1008 Study of Mechanics of Breathing in Silicotic Patients with Measure of Maximum Potential Work of Breathing. E. Sartorelli, M. Magistretti, and C. Sbertoli. Med. lavoro 47, 677-696 (Dec. 1956). Italian.

The maximum potential work of breathing was measured in 85 patients with silicosis in three degrees of severity and in 50 normal persons. Calculation was made by measuring the maximum inspiratory and expiratory pressures at different pulmonary volumes. The apparatus and technique are described. Statistical analysis of the results showed that there is a significant decrease of the maximum work of breathing in the milder forms of silicosis as well as in severe forms, showing that silicosis produces a decrease of the mechanical efficiency of breathing through diminished elasticity of the lungs and chest wall, even in the mild forms. On the other hand, measurements of vital capacity show no significant decrease of pulmonary mechanical function in the early stages of silicosis. Vital capacity, therefore, must be considered as an inadequate test for an accurate evaluation of pulmonary mechanical efficiency in silicotic patients.

-- Cond. from Bull. Hyg.

- 1009 Silicosis among Fluorite Workers. K. H. Soffge. Neues Jahrb. Mineral., Monatsh. No. 11, 259-264 (1956). German.

Experiments were made on the influence of fluorite on the solubility and rate of solution of quartz in various solvents at 37°C by agitation of solids in solvents for periods up to six months and by percolation; average grain sizes are quartz under 2 microns and fluorite under 40 microns. Fluorite increases the solubility and rate of solution of quartz in distilled water. A small amount of fluorite, 0.1 g. per 5 g. of quartz, slightly increases the solubility of quartz in 0.1% sodium bicarbonate solution, but larger proportions of fluorite reduce the solubility of quartz in this solvent. The solubility of quartz in Ringer solution is reduced by the addition of fluorite in whatever proportion. The experiments lend no support to the assumption that acute silicosis is caused by the increased solubility of quartz due to the presence of fluorite.

-- Chem. Absts.

03120393

- 1010 The Theory of the Cause of Silicosis. K. H. Soffge.
Neues Jahrb. Mineral., Monatsh. No. 1, 12-22 (1957). German.

The author discusses the causes of silicosis and reports experiments on the adsorption of silicic acid. Results are given in graphical form only. One graph shows the adsorption of silicic acid by $Al_2O_3 \cdot nH_2O$ from Ringer solution containing 106 mg. silica per liter as a function of pH (5.5-8.0). On another graph the adsorption of silicic acid by $Fe_2O_3 \cdot nH_2O$ from Ringer solution containing 28.7 mg. SiO_2 per l. plus 30.4 mg. CaF_2 per l. is shown as a function of pH (6.8-8.0). In all cases there is a marked but irregular increase in the adsorption with pH. The breaks in the curves are interpreted as being connected with silicic acid polymers. -- Chem. Absts.

- 1011 Results of Functional Respiratory and Circulatory Tests of Workers Exposed to Asbestos Dust over a Number of Years. M. Navratil, V. Krecek, and L. Cvachova.
Pracovní Lékarství 8, 329-333 (1956). Czech.

Sixty workers exposed to asbestos dust were classified according to severity of asbestosis and according to age. They were subjected to functional tests for prolonged expiration and for ventilatory coefficients, and to electrocardiography. In the over 50 age group, quite apart from all radiological data, a drop in vital capacity is found, due not merely to age but also to emphysema which was detected in 19 patients. The ventilation coefficients in the asbestosis-free and early asbestosis groups were within normal limits. In those with advanced asbestosis there was a distinct drop in the ventilation coefficients, due to fibrosis and associated pathological conditions. The differences in the carbon dioxide ventilation coefficients and in the vital capacity figures were on the limit of significance. Hypertrophy of the right heart was present in two subjects with advanced asbestosis. -- Cond. from Bull. Hyg.

- 1012 Industrial Hygiene Problems in Open Pit and Underground Mines. M. L. Roberts.
Presented at Eighth Conference of McIntyre Research Foundation on Silicosis, Oct. 22-24, 1956. 6 pp. (1957).

The hazards discussed in this paper include: the dust hazard in open pits; the dust hazard underground; heat and humidity; noise; fumes and gases; and radiation. The larger portion of the paper deals with the dust hazard. Various sources of dust both in open-pit and underground mining are evaluated, and methods of dust sampling and determination are discussed briefly.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1013 Acoustic Power Level Determination for Machinery in Hard Rooms. W. J. Burch.
Heat, Pip. Air Cond. 29, 161-164 (June 1957).

The purpose of this investigation was to determine the feasibility of writing noise specification in terms of acoustic power (or acoustic power level) instead of the presently used system involving sound pressure levels. It was desired to determine whether power level measurements could be made in acoustically untreated rooms. Tests using three different sound sources in rooms of various acoustic properties show these measurements to be feasible. Various types of machinery mountings had negligible effect upon recalculated power levels. -- Editor's summary

03120394

- 1014 What's the Cost when Noise Goes to Court? R. F. Gonda.
Occ. Hazards 19, 29-32, 70, 72, 73 (July 1957).

Laws, proposed laws, cases, and investigations in various states are reviewed briefly, showing the acuteness of the noise compensation problem. A table shows maximum and minimum compensation benefits in the various states. Maximum compensation varies from \$800 in Kansas for loss of hearing in one ear to \$32,999 in Arizona for hearing loss in both ears. In a number of states, the principle of compensation only for wage loss has been abandoned. Throughout all jurisdictions it has been usual for courts to interpret workmen's compensation and occupational disease laws as broadly as possible. When some kind of acoustic trauma is not specified legally as a compensable disease, the incident which brought about the trauma usually will be held to be an accident within the meaning of the compensation act. The problem is growing greater all the time as industry grows noisier and laws have recognized hearing loss as a responsibility of employers.

- 1015 Glaucoma Detection in Industry. Multiple Field Pattern Test. Hedwig S. Kuhn.
Ind. Med. & Surg. 26, 327-330 (July 1957).

Visual field examination should be included in all preplacement and periodic examinations, so as to detect glaucoma in its early stages and give opportunity to treat it. Until recently there has been no satisfactory test for the detection of glaucoma. Taking tonometer readings in the plant is unsatisfactory and dangerous; such tests should never be made. The multiple pattern method of visual field examination, developed by Harrington and Flocks (fully described in J. Am. Med. Assn. 157, 645-651, 1955) has proved satisfactory for this purpose. It is simple and requires little training on the part of the technician. Standardized results are easily recorded and interpreted. Reports from a number of physicians who used the test are given, showing field defects in 4 to 7% of the persons examined. The test will not uncover all cases of glaucoma, but it will uncover all who are really being threatened. The test is advocated and urged for use in industry, diagnostic clinics, and drivers' examinations.

- 1016 The Effects of Air Temperature, Air Humidity, and Velocity on the Health of Crew Members of a Modern Super Tanker under Tropical Conditions. H. Herrmann.
Med. Bull. (Stand. Oil N. J.) 17, 31-35 (Mar. 1957).

On the occasion of a tanker voyage in the tropics the effects of temperature, humidity, and velocity on the health of tanker crews was investigated. Briefly, the results reveal that a voyage through the hottest area in the world causes an unimaginable strain on the human body, skin, circulation, heart, kidneys, and nervous system. An important psychologic factor is the monotony of the trip and the boredom which gives rise to serious personnel problems. Air conditioning and a number of other improvements are suggested to reduce the health hazards.
-- Cond. from author's summary

- 1017 Absence of Raynaud's Phenomenon in Workers Using Vibratory Tools in a Warm Climate.
T. A. L. Davies, E. M. Glaser, and C. P. Collins. Lancet 272, 1014, 1015 (May 18, 1957).

Thirty men using vibratory tools in an equatorial climate were tested in a cool environment by immersion of a hand in cold water, but none showed any signs of Raynaud's phenomenon. Three controls who had been exposed intermittently to lower temperatures and to vibration not connected with their work, showed the phenomenon in the tests. These results suggest that vibration produces symptoms of Raynaud's phenomenon only under conditions of intermittent cooling. Cystic changes in 20% of the workmen investigated confirm the belief that the cystic changes are not caused by vibratory tools but by persistent jarring. It is suggested that similar experiments in which the whole body is cooled would reveal potential sufferers from Raynaud's phenomenon. Alternatively, thorough general warming of the body and hands before starting work in places heated to relatively high temperatures might be advantageous.

03120395

RADIOACTIVITY AND X-RADIATION

- 1018 Radiation Protection for the General Practitioner. L. S. Taylor.
Southern Med. J. 49, 826-833 (Aug. 1956).

The disadvantage under which the general practitioner has to use x-rays as a diagnostic tool leads him to accept more radiation exposure than is received in a specialized x-ray clinic. He is saved from more serious consequences mainly because his daily work load is less. Nevertheless, on the sound philosophy that no unnecessary radiation is good for anyone, he should make every effort to reduce radiation exposure to the absolute minimum. Permissible exposures are discussed, and specific directions are given for securing minimum exposure of the patient, the physician, the office staff, and neighbors.

- 1019 Radiological Hazards Due to X-Radiation in Veterinarians. Jacqueline Messite, F. M. Troisi, and M. Kleinfeld. Arch. Ind. Health 16, 48-51 (July 1957).

Fifty-seven veterinarians practicing in New York City or lower Westchester and employing fluoroscopy were studied for evidence of radiation injury. The major findings were limited to the nails and skin of the fingers. Nail findings, such as striations and splitting, were found in 15, or 26.3%, of those studied. Skin manifestations appeared in 9, or 15.7%; these included erythema, ulcers, keratoses, and epithelioma. The significance of nail splitting as an early sign of damage is discussed; and the occurrence of malignant degeneration complicating ulcerations or keratoses is demonstrated. The need of a preventive program combining medical and environmental phases is discussed. In essence, the environmental control includes a periodic check on radiation equipment; the use of protective devices, such as leaded gloves, shields, and aprons, and the use of integrators in the form of rate meters and dosimeters. Periodic physical examinations, proper work habits, adequate protective clothing, and semiyearly blood counts are recommended as medical control measures.

-- Authors' summary

- 1020 An Approach to Radiation Health Problems in Industry. C. T. Disney.
Ind. Med. & Surg. 26, 343-347 (July 1957).

Medical directors have in some instances, and will have in many more, the problem of employee health protection in the relatively new and little understood field of nuclear research and nuclear power. Many of the safety, industrial hygiene, and medical approaches to the problem will be similar to those involved in dealing with toxic substances generally; however, because of the tremendous toxicity of some radioactive materials, and many unsolved long-range programs, a special approach is required. Fully to appreciate the inherent hazards, and to be able to cope with the problems that will arise, one should have some knowledge of the structure of matter, of the nature of radioactivity, and of the metabolic patterns of various isotopes. Current medical literature offers rather good specific details, and it is hoped that the attached bibliography (63 references) will serve as a starting point for the physicians who must face this problem.

-- Cond. from author's summary

- 1021 Nuclear Radiation Detection and Measurement. F. W. Hutchinson.
Air Cond. Heat. & Vent. 54, 91-99 (June 1957).

The spent fuel or "ash" from a reactor constitutes an important problem. There is more radioactivity in the ash from a single reactor than in all the radium that has ever been mined. Recently a multitude of new uses have been found for this waste material, and they may be used in industry in the near future. The heating and air conditioning engineer may develop an important application of radioactive material for use in purifying recirculated air. For these reasons the detection and measurement of radioactivity is becoming a necessity

in industry. This article summarizes the principles of detection and measurement and describes the basic experimental methods used for accomplishing these purposes. Among the instruments and methods described are the electroscope, the ionization chamber, the Geiger-Muller counter, the cloud chamber, the scintillation counter, instruments for personnel protection, measurement of air and water contamination, and the "human counter."

- 1022 A Continuous Monitor for Airborne Plutonium. D. C. Collins.
Atomic Energy Comm. Report DP-188. 16 pp. (Nov. 1956). Obtainable from
Office of Technical Services, Dept. of Commerce, Washington 25, D. C. 20 cents.

A continuous monitor has been developed that can detect one unit of maximum permissible concentration of plutonium in air within ten minutes. Application details are described to assist other groups in adapting the equipment to their needs.

-- Author's summary (Nuclear Sci. Absts.)

- 1023 Indirect Effects of Psychogenic Factors on the Elimination of Radon in the Breath.
E. J. Martin and J. Kovar. Arch. Ind. Health 16, 14-16 (July 1957).

Two series of breath samples were taken from a resting, supine carrier of abnormally high, stabilized radium burden. In one series, where the subject was relaxed in hypnotic "sleep," no major psychogenic disturbances of respiratory levels occurred. The variability of radon exhaled per minute of breathing (CM) was within the limits of errors of measurement. Reproducibility of CM among repeated samples was good. In the other series, which was taken while the subject was awake and emotionally alert, major respiratory fluctuations occurred, accompanied by frequent periods of unsteadiness of breath radon.

-- Authors' summary

- 1024 Severe Radiation Damage after Thorium Treatment During Childhood. H. Spiess.
Deut. Med. Wochschr. 81, 1053, 1054 (1956). German.

Examination of 47 children treated in 1948 for bone tuberculosis with a preparation containing thorium-X revealed generalized impairment of bone growth and, in 11 instances, development of bone sarcoma.

-- Chem. Absts.

- 1025 Calculation of MAC of Radioactivity in Air and Water. H. Cember and M. A. Shapiro.
Proc. Am. Soc. Civil Engrs. 83, No. SA1, 1174-1-1174-8 (1957).

Factors and constants of radioactivity as an environmental contaminant are defined. A calculation for the maximum permissible concentration of a radioactive contaminant is made, based on energy absorption.

-- Chem. Absts.

- 1026 Fallout and Radiation Hazards Experts Disagree. Anon.
Chem. Eng. News 35, 16-19 (June 24, 1957).

Over 30 experts in the fields of physics, biology, and genetics outlined what is known about radiation and its hazards and especially on the fallout problem before a special Subcommittee on Radiation of the Joint Committee on Atomic Energy. Expert opinion on the fallout problem is far from unified, but there seems to be accord on these points: (1) To date, accumulation of radioactivity from fallout has not been large; (2) A completely "clean" bomb, causing no fallout, is apparently impossible; (3) Of the many radioactive materials released by nuclear explosions, strontium-90 is easily the most important; (4) Fallout is hazardous, to a degree, and some limitation on the injection of fission products into the atmosphere is desirable; and (5) It is not yet known how little radiation causes damages to man. Two points on which there is widest disagreement are uniformity of fallout throughout the world, and the biological effects of low level radiation on man. Various views on these points were presented. It is generally agreed that more research is needed on all these points.

- 1027 The Preparation and Biological Application of Airborne Simulants of Fallout from Nuclear Detonation. S. H. Cohn, W. B. Lane, J. C. Sherwin, J. K. Gong, and L. Weisbecker. J. Air Poll. Control Assn. 7, 20-25 (May 1957).

Characterization of airborne radioactive fallout by physical measurements does not allow a meaningful evaluation of the human hazard to be made, inasmuch as the necessary biological data for interpretation are not available. The present study describes the development of an experimental method for assaying the inhalation hazard, using mice as biological indicators. The technique used required: (1) the development and characterization of simulants of airborne fallout; (2) the design of equipment for generating the simulant and exposing small animals under controlled laboratory conditions; (3) determination of the uptake and retention by various tissues of the radioactive materials; and (4) evaluation of the hazard to the animals by this exposure in terms of dose. It was necessary to use remote handling of the materials and to design the animal exposure chambers to provide only inhalation exposure. Three general types of fallout simulants were developed, one of which was applied in the biological experiment described. Further studies are being carried out with the other fallout simulants. -- Cond. from authors' summary

ENVIRONMENTAL MEASUREMENTS

- 1028 Determining Fluoride Air Concentrations by Exposing Limed Filter Paper. E. Robinson. Am. Ind. Hyg. Assn. Quart. 18, 145-148 (June 1957).

Tests of filter paper treated with low-fluoride lime for atmospheric fluoride determination are reported. The tests show that the filter papers should not normally be expected to give a quantitative picture of fluoride air concentrations comparable with that obtained by the usual air-sampling techniques, for reasons that are discussed. There are indications, however, that the method may be refined into a useful field technique, and even in the present stage of development it appears that qualitative, but very useful results can probably be obtained at a relatively low cost compared to that for conventional air sampling techniques. -- Cond. from author's summary

- 1029 The Determination of Lead in Air and in Biological Material. Patricia A. Mecherly, A. Lilly, and N. E. Whitman. Am. Ind. Hyg. Assn. Quart. 18, 161-164 (June 1957).

The method described for the determination of lead in air and in biological material is a modification of the American Public Health Association's method (IHF Abst. 1040, Sept. 1955) and was developed for the purpose of increasing both the speed and accuracy of the procedure previously in use. Details are fully described.

- 1030 Determination of Mercury in Biologic Material. A Modification of the Reinsch Method. J. Beeman. Tech. Bull. Registry Med. Technologists 26, 265-267 (1956); Am. J. Clin. Pathol. 26, 1479-1481 (1956).

A galvanic couple is used for precipitating mercury on a coil of copper wire. The amount of mercury is estimated semiquantitatively from the intensity of color formed with copper iodide. The lower limit of sensitivity is 10 micrograms of mercury in the sample analyzed. The method is particularly useful in screening specimens of urine collected from large numbers of persons suspected of being exposed to mercury. -- Chem. Absts.

03120398

- 1031 Microsampling Method of Determining Gases and Vapors, Particularly Hydrogenated Hydrocarbons, in Air. F. Call. J. Appl. Chem. 7, 210-215 (May 1957).

The apparatus described permits the rapid determination of halogenated hydrocarbon vapors in air by withdrawing an accurately measured volume of air of the order of 1 or 2 ml. and passing this first through a silica combustion tube and then through a reagent solution where the combustion products produce a color change capable of being accurately measured. The standard error of replicates is about 0.5% and concentrations of methyl bromide and ethylene dibromide can be estimated over the range 0.5 to 170 micrograms per ml. Each determination takes about two minutes.

-- Editor's summary

- 1032 Colorimetric Ultramicro Determination of Phenol in Air. M. M. Braverman, S. Hochheiser, and M. R. Jacobs. Am. Ind. Hyg. Assn. Quart. 18, 131-133 (June 1957).

The concentration of phenol in air in the range of 2 to 10 parts per 10 billion can be determined colorimetrically by means of the color produced when the phenol, after being trapped in an absorbing solution, is oxidized in the presence of p-aminodimethylaniline sulfate. The absorbing solution is 0.5% sodium bicarbonate in a fritted glass bubbler. Directions are given for preparation of a standard curve and for conducting the determination. Efficiency tests showed that from 80 to 100% recovery was achieved. The concentration of phenol in the air of New York City was found to be of the order of parts per 10 billion.

- 1033 Colorimetric Determination of Toxaphene. I. Hornstein. J. Agr. Food Chem. 5, 446-448 (June 1957).

A method is described by which as little as 0.5 mg. of toxaphene or 0.25 mg. of Strobane can be determined in 5 ml. of solution. In tests with other chlorinated insecticides, interferences were encountered only with chlordan and heptachlor.

- 1034 "Freon" Powered Portable Air Sampling Kit. R. C. Charsha and A. L. Linch. Am. Ind. Hyg. Assn. Quart. 18, 135-138 (June 1957).

A compact air sample collecting assembly weighing less than two pounds is powered by vaporization and expansion of non-toxic nonflammable "Freon" from a disposable container through a micro-aspirator. A limiting orifice in the "Freon" gas stream is employed in place of space consuming metering devices to determine sample volume from a time-temperature relation calibration chart. One pound of "Freon" will aspirate seven to ten cubic feet of air through a midjet impinger, or filter.

-- Authors' summary

- 1035 Automatic Isokinetic Sampling. J. Rosinski and A. Lieberman. Appl. Sci. Research, A, 92-96 (1956).

Details of an automatic device for sampling air are given. The automatic feature consists of a motor-operated bypass valve controlled by a Wheatstone bridge. Transducers, sensitive to changes in air velocity, are the sensing elements in the bridge. Experimental results are given in which the controlled sampling velocity was shown to follow changes in wind velocity very accurately.

-- Eng. Index Service (Public Health Eng. Absts.)

03120399

- 1036 Dustfall Measurements. A. F. Fisher. J. Air Poll. Control Assn. 7, 47-50 (May 1957).

The author's measurements of dustfall with identical gauges at one location agree with those of Sensenbaugh and Hemeon (ASTM, 1953) in showing that errors of 10 to 15% may occur under those conditions. With different types of gauges, however, the variation may be as much as 50 to 100%. Such variations make it difficult to compare dustfall measurements in different cities and to judge the relative efficiency of air pollution control measures. It is hoped that the adoption of a simple, inexpensive dust basin can be a subject of international agreement. In the meantime it is suggested that the use of factors calculated from results such as are presented in this paper, or more desirably an extension of those results, may provide a better indication of relative conditions between cities than would be obtained by a direct comparison of the published figures.

-- Cond. from author's summary

- 1037 The Fractionation of Dust Fall Samples by Physical Methods. L. J. Sullivan and C. B. Willingham. *J. Air Poll. Control Assn.* 7, 50-53 (May 1957).

Two methods of separations have been described which, when applied to the evaluation of city dusts, will aid in the study of community air pollution problems. A sized fraction of city dust fall sample was separated and analyzed for its major constituents to establish the ability of the technique to reduce the complexity without chemical change. That the methods do accomplish this is evident from the analysis for iron in the sample. Although perfect separations of chemical type are not obtained, a useful picture of the complexity of the particles is found. -- Authors' conclusions

- 1038 Airborne Microorganisms as Analytical Tools in Aerosol Studies. T. W. Kethley, C. Orr, Jr., E. L. Fincher, and J. M. DallaValle. *J. Air Poll. Control Assn.* 7, 16-20 (May 1957).

As a result of studies on living airborne bacteria it has been discovered that airborne microorganisms are themselves a valuable tool for the study of many kinds of aerosols, and that, through their use, numerous characteristics of aerosols can be determined with a high degree of accuracy. One advantage of this use is the time factor. The time required for the organisms to grow and reproduce—one or two days—is considerably less than that required for chemical or instrumental methods. Bacteria are the most useful of the microorganisms in aerosol studies, although others can be used to advantage in certain studies. Methods are described. Among the applications discussed are: evaluation of atomizer and sprayer performance; determination of the homogeneity of dispersion of aerosols; determination of arrester efficiencies; evaluation of sampling devices; detection of trace vapors and gases; and ventilation and meteorological applications. Other possibilities are suggested.

- 1039 Forward Light-Scattering Photometer for Monitoring Uniform Dust Distributions. D. A. Fraser. *Am. Ind. Hyg. Assn. Quart.* 18, 139-144 (June 1957).

The equations which describe the angular distribution of the intensity of light scattered by spherical transparent particles show that any instrument based on this theory which is used to measure dust concentrations will be extremely sensitive to changes in the size distribution of the dust. Monitoring the controlled dust concentrations of constant size distribution in an animal inhalation exposure chamber is an ideal situation for the application of such an instrument. A commercially available forward light-scattering photometer with slight modifications is described here. A calibration curve of the instrument readings against known transmissions of neutral density filters was used to produce a scale recording the dust concentration directly in millions of particles per cubic foot. Data collected over a one-month period of typical operation show the precision obtained and the advantages of such an instrument over the more common grab sampling techniques. -- Author's summary

- 1040 Can an Automatic Blood Cell Counter Be Modified for Use in Dust Counting? R. P. Christman and A. D. Hosey. *Am. Ind. Hyg. Assn. Quart.* 18, 119-125 (June 1957).

An automatic device for counting and sizing particles has a number of advantages. However, owing to the complexity of industrial dusts encountered in environmental studies, there is no instrument that can effectively replace the trained human evaluation. Many automatic instruments are in practical use today in conjunction with research projects. Limited tests indicated that before the automatic blood cell counter can be used for dust counting, several modifications must be made: (1) development of a photomultiplier tube with exceptional sensitivity and an extremely high signal to noise ratio; (2) reduction of aperture and further study to determine the most effective slit size; (3) correction for coincident losses and additional study to define these losses more precisely; and (4) selection of the volume of sample scanned as a whole number, preferably one, to simplify calculations of net counts. -- Cond. from author's conclusion

- 1041 Particle Size Determination by Radioactivation. B. M. Abraham, H. E. Flotow, and R. D. Carlson. *Anal. Chem.* 29, 1058-1060 (July 1957).

A sedimentation method for particle size determination has been developed that can be used with reactive fluids, such as liquid metals, as well as with water and organic liquids. The powder to be analyzed is first activated by neutron bombardment and the resultant activity that radiates from a thin lamina is used as a measure of the weight of the material in the lamina. Comparison of the radioactivation method with the conventional extraction method has demonstrated the reliability of the former. The radioactivation method has proved to be reliable, rapid, and capable of automatic operation. It is particularly suited to reactive systems that must be handled in vacuo or in an inert atmosphere. An additional application is the determination of the particle distribution of the components in a mixture by discrimination of the respective radiations, thereby avoiding the necessity of separating a powder into its components. -- Cond. from editor's and authors' summaries

COMMUNITY AIR HYGIENE

- 1042 The Air Pollution Survey. W. L. Faith. *Ind. Wastes* 2, 83-87 (July-Aug. 1957).

This paper is concerned with the type of air pollution survey which seeks to assess the contribution of a specific industrial plant to an air pollution problem. It is necessary to report in detail the source and movement of pollutants and their effect on people and property. Methods of air sampling and choice of methods are discussed. Some suggestions are given for meteorological studies. Effects on health and vegetation are considered briefly. The chief difficulty in making a survey lies in selecting an adequate number of measurements at points where they will be meaningful. Too elaborate a survey is economic stupidity, but the usual failing is extravagant short-cutting. Sources of fuller information are listed.

- 1043 Characteristics and Distribution of Organic Substances in the Air of Some American Cities. L. A. Chambers, E. C. Tabor, and M. J. Foter. *Arch. Ind. Health* 16, 17-26 (July 1957).

An investigation of air pollution in more than 30 cities, nearly all American, (reported in the Proceedings of the Third National Air Pollution Symposium) was extended to include a study of organic constituents. A number of tables and charts show the weight of acetone-soluble material, its frequency distribution, its relation to the amount of particulate matter, and distribution throughout the year in large, intermediate, and "atypical" cities and in non-urban areas. The interest in organic material in the atmosphere is increasing, especially in connection with concern over the increase in lung cancer. For that reason, an understanding of the qualitative nature of the organic substances is desirable. Progress in that direction has been accomplished by preparation and study of infrared absorption spectrograms of the soluble organics from each city. The results so far are only preliminary, and much more work is necessary before particular carcinogenic substances can be identified. The qualitative nature of the organic substances, however, is sufficiently different in most of the cities to provide spectrograms which are somewhat like fingerprints. The average organic fraction of the total particulate matter in the various cities ranges between 6 and 20%, and in a few instances the fraction has been larger than 50%. The probability that some component of the organic fraction may be carcinogenic makes it imperative that systematic analysis be explored.

- 1044 Classification of Air Pollution Exposures. R. C. Wanta and A. C. Stern. Am. Ind. Hyg. Assn. Quart. 18, 156-160 (June 1957).

The concentration, averaging-time, recurrency triad has been introduced, and its significance and some of its properties for air pollution have been explained. Application has been made to familiar air pollution incidents of the past. It is suggested that research efforts employing the triad approach require enlargement, if not stimulation, in order to improve our ability to assess the kind of air environment toward which communities are now tending, and in the expectation that short-term methods of assessing long-term effects will eventually become successful.

-- Authors' conclusion

- 1045 How Control over Sulfur Dioxide Emission Reduces Air Contamination. A. R. Dudley. Chem. Eng. Prog. 53, 154M-156M (Mar. 1957).

Progress in reducing sulfur dioxide contamination from a refinery is summarized. Hydrogenation of gasoline, heating oil, and lube distillates reduced contamination by 3%. Clay treating of aromatic solvents resulted in a 15% reduction. Improved deasphalting of the lube residuums through the use of higher solvent-to-oil ratios and more efficient deasphalting permitted an additional 12% decrease. Thus, the total reduction achieved by eliminating or decreasing acid treatment was 30%. Installation of an acid regeneration plant reduced contamination by 17% and installation of a sulfur recovery plant resulted in an additional 31% reduction. Completion of a unit for scrubbing sour refinery gases should result in an additional reduction of 20%.

-- Cond. from author's summary

- 1046 Air Pollution Control by a Sulfur Dioxide Scrubbing System. C. Lawler. J. Air Poll. Control Assn. 7, 29,30 (May 1957).

A process is described by which sulfur dioxide is removed from waste gases efficiently and economically. Its essential features are the reaction of the sulfur dioxide in solution with ammonia and the addition of sulfuric acid to convert the ammonium sulfite bisulfite to ammonium sulfate which is used as a fertilizer. The sulfur dioxide concentration in the exit gases is well below requirements. The process is largely automatic.

- 1047 Hydrocarbon Synthesis in Combustion. 2. Liquid Fuels. B. D. Tebbens, J. F. Thomas, E. N. Sanborn, and M. Mukai. Am. Ind. Hyg. Assn. Quart. 18, 165-171 (June 1957).

Incomplete combustion of a wide variety of liquid fuels (saturated and unsaturated aliphatic, cyclic and aromatic hydrocarbons) can result in the formation of particulate organic material common to a polluted atmosphere. More than 90 components, separable by standard organic procedures and paper chromatography, are present in the by-products of incomplete combustion. They include polynuclear aromatic hydrocarbons and their phenolic and carboxylic derivatives. Some of these are known toxic materials. In general, the difference between liquid and gaseous fuels in the ease with which they yield the particulate organic by-products of combustion is that the former require a relatively larger amount of thermal energy to activate the reaction mechanisms. The effects of temperature and reaction time require further study. Only one liquid fuel, a low-octane gasoline, produced nitrogenous particulate organic material. This is thought to result from the presence of nitrogen in the fuel and not from nitrogen fixation from air.

-- Authors' conclusions

- 1048 Automobile Exhaust and Smog Formation. W. L. Faith, J. T. Goodwin, F. V. Morriss, and C. Bolze. J. Air Poll. Control Assn. 7, 9-12 (May 1957).

Hydrocarbons and oxides of nitrogen, in concentrations similar to those found in the Los Angeles atmosphere, were subjected to the influence of sunlight in large glass-houses. Odor, eye irritation, and oxidant concentrations, similar to those of Los Angeles smog, developed in all cases. The sources of hydrocarbons were both auto exhaust and evaporated hydrocarbons. Eye irritation and oxidant concentration both increased as the concentration of hydrocarbons charged to the chambers was increased. Auto exhaust hydrocarbons were considerably more effective in producing oxidant than were the two added hydrocarbons, 3-methylpentane and hexene-1. The effect of oxides of nitrogen

concentration was more obscure and complex, but nonetheless important. It was concluded that automobile exhaust is an important source of smog and must be controlled.

-- Authors' summary

- 1049 Field Studies of Atmospheric Diffusion and the Structure of Turbulence. H. A. Cramer and F. A. Record. Am. Ind. Hyg. Assn. Quart. 18, 126-131 (June 1957).

A preliminary analysis of the experimental data indicates the feasibility of establishing significant empirical relationships between diffusion and simple meteorological parameters. The suggested tentative conclusion is that under conditions of thermal instability, prediction of characteristic features of the time-mean plume over short travel distances appears to be relatively simple. Prediction of diffusion in conditions of thermal stability is more complicated. Suggestions are given for improved estimates under those conditions. Particular factors applying under both conditions are discussed in detail.

-- Cond. from authors' conclusions

- 1050 Vertical Temperature Profiles in Relation to Other Meteorological Elements and to Air Pollution. D. E. Jenne. J. Air Poll. Control Assn. 7, 31-35 (May 1957).

Fog in combination with atmospheric stagnation is characterized by a lapse condition from the surface to the top of the fog layer and by an intense inversion immediately above. This is the most unfavorable meteorological situation for industrial pollution of the air. An inversion extending from the ground upward for several hundred feet favors release of contaminants from elevated sources but not from the ground. Such an inversion tends to occur only at night but, in the case of warm air advection, may occur at any time. Temperature profiles identified with looping and fanning, although commonly associated with low wind speeds, may occur at speeds of 25 mph. or more.

-- Author's summary

- 1051 Air Pollution Problems of the Steel Industry Technical Coordinating Committee T-6 Steel Report. Dust Problems in Blast Furnace Operation. W. C. L. Hemeon, Editor. J. Air Poll. Control Assn. 7, 62-67 (May 1957).

A description of the blast furnace is given. There are, in the main, two potential types of dust emission incident to the operation of blast furnaces, both of which have been greatly reduced in importance over the years. One is the residual dust in blast furnace gas which would pass into the atmosphere in the flue gases. The other is the occasional escape of dust-laden gas from the bleeder openings of the furnace for reasons of safety during brief episodes called "slips." Means of reducing dust from both these sources are discussed. Blast furnace gas cleaning is usually effected in two stages; the first is a simple type of scrubber, and the second a wet-type precipitator, a high-speed disintegrator, or a Theissen disintegrator. Primary gas cleaning repays its cost in most instances in a relatively short time. The economics of fine cleaning depends on the fuel requirements of auxiliary furnaces. If there is a use for all the gas, economic returns can be expected, but at a lesser rate than in the case of primary gas cleaning. The problem of dust arising from slips is extremely complex and has not been entirely solved; but advances in technique have contributed to a reduction in the frequency of slips. These include coal washing, sintering the fines separated from the raw ore by screening, clean gas bleeding, and weighting bleeder valves, all of which are discussed.

03120403

- 1052 Modification to the Fontana Open Hearth Precipitators. E. V. Akerlow. J. Air Poll. Control Assn. 7, 39-43 (May 1957).

Modifications in the design of precipitators used in open hearth plants, made as part of the air pollution control program at the Fontana plant of Kaiser Steel Corporation, are described. The following factors created problems evident on the preliminary installation: (1) vibration and shaking caused by the movement of cranes, trains, and other heavy equipment; (2) turbulent and erratic flow of gas entering the precipitator; (3) insufficient residence time of gas within the precipitator; (4) low voltage and inadequate control

of the connected energy to the discharge electrode system; (5) sequence and type of rapping which permitted excessive dust build-up; and (6) need of automatic power control to maintain voltage very close to the sparking level during the varying conditions of the fume in the unit. The means by which these problems were solved and the final design of the precipitator are described in some detail.

- 1053 Design and Construction of Fontana Open Hearth Precipitators. E. V. Akerlow.
Iron & Steel Engr. 34, 131-138 (June 1957).

A somewhat fuller description is given of the precipitators discussed in the preceding paper.

- 1054 Method of Testing Open Hearth Precipitators. J. H. Smith and G. L. Rounds.
Iron & Steel Engr. 34, 139-141 (June 1957).

This paper deals with methods and equipment used to test the efficiency of the precipitator installed on the open hearth furnace, described in the preceding abstracts. Methods are given for velocity determination within the precipitator and in the inlet and outlet flues. Sampling methods are described. Careful testing is required to determine the true cleaning efficiency of open hearth precipitators. Continuous sampling methods are required, and a dry method of cleaning probes is necessary. The "ashed" method of weighing thimbles is most convenient, and the use of computing machines has saved many man-hours.

- 1055 Summary of the Conference on Odor Control. A. C. Stern.
J. Air Poll. Control Assn. 7, 53, 54 (May 1957).

A symposium on odor evaluation and odor control was held October 25, 1956, under the auspices of the Cincinnati Bureau of Air Pollution Control in cooperation with two other local organizations. The topography of Cincinnati is conducive to smog formation, especially in the fall months. Odor is a noticeable feature of the local smogs. Attention is called to the responsibility of management in odor prevention. The first step in odor abatement is to learn the facts. Methods of odor measurement are reviewed. The next step is to determine what decrease in odor units is necessary to abate the nuisance, and the third is to plan action on the basis of the most economical scheme for abatement. Various methods of odor control—combustion, absorption, adsorption, and masking—are discussed briefly. Odor control is also a problem for the municipality, and a four-point program involving the creation of air pollution districts, passage of uniform ordinances, and research is suggested. Abstracts of the papers presented at the Symposium follow. Two others deal with management approach and the control official's viewpoint.

- 1056 Rank Odor Method for Evaluating Stack Gases. G. B. Nickol.
J. Air Poll. Control Assn. 7, 55 (May 1957).

A simple procedure for evaluating odors in stack gases is described. The odorous materials are frozen out of the stack gases, and the samples are diluted to equal definite volumes. Aliquot portions in distilled water in three flasks and a blank are submitted to testers who give ratings of one to four (one to the sample with the most odor). The scores of the testers for the same sample are then added. An example of a test is described.

- 1057 Procedure for Measuring Odor Concentration in Air and Gases. E. A. Fox and V. E. Gex.
J. Air Poll. Control Assn. 7, 60, 61 (May 1957).

A method of measuring odor concentrations in the atmosphere and industrial discharge gases is described. A sample of the gas or atmosphere is diluted with odor-free air until a dilution is achieved in which the odor can be barely perceived. The ratio of the total volume of this diluted sample to the volume of the original sample in the diluted sample is a measure of the concentration of odor in the original sample. The method does not take into account the character of an odor. Interferences to be avoided are discussed. Odor

units are defined and the apparatus, procedure, and method of calculation are described. The precision and accuracy of the method depend upon the number, physical condition, experience, and skill of the observers. Any single observer should be able to obtain results which are reproducible within $\pm 50\%$ on any given day. For greater accuracy the results of more observers should be averaged. (A demonstration of the method by J. E. Byrd is also reported, pp. 58, 59).

- 1058 Industrial Odor Control. J. Von Bergen. Chem. Eng. 64, 239-250 (Aug. 1957).

Industrial odors are an important phase of the air pollution problem. Some principles of odor are discussed and suggestions are given for appraising odors and initiating an abatement plan. The most effective general methods of odor control include combustion, absorption, adsorption, odor masking, and odor counteraction. These methods are discussed at length. All these methods have proved successful in the field, but each problem is specific and unusual. It is difficult to make general cost comparisons between the methods. The advantages and disadvantages of each method should be considered for any problem.

- 1059 Role of Occupational and Environmental Air Pollutants in Production of Respiratory Cancers. W. C. Hueper. Arch. Pathol. 63, 427-450 (May 1957).

Present knowledge of the relation of occupational and environmental factors to respiratory cancer is reviewed. About eight substances used in industry have been implicated, and although the data available on these suspected agents are inadequate for assigning them any quantitative role, the epidemiologic, clinical, pathologic, and experimental evidence is adequate for assigning them a considerable role in cancer production. Many sources of evidence do not favor the concept that the great majority of lung cancers, particularly in men, are caused by excessive smoking. The epidemiologic evidence concerning this factor, on the other hand, is sufficiently impressive to attribute to cigarette smoking a definite role in frequency of cancer of the lung. Cigarette smoking has no consistently positive statistical relation to cancers of the tongue and oral cavity. In all probability, environmental carcinogens of still unknown nature seem to act upon the pulmonary tissue, and they may enter the organs by other than the respiratory route. The information at hand, however, is sufficient for devising and instituting rational and effective preventive measures. -- Cond. from author's summary

- 1060 The Chemical and Biological Consideration of Atmospheric Carcinogenic Agents. H. L. Falk and P. Kotin. J. Air Poll. Control Assn. 7, 12-14 (May 1957).

A review of the factors relating atmospheric pollution to lung cancer strongly suggests that it be regarded as one of the agents etiologically associated with the increase in mortality from lung cancer now being recorded throughout the world. Lung cancer in common with all other neoplasms must certainly have many factors concerned with its initiation and promotion. While the relative significance of these various factors is at present the subject of great controversy, epidemiologic and experimental data obtained from broad programs of lung cancer research strongly support the thesis that air pollution provides a source for agents carcinogenic to the lung. Chemically, carcinogenic agents have been demonstrated in the atmospheric environment, and biologically, a mechanism utilizing laboratory data has been advanced for the pathogenesis of lung cancer. This report certainly does not preclude possible similar roles by other environmental factors. -- Authors' conclusion

03120405

MANAGEMENT ASPECTS

- 1061 Engineering Plan Review for Health, Safety, and Fire Protection. B. Feiner and M. Slotkin. Monthly Rev., N. Y. State Dept. Labor 36, 9-12 (Feb. 1957).

In New York State plans for new industrial buildings and changes in existing buildings must be reviewed by the Industrial Hygiene Engineering Unit. Typical industrial hygiene factors which may be considered and brought to the attention of both management and the industrial hygiene personnel of the Division may include the following: (1) consideration of the floor plan; (2) provision for local exhaust or general ventilation; (3) provision for locker rooms, washing facilities, and other hygienic measures; (4) provision for adequate in-plant medical office or first aid station; (5) provision for eating facilities in large plants removed from adequate community eating facilities; and (6) specifications for materials used in finishing interiors where radioactive materials are used. Exhaust systems voluntarily installed in industries not subject to special codes need not be submitted for review, but must conform to the code and to good hygienic practice and are subject to inspection. Plant visits are an important function of the Unit. Such visits often reveal unsuspected hazardous conditions in addition to the planned purpose of the inspection. Several examples are given, and some of the points uncovered during plant visits are listed.

- 1062 Shifting Workmen's Compensation into High Gear. J. J. Reid. Compens. Med. 8, 1-8 (Dec. 1956-Feb. 1957).

The author (member of the Employees' Compensation Appeals Board, U. S. Department of Labor) discusses a number of problems connected with the administration of workmen's compensation. In summary, he suggests improving the role of the adjudicator and other compensation staff members, developing standards of medical knowledge as to causation and evaluation of the many disabilities and deaths, and the invoking of the second-injury fund idea on a much broader scale to include all claims compensable on the basis of aggravation, along with public contribution to that fund. Following these suggestions progress can be made on the very pressing demands for establishing adequate benefits and on making rehabilitation a working art in workmen's compensation. Furthermore, employers will be encouraged to hire the physically handicapped and the aged with chronic diseases.

- 1063 Compensation for Non-Scheduled Disabilities. Actual Wage Loss Theory. J. L. Hill. Compens. Med. 9, 14-16 (Mar. - May 1957).

The payment of a definite fraction of the wages lost as a result of an industrial injury, subject to minimum and maximum limitations, is the basic concept of workmen's compensation. There is, however, a deviation from that concept in the case of so-called schedule injuries because payments are made for those injuries irrespective of wage loss. The injuries listed in the schedule involve the loss or loss of use of a member of the body, and the loss of vision. The non-scheduled permanent partial disabilities include back, nervous system, heart, and other injuries. In many jurisdictions, the schedule theory has been extended to include these non-scheduled disabilities. The author presents strong arguments against using the schedule concept, rather than wage loss, as a basis for compensation. It has been held that schedule payments represent future wage loss that may result from an injury, but there is no objective procedure as yet designed to measure percentage-wise the effect of these disabilities. The important consideration for the employee is employment. Because the employee would rather have wages than compensation, he will cooperate in his rehabilitation in order to return to his job. If actual wage loss were the exclusive test for payment of compensation for non-scheduled disabilities, there would be less resistance to increasing weekly payments to present-day requirements for maintenance of income, and there would be less controversy regarding non-scheduled disabilities.

- 1064 Minutes of the First Annual Meeting, Employer Subcommittee, President's Committee on Employment of the Physically Handicapped, New York, N. Y., Nov. 14, 1956. 11 pp. (1957). Obtainable from President's Committee on Employment of the Physically Handicapped, Washington 25, D. C.

These minutes include the principal talks given at the meeting, in condensed form, and the full report of the Chairman. The titles of the papers are: "Competition for Manpower," by E. Bunting; "One Company's Community Program," by N. W. Wilson; "Preparing the Handicapped for Employment," by H. H. Kessler; "Employment Services for the Handicapped," by A. W. Motley; "How It Can Be Done," by H. Viscardi, Jr.; and "Report of Chairman," by A. Bulova.

- 1065 The Health Problems of the Older Worker—A Study of Swedish Industry. S. Forssman. Trans. Assn. Ind. Med. Officers 7, 9-21 (Apr. 1957).

This paper is the result of an extensive and objective study of elderly workers in Sweden. A number of tables are given, showing employment in various industries at different ages, life expectation at different ages, age distribution of older workers, average working time in relation to age, average earnings of older workers, desire of older employees to continue working, and related subjects. In a table giving the age distribution of the population in various countries, it is interesting to note that the United States, with 8.3% of the population over 65 (in 1953), ranks tenth in that respect, while France, with 11.4% over 65 is first. Among the conclusions established are: that older employees are an important part of the total number of employees (10% over 60 years in one industry); that 50 to 70% of old employees at work have impaired health or working capacity, resulting in more lost time than in the healthy group; that notwithstanding this factor, the entire older group has a lower labor turnover and about the same absenteeism, working time, earnings, and productivity as the average workers; and that transfer to lighter work is carried out to a considerable extent. Among the recommendations are: placing old employees in low-speed work at their own speed; avoiding placing old employees near young groups, especially in piece work; transfer from piece rates to time rates; reduction of overtime; and longer lunch periods and rest pauses.

A flexible retirement age may be useful but it must be arranged so that the promotion of younger employees will not be blocked. Regular health examinations are of great value. Retirement should occur gradually, and courses in training for retirement such as have been used in the U. S. seem to be of great value. Information to management and workers on the health and socio-medical problems of old workers and the main principles for their solution would be of importance.

- 1066 Women at Work. Mildred Siegel. Am. Assn. Ind. Nurses J. 4-6, 8, 10 (June 1957).

The number of women in industry is continually increasing and will continue to increase. The results of several surveys are reported, both on the capabilities of women and on psychological factors connected with their employment. It is generally agreed that women excel in: (1) loyalty, if given loyalty in return; (2) retentive memory, and ability to perform repetitive tasks; (3) manual dexterity; and (4) color perception. On the other hand, they are not as strong as men, have more frequent (though shorter) absences, and have higher turnover. Women are good security risks, prefer sedentary work, and respect authority. One survey lists in this order what women want from their jobs: (1) credit for work; (2) promotion on merit; (3) interesting work; (4) salary increases; (5) pleasant working conditions; (6) job security; and (7) advice on personal problems. The list on the basis of what their bosses think they want is in a considerably different order. Results of the studies are contradictory regarding mechanical ability, temperament, and ease of supervision; and easy generalizations should be avoided. The author gives the following pointers on how women should be handled: (1) Don't tell a woman she is illogical; (2) Praise women more than men; (3) Don't correct her too harshly; (4) Don't yield to a woman's tears; (5) Be careful to appear impartial; and (6) Remember that women take things personally. Good human relations are always essential in industrial management and especially in dealing with women employees.

03120407

- 1067 Satisfying the Salaried Employee. Industrial Relations Division, National Association of Manufacturers, 2 East 48th St., New York, N. Y. 64 pp. (Apr. 1957). 50 cents.

Salaried employees now outnumber the production group, and are increasingly more concerned about their problems. Some have turned to unions to represent them, but have frequently been disillusioned. While the salaried employee looks instinctively to his employer for both leadership and job satisfaction, recent developments have tended to undermine his traditional willingness to rely on management. This booklet deals with the problems of status and recognition, compensation, communication, and supervision. Among the topics given special attention are: what salaried employees want of their jobs, and how those wants should be met; special needs of the professional employee; sound salary administration; proper selection of supervisors; and daily use of human relations practices. An appendix suggests a typical program of basic supervisory training.

ACCIDENTS AND PREVENTION

- 1068 Plan Your Message, Pick Your Medium. L. C. Smith.
Natl. Safety News 75, 24, 25, 129 (June 1957).

The various types of visual aids that are useful in a safety communication are listed and compared with respect to effectiveness, audience size, flexibility, and cost. Carefully selected and properly used visual aids will aid a training program by saving time, increasing attention, holding interest, and providing more accurate learning.

- 1069 Safety Communication—Media—Methods, Results. W. T. Bowne.
Natl. Safety News 75, 26, 27, 80-94, 97, 110 (June 1957).

The following communication methods and techniques are discussed: (1) face to face (particularly emphasized); (2) round tables; (3) workplace safety meetings; (4) bulletin boards and billboards; (5) letters to employees' homes; (6) contests; (7) suggestion plans; (8) safety committees; (9) management newsletters; (10) management meetings; (11) company newspapers and magazines; (12) reading racks; (13) displays; (14) employee newsletters; and (15) audio-visual aids.

- 1070 Measurement of Leakage Resistances and Static Electrification. B. Barnholdt and R. E. H. Rasmussen. Arch. Ind. Health 16, 67-76 (July 1957).

An investigation on the leakage resistance of personnel and floors and on the possibility of the building up of charges on personnel in The National Vitamin Laboratory, Copenhagen, showed that the use of insulating floor coverings (as, for instance, linoleum) as well as insulating footwear (shoes with rubber soles) should not be allowed in rooms in which work is in progress involving the use of volatile inflammable substances. The investigation showed that charges would frequently build up on a person rising from an ordinary varnished wooden stool. Handling of plastic packing material might result in the formation of static electricity. Experiments were made at different degrees of humidity of the air (about 20%-70%), showing that the tendency for static electricity to accumulate increases at low degree of humidity.

-- Authors' summary

03120408

- 1071 Static Electricity: 3100 Million Headache. R. Beach.
Factory Mgmt. and Maint. 115, 106-113 (July 1957).

Common industrial sources of static electricity include driving and conveyor belts and a number of operations in the rubber, textile, and printing industries, which are described. The components necessary to cause a fire or explosion are: (1) vapors from flammable liquids or flammable gases; (2) presence of air or oxygen to mix with vapor or gas within the flammable range; (3) occurrence of an electric spark or adequate heating energy to ignite the mixture; and (4) simultaneous presence of the above three components in the same location. The mechanism of static generation is discussed. Humidification has been proposed and sometimes tried as a remedy; however, the use of sufficiently high humidity to be effective is costly because of the rapid deterioration of exposed machinery. Also, many uncontrolled variables complicate the problem. The static electricity can almost always be removed readily and effectively by static neutralizers, of which there are three types: high-voltage, radioactive, and induction. The principles of these neutralizers are discussed. All involve certain hazards, but in general the induction neutralizers are safest. Choice, however, depends upon the particular operation; in some cases special methods have to be developed. A case of successful application of a special method is described.

- 1072 The Explosibility Characteristics of Coal-Dust Clouds Using Electric Spark Ignition. D. L. Carpenter. Combustion & Flame 1, 63-93 (1957).

Present knowledge of the effect of various factors which govern the explosibility characteristics of coal-dust clouds is summarized and the theories of the mechanism of the ignition and self-sustained combustion of dispersed coal dusts are discussed. The explosibility characteristics of a range of South Wales and English coals and the effect on these characteristics of variation of the oxygen content of the dispersion medium are investigated. Apparatus and methods are described. Possible explanations of the difference between the calculated and observed maximum explosion pressures are given. Practical evidence supporting the theory that gas-solid oxidation is responsible for the initiation of propagated combustion has been obtained from an investigation of the effect of coal-dust explosibility of the addition of admixed inert dust, prior oxidation of the coal dust, and the blending of nonexplosive and explosive dusts. It is concluded that for all coal dusts the reaction initiating combustion and explosion is that between the coal particle surface and gaseous oxygen. The heat liberated will be supplemented, with medium- and high-volatile coals, by the burning of flammable decomposition products around the coal particle, resulting in an increased rate of heat transfer and explosion velocity.

-- Cond. from Chem. Absts.

- 1073 The Explosive Danger of the Bituminous Coal Dust from Saxony Coal Mines with Special Attention to Petrographical Character of Coal Dust. H. Hanel. Bergbautechnik 7, 13-20 (1957). German.

Testing methods for determining the explosion danger of a coal dust and air mixture, and investigation of factors influencing the explosibility are described. The effects of the fineness of the dust, its noncombustible compact constituents, its degree of moisture, its dispersability, and its methane content are discussed. Furthermore, coal-dust-explosion tests in Saxon mines have demonstrated the importance of the petrographic nature of coal dusts. In one district (Oelsnitz) the dust was higher in fusain content than the original coal and its petrographic structure differs essentially from that of base material. The danger of explosion is reduced essentially by enrichment of fusain in natural coal dusts.

-- Cond. from Chem. Absts.

- 1074 The Extinction of Flames by Pulverized Substances. R. Bouchet, R. Delbourgo, and P. Lafitte. Compt. rend. 242, 2152-2154 (1956). French.

The differences between the powers of extinction of different powdered salts decrease on increasing their degree of fineness. For the greatest degree of fineness sodium salts are more effective than those of potassium. However, for more granular salts, those of potassium are far superior to those of sodium.

-- Chem. Absts.

- 1075 Extinguishing of Fast-Propagating Flames by Powdered Substances. R. Bouchet, R. Delbourgo, and P. Lafitte. *Compt. rend.* 244, 606-609 (Jan. 28, 1957). French.

A study was made of the extinction of flames from various gas mixtures by potassium oxalate powdered to 25 microns. The gas mixtures were introduced into a glass tube (8.5 mm. internal diameter), closed at both ends and evacuated. The ignition was produced by an electric spark at one end, and the powder was laid at a definite distance from the source of ignition. The flame propagation was recorded chronophotographically on a sensitive film wound around a revolving drum. A few examples are given with specific gas-air mixtures, flame propagation speeds, and amounts of the oxalate. Extinction was found possible, for flames with a maximum propagation speed of 450 m. per sec., during the predetonation period. The speed of the flame, when extinguished, was in general lower by 50 to 200 m. per sec. than that recorded in the absence of the oxalate. The flames which were extinguished originated from mixtures with a detonation speed not exceeding 2100 m. per sec., independently of their propagation speeds.

-- Adapted from Chem. Absts.

- 1076 American Standard Safety Code for the Use, Care, and Protection of Abrasive Wheels. American Standard B7.1-1956. American Standards Association. 74 pp. (Oct. 1956). Single copies obtainable without charge from Grinding Wheel Institute, Keith Bldg., Cleveland, O.

This safety code was sponsored by the International Association of Governmental Labor Officials and by the Grinding Wheel Institute. The code covers a wide variety of items connected with safety in the use of grinding wheels. The scope of the code is indicated by the section headings: (1) scope and definition; (2) handling, storage, and inspection; (3) general machine requirements; (4) types of protection devices; (5) safety guards; (6) flanges; (7) mounting; (8) speed; (9) general operating rules; and (10) mounted wheels. Dust exhaust provision is mentioned, but detailed recommendations are given in "American Standard for Grinding, Polishing, and Buffing Equipment Sanitation (Z43), obtainable from the American Standards Association for 75 cents. Many illustrations accompany the text. All companies using grinding wheels should be familiar with the material given in this code.

MISCELLANEOUS

- 1077 Fluoride Domestic Water and Periodontal Disease. A. L. Russell. *Am. J. Public Health* 47, 688-694 (June 1957).

The periodontal status of residents of three fluoride communities has been compared with that of that of residents of three comparable low-or non-fluoride communities. Ages of the persons studied ranged from 7 to 78 years. The domestic water supplies of the fluoride communities carried about 1.0, 2.5, and 8.0 ppm of fluorides, respectively. Fluoride subjects had used the domestic water for from 7 to 44 years. Indirect evidence in the two adult groups was opposite in direction. In each case the fluoride group exhibited the more favorable periodontal condition on direct examination. Native school children in a series of communities, each with about 1.0 ppm in its domestic water, were compared with migrant children in the same communities. There was a weak tendency for the periodontal health of native children to improve, relative to that of migrants, as their advantage in water-borne fluoride consumption increased. Most of the differences were slight. They are not adequate to support a hypothesis that use of a fluoride water results in improved health of periodontal tissues. The findings are, however, wholly incompatible with any hypothesis that the periodontal tissues of children or of adults are harmed by use of a fluoride-bearing domestic water.

-- Author's summary

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