

IN RE: ABRAMS November 1992



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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL ... decisions and trends

JULY, 1956
(Vol. 20, No. 7)

INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
4400 FIFTH AVENUE -:- PITTSBURGH 13, PA.

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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 18

July, 1956

No. 7

WELCOME TO MEMBERSHIP

Wald Industries, Inc. is the latest company to affiliate with Industrial Hygiene Foundation. We are pleased to add them to the membership roster.

INTERNATIONAL INTEREST IN FOUNDATION ACTIVITIES

The work of Industrial Hygiene Foundation is of interest not only to industries within the United States but to scientists and industrial health specialists in other countries as well. The Foundation is pleased to receive such visitors and to explain the American system and techniques for maintaining health in industry. Among the distinguished visitors recently was Dr. W. E. George, Medical Officer of the Joint Coal Board, New South Wales. A visitor from Birmingham, England was Dr. J. G. Lawson, Senior Medical Officer of Joseph Lucas, Ltd. Dr. Mario Battigelli, a surgeon from the Clinical Del Lavoro in Milan, Italy, visited the Foundation and plans to devote further time to studying I-H-F activities. Dr. R. S. Kee of the College of Medicine of Seoul National University in Korea also paid a visit to the Foundation.

SCHRENK APPOINTED TO POLLUTION ABATEMENT COMMITTEE

Dr. H. H. Schrenk, Research Director of Industrial Hygiene Foundation, has been appointed to the Pennsylvania State Chamber of Commerce Committee on Pollution Abatement for the 1956-57 period.

SCIENTIFIC EXHIBITS FOR THE 21st ANNUAL MEETING OF I-H-F

Each year at the annual meeting of the Foundation a limited number of exhibits are displayed illustrating the accomplishments of industrial organizations in promoting industrial health. Companies desiring to describe through this medium their health maintenance programs or some special industrial health activity are invited to do so. To reserve space for the November 14-15, 1956 meeting here at Mellon Institute, please advise the Foundation as soon as possible.

"PRODUCTS" OF INDUSTRIAL HYGIENE FOUNDATION

A chart prepared by the Foundation's staff showing the functions of a biological laboratory as a teammate in industrial hygiene appears on the following page. This chart forms the basis for a paper entitled "The Importance of Biological Research in Industrial Medicine" which was published in the June 18, 1956 issue of the Journal of the American Medical Association. The chart was prepared to show concisely and in a graphical way the various functions of a biological laboratory. Reprints of the paper will be available at a later date.

It is evident from this chart that Industrial Hygiene Foundation's toxicology laboratory can begin its contribution even during the research development of new materials in helping to eliminate those substances which are obviously too toxic for the intended purpose. The extent of the biologic work can expand as the development phase of the material expands, and thus adequate biologic data parallels the development and commercial production and utilization of a new product.

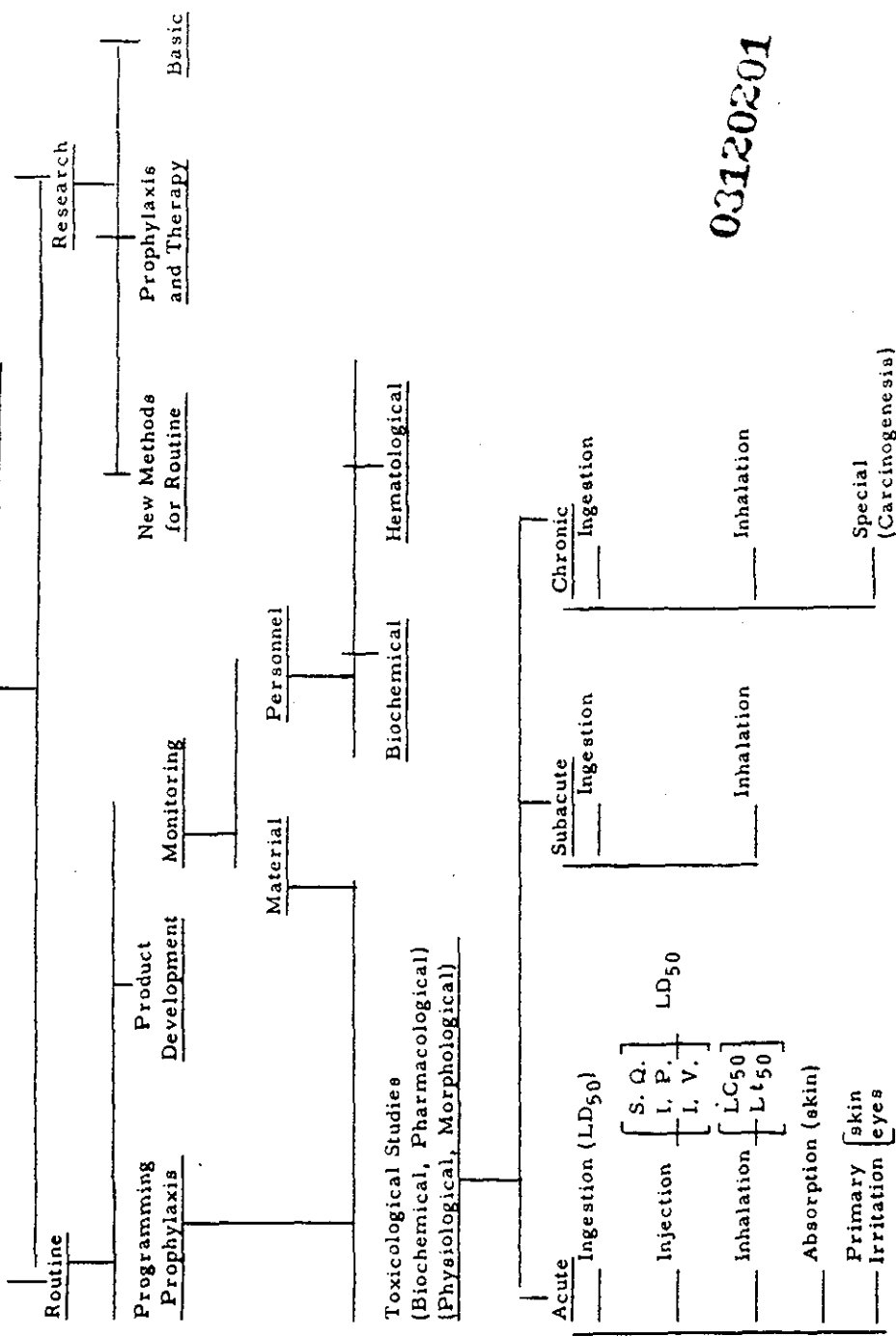
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IN RE: ABRAMS November 1992

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THE FUNCTIONS OF A BIOLOGICAL LABORATORY AS A TEAMMATE IN INDUSTRIAL HYGIENE



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INDUSTRIAL HYGIENE FEATURES

Biological research makes significant contributions to industrial medicine. Abstract No. 852.

Cooperative action to bring vocational rehabilitation to disabled workers. Abstract No. 853. An international problem. Abstract No. 854.

How to work safely with benzene. Abstract No. 888.

Precautions necessary in the handling of naphthalene and details of personal protective equipment and first aid procedures. Abstract No. 889.

Insecticides—use with caution. Abstract No. 892.

Does noise affect you and your work? Abstract No. 914.

Protection of the public, the worker and the patient from radiation. Abstract Nos. 922, 925. Regulation of radiation exposure by legislative means. Abstract No. 923. The genetic effects of radiation are considered. Abstract No. 930.

New method for electron microscopic examination of aerosols. Abstract No. 938.

A cascade impactor with four mechanically traversed sampling slides permits reliable size grading of solid particles. Abstract No. 939.

Aerosoloscope relieves technician of tedious task of counting and sizing of aerosol particles under the microscope. Abstract No. 940.

Theoretical principles and components of local exhaust systems. Abstract No. 941.

Experiments confirm the finding of Haagen-Smit that traces of nitrogen dioxide and hydrocarbon in the air undergo a photo-chemical reaction to produce ozone. Abstract No. 949.

An approach to odor control. Abstract No. 950.

Truth and fallacy about acid coal mine drainage. Abstract No. 958.

IN THE ABSTRACTS
November 1956

03120202

IN RE: ABRAMS November 1992

TABLE OF CONTENTS

	<u>Page</u>
News Items	1
Coming Events	2
Occupational Disease Statistics	2
Legal Developments	3
Books, Pamphlets and Notices	4
Industrial Medical Practice	5
Skin Diseases and Burns	8
Chemical Hazards	9
Industrial Dusts	16
Physical Aspects of the Environment	19
Radioactivity and X-Radiation	22
Environmental Measurements	25
Preventive Engineering	27
Community Air Hygiene	27
Management Aspects	29
Accident Prevention	30
Miscellaneous	31
Index	32

03120203

November 1956

IN RE: ABRAMS

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

839 Bibliography on Air Pollution.

The Library of Congress has agreed to prepare a continuing, annotated bibliography on air pollution for the Public Health Service. The bibliography will include references to the physical, biological, engineering, legal-administrative, and economic aspects of atmospheric pollution. -- HEW News Release (APCA News)

840 Smog in Hawaii.

The Hawaiian Islands now report smog. A representative, sent by the Island's Department of Health to study the Los Angeles situation, blamed smog on open burning, gasoline storage, automobiles, and increasing population and industrial growth. They presently have no oil refineries. Of special concern to the territory is damage being suffered by world-famous Hawaiian orchids. -- LACAPCD Report (APCA News)

841 First Inter-American Conference.

The first Inter-American Conference on Occupational Medicine and Toxicology, sponsored jointly by the Schools of Medicine of the University of Miami and the University of Havana, will be held in Miami September 3-7. The program includes speakers from Venezuela, Mexico, Peru, Columbia, Chile, Puerto Rico, Cuba, and the United States. Titles of the papers include: "Establishment of a Medical Department in Industry"; "Work and Fatigue in Industry"; "Effects of Environmental Conditions on the Health of the Worker"; "Recording of Medical Case Histories"; "Control of Malaria in Endemic Areas"; "Occupation and Heart Disease"; "The Role of the Anesthesiologist in Acute Poisonings"; "Neurological Problems in Occupational Medicine and Toxicology"; "The Treatment of Intoxication by Organic Phosphates"; "Management of Berylliosis"; and "Treatment of Manganese Intoxications". The official language of the program will be Spanish. -- Ind. Med. & Surg.

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COMING EVENTS

- 842 Aug. 1-15 Pan American Tuberculosis Conference, Medellin and Bogota, Columbia
 Aug. 19-23 Fourth International Congress on Diseases of the Chest, Council on International Affairs, American College of Chest Physicians, Cologne, Germany
- Sept. 3-7 First Inter-American Conference on Occupational Medicine and Toxicology, Miami, Fla. (See news item.)
- Sept. 10-12 American Society of Mechanical Engineers, fall meeting, Denver, Colo.
 Sept. 10-Nov. 2 Course in occupational medicine, Post-Graduate Medical School of New York University-Bellevue Medical Center, New York, N. Y.
- Sept. 16-21 American Chemical Society, 130th National Meeting, Atlantic City, N. J.
 Sept. 17-21 Instrument Society of America, 11th Annual Instrument-Automation Conference and Exhibit, New York, N. Y.
- Sept. 21-22 Institute on "The Head: A Law-Medicine Problem". Western Reserve University, Cleveland, O.
- Sept. 24-26 Steel Founders Society of America and Materials Handling Institute, fall meeting, White Sulphur Springs, W. Va.
- Sept. 25-27 Third Annual Forum Conference—Management and Technology for the Atomic Industry, Chicago, Ill.
- Oct. 1-4 Austrian Society for Industrial Medicine, Third Austrian Congress on Industrial Medicine, Vienna
- Oct. 8-12 American Welding Society Fall Technical Meeting, Cleveland, O.
 Oct. 9-15 World Medical Association, 10th General Assembly, Havana, Cuba
 Oct. 11-12 National Noise Abatement Symposium, Chicago, Ill.
 Oct. 14-16 First International Sanitation Maintenance Show and Conference, New York, N. Y.
- Oct. 22-24 American Standards Association, 38th Annual Meeting and Seventh National Conference on Standards, New York, N. Y.
 Oct. 22-25 National Pest Control Association, Detroit, Mich.
 Oct. 22-28 Forty-Fourth National Safety Congress and Exposition, Chicago, Ill.

OCCUPATIONAL DISEASE STATISTICS

843 Occupational Disease Statistics.

	Ind. ¹ May 1956	Ind. ¹ June 1956	Wis. ¹ April 1956	Total
Dermatitis	4*	2**	4	10
Lead Poisoning			1	1
Silico-Tuberculosis	1			1
Silicosis			4	4
Skin Infection			3	3
Skin Irritation			1	1
Undulant Fever			2	2
Total	5	2	15	22

1. Occupational disease cases reported to the State Board of Health.

* Cleaning alkalis, plating solution, and rubber caused one each; the cause of one other case was not stated.

** Rubber caused one; and the cause of the other case was not stated.

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LEGAL DEVELOPMENTS

- 844 State Workmen's Compensation Laws. Supplement to Bull. No. 161. U. S. Dept. Labor, Standards, 46 pp. (Nov. 1955).

This revised bulletin brings up to date a brief tabulated summary of the workmen's compensation laws of the states. The information includes: type of law (whether elective or compulsory); how insurance is to be obtained; penalty for not insuring; states making numerical exemptions; coverage of occupational diseases; statutory provision for medical benefits; maximum benefits for various types of disability; number of weeks for which compensation is payable; maximum benefits for widows and children; maximum burial expenses; additional benefits payable to disabled workers for dependent children; provisions relating to rehabilitation; and status of nonresident alien dependents in death cases.

- 845 Silicosis—Total Disability—Other Employment Obtained—Subsequent Death of Cancer.

The administratrix of the estate of a deceased foundry molder was properly denied death benefits where the cause of decedent's death was cancer. The decedent had previously been awarded compensation for total disability due to silicosis. He then secured other employment where he earned more money than he had as a molder. Counsel for the administratrix contended that if an employee sustains a disability preventing him from re-engaging in the particular kind of work in which he was employed at the time of such disability, but is able to do other kinds of work and to earn the same or higher wages as in the prior employment and is prevented for any reason other than his own fault from continuing therein, he is entitled to demand the reinstatement of full disability compensation benefits payable for the original disability. It was further contended that the statute makes no distinction between disability and death. The court ruled that such an interpretation of the statute obviously leads to the conclusion that an employer, situated as the employer herein, becomes an insurer as to an employee prevented from following one line of work but having an established wage earning capacity in other lines. The fact that resort might be had under the compensation law against the latter employer would not be a bar to asserting further liability on the part of the employer paying the compensation in the first instance. Reversed. Lauder v. Paul M. Weiner Foundry. Michigan Supreme Court, October 3, 1955. -- Commerce Clearing House

- 846 Silicosis—Total and Permanent Disability—Sufficiency of Evidence.

A coal miner was properly awarded compensation for total and permanent disability due to silicosis where the proof showed that he had been injuriously exposed to free silica dust for many years. The preponderance of the medical evidence showed that claimant suffered from silicosis while employed by the mining company, and that his condition grew progressively worse resulting in total and permanent disability. The proof also showed that the room in which the claimant worked was poorly ventilated. Affirmed. Eggert v. Tennessee Products & Chemical Corp. Tennessee Supreme Court. February 3, 1956. -- CCH

- 847 Occupational Disease Alleged—Aggravation of Pre-existing Back Condition—Lifting of Heavy Materials.

In reversing the lower court which had ruled that the claimant had suffered an occupational disease by the aggravation of a pre-existing back condition caused by the lifting of heavy materials, the court ruled that an ailment does not become an occupational disease simply because it was contracted on the employer's premises. Although the claimant incurred his disability while working for the motor company, the nature of his employment was not

such as to have a tendency to induce a similar malady in the average workman. In so far as it caused this result, the work in which the claimant was engaged simply amounted to the ordinary wear and tear of life impinging on the infirmity with which this claimant had been born and which he had carried with him during all of his previous life. The court further held that to affirm the lower court would transform workmen's compensation into life and health insurance. Reversed. Detenbeck v. General Motors Corp. New York Court of Appeals. No. 225. February 16, 1956. Reversing opinion reported previously. -- CCH

848 Silicosis—Practice and Procedure—Diagnosable Prior to Enactment of Occupational Disease Act.

A foundry worker was properly awarded damages for silicosis in a common-law action where the evidence showed that the disease was diagnosable prior to the enactment of the occupational diseases act even though the jury found specially that the disease was not diagnosable until one year after the enactment. The court ruled that the fact that the jury reported that the employee's disease "could have been diagnosed as silicosis in 1948," did not exclude the possibility that the disease was diagnosable on or before March 12, 1947, the date the occupational disease act was enacted. The court further ruled that it is the recognized procedure in this state that a jury may return a general verdict at the same time it responds to interrogatories submitted by the court, and if the findings on the interrogatories are insufficient to warrant a judgment, the court may act upon the general verdict and deal with it as if there had been no findings. Affirmed. Lenoir Car Works v. Littleton. Tennessee Court of Appeals, Eastern Section. Nos. 1 and 3. March 21, 1956. -- CCH

849 Pneumoconiosis—Liability of Last Employer—Foundry Worker.

A foundry worker was improperly awarded compensation from his last Michigan employer for contracting pneumoconiosis where the evidence disclosed that his last employer was an Ohio foundry and not a Michigan company. The court ruled that the statutory provision "employer who last employed," meant last Michigan employer. The evidence showed that the injured workman was last employed for a period of two or three months in Ohio. The court further ruled that the legislature intended that the commission would have jurisdiction in a case of this nature upon the last employer, provided, that such last employer was a Michigan employer. In this case the last employer was an employer without the State of Michigan, therefore, the commission lacked jurisdiction to make an award. Reversed. Wagner v. LaSalle Foundry Co. Michigan Supreme Court. April 2, 1956. -- CCH

BOOKS, PAMPHLETS AND NOTICES

- 850 Mental Health Planning for Social Action. George S. Stevenson. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. 358 pp. (1956) \$6.50.

The aim of this book is to tell how the current knowledge of mental illness can be used to a fuller extent and toward better results. The discovery and classification of the mentally ill are the cornerstones of a dynamic, constructive mental health program. Suggestions are given whereby the mental hospital can increase its contribution to mental health. The place of government agencies is shown with suggestions as to which agency can best perform each service. The church, school, prison, industrial firm, military defense service, and other institutions are assessed as to their present and future contributions to mental health. Discussions of the problems of the child, the delinquent, the criminal, the aged, and the mentally deficient are included. The chapter on Mental Health and Work, will be of most interest to industrialists and industrial physicians. One of the principal

subjects discussed is work satisfaction. The question may be raised whether the frustrations of a task that does not eventuate in a visible finished product are not disorganizing and contributory to awkwardness and accidents. The smaller industries, especially, have no special facilities for adjusting the limitations of the worker to the demands of the business. Regimentation is not a remedy; it may rather have a frustrating effect. Absenteeism, accidents, and alcoholism are symptoms of underlying faults in all industries. Among the other subjects considered are: the personal relations of workers to supervisors in relation to mental health; the need of emotional stability tests in selecting applicants for employment and promotion, applying to both workers and executives; orientation of worker toward mental hazards; and problems connected with unemployment and retirement. -- FFR

- 851 The Spectral-Transmissive Properties of Plastics for Use in Eye Protection. American Standards Association, 70 East 45th St., New York 17, N. Y. 48 pp. (1955) \$1.50.

Until recently glass has been practically the only material used in lenses in eye protective devices. Plastics, which are now coming into use for the purpose, have the advantage of lighter weight and resistance to shattering. By incorporation of or coating with various materials, a wide range of transmission, both of light and ultraviolet rays, can be achieved. A wide variety of plastic materials can be used, including cellulose derivatives, thermoplastic synthetic resins, and thermosetting resins. This paper gives ultraviolet, luminous, and infrared spectral-transmissive and other characteristic data on many of the available types of plastics suitable for eye protection. Important consideration is given to the use of plastics in those circumstances wherein their use is comparable to that of glass. Molded lenses, contact lenses, cover and filter lenses for industry, head and face shields, television glasses and filters, sunglasses, and glasses for driving at night are discussed. Caution is given against their use in certain situations wherein the spectral-transmissive qualities of plastics, as they bear on invisible radiations, are a factor which may limit their use as a protection against such hazards. The only safe procedure to follow in writing specifications is to exclude as nearly as possible all harmful ultraviolet and infrared rays. -- FFR

INDUSTRIAL MEDICAL PRACTICE

- 852 Importance of Biological Research in Industrial Medicine. P. Gross, H. H. Schrenk, and C. R. Walmer. *J. Am. Med. Assn* 161, 569-573 (June 16, 1956). Reprints available from the Foundation.

A brief review of the functions of a biological laboratory shows the significant contributions that can be made to industrial medicine. Such a laboratory not only supplies the basic information on which to build adequate engineering control but it also supplies the medical profession with knowledge that is essential for continuing progress in the diagnosis, treatment, and prevention of occupational diseases. A complete toxicologic study considers three phases: acute, subacute, and chronic toxicity. Methods of investigating each of these phases are discussed briefly. Inhaled dust, though not toxic in the strict sense, causes definite reactions in the lungs. Animal experiments on the effects of dust may be conducted by intratracheal injection or by an inhalation chamber; both methods are usually advisable. In dust studies, the effect of particle size must be considered. Dust of the same particle size should be used in experiments with the dust investigated and with dusts generally considered harmless. Typical problems discussed include research on halophosphors and on carcinogenic substances. The use of range-finding tests in connection with product development is discussed. Several examples show the importance of basic research. A feature of the paper is a table showing the symptoms, signs, organs, or systems affected and diagnostic laboratory tests relating to some commonly used toxic substances.

- 853 Recent Developments in Rehabilitation: Their Significance in Compensation Medicine.
H. A. Rusk. *Compens. Med.* 7, 1-4 (Dec. 1955-Feb. 1956).

Compensation and rehabilitation agencies in all the states have written agreements concerning cooperative action to bring vocational rehabilitation to disabled workers. In some states such relationships are excellent; in others they are but little more than scraps of paper. The procedure in the State of Washington is cited as an example. Nationally there is an average time lag of 7 years between the onset of disability and the worker's referral for rehabilitation services. Several reasons for this delay are discussed; but wherever the blame lies, during this period the disabled workman may be disastrously affected, physically, emotionally, and vocationally. Within the past decade there has been a substantial increase in the volume of rehabilitation services available nationally, but they are still greatly inadequate. Considerable study, however, has been given to these problems. The greatly expanded Federal-State vocational program is an important step. A number of features of this program are described. In summary, if we are to meet the challenge, we must recognize that: (1) the new tools of modern rehabilitation are sharp and effective; (2) as Spiller has said, "Action absorbs anxiety"; (3) if our goals are to be achieved the sites must be raised from our own backyards to the far horizons; (4) red tape must not only be cut but be debrided from the field; and (5) in order to achieve our goals we must work as a team, putting the patient above self.

- 854 Rehabilitation: An International Problem. H. A. Rusk.
Arch. Phys. Med. 37, 135-137 (Mar. 1956).

Interest in rehabilitation of the disabled is increasing in many countries. Examples are given. Two unmistakable facts emerged from the Sixth World Congress of the International Society for the Welfare of Cripples: (1) rehabilitation services for the disabled are increasing rapidly throughout the world; and (2) the number of people needing such services is increasing rapidly. A part of this increase is due to lengthening of the life span. The responsibility of the medical profession for rehabilitation is thus increased.

- 855 Total Medical Resources versus Piecemeal Approach to the Rehabilitation of the Industrially Injured. D. A. Covalt, *Compens. Med.* 7, 5-8 (Dec. 1955-Feb. 1956).

Good diagnosis and good medicine and surgery in the hands of a competent physician will handle 90 to 95% of the problems that are seen by the industrial orthopedic and general surgeon, but the other 5 to 10% are lost to industry unless they are given more than routine care. It is this 5 to 10% who need a complete rehabilitation program. These include not only the severely injured, but also those who have not been able to return to work because of social or emotional problems. Several typical cases are described. Procedure for complete evaluation of disabilities at the Institute of Physical Medicine and Rehabilitation is described.

- 856 Medical Aspects of Automation--Influence on Industrial Medical Programs.
C. R. Walmer. *Ind. Med. & Surg.* 25, 216-220 (May 1956).

Automation is not going to have the effect of an atomic bomb falling on us. On the contrary, it will mean greater enjoyment of life, and will make possible a greater humanization of industry. The working environment will undoubtedly be a safer, healthier place, and many of the hazards will be completely eliminated. Any new medical problems which arise can be coped with by adhering to the principles of preventive medicine, utilizing the knowledge and techniques of industrial health specialists in all the professional fields.

-- Author's summary

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- 857 Environmental Cancer in Connecticut: 1. The Survey Project Plan. M. H. Griswold. Conn. Health Bull. 70, 91-100 (Apr. 1956).

The Environmental Cancer Survey Project in Connecticut has been carried out jointly by the Division of Cancer and Other Chronic Diseases and the Bureau of Hygiene of the State Department of Health. Occupational histories and hazard exposures of 3730 cancer patients in the state have been obtained in order to find out whether exposures have had any demonstrable association with the subsequent development of cancer in these patients. The project and interview forms have been discussed. Analyses of the survey will appear in forthcoming issues. -- Author's summary

- 858 A Survey of Industrial Washrooms. L. F. Klein and J. E. Molos. Modern Sanit. 8, 19-22 (Apr. 1956).

The purpose of the survey was to obtain a comprehensive picture of the adequacy and condition of sanitary facilities provided workers in the industrial plants of St. Louis, Mo. The methods of the survey technique, and the basic inspection form are offered as guides to self-inspection by industrial establishments and, to official agencies which may wish to undertake similar surveys. -- Editor's summary

- 859 Productive Living for Those with Heart Disease. The Role of Physical Medicine and Rehabilitation. L. B. Newman, R. R. Wasserman, and C. Borden. Arch. Phys. Med. 37, 137-149 (Mar. 1956).

Physical medicine and rehabilitation must be considered as a part of the total medical care of those with heart disease; however, it does not supersede or supplant good medical management, for its greatest benefits are achieved when it is completely coordinated and integrated with the other medical and available ancillary services. The heart patient must be oriented and indoctrinated regarding his disease and his hospitalization as early as possible. The rehabilitation program at the hospital or center should simulate at least the physical demands of the job situation that the patient will encounter even though the psychological factors and environment are difficult to duplicate. Selective job placement is vital in order to attain a well-planned goal. Improved medical care and rehabilitation of cardiac patients in most instances, has increased the number of years of productive living, and may even have prolonged the actual years of life.

-- Cond. from authors' summary

- 860 Prevalence of Coronary Heart Disease in Elderly Coal Workers. A. J. Thomas, J. E. Cotes, and I. T. T. Higgins. Lancet 270, 414-420 (Apr. 14, 1956).

A detailed clinical and physiological study was made of a sample drawn at random from a complete population of coal workers aged 55-64. Coronary heart disease was found in 38% of the men; half of these had symptoms and the remainder were silent cases. The mean systolic and diastolic blood pressures for the men with coronary disease (165.8/89.4 mm. mercury) were higher than those for the remaining men in the sample. The mean body weights for the two groups were 156.9 and 133.8 lbs. respectively. The variation in body weight, however, was significantly greater in the men with coronary disease. The 38% prevalence of coronary heart disease in this population of miners and ex-miners is higher than that previously reported, and underlines the need for further investigations.

-- Cond. from authors' summary

- 861 Medical Problems in the Mining Industry. T. D. Spencer. Trans. Inst. Mining Engrs. (London) 114, 1017-1028 (Sept. 1955).

This article, though containing little that is new, provides a useful survey of the causation, problems and prevention of pneumoconiosis, bent knee, Weil's disease, tetanus, athlete's foot, dermatitis, and accidents and sickness. The conclusion stresses the point that the essential work in the prevention of industrial accidents and illness is primarily a managerial responsibility. -- Cond. from Bull. Hyg.

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- 862 Employability of Patients with Back Pain. A. S. Russek.
Compens. Med. 7, 12-16 (Dec. 1955—Feb. 1956).

The employability of the patient with a back injury which does not recover spontaneously depends upon adequate understanding of the functional disturbance following the injury and the institution of appropriate treatment to re-establish function as early as possible. A method of diagnosis and the principles of treatment involved, which have proved successful in clinical practice, are described. The development of a long-standing disability must be avoided at all costs since it is in these cases that the serious psychological problems obstructing functional return, emotional stability, and productivity develop.

-- Cond. from author's summary

SKIN DISEASES AND BURNS

- 863 Rehabilitation in Industrial Dermatoses. R. O. Noojin.
Arch. Dermatol. 72, 462-466 (Nov. 1955).

Dermatological rehabilitation concerns itself with numerous complex factors, and the solution of some of these has proved to be most difficult. These problems are inadequately considered in most instances by the many parties concerned. In addition, to the need for more extensive and rational social, legal, and legislative consideration, it behooves the dermatologist to give the subject greater interest and study.

-- Author's conclusions

- 864 Contact Dermatitis Due to Nickel and Chromate. S. Epstein.
Arch. Pathol. 73, 236-255 (Mar. 1956).

Dermal delayed (tuberculin-type) sensitivity in contact dermatitis is demonstrated in cases of contact dermatitis from nickel and chromates as a phenomenon of theoretical and also of some practical importance. The microscopic picture of dermal delayed sensitivity relations is described. Cases are presented exhibiting contact dermatitis with reactivity to intradermal injections of metals but without reactivity to patch tests, which proves that some cases of contact dermatitis are based slowly on dermal delayed sensitivity. Cross sensitivity between nickel and copper is reported.

-- Author's summary

- 865 Standards for the Classification of Occupational Dermatoses. M. Salinas.
Med. y Segur. Trab. 4, 69-79 (Oct. - Dec. 1955). Spanish.

Noting that different writers adopt different bases for the classification of occupational dermatoses, the author has attempted to devise a system that would encompass these different viewpoints. A tabular outline lists for a specific dermatosis, (1) the etiology-pathogenesis; (2) the morphology and; (3) the occupations in which it may occur.

- 866 Contribution to the Study of Cement Dermatitis. M. Salinas and E. Subiza.
Med. y Segur. Trab. 3, 24-32 (Oct. - Dec. 1954). Spanish with English summary.

Several authors in different countries have pointed out that cement dermatitis is associated with the presence of chromate in the cement. This paper examines this association so far as it relates to cements used in Spain. Chromium was present in all 4 samples of cement examined spectroscopically. Patch tests for cement and for chromate were applied to 24 patients suffering from dermatitis attributed to cement. In 9, the

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reaction was positive both to cement and to chromate (3% potassium bichromate); in 4, positive to chromate only; in 6, positive to cement only; and in 5, negative to both. In the 6 patients positive to cement, one was also positive to nickel and one weakly positive to cobalt. Patch tests with different dilutions of cement and chromate showed that each subject reacts only above a limiting value of chromate and of cement, and that the two limits are not correlated. In the production of cement dermatitis it appears that there are two concurrent factors: a metallic ion which may be a definite antigen or a semi-antigen and a factor which allows penetration of the skin. This factor may include alkalinity and a physical element producing microscopic lesions accompanied by perspiration. A study of the pH of the normal skin and that of the lesions showed that generally there is a distinct tendency to alkalinity, especially in the acute cases. -- Cond. from Bull. Hyg.

- 867 Contribution to Cement Dermatitis. Importance of Chromium, Nickel and Cobalt Ions as Specific Sensitizing Factors. M. Salinas and E. Subiza. Med. y Segur. Trab. 4, 13-23 (Jan. - Mar. 1956). Spanish.

In 37 workers with cement dermatitis patch tests showed 87% sensitive to chromium, 59% to cobalt and 45% to nickel. Manganese, determined spectrographically to be present in cement, produced no evidence of sensitivity. Monosensitization was rare, polysensitizations being more frequent, especially to chromium, cobalt and nickel or cobalt and chromium. It is suggested that a suspected cement dermatitis can be verified if the patch test is positive with cobalt, nickel or chromium ions, even though negative with the cement itself. The authors conclude that the raw materials used in the manufacture of cement are of greater importance as vectors of these ions than the metal particles that may enter the cement through any grinding process. They offer as explanation the alkalinity that wet cement exerts upon the surface of the skin. -- Cond. from English summary

CHEMICAL HAZARDS

- 868 Blood Glutathione and Hydrogen Cyanide Poisoning. G. Paulet. Compt. rend. 240, 1665-1667 (Apr. 1955). French.

The blood glutathione increases during poisoning with hydrogen cyanide. The relative importance, in bringing about this change, of the increase in circulating red cells and the mobilization of liver glutathione is discussed. The major part of the increase occurs in the blood supporting the second mechanism of hepatic discharge. This phenomenon explains the good results obtained in HCN poisoning by the injection of glutathione. The part played by glutathione in the oxidation-reduction reaction of cellular respiration is described. -- Arch. Ind. Health

- 869 Chronic Subacute Hydrogen Cyanide Poisoning in Man. S. Carmelo. Rass. med. ind. 24, 255-271 (1955). Italian.

A study was made of the inhalation of hydrogen cyanide on 600 laborers. A high percentage of workers suffering from acute HCN poisoning showed an intoxication of the nerve centers accompanied by disturbance in equilibrium, dizziness, nystagmus, and Moebius' disease. Pains in the pre-cordial region were experienced by 9 out of 13 workers. Electrocardiograms showed in 11 out of 13 cases an alteration of the ST tract and of the T wave in AVL often accompanied by an alteration of the terminal phase in D₃ and V₆. In 11 out of 13 cases x-ray examinations of the stomach and the duodenum showed marked signs

of hypertrophic gastritis. A high percentage of patients showed an increase in globulins and hemoglobin with a slight tendency to stress lymphocytosis. -- Chem. Absts.

- 870 Tolerances for Residues of Hydrogen Cyanide. Anon.
Federal Register 21, 1172 (Feb. 21, 1956).

A tolerance of 25 ppm of hydrogen cyanide is established under the Federal Food, Drug, and Cosmetic Act from post-harvest fumigation on almonds, barley, beans (dried), cashews, cocoa beans, corn, peanuts, peas (dried), pecans, popcorn, rice, rye, walnuts, and wheat. -- Chem. Absts.

- 871 Selenium in Apples—Effect of Applications of Selocide to the Tree and the Soil.
Helen E. Barr, P. J. Clark, and H. Jacks. New Zealand J. Sci. Technol. 37B, 119-125 (1955).

Analysis of apples and trees which received annual spring applications of Selocide (31% by weight $(\text{KNH}_4)_2\text{Se}$), 1 pint in 100 gallons, showed no progressive increase in the selenium content of the fruit or the tree. Heavy spray applications, 2 pints in 100 gallons, brought about an increase in the selenium in the fruit harvested in 2 subsequent years. Application of Selocide to the soil did not increase the selenium content. Applications of Selocide controlled the red mite until midsummer. Selenium residues found in the trials show that Selocide can be safely applied to apples in the early growing season.

-- Chem. Absts.

- 872 Urticaria Following Exposure to Ammonia Fumes.
G. E. Morris. Arch. Ind. Health 13, 480 (May 1956).

The author presents the case histories of two workers who suffered hives on six different exposures to ammonia fumes.

- 873 Hydrogen Peroxide. Chemical Safety Data Sheet SD-53. Revised. Manufacturing Chemists' Association, 1625 Eye St., N. W., Washington 6, D. C. 17 pp. (1955)
Obtainable at above address, 30 cents.

The following summary of the first edition (IHF Abst. 939, Sept. 1953) still applies:

"Hydrogen peroxide water solutions containing over 8% hydrogen peroxide by weight are classified by the Interstate Commerce Commission as corrosive liquids. Hydrogen peroxide may cause spontaneous combustion if allowed to remain in contact with readily oxidizable organic materials. It may have an irritating effect on the skin, mucous membrane, and eyes, particularly in the higher concentrations. If it is swallowed, the sudden evolution of oxygen may cause injury to the stomach or esophagus. The principal features in safe handling of the material include: (1) avoiding contact with skin or eyes; (2) avoiding contact with combustible materials; (3) storing only in compatible materials; (4) observing all Federal, State, and local regulations with regard to waste disposal; and (5) administering first aid after exposure to hydrogen peroxide. Directions are given for observance of all these precautions."

One precaution added in the revision is that contact of hydrogen peroxide with such materials as lubricating oils and "pipe dope" should be avoided. Other additions deal with the use of newly developed containers, and additional references are given to ICC regulations.

- 874 Studies on the Experimental Pathology and Biochemistry of the Pulmonary Granulomatosis of Beryllium Workers. Section 2. Consolidated Progress Report. G. W. H. Schepers. Atomic Energy Commission, Publication AECU-3140, 39 pp. (Apr. 25, 1955). Supplement: A Review of the Physical Chemistry of Beryllium. L. D. Scheel. 57 pp. (May 10, 1955).

The status of research is reviewed in a study of pulmonary granulomatosis in beryllium workers. Equipment for use in dust exposure studies is described. Preliminary

03120213

results are reported from studies on the tissue distribution and pathological effects of beryllium dust in rats; the physical chemistry of solutions of beryllium salts; the effects of beryllium on the enzyme system; and the effects of ascorbic acid on beryllium excretion.

-- Nuclear Sci. Absts.

- 875 The Antidote Action of EDTA in Experimental Cadmium Poisoning.
U. Scudier, Med. lavoro 46, 559-564 (Oct. 1955). Italian.

Cadmium administered to animals as soluble salt is highly toxic even in small doses, causing alterations, macroscopically shown by post mortem examination, not only in the excretive organs but also in the different parenchymas. Cadmium introduced as a chelating agent of ethylenediaminetetraacetic acid is much less toxic than in the form of soluble salt. Disodium calcium EDTA administered to animals in suitable doses with cadmium was shown to prevent the appearance of toxic symptoms and organic impairment. When injected intravenously, 10 to 12 minutes after the cadmium, it is capable of saving the animals and diminishing the symptomatology and alterations of the organs. From the results of these experiments it is hoped that the treatment may be introduced as a clinical therapy.

-- English summary (Bull. Hyg.)

- 876 Treatment of Lead Poisoning by Edathamil Calcium-Disodium.
D. O. Shiels, D. L. G. Thomas, and E. Kearley. Arch. Ind. Health 13, 489-498 (May 1956).

Edathamil calcium-disodium taken orally in doses of 2 gm. twice a day for adults caused from fivefold to thirty-five-fold increases in urinary lead concentration and from fivefold to twenty-two-fold increases in urinary lead excretion. In some instances this occurred on the first day of treatment. This method of treatment caused very considerable increase in fecal lead excretion. It caused immediate falls and subsequent rises in blood lead concentration in some cases and in another case a steady fall. In most instances the amounts excreted in the urine alone greatly exceeded the amount circulating in the blood prior to treatment. No serious untoward symptoms occurred during the course of treatment in our own cases. The clinical results were very favorable, amelioration of symptoms being noted early in the treatment. The method is capable of causing removal of lead from the bones.

-- Authors' summary

- 877 Treatment of Tetraethyl Lead Poisoning by Intravenous Injections of Disodium Calcium Ethylenediaminetetraacetate. M. Salvini and U. Scudier. Med. lavoro 46, 526-532 (Oct. 1955). Italian.

On the basis of researches made on rabbits poisoned with tetraethyl lead by inhalation, the authors show that an antidote action of the drug can be obtained by previously giving the animals disodium calcium EDTA several days in succession. The favorable therapeutic result is attributed to the gradual preventive accumulation of efficient doses of EDTA in the tissues rapidly reached by otherwise fatal quantities of tetraethyl lead. The diffusion characteristics of any chelating agent should not differ from those of tetraethyl lead, otherwise it will be necessary to follow a route other than the intravenous. Preliminary results of experiments carried out with disodium calcium EDTA administered through the intraspinal route are reported.

-- Cond. from English summary (Bull. Hyg.)

- 878 Exposure and Hazards from Organic Mercury Compounds in Connection with Seed Dressing on Small Farms. G. Bloom, K. D. Lundgren, and A. Swensson. Nord. Hyg. Tidskr. 36, 110-117 (1955)

In earlier papers, the authors reported studies on exposure and hazards in handling mercury compounds at seed control stations, seed dressing plants, and seed disinfectant factories. In this paper a study on exposure and hazards in connection with seed dressing on small farms is reported. The study included 89 small farms in Sweden. On these farms seed was treated during one or two days only, but as a rule the work was performed under

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rather poor conditions. Some persons experienced slight catarrhal symptoms, especially when powder was used. In no case were any symptoms of general poisoning reported. The mean value of mercury excretion in the urine was 6.1 micrograms per liter. About half the group did not excrete mercury at all, the rest up to 19 micrograms per liter. No difference between treating with powder preparations and oil preparations was found in this respect.

-- Cond. from authors' summary (Arch. Ind. Health)

- 879 Nickel Poisoning. 3. Procedures for Detection, Prevention, and Treatment of Nickel Carbonyl Exposure, Including a Method for the Determination of Nickel in Biological Materials. J. F. Kincaid, E. L. Stanley, C. H. Beckworth, and F. W. Sunderman. Am. J. Clin. Pathol. 26, 107-119 (1956).

Procedures for the detection, prevention, and treatment of exposure to nickel carbonyl are described. Determination of nickel in air or in biological fluids is based on colorimetric measurement of the reaction product with dimethylglyoxime or spectrophotometric measurement of the diethyldithiocarbamate complex. (For earlier paper see IHF Abst. 878, Aug. 1954.)

-- Chem. Absts.

- 880 Industrial Thallium Poisoning. B. Egen. Zentr. Arbeitsmed. u. Arbeitsschutz 5, 141-144 (Sept. 1955). German.

Since the introduction of the use of thallium compounds in medical therapy and particularly since their employment as insecticides, cases of poisoning through accidental administration or as the result of suicidal or homicidal attempts have been not uncommon. In contrast to this, records of industrial thallium poisoning are scanty. Some particulars of the chemistry of thallium compounds and of their uses in industry, together with some description of the literature of poisoning by thallium, introduce an account of a 45-year-old worker in a lithopone factory who, after 24 years of this employment, and in spite of the use of protective clothing and mask, developed the symptoms and signs of poisoning. The nature of his employment, the onset of symptoms and the clinical course of the condition are fully described. The main points in the picture were an ascending polyneuritis of Landry type with disturbances of sight and speech and loss of hair. Thallium was demonstrated in the urine. The worker, though improved under treatment, was still incapacitated after 8 months. It is considered that thallium poisoning should be added to the German list of industrial poisonings for which compensation is granted.

-- Bull. Hyg.

- 881 Experimental Poisoning by Uranyl Nitrate. Biochemical and Morphological Study of Kidney. I. F. Passalacqua, F. Rilke, and V. Scortecchi. Med. lavoro 46, 699-714 (1955). Italian with English summary.

Death of every rat (150 g.) was caused by 4 mg. uranyl nitrate hexahydrate by intramuscular injection, while 2 mg. caused no mortality. Injections of 2 mg. and 1 mg. were followed by an increase in phosphorus between the 48th and 96th hours in the kidneys. Histological examinations of the kidneys showed albuminoid and fatty degeneration and necrosis.

-- Chem. Absts.

- 882 Acute Poisoning with Petroleum. Hematological and Electrocardiographic Findings. V. Cali. Folia Med. 38, 1352-1361 (1955). Italian.

Two cases of poisoning by exposure to petroleum vapors are reported. The first showed macrocytic, hypochromic anemia and block of erythrocyte maturation in the bone marrow; the second, disturbances in the myocardial excitability manifested by polymorphous ventricular extrasystoles. (Concentration and composition of the vapor are not given.)

-- Chem. Absts.

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- 883 Acute Poisoning by Tetramethylthiuram Disulfide. A. Lavarino and A. Masoero. *Rass. med. ind.* 24, 458-461 (1955). Italian.

A case of acute poisoning by tetramethylthiuram disulfide of a worker in a rubber plant is described. The main symptoms are urticaria, rhinitis, conjunctivitis, and bronchitis. There is also a hepatic insufficiency with slight renal suffering.

-- Chem. Absts.

- 884 Fumigation of Grain and Flour. Queries & Minor Notes, *J. Am. Med. Assn.* 161, 485 (June 2, 1956).

A patient who had been exposed to methyl bromide in the fumigation of grain and flour developed a disability in the use of the right hand and a speech aphasia. Information about other cases is requested. The reply states that methyl bromide is a profoundly toxic agent attacking many organs and systems but with predilection for pulmonary and nervous system tissues, especially the former. Hemorrhage within the central nervous system and thrombosis are possible. Next to visual disturbances, speech dysfunction dominates the clinical picture in those cases with central nervous system involvement. While thrombi and emboli are a prospect, it is possible that the inquirer overstressed their significance. Severe damage may arise in their absence. Methyl bromide victims are prone to psychological reactions, with neuroses becoming in the long, drawn-out cases more difficult to eradicate than organic damage. The rule is in nonfatal cases that reversible processes eventuate in full recovery. An essential part of therapy is to guide the patient away from long, persistent functional residuals.

- 885 Arterial Pressure in the Retina in Occupational Poisoning with Carbon Disulfide. L. Ambrosio, V. Mazza, and S. De Simone. *Folia Med.* 38, 1337-1351 (1955). Italian.

Twenty workers exposed to carbon disulfide for 2 to 4 years and showing some signs of intoxication were examined. Nine showed a marked increase in the retinal arterial pressure and only 3 had normal readings. There was some evidence of damage to the retinal arteries. The effect is attributed to sclerosis of the cerebral arteries caused by carbon disulfide.

-- Chem. Absts.

- 886 Toxicological Studies on Hydrocarbons. 2. A Comparative Study of the Effect of Benzene and Certain Mono-n-alkylbenzenes on Hemopoiesis and Bone Marrow Metabolism in Rats. H. W. Gerarde. *Arch. Ind. Health* 13, 468-474 (May 1956).

Benzene administered subcutaneously to rats at a daily dosage of 1.0 ml. per kg. of body weight for 14 days causes a loss in body weight, a leucopenia, involution of the spleen and thymus, and a decrease in femoral marrow nucleated cell count and nucleic acid. The hematocrit was not significantly affected. Rats given the same dosage of toluene, ethylbenzene, normal propylbenzene, and normal butylbenzene gained weight and had a normal or increased peripheral blood leucocyte count, thymus and spleen weight, femoral marrow nucleated cell count, and femoral marrow nucleic acid. The injury to hemopoietic tissues caused by benzene is reversible, in spite of severe tissue destruction, if the benzene treatment is discontinued. Except for differences in body weight as compared with the controls, the benzene-treated animals were normal three weeks after receiving the final dose of benzene. It appears that the introduction of an alkyl group into the aromatic ring results in a loss of the myelotoxicity of benzene. These studies suggest that benzene may be unique among the monocyclic aromatic hydrocarbons in its myelotoxic property.

-- Cond. from author's summary

03120216

- 887 The Histochemistry of Peripheral Blood in Industrial Poisoning with Benzene and Heptane. A. N. Cesaro and A. Granata. *Acta Histochem.* 2, 88-96 (1955). Italian.

A reduction of sudanophilic granules in all leucocytes and a reduction in polysaccharides in neutrophils accompanied both types of poisoning in human subjects. No change from normal could be detected in peroxidase, acid or alkaline phosphatase, or nucleic acid reactions.

-- Chem. Absts.

- 888 Benzene. Chemical Safety Data Sheet SD-2, Second Revision. Manufacturing Chemists' Association, Inc., 1625 Eye St., Washington 6, D. C. 18 pp. (1956). 30 cents.

Benzene presents a fire and explosion hazard and is highly toxic. Continued inhalation of low concentrations may cause serious, even fatal, blood changes. The liquid after prolonged contact may cause defatting of the skin, resulting in dermatitis or secondary infection. Some of the principal precautions are: (1) keep away from sparks or open flame; (2) provide adequate ventilation; (3) ground all containers and equipment before discharge to reduce danger from static electricity; (4) avoid inhalation of the vapor; (5) avoid skin contact with the liquid; and (6) follow Interstate Commerce Commission Regulations and other applicable requirements in regard to shipping containers, loading, unloading, and labeling. These regulations are rather fully summarized with references to the originals. Chemical and physical properties are listed. Health hazards and engineering, educational, and medical measures for their prevention and control are described. The material has been revised in accordance with additional knowledge.

- 889 Naphthalene. Chemical Data Sheet SD-58. Manufacturing Chemists' Association, Inc. 1625 Eye St., N. W., Washington 6, D. C. 12 pp. (1956). 30 cents at above address.

Naphthalene is not classified as a dangerous chemical and therefore is not subject to Interstate Commerce Regulations governing the transportation of hazardous articles. However, fire and explosion hazards exist, and there is the risk of burns when the molten substance is handled. Precautions necessary in the handling of naphthalene and details of personal protective equipment and first aid procedures are described in detail. Some of the principal points to observe are: (1) fire hazard; (2) explosion hazard of the vapor or dust; (3) reaction of molten naphthalene (above 110° C) on contact with water, resulting in violent foaming and even explosion; (4) need for protective equipment for eye, face, respiratory system, body, skin, and hand; and (5) first aid procedure.

-- Cond. from author's summary

- 890 Chronic Toxicity Studies on Alkyl Phenyl Phenate. N. R. Brewer, A. J. Carlson, and Anne Pratt. Food Research 20, 531-538 (1955).

Alfentan, alkyl phenyl phenate, prevents crystallization and separation in emulsions and stearins. Chronic toxicity experiments for 2 years with rats and for 1 year with dogs at very high dose levels were entirely negative as to growth, life span, hematology, and histopathology.

-- Chem. Absts.

- 391 Polyneuritis after Exposure to Dinitro-Ortho-Cresol. H. Stott. Brit. Med. J. 1, 900-901 (Apr. 21, 1956).

Two cases of polyneuritis following exposure to dinitro-o-cresol are described in detail. The exposures occurred among staff who were servicing aircraft used for spraying the material on locust swarm. Cases of peripheral neuritis caused by dinitrophenal have been reported previously.

- 892 The Insecticides—Their Hazard in Industry and in the Home. 1. Chemistry and Pharmacology. T. J. Haley, Calif. Med. 84, 258-264 (Apr. 1956).

Chemical, pharmacologic, and toxicologic properties of the chlorinated hydrocarbon and organic phosphate insecticides are reviewed. The chlorinated hydrocarbon group present problems in either acute or chronic exposure, whereas the problems associated with the organic phosphates develop only in event of toxic exposure. Chlorinated hydrocarbon insecticides accumulate in body fat deposits and cause both liver and kidney damage while being metabolized and excreted. Organic phosphates destroy cholinesterase and produce effects related to the overstimulation of the cholinergic branch of the autonomic nervous system. Barbiturates control the convulsions produced by the chlorinated hydrocarbon

insecticides. Atropine blocks most of the effects of the organic phosphate insecticides. These compounds may be grouped in the following order of decreasing toxicity: TEPP, HETP, parathion, OMPA, ENP, aldrin, dieldrin, chlorophenothane, toxaphene, gamma benzene hexachloride, malathion, and chlordane. -- Editor's summary

- 893 The Insecticides—Their Hazard in Industry and in the Home. 2. Clinical Aspect.
R. T. Johnstone. Calif. Med. 84, 265-268 (Apr. 1956).

It is imperative that information be widely disseminated regarding proper cautionary measures in the use of organic insecticides, as well as the early signs and symptoms of toxicity. Procedures in the determination of toxicity of the chlorinated hydrocarbon and organic phosphate insecticides are described. Diagnosis, treatment, and prevention are discussed.

- 894 Tolerances for Endrin. Anon.
Federal Register 21, 1348 (Mar. 1, 1956).

A tolerance of zero is established under the Federal Food, Drug, and Cosmetic Act for endrin on cabbage, cottonseed, cucumbers, eggplant, peppers, potatoes, sugar beets, sugar beet tops, summer squash, and tomatoes. -- Chem. Absts.

- 895 Tolerances for Residues of Sodium o-Phenylphenate. Anon.
Federal Register 21, 1172 (Feb. 21, 1956).

A tolerance of 10 ppm of this chemical (calculated as o-phenylphenate) is established under the Federal Food, Drug, and Cosmetic Act on oranges, lemons, grapefruit, tangerines, limes, tangelos, citrus citron, and kumquats. -- Chem. Absts.

- 896 Tolerances for Residues of p-Chlorophenyl p-Benzene-sulfonate. Anon.
Federal Register 21, 16-39 (Mar. 15, 1956).

Tolerance under the Federal Food, Drug, and Cosmetic Act for residues of this chemical are established at 5 ppm in or on grapefruit, lemons, oranges, tangerines, and 3 ppm for apples, peaches, pears and plums (prunes). -- Chem. Absts.

- 897 A Review of Organic Phosphorus Insecticides. Part 1. Introduction and General.
R. G. Borradas. Chem. Age 74, 899-903 (Apr. 21, 1956).

This is the first of 6 papers constituting a review of the organic phosphorus insecticides. Since the recognition of the insecticidal properties of DDT by Muller in 1939, the development of insecticide research has proved highly eventful. The main scientific concern is with insect control; but complicated and necessary legal aspects must be closely concerned before an insecticide is released for use by the general public. The introduction of DDT led to the development of other effective hydrocarbons, such as aldrin, dieldrin, toxaphene, chlordane, hexachlorocyclohexane, and heptachlor. Later, the search for substitutes for nicotine insecticides led to the synthesis of the organic phosphorus insecticides. Structural and empirical formulas and properties are tabulated for parathion, malathion, methyl parathion, paraoxon, EPN, TEPP, schradan (OMPA), chlorothion, and diazinon, and the chemical names of pestox, isopestox, dipterex, and some of the numbered compounds are given.

- 898 A Review of Organic Phosphorus Insecticides. Part 2. Colorimetric Methods of Analysis.
R. G. Barradas. Chem. Age 74, 1125-1129 (May 19, 1956).

Several methods of colorimetric analysis of parathion in insecticides and in residues are described. Methods for schradan, systox, and dimefox or mipafox are also presented. A number of references are given.

03120218

- 899 Therapeutic Factors in Survival after Lethal Cholinesterase Inhibition by Phosphorus Insecticides. G. Freeman, and M. A. Epstein. *New Engl. J. Med.* 253, 266-271 (Aug. 18, 1955).

Intoxication with lethal doses of phosphorus insecticides, or of nerve gases, generally can be contained and reversed with treatment applied early and vigorously. The efficacy of atropine in blocking and reversing the toxic action of excessive acetylcholine has been remarkable. It not only has controlled the protean respiratory and central neural manifestations of poisoning but also has strikingly facilitated the administration of air or oxygen when breathing failed. It appeared to relieve the mechanical obstruction caused by hypersecretion, and allowed recovery of the blocked respiratory centers. Thus, respiration was resumed spontaneously or maintained by artificial means. Also, mechanical clearing of the airways was frequently essential and was managed generally by repeated aspiration and occasionally, by intubation of the larynx as well. Man has been resuscitated on occasion, without the aid of atropine, although lethally intoxicated, by effective ventilation. Data indicate strongly that atropine, given promptly in quantities greater than 3 mg. within the first 5 hours (while circulation is still efficient) and continued as necessary is likely to revive persons severely poisoned with parathion. Rapid poisoning by more toxic and volatile materials, such as TEPP and nerve gases, requires more prompt and vigorous measures of the same type. -- Authors' summary

- 900 The Action of Thiophosphoric Esters on the Human Organism. M. Floris and P. Cossu. *Rass. med. ind.* 24, 246-254 (1955). Italian.

A study was made of the effect of insecticides of thiophosphoric esters used in malarial regions on 20 laborers. Precautions were taken to avoid direct contact of the esters with the bodies of the laborers. Cholinesterase determinations of the blood serum were made at 5-day intervals for 30 days. There was a general decrease in cholinesterase, varying between 3.8 and 6.2 mg. %. The laborers showing a low cholinesterase content at the beginning showed a rapid decrease of cholinesterase accompanied by some intestinal disturbances and lack of appetite. Administration of vitamin B₁₂ removed these disturbances. A few fatal cases from fruit farms in which thiophosphoric esters were used were reported. -- Chem. Absts.

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INDUSTRIAL DUSTS

- 901 Survey of Dust-Control Practices in the Coal-Mining Industry. R. W. Barnes, M. J. Gregory, C. W. Owings, and L. B. Berger. *Bur. Mines Inf. Circ.* 7733, 49 pp. (Apr. 1956). Obtainable free from Publications Div., Bureau of Mines, 4800 Forbes St., Pgh. 13, Pa.

Results of the survey indicated that the larger mines seemed the most dust-conscious, whereas most of the smaller mines appeared to pay little or no attention to the dust problem or to have concluded, in the case of wet mines, that no such problem could exist. Water was the chief agent used to prevent the dissemination of dust and in efforts to allay dust that had become airborne. Water was not always entirely effective but usually had some beneficial results. Few mines added wetting agents to the water. Dry dust collectors were employed mainly in connection with roof drilling for roof bolting. Manufacturers of mining equipment should consider means for dust control as a necessary and integral part of the design of the equipment. Better application of the existing systems for dust control also was a need, as the survey showed that the controls used were, on the whole, effective in only about 50% of the applications. The survey showed that the necessity for dust control is being recognized in the coal-mining industry, but that improved

IN RE: ABRAMS November 1993

measures of suppression are needed in many instances and that the problem should be attacked on a broader scale. -- Cond. from authors' conclusions

- 902 Drill-Dust Collectors Approved by the Bureau of Mines as of January 31, 1956. C. W. Owings, F. G. Anderson, J. P. Harmon, L. Johnson, and L. B. Berger. Bur. Mines Inf. Circ. 7741. 25 pp. (Mar. 1956). Obtainable free from Publications Div., Bureau of Mines, 4800 Forbes St., Pgh. 13, Pa.

This circular describes briefly the requirements and procedure for approval and lists drill-dust collectors that have been granted approval as of Jan. 31, 1956. The addresses of manufacturers of approved devices are listed alphabetically at the end of the circular.

- 903 The Dust Produced by Rotary Drilling Machines. Part 2. Power Consumption in Relation to Dust Production. S. R. Asquith, G. Broomhead, and J. T. Burdekin. Great Britain, Safety in Mines Research Establishment, Research Rept. No. 109. 24 pp. (Jan. 1955). 35 cents.

Continuing their work on rotary drilling, the authors investigated the relationship between power consumption and three variables: speed of revolution, rate of penetration, and sharpness of bit. Results show that the power input varies with speed of revolution and rate of penetration, but is independent of sharpness of bit. The conditions for minimum dust production are the same as those for minimum power consumption, and comprise slow speed of revolution and high rate of penetration, for a given depth of hole. The dust produced per unit depth is inversely proportional to the depth per revolution. Therefore it pays to use a high torque so as to drill rapidly. Clogging of the bit sets a limit to the rate of penetration, but can be prevented by modifying the design of the bit or flushing the drillings away with water or air. -- Cond. from Bull. Hyg.

- 904 Dust Suppression by Dust Traps during Drilling. S. R. Asquith, G. Broomhead, and J. T. Burdekin. Research Rept. No. 111, Safety in Mines Research Establishment, Portobello St., Sheffield, England. 22 pp. (Feb. 1955). 35 cents.

During experimental dry percussion drilling airborne particles between 0.5 and 5 microns in diameter were disseminated at about half a million per minute. By means of certain dust traps this figure could be reduced to 2000 or less, an efficiency exceeding 99.5%. The traps used, the Belgian, Dryductor, and Hemborn, are fully described. Comparisons of various types of separator for cleaning the exhausted air are also described. It is shown that water scrubbing is unsatisfactory, and that a filter is necessary for certain removal of fine particles. -- Cond. from Bull. Hyg.

- 905 The Action of Dusts and Pharmacological Agents on Respiration. Part 2. Vital Capacity, Maximum Expiratory Volume per Second, and Sibilant Rales before and after Work in a Dusty Atmosphere. J. Pestiaux, E. Gielen, G. Degueudre, and F. Lavenne, Report No. 130, Institut d'Hygiene des Mines, Hasselt, Belgium. 33 pp. (Sept. 1955). French.

The data analyzed in this study were the same as those used in the first part (Report No. 125, IHF Abst. 17, Jan. 1956). No correlation was found between the maximum respiratory volume per second and the amount of dust present in the air. Bronchoconstriction after work was manifest only in particularly sensitive men. Absence from work for the week-end or longer made no difference in the pulmonary function. Variations from the average depended upon variations in the clinical conditions of the men as regards the presence of a certain amount of pneumoconiosis. Sibilant rales were the most frequent signs of bronchial trouble. Most of the men exhibited them, generally during the hour after work and during the winter and spring months. Nothing in the study gives support to the view that the inhalation of bronchodilating aerosols would be of use to miners, except as treatment during bronchitic episodes; certainly there is nothing in favor of preventing pneumoconiosis

by collective aerosol "seances" after work. This interesting study did not bring to light any unexpected finding. -- Cond. from Bull. Hyg.

- 906 The Fibrinogen of the Blood in Silicosis and Silico-Tuberculosis among Coal Miners. J. Prignot. Arch. belges med. sociale hyg. 13, 423-428 (July 1955). French.

The study reported was made upon 93 coal miners of Campine who had been employed for not less than 10 years with considerable exposure to dust. For each the blood fibrinogen and the sedimentation rate were calculated. Each of the men had some degree of pneumoconiosis with or without tuberculosis. The patients were then grouped according to the extent of the pneumoconiosis, from slight to advanced, with a separate group for tuberculous patients. The results are shown in tables. They indicate that the amount of fibrinogen increases as the pneumoconiosis becomes more and more severe and also with the presence of tuberculosis: with this increase was an increase in the rapidity of sedimentation. The normal values of fibrinogen calculated by gravimetric analysis were found to be between 200 and 400 mg. %; these values rose as high as 520 and even 770 mg. %. As the rapidity of sedimentation is influenced by other factors as well as by fibrinogen, the correlation here was not complete. -- Bull. Hyg.

- 907 Atelectasis Due to Bronchial Obstruction in Silicosis with Particular Attention to the Middle-Lobe Syndrome. B. Pernis and M. Battigelli. Med. lavoro 46, 605-622 (Nov. 1955). Italian.

Ten cases of lobar atelectasis have been observed among 600 cases of reticular or nodular silicosis. The middle lobe was involved in 8 cases, the right upper lobe in two. The authors believe that lobar atelectasis in silicotics is mostly due to the silicosis of hilar lymph nodes. The action of the silicotic nodes on the bronchial wall may be direct or indirect; in the latter case the bronchial obstruction is often the consequence of an invasion of silicotic tissue, beyond the capsule of the lymph nodes, into the walls of adjacent bronchi. This condition explains the high incidence of middle-lobe atelectasis among the cases. The over-all incidence of lobar atelectasis is not very high in silicosis, but it is of definite practical significance, in view of the cases studied. In these cases the lobar atelectasis is the outstanding feature of the clinical and radiological picture, and is also the most important fact to be considered in the evaluation of disability.

-- Cond. from English summary (Bull. Hyg.)

- 908 Experimental Infective Pneumoconiosis. 2. Coal-Mine Dust with Attenuated Tubercle Bacilli (BCG) in the Lungs of Immunized Guinea Pigs. S. H. Zaidi, C. V. Harrison, E. J. King, and D. A. Mitchison. Brit. J. Exptl. Pathol. 36, 539-544 (Dec. 1955).

The combined action of coal-mine dust and living tubercle bacilli (BCG) and their individual effects were studied in the lungs of sensitized guinea pigs. Coal-mine dust produced no pulmonary fibrosis, BCG alone caused proliferative lesions which reached a peak at 60 days, followed by resolution, with no evidence of disease after 150 days. Coal-mine dust plus BCG produced proliferative and extensive lesions. The peak of disease was reached at 120 to 150 days; the disease then regressed gradually over a period of one year. There was a loose reticulosis of the lesions and no necrosis. -- Am. Rev. Tuberc.

- 909 Experimental Infective Tuberculosis. 3. Coal-Mine Dust and Isoniazid-Resistant Tubercle Bacilli of Moderate Virulence. S. H. Zaidi, C. V. Harrison, E. J. King, and D. A. Mitchison. Brit. J. Exptl. Pathol. 36, 545-551 (Dec. 1955).

The combined action of coal-mine dust and tuberculous infection produced by catalase-negative isoniazid, streptomycin, and PAS-resistant strain 3073 of *M. tuberculosis* of moderate virulence, and the individual effects of strain 3073 and coal-mine dust, were studied by the intratracheal injection of these substances in guinea pigs. Strain 3073 alone produced fibrocaseous lesions which regressed, leaving small calcified nodules as the only

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evidence of previous infection. Coal-mine dust alone produced no fibrosis. The combination of bacilli and dust produced tuberculous cavities involving large areas of lung tissue, and killed the guinea pigs.

-- Am. Rev. Tuberc.

- 910 Experimental Infective Tuberculosis. 4. Massive Pulmonary Fibrosis Produced by Coal-Mine Dust and Isoniazid-Resistant Tubercle Bacilli of Low Virulence. S. H. Zaidi, C. V. Harrison, E. J. King, and D. A. Mitchison. *Brit. J. Exptl. Pathol.* 36, 553-559 (Dec. 1955).

The effects of intratracheal injection of coal-mine dust, a catalase-negative isoniazid-resistant strain of tubercle bacilli of low virulence, and a combination of dust and bacilli were studied in the lungs of guinea pigs. The bacilli alone produced lesions which tended to disappear after 90 days, and the only evidence of tuberculosis at 300 days was a few calcified nodules in some of the lungs. While coal-mine dust itself produced no pulmonary fibrosis, the combined action of the dust and bacilli produced massive pulmonary fibrosis. In its early stages, the fibrosis was composed mainly of thick reticulin fibers and collagen, but later more collagen was formed. Serial cultures of the lungs injected with coal dust and bacilli yielded growth of tubercle bacilli up to, but not beyond, 120 days. The largest number of organisms was found at 30 days. In animals infected with bacilli alone, no growth could be obtained from lung cultures other than those from guinea pigs killed one day after injection.

-- Am. Rev. Tuberc.

- 911 Costal Pleura and Pleural Adhesion Silicotic Pigmentation. D. Schwenkenbecher. *Tuberkulosearzt* 9, 592-595 (Oct. 1955). German.

A pneumothorax for cavernous tuberculous disease was induced in a patient who had worked as a bricklayer for fourteen years. During a pneumonolysis, a silicotic deposit was observed in the pleural adhesions as well as in the costal pleura. The suspicion of silicotuberculosis was verified by biopsy following eventual lobectomy. Silicotic deposits in the costal pleura are rare. They are usually localized in the neighborhood of the pleuro-pulmonary adhesions and are believed to come from the lymphatic system. In the present case the chest roentgenogram gave no indication of silicotuberculosis.

-- Am. Rev. Tuberc.

- 912 Roentgenographic Complications of Pulmonary Asbestosis. G. Jacob and H. Bohl. *Fortschr. Gebiete Rontgenstrahlen* 83, 515-525 (Oct. 1955). German.

Over a period of approximately twenty years, 343 cases of asbestosis, 130 in women and 213 in men, were observed in Dresden, a center for industries using asbestos. The most common complications were pleural thickening, compensatory emphysema, and nonspecific peribronchial, peribronchiectatic, and bronchopneumonic inflammations. Pleural changes were found in 49 per cent of the cases, 5 per cent of which had extensive, irregularly shaped calcifications. Active pulmonary tuberculosis was present in 4.4 per cent of the cases; bronchogenic cancer was not more frequent than in the general population but, when present, was found relatively often in the lower lobe.

-- Am. Rev. Tuberc.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 913 Industrial Noise and How to Deal with It. H. A. Carter. *Arch. Phys. Med.* 37, 152-158 (Mar. 1956).

This paper deals briefly with noise sources, dangerous noise levels, noise measurement, effects on hearing, protection, noise reduction, and medico-legal aspects.

03120222

IN RE: ABRAMS November 1992

WAB-0016649

914 Does Noise Affect You and Your Work?

L. N. Miller. *Safety Maint. & Prod.* 111, 42-49 (June 1956).

The author reviews several studies of the effects of noise, on annoyance, efficiency, fatigue, and speech communication, and hearing. The general conclusions from the studies on efficiency and fatigue are: (1) noise does not appear to affect significantly the mental or motor skills of individuals; in the performance of simple tasks, action becomes automatic and not adversely influenced by noise, and in difficult tasks, action is concentrated on the task and the noise is ignored; (2) with prolonged exposure, individuals become adapted to the noise environment, but short-term changes in the noise environment require short periods of adjustment and frequently produce short-time improvements; and (3) high noise levels give rise to feelings of annoyance and irritability, and possibly fatigue. The factors associated with neighborhood noise are discussed. Briefly, they include: (1) background noise levels; (2) time of day or night; (3) previous exposure; and (4) miscellaneous connotations of the noise (political, legal, and economic effects). A number of conclusions are presented on the effect of noise on speech communication. In the section on hearing loss, the extensive work on the subject is reviewed very briefly. Additional papers will follow.

915 An Automatic Audiometer for Air Force Classification Centers.

F. A. Brogan. *Noise Control* 2, 58-67 (May 1956).

An automatic audiometer was developed by the United States Air Force to meet the need of classification centers for a fast, rugged instrument. The periodic hearing tests which are a part of the hearing conservation program have more meaning if a base-line or pre-employment audiogram is available, and the audiometer was designed for this purpose. The testing procedure simulates manual audiometry very closely. Simple instructions are given for using push-buttons and the results are recorded on punch cards. Details are described and illustrations and diagrams are presented.

916 Shake Table Insolation Ward. W. H. Kingsley and M. A. Kuliasha.

Noise Control 2, 60, 61, 83 (May 1956).

Modern engineering requirements for a wide variety of both military and civilian products call for shake table testing. A high-frequency shake table used by Sandia Corporation was found to produce intense noise which caused headaches, nausea, and extreme psychological tension. Noise measurements near the table gave 114 to 130 decibels. Various sound shields, ear plugs, and helmets gave little relief. The table and another acquired at the time were moved into a bay and soundproof rooms were built around them. The control cabinets were outside the room and a window was provided for observation. Features of the installation are described. Noise levels outside the room were satisfactory and no complaints were made.

917 Photoplethysmographic Investigations in a Group of Trimmers with Angioneurotic Manifestations Due to the Use of Air Hammers. G. Saita and G. Radino. *Med. lavoro* 46, 456-462

(Aug. - Sept. 1955). Italian.

Ten trimmers in an engineering industry of Milan, suffering from ischemic attacks of the fingers due to the use of air hammers, were subjected to a photoplethysmographic research both in basal conditions and after functional tests (response to heat and passive congestion test). A high decrease of the plethysmographic index was noticed in almost all the impaired fingers, while the sound fingers gave normal indices. The functional tests have at times led to a complete restoration of the pulse evidence in a vasopastic type lesion; at others the restoration failed or was very low, which indicates the presence of parietal arteriopathic component. Oscillometric readings always gave values within the normal even in the presence of vasopastic components. The plethysmographic investigation seems to be the most suitable instrumental means for an objective demonstration of the existence and severity of the arteriolar alterations in workers using vibrating tools.

-- Adapted from English summary (Bull. Hyg.)

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IN RE: ABRAMS
 November 1992

- 918 Air Conditions in Hot Mines. V. O. Steed.
 J. Chem. Met. Mining Soc. S. Africa 55, 261 (May 1955).

From a heat survey made in 5 South African mines, the author arrived at the following conclusions for the control of mine atmospheres. The maximum wet-bulb temperature for safe and efficient work in mines is 87.5° F when the air is nearly saturated with moisture. Above this limit working efficiency falls off rapidly and the danger of heat stroke increases greatly. Refrigeration is not very efficient in cooling deep mines, because the greater temperature difference between rock and air quickly reheats the air. The limited benefit of cooling results largely from the reduced absolute humidity, provided that the moisture content is not allowed to rise by contact with moist surfaces. The author feels that the use of preventive measures may, in the long run, prove more practical than refrigeration. The absence of a refrigerating plant makes the workers more heat-and-ventilation conscious, and they are likely to cooperate more effectively in preventing evaporation of underground water and in ventilation control. This view is confirmed by experience. The recommended preventive measures consist in covering exposed damp surfaces, draining, and pumping out point water sources directly to the outside. The author also recommends where practicable, bringing in the hot, dry air via dry intakes to the working faces, then cooling the air by evaporation of water, and finally discarding the used air when its wet-bulb temperature exceeds 87.5° F. In this way, the dry-bulb temperature is reduced immediately by rapid cooling, whereas the rise of wet-bulb temperature is slow, allowing time for the air to pass out of the stopping areas before the wet-bulb temperature can reach the danger point. All the available air should be sent to the working face by cutting off the ventilation to the worked-out areas.

-- Cond. from Arch. Ind. Health

- 919 The Effects of Water and Salt Intake upon the Performance of Men Working in Hot and Humid Environments. W. S. S. Ladell. J. Physiol. (London). 127, 11-46 (Jan. 28, 1955).

There is considerable evidence that water drinking improves the performance of men working in the heat, but the belief that drinking also causes increased sweating is less well substantiated. Experiments on hyper-acclimatized and other subjects are described, in which water with and without salt was consumed under various conditions. The subjective effects of these treatments were more marked than the objective effects. The chances of failure to complete a task increased with increasing water deficit, and fatigue usually sudden in onset, was more pronounced when the water debt was high. The rate of sweating tended to be slower when saline was drunk. Abstention from water had no effect on the sweat rate until a water debt of more than 25 l. had been incurred. Thermal equilibrium was established at a higher level in those who abstained from drinking than in those who did drink, and in those not taking salt than in those who took salt. During recovery the heart rate increased with rectal temperature less rapidly when salt or saline was taken than when only water was drunk or when there was no drinking. Those who drank water or saline tolerated exercise better than those who took water only. When salt was taken the chloride content of the sweat was higher. The changes in thermal equilibrium and in heart rates are in accordance with calculations of the changes in volume of intracellular fluid. Apparently contradictory responses to given conditions can be traced to variations in the rate of sweating.

-- Cond. from Bull. Hyg.

- 920 Regulation of Pulse Rate During Recovery from Fatiguing Muscle Work.
 E. A. Muller. Int. Z. angew. Physiol. 16, 35-44 (1955). German.

Pulse rate recovery was studied after the calf muscles of a single male subject had been exercised to exhaustion on the author's foot ergometer. Occlusion of the blood supply lengthened, while massage shortened the period of recovery. Chemical stimulation of nerve receptors in the muscles as well as the effect of the primary motor innervation was held responsible for the high pulse rate in recovery. Very light work during recovery from severe work did not accelerate pulse rate recovery. The light work, by its effect through motor innervation was additive to the chemical effect of the severe work.

-- Brit. Abs. Med. Sci.

03120224

- 921 Some Observations on Acclimatization to High Altitudes.
C. S. Houston. *New Engl. J. Med.* 253, 964-968 (Dec. 1, 1955).

The author's discussion is based on experiments on simulated altitudes in which he participated as observer and subject, and his experience in the Himalayas. Various adaptations which are described make possible heavy work by acclimatized men at altitudes that cause rapid loss of consciousness in unadapted subjects. Even the fully acclimatized man at great heights cannot be considered normal in terms of his performance at sea level, although some faculties remain at a high level. These observations should have valuable applications to the patient at sea level who is crippled by chronic pulmonary or chronic cardiac disease. Much material has been accumulated that can be applied to pathologic states, but much work remains to be done.

RADIOACTIVITY AND X-RADIATION

- 922 X-Ray Protection. National Bureau of Standards Handbook No. 60.
41 pp. (Dec. 1955). For sale by Supt. of Documents, Washington 25, D. C., 20 cents.

This Handbook, prepared by the National Committee on Radiation Protection, supersedes No. 41, "Medical X-Ray Protection up to Two Million Volts", prepared by the same Committee in 1949. The recommendations given are intended primarily for the protection of the radiation worker and the public, but it is pointed out that caution also should be used to protect the patient. The use of student technicians as radiographic subjects for training purposes should be minimized. The maximum permissible weekly dose used in the Handbook is 0.3 r as recommended in Handbook 59. The contents include: definitions; planning, surveys, and inspections; working conditions; structural details of protective barriers; plans for an x-ray installation; and additional rules for specific applications, including fluoroscopic, radiographic, dental radiographic and therapeutic installation, and mobile equipment. An appendix deals with determination of protective barriers.

- 923 Regulation of Radiation Exposure by Legislative Means. National Bureau of Standards, Handbook 61. 60 pp. (1955). For sale by Superintendent of Documents, Washington 25, D. C. 25 cents.

Some degree of statutory control of radiation hazards is becoming necessary. Several states and a few municipalities have legislated in regard to some of the hazards. Such legislation, if desirable, should make use of the present knowledge of radiation and methods of protection that have been found useful. Three policies are worthy of consideration: (1) one following present broad policies, augmented by a widespread program of education; (2) one in which all sources of radiation are registered; and (3) one calling for inspection and licensing of all radiation sources. The last is not recommended. The need for control of radiation exposure, the enforceability of legislation, licensing versus registration, and constitution of a radiation-regulation body are discussed. Appraisal of various procedures is followed by a suggested state radiation-protection act and suggested regulations.

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- 924 X-Ray Exposure in Dermatology Personnel. G. T. Jansen and A. C. Curtis.
Arch. Dermatol. 73, 66-68 (Jan. 1956).

X-ray exposure of a dermatological staff, as recorded by photographic film dosimetry for a 3-1/2 year period, is reported. The dose was observed to be well below accepted maximal permissible dosage of 0.300 r per week. However, overexposure was recorded in a person with a lax attitude toward protection technique. -- Authors' summary

- 925 Impact of the Atomic Energy Industry on Community Health. Panel Discussion.
 Edited by R. E. Albert. Arch. Ind. Health 13, 425-467 (May 1956).

This is a report of a panel discussion held at the Fifteenth Annual Congress on Industrial Health, sponsored by the Council on Industrial Health, American Medical Association, and the Medical Society of the District of Columbia, and arranged by the Division of Biology and Medicine, U. S. Atomic Energy Commission, Washington 25, D. C., Jan. 25-26, 1955. The following papers, usually rather brief (1 to 4 pages), were presented:

Introduction. J. C. Bugher.

A Review of the Health Problems in the Atomic Energy Industry to Date.

J. H. Sterner.

Industrial Power Reactors and Their Location. W. K. Davis.

Industrial Medicine in the Nuclear Reactor Power Facility. R. E. Albert.

Control of Radiological Hazards in the Operation of a Nuclear Reactor.

F. Western.

Responsibility of Public Health Agencies in Monitoring, Control, and Public Education. D. A. Holaday and J. G. Terrill, Jr.

Accidents in a Nuclear Power Reactor Operation. J. C. Robinson.

Effects of Reactor Accidents on Plant and Community. H. M. Parker.

The Disaster Plan and Medical Problems in a Nuclear Reactor Facility.

R. M. Taylor.

Power Reactor Accidents—Role of the Public Health Service. J. G. Terrill, Jr.

Health Problems Associated with the Use of Radioisotopes in Industry.

G. G. Manov.

Health Problems Associated with the Use of Radioisotopes in Medicine.

C. L. Dunham.

Health Problems Associated with the Radiochemical Processing Industry.

H. M. Parker.

Transition of the Atomic Energy Industry from Government to Private Control.

J. C. Bugher.

Discussion of the various papers by a number of commentators is reported in full in about 7 pages.

- 926 Retention of Radon Decay Products in Human Lungs.
 C. Jech. Arch. Ind. Health 13, 475-479 (May 1956).

A method has been developed for a continuous registration of radon decay products (or other radioactive aerosols) in the exhaled air. By this method it has been established that, after inhalation of air containing decay products of radon, the concentration of these products in the expired air varies largely during the course of an exhalation, dropping from a relatively high initial value to about .30% of the inhaled concentration at the end of each normal exhalation and practically to zero during a deep exhalation. This is explained by the large retention efficiency of the deep (capillary) parts of the lungs.

-- Author's summary

- 927 Medical Care of Wounds Contaminated with Radioactive Materials. A. J. Finkel and E. A. Hathaway. J. Am. Med. Assn. 161, 121-126 (May 12, 1956).

The presence of radioactive materials on the skin and in wounds complicates conventional surgical treatment. Initial decontamination, adequate monitoring and possible excision of otherwise viable tissue may be necessary. Systemic injury, from the absorption of excessive amounts of radioactive substance, takes the form either of the acute radiation syndrome or of the delayed, varied toxic effects of slowly excreted, long-lived isotopes. Compounds such as zirconium citrate and edathamil calcium-disodium intravenously may hasten the excretion of some of these substances. Elaborate decontamination facilities are necessary where radioactive materials are used, and suitable planning insures more effective care of patients with contaminated wounds.

-- Cond. from editor's summary

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- 928 Studies on Radiation Cataract. I. Determination of the Threshold Dose Level of Radiation Cataract. F. Kadori. *Am. J. Ophthalmol.* 41, 627-632 (Apr. 1956).

Lens changes resulting from irradiation have a critical dose level, using the same factors, for animals or humans in the same age group. The minimal dose of cataractogenic level may be determined by histologic findings only, 160 days after exposure, and not on the basis of clinical symptoms. Minimal doses under various specified conditions are given. Minimal cataractogenic doses are always lower than epilation doses. Lens has almost the same recovery power to the x-ray radiation as other tissues.

-- Cond. from author's summary

- 929 Human Chorioretinal Burns from Atomic Fireballs. H. W. Rose, D. V. L. Brown, V. A. Byrnes, and P. A. Cibus. *Arch. Ophthalmol.* 55, 205-210 (Feb. 1956).

The history, ophthalmoscopic findings, and visual impairment in six human cases of chorioretinal burns due to atomic flash are described. The physical, anatomical, and physiological factors contributing to the production of the lesion are discussed.

-- Authors' summary

- 930 Genetic Damage Produced by Radiation. H. J. Muller. *Science* 121, 837-840 (June 17, 1955).

The author expresses his conviction that radiations of the types derived from radioactive substances or x-ray machines produce permanent changes, or mutations in the hereditary constitution of living things of all kinds. Gene mutations, the most numerous and most important of these changes, arise with a frequency depending proportionally on the total dose of radiation. No dose is so tiny that it does not carry its corresponding mutational risk. The genetic effects of test explosions are considered and the need for perspective in considering the subject is stressed. It is pointed out that present evidence indicates that relative to the natural mutations already present in the total American population, those produced by the test explosions form only a minute contingent. It is concluded that the estimate of genetic damage must be weighed against the potential benefits to be derived from the tests, or rather against the potential damage to our society that would follow from the alternative policy.

-- Cond. from Nuclear Sci. Absts.

- 931 Ultimate Disposal of Radioactive Reactor Wastes in the Oceans. C. E. Renn. *J. Am. Water Works Assn.* 48, 535-537 (May 1956).

Preliminary results are reported on a survey made by the AEC on the disposal of radioactive wastes in the ocean. It appears quite possible and practical to design ocean disposal operations for the specific conditions that will arise. Problems involved in the disposal of both free and confined wastes are considered. Among the unknown factors are: rate of diffusion, horizontally and vertically; suitability of disposal into deep regions of the ocean; settling into the ocean floor; and accumulation in plankton and fish. Acceptable levels for added fission products in the various marine systems must be established. The standards used for drinking water cannot apply here because the concern is not with the direct intake of sea water but with a much more complicated series of cycles terminated by concentration in food materials and, possibly, in the chemical and ore resources of the seas.

- 932 Land Disposal of Atomic-Reactor Wastes. A. B. Joseph. *J. Am. Water Works Assn.* 48, 538-544 (May 1956).

In its search for solutions to the problem of high-level atomic-waste disposal, the Atomic Energy Commission, through research contracts, is enlisting the aid of scientific and industrial leaders. Groups of oceanographers, soil scientists, geologists, petroleum engineers, and others are considering the manifold aspects of the problem. Among the methods now used are ion-exchange treatments, storing in underground tanks, and disposal in surface waters. Other suggested treatments include burial or dispersal in the sea,

storage in mines, discharge into deep, isolated geological formations, and burial or discharge into geologically and topographically isolated basins. Advantages of and possible objections to these methods are discussed.

ENVIRONMENTAL MEASUREMENTS

- 933 Instantaneous and Continuous Gas Analysis by Infra-Red Spectra. Anon. Chem. & Process Eng. 36, 403-404 (1955).

An apparatus is described which works on the principle of detecting and measuring the concentration of a gas by recording its "optical" absorption in the infra-red spectrum. Among its applications are detection and warning of toxic or explosive atmospheres, detection of leaks in gas cooling systems, process control in the chemical industry, and measurement of the products of combustion.

-- Atm. Poll. Bull.

- 934 Adaptation of Titrilog for Field Mobile Sampling. S. B. Carpenter and R. E. Sparkman. J. Air Poll. Control Assn. 5, 195-196 (Feb. 1956).

The article describes methods for installation and operation of the Titrilog in an automobile and a helicopter for mobile field sampling for sulfur dioxide. Frequent calibration is required and a method of calibration of the Titrilog using sulfur dioxide is also described.

-- Authors' summary

- 935 Reagent for Sulfur Dioxide. H. F. Liddell. Analyst 80, 901 (Dec. 1955).

A sensitive reagent to detect small quantities of sulfur dioxide in smog can be prepared by dissolving 0.1 g. of Astrazone Pink (Bayer) in 20 ml. of hot water, allowing it to cool, then adding a solution of 5 g. of sodium bicarbonate in 50 ml. of cold water and 25 ml. of glycerol and making up to 100 ml. A drop on filter paper held between two sheets of transparent plastic, each with a circular hole 0.110 inch in diameter can be used in conjunction with a hand-operated gas sampling pump. The reagent will keep in the dark for about a week or the dye solution alone for several months.

-- Atm. Poll. Bull.

- 936 Spectrophotometric Determination of Heptachlor and Technical Chlordan on Food and Forage Crops. E. P. Ordas, V. C. Smith, and C. F. Meyer. J. Agr. & Food Chem. 4, 444-451 (May 1956).

To secure approval from federal and state regulatory agencies for the use of heptachlor and technical chlordan, it was necessary to measure the residues resulting from treatment of food and forage crops with these toxicants. Earlier methods were modified to make them more sensitive. Methods which used chromatography to separate very small quantities of the toxicants gave good recovery. Good agreement with bioassay methods was found. Analyses of a large number of crops treated with recommended dosages of heptachlor and chlordan show no significant residue present at harvest time.

-- Cond. from editor's summary

- 937 Sampling and Analyzing Air for Contaminants. L. Silverman.
Air Cond. Heat. & Vent. 52, 87-100 (Aug. 1955).

Methods for sampling and analysis of air in work places are reviewed. For air sampling purposes, the contaminants can be grouped as follows: (1) gases and vapors which are water soluble and miscible and which can be collected in water; (2) gases and vapors which are not water soluble but are soluble or highly reactive in other agents and can be absorbed or will react readily with a particular solvent or agent; (3) gases and vapors which are not water soluble and which react slowly with absorbing agents and therefore require much more treatment for collection. Dusts may be grouped as: (1) insoluble mineral dusts such as silica, asbestos, and insoluble metal oxides; (2) soluble mineral dusts such as limestone or dolomite; and (3) organic dusts which may or may not be affected by water. Fumes, smokes, and mists are usually considered in the same category as dusts. Tables showing collection methods and devices are given. -- Cond. from APCA Absts.

- 938 New Method for Electron Microscopic Examination of Aerosols. G. Pfefferkorn.
Z. Aerosol. Forsch. u. Therapie 4, 97-105 (1955). German.

Ordinary methods of examination of extremely fine liquid or solid suspensions have the disadvantages that agglomeration and formation of large aggregates takes place on the supporting foil or slide of the sampling apparatus, and little information is gained regarding the actual state of aggregation of the aerosol while in suspension. Recently a method has been developed which consists in "catching" aerosol particles on very fine crystalline needles of sub-optical microscopic dimensions. Such needles may be obtained by suitable oxidation of metals, especially copper. The method makes it possible to examine the size and shape as well as the process of aggregation of the individual particles which adhere to the needles due to strong adsorption forces. Some results of this technique obtained with quartz dust, cigarette smoke and ammonium chloride aerosol are shown in photographs. -- Atm. Poll. Bull.

- 939 A Cascade Impactor with Moving Slides. K. R. May.
Arch. Ind. Health 13, 481-488 (May 1956).

A cascade impactor is described in which the four sampling slides are mechanically traversed across the air jets simultaneously. This enables difficulties arising from overloading of the slides with particles to be overcome so that size grading of solid particles is more reliable. The system also enables changes in concentration and size distribution of aerosols with time to be observed. Alternately up to six separate samples can be obtained on the same set of slides by remote control. -- Author's summary

An appendix describes and reports results of a study of particle intake efficiency of the instrument. It is shown that there is no serious error in sampling particles smaller than 20 microns in winds below 14 miles per hour, but large errors are possible with larger particles. The impactor gives its best performance when facing upward in calm air or when facing into winds of 8-10 miles per hour. -- Cond. from appendix summary

- 940 Aerosoloscope Counts Particles in Gas. E. S. Gordon, D. C. Maxwell, Jr.,
and N. E. Alexander. Electronics 29, 188-192 (Mar. 1956).

The aerosoloscope is intended to relieve the technician of the tedious task of counting and sizing of aerosol particles under the microscope. In one operation it detects particles in the atmosphere or a gas, from 1 to 64 microns in diameter and classifies them into 12 adjacent size groups within this range, at a maximum rate of 100 particles per second. Components of the apparatus are a glow-transfer-tube counter and a unique pulse-height discriminator. As in other automatic particle counters, it is necessary to avoid counting the same particle more than once. An anticoincidence circuit is employed to avoid that difficulty. The apparatus is quite complicated and the description is highly technical. Its component parts are illustrated by diagrams.

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PREVENTIVE ENGINEERING

- 941 Instruments for Testing Exhaust Ventilation Systems. Data Sheet D-431.
National Safety Council. Natl. Safety News 73, 34-40 (June 1956).

The theoretical principles and components of local exhaust systems are discussed briefly. The testing of an exhaust system is largely a measurement of pressures. The pressures involved in the flow of air through ducts are discussed. The various measuring instruments are described, including the Pitot tube and manometers of different types. The most important measurements to be made are: (1) hood suction (static pressure); (2) velocity in branch and main ducts and diameter of ducts; (3) fan static pressure and total pressure; (4) pressure drop across collector; and (5) cubic feet per minute of system. These measurements and their relationships are described in detail.

COMMUNITY AIR HYGIENE

- 942 A Comparison of the Smokescope and the Ringelmann Chart. L. R. Burdick.
Bur. Mines Rep. Inves. 5162. 12 pp. (Sept. 1955). Obtainable free from
Publications Div., Bureau of Mines, 4800 Forbes Street, Pgh. 13, Pa.

The Smokescope is an instrument recently developed for determining the density of smoke by shade comparison. The instrument is designed so that the smoke is seen adjacent to two shades of gray corresponding to Nos. 2 and 3 on the Ringelmann chart. The corrections for the Smokescope readings by the two test observers with the test Smokescope varied with the smoke density under constant conditions of light and background. The maximum estimated variation between Nos. 2 and 3 Smokescope for constant light and background conditions was 0.57 Ringelmann. The data did not show that background conditions had a significant effect on the Smokescope correction, whereas light conditions did. The correction (based on averages) for the test Smokescope and the test observers did not exceed -0.30 or +0.37 Ringelmann under any condition of smoke density, light, and background.

-- Author's conclusions

- 943 Aerial Sampling by Helicopter: A Method for Study of Diffusion Patterns. F. E. Gartrell and S. B. Carpenter. J. Meteorol. 12, 215-219 (June 1955).

The trend toward larger and larger steamelectric plants, using fuels with high sulfur content, is resulting in increased attention to studies of diffusion of power-plant stack gases in the atmosphere. This article describes a method for sulfur-dioxide air-pollution sampling, utilizing a continuous analyzer and recorder operated in a helicopter. This method was developed to overcome many of the limitations of conventional sampling methods encountered in diffusion studies at one of the large coal-fired steamelectric plants in the Tennessee Valley Authority power system.

-- Authors' summary

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- 944 Contamination of Citrus Foliage by Fluorine from Air Pollution in Major California Citrus Areas. J. C. Kaudy and others. Proc. Am. Soc. Hort. Sci. 65, 121-127 (1955).

Leaves from approximately 130 citrus groves, representing areas far removed from air pollution and areas where pollution occurs were analyzed for fluorine. The greatest fluorine accumulation (up to 211 ppm) was evident in leaves from the San Bernardino Valley, especially from the vicinity of Fontana where a steel plant is located. High fluorine values were not associated with visible damage. In non-industrial areas fluorine content was 1 ppm or less. Maximum accumulation of fluorine occurred during the summer and fall months. Foliar concentrations increased very little after the winter rains began. -- Chem. Absts.

- 945 Fluorine Damage to Vegetable Crops. G. C. Wade. Australian Plant Disease Recorder 7, 55 (1955).

Lettuce, broad beans, radish, silver beet, onion, shepherd's purse, and Rhagodia mutans growing within two miles of a factory manufacturing superphosphate developed extensive silvery patches on the leaves from fluorine liberated into the atmosphere. Most plants recovered and growth subsequent to the damage was normal. Cabbage and cauliflower growing in the affected area showed no damage. -- Chem. Absts.

- 946 Concentration Distributions in Aerosol Plumes Three to Twenty-Two Miles from a Point Source. W. D. Crozier and B. K. Seely. Trans. Am. Geophys. Union 36, 42-52 (Feb. 1955).

A formula for horizontal distribution of particle concentrations in aerosol plumes is derived from the analyses in 15 cross sections of experimental plumes, each from a point at ground level. Two methods of application of the equation are discussed.

-- Cond. from authors' summary (Public Health Eng. Absts.)

- 947 Natural Removal of Atmospheric Pollution during Fog. A. R. Meetham. Quart. J. Roy. Meteorol. Soc. 80, 96-99 (1954).

Smoke and sulfur dioxide molecules may, fortunately, have a shorter lifetime during foggy weather than in normal weather. An average lifetime of 28 hours for smoke and 8.75 hours for sulfur dioxide is calculated. Conditions during the London Fog of Dec. 5-9, 1952, when 700 tons of smoke and 1400 tons of sulfur dioxide were omitted per day in an area of 450 square miles around London, are analyzed, leading to conclusions that concentrations of 6.2 ppm of SO₂ (8.0 mg. per cu. m.) would be produced in a day, only 2.1 mg. per cu. m. was detected. This indicates that the life of the SO₂ molecule was only six hours, and of smoke 13 hours. It is further shown that much of this shortening of lifetime can be accounted for by combination with fog and smoke particles or aggregates. The standard volumetric measuring instrument does not measure SO₂ attached to smoke, since the smoke is filtered out before the air is sampled. The human lung, however, can collect both the fog and smoke particles containing SO₂. Oxidation to sulfuric acid may prove to be the source of danger to human life in such fogs, which, were it not for the fallout and drift to the sea, would prove far more deadly. -- Cond. from Chem. Absts.

- 948 Stack Heights Required to Minimize Ground Concentrations. E. W. Hewson. Trans. Am. Soc. Mech. Engrs. 77, 1163-1172 (Oct. 1955).

Aerodynamic and meteorological concepts are combined in a procedure for estimating ground concentrations of effluents from stacks with various possible heights and exit gas velocities. The operation of each of the several influences at work is first described. A detailed example is then given of how the most important phases were integrated into a consistent procedure for predicting ground concentrations in answer to a specific design problem. Further improvements and refinements of the method are desirable and are being incorporated in a later study. -- Author's summary (APCA Absts.)

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- 949 Photochemical Reactions of Nitrogen Dioxide and Hydrocarbons in Air. A. Miller, Callaway Brown, and K. D. Franson. Science 123, 934, 935 (May 25, 1956).

Experiments on the reactions of nitrogen dioxide with butene-2 and with 3-methyl heptane confirm the finding of Haagen-Smit that traces of nitrogen dioxide and hydrocarbon in the air undergo a photochemical reaction to produce ozone. Furthermore, nitrogen dioxide is consumed in the course of the reaction, indicating that nitrogen dioxide is more than a radiation absorber. Work is in progress to determine the stoichiometric relation between ozone formed and nitrogen dioxide consumed. A paper by Hanst and coworkers (IHF Abst. 813, June 1956) confirms the oxidant as ozone by infrared spectroscopy and also shows disappearance of nitrogen dioxide as the reaction proceeds.

- 950 An Approach to Odor Control. R. Pantaleoni. J. Air Poll. Control Assn. 5, 213-215 (Feb. 1956).

Various methods of odor control are discussed. In many cases where the character of the operation and nature of the odorant are known, it is not necessary to sample the effluent in order to develop a suitable odor reducing agent. Where the nature of the odorant is unknown it can be sampled by absorption by a liquid and treated with an odor counteractant, or by adsorption on activated charcoal, followed by desorption under a vacuum, and collection at a low temperature. An illustration of the procedure is given. The nature of the odorant can frequently be determined from the condensate; in other cases it may be necessary to spray it into a room and try various masking agents. A table shows the practical aqueous odor intensity of some of the common odorants. Some odoriferous manufacturing processes can be treated by adding the odor control agent along with the other reagents. Lagoons are treated by spraying from the shore or the shore line is sprayed. The most widely used application of a deodorant is atomization of a dilute dispersion, generally with air.

- 951 Correct Power Supply: Key to Efficient Electrostatic Precipitator Flyash Collection. C. E. Beaver. Power 99, 85-87 (Sept. 1955).

Basic elements of an electrostatic precipitator's power supply are switchboard, transformer and rectifier. It is advantageous to remove as many dust particles as possible from the gas. An accurate expression for dust-collection efficiency may be derived from fundamental principles based on the properties of turbulent gas flow and electric forces acting on the particles. The electric forces cause the particles to drift toward the collecting electrodes. For power supply to electrostatic precipitators the trend is toward vacuum-tube rectifiers because they are easy to maintain and low in costs. Research on electrical precipitation has greatly increased available knowledge of electrical characteristics and power requirements for precipitators. Out of this work has come an automatic voltage-control system to hold precipitator voltage at the highest possible level. -- APCA Absts.

MANAGEMENT ASPECTS

- 952 Look Forward to Your Retirement. Chamber of Commerce of the United States, 1615 H St., N. W., Washington 6, D. C. 23 pp. (1956). Single copies free, 5 cents in quantities.

The necessity of making plans for retirement is emphasized. They include planning for good health, for a good home life, for being useful, and an adequate retirement income. The items under good health are: stay fit, watch your diet, avoid accident risks,

and keep from worrying. Planning for a good home life includes planning with your wife (or husband), thinking about living arrangements, moving to a warmer climate, and enjoying friendships. Under being useful, the suggestions are a part-time job, a small business, a country place, and taking part in community activities. Saving, a life insurance program, and understanding about company pension plans and social security are the features of financial planning. Religion as a source of strength is discussed briefly. This booklet is suitable for distribution to employees.

ACCIDENTS AND PREVENTION

- 953 The Value of a Well-Balanced Safety Program. F. R. Barnako.
Iron & Steel Engr. 33, 80-82 (Apr. 1956).

The article describes some of the elements of a well-balanced safety program and the benefits to be derived from it. The author discusses some of the amendments to the Pennsylvania Workmen's and Occupational Disease Laws, effective as of March 30, 1956. Some of the changes are: 1. Payments for permanent disability are now payable for the life of the employee so long as he is disabled instead of 750 weeks as heretofore. The maximum rate is increased from \$32.50 to \$37.50 per week, and the minimum from \$22.50 to \$25.00; 2. Weekly benefits for partial disability are increased from \$23.00 to \$27.50. Also, where partial disability follows total disability, the full 350-week maximum period for the former is now payable in addition to the amount paid for total disability. 3. In respect of schedule injuries, an amendment now adds a healing period. 4. The period during which the employer is required to furnish medical services is increased from 120 days to six months. 5. The requirement that a hernia be reported to the employer within five days is eliminated. 6. Benefits to dependents are increased. 7. Dependent alien widows, children and parents are now entitled to receive up to 50% of the compensation which would have been payable if they were residents of the United States, provided that the country of which they are residents provides the same rights to residents of the United States. The Pennsylvania Occupational Disease Law now becomes inclusive. These features have added to the cost of compensation. The cost of compensation is one reason for the existence of a safety program, but the benefits far outweigh the savings in compensation costs.

- 954 Frictional Ignition of Gas by Mining Machines. I. Hartmann. Bur. Mines Inf. Circ. 7727, 17 pp. (Sept. 1955). Obtainable free from Publications Div., U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.

The purpose of this paper is to call attention of mine operators to potential ignition hazards associated with the use of mining machines; review several ignitions and explosions caused by friction; outline the possible mechanisms of ignitions; and discuss preventive measures against explosives. Ignition by friction in industrial plants is discussed briefly.

-- From Author's Introduction

- 955 International Cooperation in Reducing Mine Hazards. E. J. Gleim.
Bur. Mines Inf. Circ. 7739, 15 pp. (Feb. 1956). Obtainable free from Publications Div., U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.

This report reviews the Eighth International Conference of Directors of Safety in Mines Research, which met in Dortmund-Derne, Germany, July 5-10, 1954. It also summarizes information on subjects of special interest in the United States gained by the writer in visits to mining experiment stations in Belgium, France, and England.

-- Cond. from author's summary

- 956 Health and Safety Activities of the Bureau of Mines, Fiscal Year 1955. J. Westfield. Bur. Mines, Inf. Circ. 7732, 21 pp. (Jan. 1956). Obtainable from Publications Div., U. S. Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.

Bureau of Mines activities for safety and health in the mineral industries were reorganized during the fiscal year to provide direct supervision by the Assistant Director, Health and Safety. The functions of determining the causes of accidents and injuries and recommending measures to eliminate them were continued, with satisfactory results in improved safety records. The inspection of coal mines and enforcement of the Federal Coal Mine Safety Act of 1952 were conducted as directed by the Congress, and safety conditions in the mines were notably improved. One coal-mine explosion classed as a major disaster occurred during the year. The causes are still under investigation. Basic research on the nature of certain hazards and ways of eliminating them, including training of individual workers and supervisors, is being continued.

- 957 How to Use Magnesium Safely. S. H. Egbert. Factory Mgmt. and Maint. 114, 84-86 (May 1956).

Twelve rules are given for the safe handling of magnesium: (1) clean up loose fines; (2) calm workers' fears; (3) filter cutting oil; (4) keep shop clean; (5) use right kind furnace; (6) ventilate shop; (7) immerse grinding fines (in oil); (8) inspect furnace pots; (9) watch hydraulic lines; (10) don't allow steel grinding nearby; (11) choose right oil; and (12) air-seal the melt. Reasons for each of these rules and specific directions for avoiding the hazard are given. Observance of these rules, together with building safeguards into the operations and plant, have resulted in a high degree of safety and morale.

MISCELLANEOUS

- 958 Truth and Fallacy about a Serious Problem: Acid Coal Mine Drainage. S. A. Braley. Mining Eng. 8, 314-318 (Mar. 1956).

Failure to obtain neutralization of acid or evidence of diffusion of ammonia gas in a mine suggests the futility of attempting to apply inhibitors in a gaseous form to the interior surfaces of an abandoned mine. Phosphates, chromates, or sodium hydroxide have little or no effect upon the rate of oxidation of pyrite or pyritic material either in solution or intimately dried upon the surface by evaporation of a solution. The reaction rate of the pyritic material from a coal measure is much greater than the reaction rate of yellow pyrite. The reaction rate of sulfuritic waste is greatly increased by aeration in either the wet or dry state. The decrease in pH of buffered solutions on pyritic waste is less rapid than in pure water but ultimately reaches the same value. However, the rate of sulfur trioxide formation is comparable in all solutions. The pH determination is a very poor criterion of reaction rate in buffered solutions, and since the oxidation of the sulfuritic materials is a progressive time reaction, long periods of experimentation are necessary for specific conclusions. There is at present little if any evidence that there is an inhibitor capable of deferring or stopping the reaction between the sulfuritic material associated with the coal measures and the oxygen of the air. If there were such an inhibitor no practical application is known for an abandoned mine.

-- Author's conclusions

INDEX

<u>Aerosol plumes</u>		<u>Exhaust ventilating systems</u>	
concentration distribution	946	instruments for testing	941
<u>Aerosols, electron microscope examination</u>	938	<u>Eye burns from atomic flash</u>	929
<u>Air analysis, continuous, infrared</u>	933	<u>Eye protection, plastics</u>	
<u>Air pollution</u>		in spectral transmission (Bk. Rev.)	851
fluorine in citrus plants	944	<u>Fatigue, pulse rate during recovery</u>	920
natural removal during fog	947	<u>Fluorine, damage to crops</u>	945
stack heights required	948	<u>Gas, ignition by friction</u>	954
<u>Air sampling</u>		<u>Health and safety, Bureau of Mines</u>	956
and analysis, methods	937	<u>Heart disease in elderly miners</u>	860
by helicopter	943	<u>Heptachlor, determination in residues</u>	936
<u>Alkyl phenyl phenate, toxicity</u>	890	<u>Heptane poisoning, blood effects</u>	887
<u>Altitude, high, effects</u>	921	<u>Hot environments</u>	
<u>Ammonia, causing urticaria</u>	872	effects of water and salt	919
<u>Asbestosis, roentgenographic complications</u>	912	<u>Hydrogen cyanide, tolerance for residues</u>	870
<u>Atomic energy industry</u>		<u>Hydrogen cyanide poisoning</u>	
and community health, panel discussion	925	blood glutathione	868
<u>Audiometer, automatic</u>	915	subacute	869
<u>Automation, medical aspects</u>	856	<u>Hydrogen peroxide, data sheet</u>	873
<u>Back pain, employability of patients</u>	862	<u>Industrial medicine</u>	
<u>Benzene</u>		importance of biological research	852
data sheet	888	<u>Industrial washrooms, survey</u>	858
effect on bone marrow	886	<u>Insecticides</u>	
poisoning, blood effects	887	hazard	892, 893
<u>Beryllium granuloma, pathology</u>	874	organic phosphorus	
<u>Cadmium poisoning, experimental</u>		review	897, 898
EDTA treatment	875	treatment	899
<u>Cancer survey, Connecticut</u>	857	thiophosphoric esters, effects on man	900
<u>Carbon disulfide poisoning, eye effects</u>	885	<u>Lead poisoning, treatment, EDTA</u>	876
<u>Cascade impactor with moving slides</u>	939	<u>Lead tetraethyl poisoning, EDTA treatment</u>	877
<u>Chlordan, determination in residues</u>	936	<u>Magnesium, safe use</u>	957
<u>Chlorophenyl chlorobenzenesulfonate</u>		<u>Mental health planning</u>	
tolerance for residues	896	for social action (Bk. Rev.)	850
<u>Coal dust</u>		<u>Mercury, organic compounds</u>	
and BCG, effect on lungs	908	hazards in seed dressing	878
and tubercle bacilli, effect on lungs	909, 910	<u>Methyl bromide poisoning</u>	
<u>Coal mine drainage, acid</u>	958	from fumigation	884
<u>Coal mining</u>		<u>Mines, air cooling</u>	918
hazards, reducing		<u>Mining, medical problems</u>	816
international cooperation	955	<u>Naphthalene, data sheet</u>	889
industry, dust control, practices in	901	<u>Nickel carbonyl poisoning</u>	879
<u>Dermatitis</u>		<u>Noise</u>	
cement	866, 867	general effects	914
nickel and chromate, delayed sensitivity	864	industrial	913
rehabilitation	863	from shake table, control	916
<u>Dermatoses, occupational, classification</u>	865	<u>Odor control</u>	950
<u>Dinitrocresol, poisoning, polyneuritis</u>	891	<u>Ozone, formation in air</u>	949
<u>Dust</u>		<u>Particle counting and sizing, automatic</u>	940
collectors, drill		<u>Petroleum poisoning</u>	882
approved by Bureau of Mines	902	<u>Radiation</u>	
production by rotary drilling	903	cataract, minimal dose	928
suppression in drilling	904	exposure, legislation	923
<u>Dusts, effect on respiration</u>	905	genetic damage	930
<u>Electrostatic precipitation, power supply</u>	951	<u>Radioactive materials</u>	
<u>Endrin, tolerance for residues</u>	894	wound contamination by, treatment	927

<u>Radioactive waste disposal</u>		<u>Silicotuberculosis, case</u>	911
land	932	<u>Smoke measurement, with smokescope</u>	
ocean	931	and Ringelmann chart	942
<u>Radon, decay products</u>		<u>Sodium o-phenylphenate</u>	
retention in human lungs	926	tolerance for residues	895
<u>Rehabilitation</u>		<u>Sulfur dioxide</u>	
in heart disease	859	detection in smog	935
international problem	854	determination, Titrilog	934
recent developments	853	<u>Tetramethylthiuram disulfide poisoning</u>	883
total medical resources in	855	<u>Thallium poisoning, industrial</u>	880
<u>Retirement, pamphlet</u>	952	<u>Uranyl nitrate poisoning</u>	881
<u>Safety program, value</u>	953	<u>Vibrating tools, effects</u>	
<u>Selenium in apples</u>	871	investigation	917
<u>Silicosis</u>		<u>X-ray exposure in dermatologists</u>	924
atelectasis in	907	<u>X-ray protection, handbook</u>	922
in coal miners, fibrinogen in blood	906		

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