

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

OCTOBER, 1951

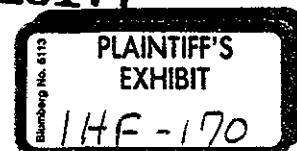
(Vol. 15, No. 10)

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.

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Volume 13

October, 1951

No. 10

The preliminary program for the Sixteenth Annual Meeting and Conferences of the Industrial Hygiene Foundation, at Mellon Institute, Pittsburgh, to be held on November 14 and 15, has been completed and sent to member organizations.

The four professional conferences: Medical, Legal, Chemical, and Engineering, will be held November 14. The Medical Conference will be open to guests from the medical profession, and the other conferences will be limited to specialists from member companies. The agenda includes a joint Medical-Legal session on Compensation Law.

The General Meeting will be held on November 15. Its theme: THE EXECUTIVE AND HEALTH.

- Program -

ADDRESS OF WELCOME- - - - - Dr. Edward R. Weidlein, President,
Mellon Institute

FOUNDATION FACTS- - - - - Andrew Fletcher, President,
St. Joseph Lead Company; Board
Chairman, Industrial Hygiene
Foundation.

HUMAN DIGNITY- - - - - Don G. Mitchell, President,
Sylvania Electric Products Inc.

THE EXECUTIVE AND HEALTH (A Panel Discussion)

Presiding: Lemuel B. Hunter, Manager
Industrial Relations Department
Inland Steel Company

Howard R. Hartman, M.D.
Mayo Clinic

E.A. Irvin, M.D., Medical Director
Cadillac Motor Division
General Motors Corporation

Afternoon Session

TRENDS OF STATE LEGISLATION AFFECTING

NON-OCCUPATIONAL DISABILITY INSURANCE- - - - - Stanley A. McCaskey, Jr., Secretary
Allegheny Ludlum Steel Corporation

WHERE DO EXECUTIVES COME FROM?- - - - - Dr. G.L. Bach, Dean
Graduate School of Industrial
Administration, Carnegie Institute
of Technology

BACKGROUND AND DEVELOPMENT OF AN INDUSTRIAL

MEDICAL PROGRAM (For Small Industries)- - - - - A.D.R. Fraser, President
Rome Cable Corporation

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IN RE: ALBRAMS



HWBB-0014279

Dr. C. Richard Walmer, managing director of Industrial Hygiene Foundation, was interviewed by Edgar Wood, Pittsburgh television station WDTV newscaster for the Chevrolet dealers of Western Pennsylvania, on his return from Lisbon, Portugal, where he attended the Tenth International Congress on Industrial Medicine. Mr. Wood rates approximately 270,000 listeners who heard Dr. Walmer tell how much more advanced industrial medicine is in this country as compared to countries abroad where industry and mines are nationalized.

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EUROPEAN PROGRESS IN INDUSTRIAL HYGIENE FAR BEHIND UNITED STATES.

Europe--where the state operates the industries--is far in arrears in measures to protect the health of workers.

The development of machinery is far more important in the present stage of industrial development abroad. Man is not the important cog in the wheel of production as he is in this country.

These are some of the observations of Dr. C. Richard Walmer, participant in the recent Tenth International Congress on Industrial Medicine in Lisbon, Portugal.

The Technical material presented at the Congress was behind what is being done in the United States at present.

Of the 50 countries represented, only Finland was from behind the Iron Curtain. Representation at the Congress included South America, Africa, India, Europe and the United States.

Dr. Walmer visited the World Health Organization at Geneva to meet with Dr. Brock Chisholm. The WHO is directing its endeavors on a world-wide scale. At present 79 nations are participating in this organization. The WHO is collecting daily statistics from each continent and the high seas on epidemics for the purpose of biostatistical analyses. It is also supplying backward nations with medical service and devoting much time to the research which will lead to standardizations of biologicals.

Taking a TWA plane from Idlewild on September 7th, Dr. Walmer was back at his desk September 24. In that time he had visited Lisbon, Portugal; Geneva, Zurich, Switzerland; Copenhagen, Denmark; Stockholm, Sweden; and London, England.

* * *



FREE ENTERPRISE is demonstrated to young America on the 25th anniversary of the Industrial Hygiene Foundation. Posters which show the Scott's Emulsion (the cod liver oil) and the Accident Prevention House (the Industrial Hygiene Foundation) are displayed. The industry spends to protect the health of their working fathers. This was only one of 52 exhibits which 27,000 people viewed at Ocean House.

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Industrial Hygiene Foundation
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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1069 Postgraduate Course on Workmen's Compensation.

The Third Postgraduate Course on the Medical Aspects of Workmen's Compensation will be held October 22 through 29, sponsored by New York University Post-Graduate Medical School and the American Academy of Compensation Medicine. The course is designed for the claims supervisor and the hearing man, as well as the doctor, and the lectures will be given by outstanding men in plain, non-technical language. Questions from the floor will be welcome. The full registration fee is \$25.00, and tickets can be revolved among personnel of an organization if desired. Applications may be made at the Office of the Dean, New York University Post-Graduate Medical School, 477 First Avenue, New York 16, New York.

1070 Management Conference.

The Society for the Advancement of Management will hold its Annual Conference on Principles, Methods, and Techniques at the Hotel Statler, New York City, November 1 and 2. The general subjects on the program are production management and human relations. Information can be obtained from the above Society, 84 William Street, New York 38, New York.

1071 Chest Disease Program.

A combined meeting of the Laennec Society of Philadelphia and the Pennsylvania Chapter of the American College of Chest Physicians will be held November 7, 1951 at the Warwick Hotel, Philadelphia. Seven papers will be presented, dealing with x-ray chest examination, berylliosis, and other aspects of chest diseases. Programs can be obtained from Dr. Leon H. Collins, Pennsylvania Trudeau Society, 311 South Juniper Street, Philadelphia 7, Pennsylvania, or from representatives of the above societies.

1072 Diseases of the Chest--Postgraduate Course.

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The Fourth Annual Postgraduate Course sponsored by the Council on Postgraduate Medical Education and the New York State Chapter of the American College of Chest Physicians, will be held at Hotel New Yorker, New York City, November 12-17, 1951. The afternoon session on Tuesday,

November 13, will be devoted to industrial pulmonary diseases, and will include a panel on air pollution. The registration fee will be \$50.00 for the entire course. Information can be obtained from the American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

1073 Safety, Hygiene and Air Pollution Expert Named to American Foundrymen's Society's Staff.

The initial step in launching the American Foundrymen's Society's new long-range safety, hygiene and air pollution program is the addition of Kenneth M. Morse to the Society's staff. Mr. Morse, a native of Boston, with degrees from Tufts College and Harvard School of Public Health, has been employed at the Bureau of Industrial Hygiene of the Illinois Department of Public Health since 1937, as chief industrial engineer since 1943. He is consultant to the U.S. Atomic Energy Commission's Argonne National Laboratory and will continue in that capacity. His experience in the technical and administrative and teaching phases of industrial hygiene has been extensive, including research in collection and determination of air pollutants and development of control measures. One of his first activities in the new program will be the appointment of a committee of experts representing the foundry and equipment manufacturing industries, who will make a critical review of existing practices with a view to revise and modernize them to conform with the best in current thinking on the subject.

-- American Foundryman, August, 1951

1074 The Human Resources of the United States.

The September, 1951 issue of Scientific American is devoted entirely to the assessment of our human resources. There are eight articles by outstanding authorities in which both the short-range and long-range aspects of the problem are discussed. The first article deals with appraisal of our population resources as a whole, and the other articles deal with "Labor Force," "Intellectual Resources," "Engineers," "Scientists," "Doctors," "Mobilization," and "Youth." In an introduction to these articles, it is stated "The U.S. has not always spent its resources wisely. In recent years we have become aware that such of our resources as forests, soil, iron ore and petroleum are finite, and we have begun to develop a conscience about their conservation. There is good reason to believe that we should be even more concerned about the conservation of our human resources." It is interesting that the keynote of the 1949 Annual Meeting of Industrial Hygiene Foundation was "Developing Human Resources."

There are many who feel that scientific work should be planned in detail. In technological work we can plan; indeed, we must plan. But the planning must be done by those who understand the work thoroughly. Best of all is the planning of the research worker himself, and next, that of his department head or group leader. After that we can only assess the probable error of the planners. The research director may be wrong most of the time; and a committee of vice presidents would probably be wrong all the time.

-- C.E.K. Mees, in A.C.S. Diamond Jubilee Speech

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OCCUPATIONAL DISEASE STATISTICS

1075 Occupational Disease Statistics

	Conn. ² Sept. 1951	Ind. ² Sept. 1951	Ohio ¹ May 1951	Wisc. ² Aug. 1951	Total
Benzol poisoning		1			1
Blood poisoning (cement)				1	1
Burns				1	1
Carbon monoxide poisoning				1	1
Dermatitis	48*	18**	361	39	466
Eye irritation				1	1
Lead poisoning		1	10		11
Miscellaneous			139	3	142
Peripheral neuritis (Gases, N.O.C.)	1				1
Rhinitis (lead and compounds)	1				1
Silicosis		1	42	1	44
Skin infection				11	11
Skin irritation				5	5
Tuberculosis				1	1
Tuberculosis (due to contact)			9		9
Undulant fever		1		2	3
Total	50	22	561	66	699

(1) Occupational Disease Cases reported to the Industrial Commission.
There were 90,242 days lost; as well as nine deaths from silicosis and three deaths from unknown causes.

(2) Occupational Disease Cases reported to the Board of Health.

* Alkalies, Infections, Medications, Rubber chemicals, Synthetic resins and chemicals; Tar and allied substances, and Undetermined caused one each; Oil and solvent (combination exposure) and Solvents (N.O.C.) caused two each; Phenol and phenolic compounds caused four each; and Oils, fats and waxes caused thirty-three each.

** Developing solutions, Streptomycin, and Rubber caused one each; Mica glues, Wood glues, and Miscellaneous caused two each; Penta-chlorophenol caused three each; and Cutting oils caused four each.

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LEGAL DEVELOPMENTS

1076 Silicosis--Election of Remedy.

Where the widow of a deceased employee brought action against the employer at common law, and collected benefits for the death of her husband due to silicosis, she was barred from collecting compensation under the death benefits rights of workmen's compensation law. State ex rel. Campbell v. Industrial Commission of Ohio, (1944). -- CCH

1077 Silicosis--Statutory Violation as Negligence Per Se.

In an appeal from a decision awarding compensation on the grounds of negligence per se, it was decided that violation of statutory duty, for which the lower court had held the employer liable, was not negligence per se, and the judgment was reversed. McKee v. New Idea, Inc., (1942) 44 N.E. 2d 697. -- CCH

1078 Silicosis--Partial Disability.

In the case of a worker who sought payment for a condition of partial disability due to silicosis, an award was denied, as the statute provides compensation only for temporary total or permanent total disability, or death. State of Ohio ex rel. Uska v. Industrial Commission of Ohio (1943) 66 N.E. 2d 331. -- CCH

1079 Federal Tort Claims Act--Tuberculosis--Exposure in Employee's Place of Work.

Where the claimant allegedly contracted tuberculosis as a result of exposure in his place of employment, he may seek redress under the Federal Employees' Compensation Act without regard to the issue of negligence or file suit under the Federal Tort Claims Act and suffer the burden of proving negligence. An employee of the federal government has stated a sufficient cause of action under the Federal Tort Claims Act if his complaint would satisfy the laws of the state where the tuberculosis was contracted, assuming he was proceeding against a private employer. Henson v. United States. United States District Court, Missouri. No. 6590. December 5, 1949. -- CCH

1080 Silicosis--Late Claim.

In the case of a worker who died from silicosis, both the claims for his period of disability and death were disallowed because the statutory limit had expired before filing. Raymond v. Industrial Commission of Ohio (1942). -- CCH

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1081 Pulmonary Tuberculosis.

The employee was exposed on occasion to carbon monoxide fumes and contracted pulmonary tuberculosis. It was held that pulmonary tuberculosis is not in itself a compensable disease, and outside of those compensable diseases named in the statute, no compensation is allowed except for an accidental physical injury. There is no evidence that the death of decedent was due to any physical injury or bodily impairment accidental in its cause and origin. Industrial Commission v. Ackerman, (1935) 199 N.E. 857. -- CCH

1082 Silicosis--Textile Worker--Medical Testimony--Sufficiency of Evidence--Claimant's Failure to Prove Existence of Disease.

A majority of doctors testified that a textile worker had not contracted silicosis, and since the judgment of a trial court is not disturbed where there is sufficient evidence to support its findings, the claimant's appeal was denied. Fraday v. Werthen Bag Corp., Tennessee Supreme Court, July 27, 1951. -- CCH

1083 Lead Poisoning--After Amendment.

Where a painter contracted lead poisoning, it was held that he had the right to elect within 90 days from the time he became disabled to sue for damages for violation of a safety requirement, under Section 1465-76, permitting such election. Maxwell Motor Corp. v. Winter, (1928) 163 N.E. 198. -- CCH

BOOKS, PAMPHLETS AND NOTICES

1084 Conference on Silicosis and Aluminum Therapy, January 29, 30 and 31, 1951. McIntyre Research Foundation, 25 King Street West, Toronto, Ontario. 108 pp., (1951). Copies obtainable at the above address.

The proceedings of this Conference have been fully and attractively published in this booklet, including the text of all the papers presented. The titles are: Prevention of Silicosis in Ontario Mines; Function of the Miners' Chest Examining Station; Progress in Medical Statistics in Ontario Mines; Tuberculosis Program in Ontario; Recent Advances in the Study and Treatment of Silicosis; Evaluation of Pulmonary Function Impairment by Physiological Studies on 400 Unselected Cases of Hard and Soft Coal Miners with Respiratory Complaints; Pneumoconiosis Research in Great Britain; A Preliminary Report of the Controlled Use of Aluminum Therapy in the Prophylactic Treatment of Silicosis; A Preliminary Report on Aluminum Prophylaxis; Experience of McIntyre Porcupine Mines, Ltd., in Combatting Silicosis; and a synopsis of a film presented on Ventilation and Dust Control in Ontario Mines.

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- 1085 The Application of Scientific Methods to Industrial and Service Medicine. (Proceedings of a Conference Held from March 29 to March 31, 1950). Great Britain, Medical Research Council, 112 pp., (1951). Price \$.75. Copies obtainable from British Information Services, 30 Rockefeller Plaza, New York 20, New York.

Fourteen papers were presented under the headings: Scientific Method in Field Surveys; Investigation of Health Hazards; and Improvement of Human Performance by Laboratory Studies. The health hazards include fluorosis and berylliosis, coalworkers' pneumoconiosis, connection between dust and disease, physiological assessment of shortness of breath, and pathological techniques in assessing toxicity.

- 1086 Outline of Lectures on Industrial Diseases for Medical Students. Revised Edition. H. Heimann. Public Health Service Publication No. 115. Federal Security Agency, Washington, D.C. 125 pp., mimeographed. (August, 1951).

This revised edition was planned as soon as the first edition (IHF Abstract 671, June, 1950) was prepared for duplicating, and incorporates many changes suggested by readers of the first edition. The entire field of industrial medicine is covered in outline form as a basis for presentation.

- 1087 Carbon Monoxide and Carbon Monoxide Poisoning. V. Raymond and A. Vallaud. Inst. Natl. Securite, 9 Ave. Montaigne, Paris. Monograph, 367 pp., (1950). Price 500 fr. (In French).

This monograph discusses the physical and chemical properties, methods of determination, and toxicology of carbon monoxide. Both acute and chronic carbon monoxide poisoning are reviewed along with methods of prevention and treatment. 610 references. -- Chem. Absts.

- 1088 Civil Defense in Industry and Institutions. Federal Civil Defense Administration. 60 pp., (August, 1951). For sale by Supt. of Documents, Washington 25, D.C. Price \$.25.

This manual presents recommendations for organizing and administering a civil defense self-protection program for the Nation's industrial plants and other institutions. The protective principles described apply most directly to industrial plants. The first step is a survey of the plant, involving possible exposures and emergency hazards, types of ventilation and power conditions, potential shelter areas, types of fire extinguishers, and watchmen or guard service. Forms are suggested for recording the results of such a survey. The next step is organization of protective services, with the duties of personnel outlined. The need of securing cooperation of employees and their complete organization is stressed.

Today we have but 322,000 trained nurses--the need is for 381,000 nurses. These figures exclude military needs. The military hospitals today have 3,000 nurse vacancies, and if our military forces are increased to the suggested figure we will need an additional 20,000.

-- Social Legislation Information Service

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INDUSTRIAL MEDICAL PRACTICE

NWBB-0014287

- 1089 The Use of Standard Films in the Radiological Diagnosis of Coalworkers' Pneumoconiosis. C.M. Fletcher and P.D. Oldham. Brit.J. Ind. Med. 8, 138-149, (July, 1951).

An experiment was designed to test the value of "standard films" in the quantitative classification of radiographs of simple pneumoconiosis of coal workers. The standard films are examples of the limits of the categories and are used in side-by-side comparison of the films to be classified. Film readers experienced and inexperienced in the method of classification participated in the tests. The use of standards enabled some, but not all, of the observers to achieve a greater accuracy and consistency in the classification. The least experienced observers benefited most, but they tended to make false diagnoses of abnormality in normal films when working with standards. On the other hand, the more experienced readers received help in the discrimination of normal films from those with slight abnormality. The chief practical use of standard films appears to be to enable wholly inexperienced observers to use a radiographic classification with an accuracy approaching that of the more experienced observers. It is suggested that in routine work, films should be read by at least two observers on two independent occasions, and that a third and deciding reading be made. Only films of first-class radiographic technique can be used for accurate diagnosis.

-- Cond. from Authors' Summary

- 1090 The Clinical Importance of Lesions Undetected in a Mass Radiographic Survey of the Chest. H.B. Zwierling, E.R. Miller, J.T. Harkness and J. Yerushalmy. Am. Rev. Tuberc. 64, 249-255, (September, 1951).

The study demonstrates that "active" lesions are as likely to be overlooked in mass surveys as are "inactive" ones. The problem of film interpretation is of extreme practical importance. The problem can be minimized to some extent by having the survey films read independently by more than one reader.

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- 1091 The Value of Exploration in Silent Lung Disease. R.H. Overhold. Diseases of Chest 20, 111-125, (August, 1951).

Diseases of the lung can be more easily discovered during their early and silent form than in any other internal organ. Different pathologic processes within the lungs may produce identical x-ray shadows. Conversely, the same disease entity may produce different x-ray shadows. All shadows cannot be labeled accurately at a time favorable for successful treatment unless surgical exploration is employed. Cancer of the lung is the most favorable of all internal cancer because its silent shadow appears in survey films, and it can be properly identified and excised in its early and local form. When silent cancer is treated promptly the cure rates should be high, but when symptoms appear, the likelihood of extrapulmonary extension of the cancer is high.

-- Cond. from Author's Summary

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- 1092 Silicosis and Diseases with an X-Ray Picture Similar to That of Silicosis. E. Beintker. Pracovni Lekarstvi 2, 249, (December, 1950). (In Czechoslovakian).

The x-ray diagnosis of silicosis, especially in its earlier stages, is often difficult because of similar opacities occurring in other diseases. The following diseases give roentgenograms that may cause difficulties: benign pneumoconiosis; barytosis and stannosis; siderosis of grinders and welders; pneumoconiosis of anthracite and steam-coal workers; tuberculosis; and cardiac hyperemia. As a result of studies in the Ostrava region and other places it became clear that it was necessary to introduce a definition and standards to overcome the confusion and ambiguity in diagnosis and classification. The generalized nodulation was taken as the standard, and standard x-ray photographs of every type and stage were used as an aid to classification. It was expected that modifications of the standards would be necessary in silicosis occurring in places other than mines. -- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1093 The Physician and Workmen's Compensation Cases. P. Thurber, P. Thurber, Jr., and W.I. Nesson. Calif. Med. 74, 247-249, (April, 1951).

The duties of the physician in workmen's compensation cases are reviewed for the benefit of physicians just entering the field or doing varying amounts of industrial surgery concurrently with private practice.

- 1094 Analysis of the Ventilatory Defect by Timed Capacity Measurements. E.A. Gaensler. Am. Rev. Tuberc. 64, 256-278, (September, 1951).

The deficiencies of the vital capacity as a test for ventilatory function have been outlined, and it is suggested that the use of this test for evaluation of pulmonary function be abandoned. An attachment for the vital capacity spirometer is described which automatically records both the total vital capacity and any volume expired during a pre-set interval of 0.1 to 10 seconds. The timing cycle is initiated by the patient's expiratory effort. The total vital capacity was severely reduced in patients with restrictive ventilatory insufficiency, but the timed percentages remained essentially normal. The reverse was true in cases of obstructive inefficiency. Unlike the total vital capacity, the timed capacities correlated very well with the maximum breathing capacity, the air velocity index, and the RV/TC ratio, and were very sensitive indicators of an artificially introduced stenosis of the airway. The timed vital capacity should be useful wherever a simple and inexpensive method for analysis of ventilation is needed, and for screening studies and large-scale investigations. -- Cond. from Author's Summary

- 1095 Accident Proneness in Multiple Sclerosis: Relationship to Trauma, with Medicolegal Implications. A.E. Bennett. J. Nervous & Mental Dis. 113, 198, (March, 1951).

The author reviews the literature and presents three cases from his own medicolegal experience. Although medical evidence is definitely against the theory that trauma causes or aggravates multiple sclerosis, compensation courts are granting large awards on that basis. The reason

for such decisions seems to be the failure to understand the disease and the peculiar types of personality changes. The same condition exists in the Veterans Administration; many persons who had multiple sclerosis prior to service are wrongfully drawing pensions for service-connected disability. The complexity of factors in the disease makes the patients more prone to meet with accidents and to accept them as causing or aggravating their symptoms. There is increasing need for a unified medical opinion to guide courts in decisions on such cases. One way to meet this need is to form a national committee of qualified physicians to study the relations of trauma to multiple sclerosis and other organic neurologic diseases. Expert witnesses, drawn from a panel of qualified neurologists certified by a medical society, who can give an impartial, unified opinion, should replace the present method of retaining experts expected to render favorable opinions to the side retaining them.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1096 Symposium on the Treatment of Chronic Beryllium Poisoning with ACTH and Cortisone. Occupational Medical Clinic, Massachusetts General Hospital, Boston, December 13, 1950. Arch. Ind. Hyg. & Occ. Med. 3, 543-630, (June, 1951).

Fifteen papers were presented at this symposium, all but one reporting on the effects of treatment of beryllium poisoning with ACTH and cortisone, sometimes in conjunction or in comparison with other forms of treatment. The remaining paper described a case of spontaneous recovery. The papers differ in length and emphasis; two authors call attention especially to the need of further investigation. There is very general agreement on one important point, that both drugs generally lead to improvement in symptoms, but that the effect does not persist after cessation of the treatment. Several authors discuss complications arising from the treatment, and their prevention.

- 1097 Effect of Adrenocorticotrophic Hormone (ACTH) on Beryllium Granulomatosis and Silicosis. B.J. Kennedy, J.A.P. Pare, K.K. Pump and others. Am. J. Med. 10, 134, (February, 1951).

Administration of ACTH to three patients with chronic beryllium granulomatosis led to striking improvement in two and some improvement in the third. Improvement was also demonstrated in one patient with silicosis. The period of observation was too short to determine how long the improvement will persist after cessation of the therapy. In the case of silicosis, further investigation is needed. -- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1098 Memorandum on Electric Arc Welding Form 329 (Fourth Edition 1945, Revised 1950). Great Britain, Ministry of Labour and National Service, Factory Department. 15 pp. His Majesty's Stationery Office, London, 1950.

The hazards inherent in electric arc welding and means for their prevention are covered briefly.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

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- 1099 The Relation of Nursing to Dentistry in Industry.
L.S. Morvay. Nursing World 125, 406, (Sept., 1951).

Now added to the many responsibilities of the industrial nurse is that of assisting the industrial dentist and of giving dental first aid to employees. A good industrial program includes a preemployment examination with roentgenograms, follow-up, correction of existing dental defects, and periodic dental examinations. In such a program the nurse plays an important part. An outline of a well-defined procedure to be given as standing orders by the dentist is presented.

- 1100 Industrial Dental Health Program Sponsored by the Cooperative Service, Wyomissing, Pennsylvania. H.H. Dougherty. Ind. Med. & Surg. 20, 408-410, (September, 1951).

The Cooperative Service maintained by several companies in the district is described. Such a service has been maintained for 30 years, but has recently been modified and extended. It comprises preemployment examination, treatment of emergency cases, x-ray examination requested by private practitioners, and pre-retirement examination. Satisfactory relations are maintained between the Service dentists and private practitioners and the line of demarcation between their functions is well established. It is too early to assess the results of the modified program statistically, but the cooperation of employees is good and a large number are seeking dental treatment. The dental cost per capita in 1950 was approximately \$2.50.

- 1101 Symptomatic Treatment of the Common Cold. R.F. Buchan, A.E. Gras and F.H. David. Arch. Ind. Hyg. & Occ. Med. 4, 32-42, (July, 1951).

The total number of cases of common cold in which the patient experienced some relief from the antihistamine on the first day exceeded by approximately 10% the total number in which the patient derived relief from inert placebos. While this difference is statistically significant, the degree of relief afforded relatively few patients does not warrant general clinical application of antihistamine medication in the palliation of colds. The phenindamine-acetylsalicylic acid-acetophenetidin-caffeine compound was no more effective than antihistamine alone. The acetylsalicylic acid-acetophenetidin-caffeine compound as used produced palliation no greater than a placebo in the symptom complex under study. -- Authors' Conclusions

SKIN DISEASES AND BURNS

- 1102 Environmental Cancer and Petroleum. S.J.M. Auld. J. Inst. Petroleum 36, 235-253, (1950).

Cancer due to contact with tars and oils has occurred in a limited number of workers in the light oils and waxes from shale, lubricating oil users, such as mule skimmers, and users of cutting oils. Mule skinner's cancer has been avoided by the use of highly refined white oils. Certain

cracked oils contain a small proportion of carcinogens; such compounds are apt to be concentrated in oil extracts, if this method of refining is used. Attention should be paid more to cleanliness and the avoidance of continuous contact with the oil than to the nature of the oil.

-- Arch. Ind. Hyg. & Occ. Med.

- 1103 A Case of Occupational Iron Pigmentation of the Skin. P.J. Hare. Brit. J. Dermat. 63, 63, (February, 1951).

The case reported concerns a man, 29, who while "pickling" metal in hydrochloric acid sustained a violent dermatitis of the forearms, which were unprotected. The inflammation subsided after two weeks' treatment with calamine lotion. Pigmentation persisted without change. He did not know of other workmen affected in this way. On examination the skin was healthy except for the pigmentation. The spots were arranged in well-demarcated bands around the wrists and in scattered groups on the flexor aspects of the forearms. The individual lesions were sharply defined, purplish-brown areas, 1 to 2 mm. in diameter, flat or a little depressed. Some of the macules were pierced by hairs. Others showed translucence centers. One's first impression was of perifollicular purpura. The clinical appearance of the lesion closely resembled that in cases of iron pigmentation due to therapeutic misadventures. The histologic aspect is described and an explanation of the punctate arrangement is offered. The exact nature of the pigment remains unknown. The problem remains why this clinical picture should be so rare in view of the extensive use of iron salts in industry.

-- Arch. Ind. Hyg. & Occ. Med.

- 1104 Electroplating. Data Sheet D-Gen. 46. National Safety News 63, 32, 33, 101-109, (July, 1951). Obtainable from National Safety Council, 425 North Michigan Avenue, Chicago 11, Illinois

The usual types of solutions found in different plating baths are enumerated. They vary in hazardous properties, but there are a number of harmful effects which are discussed briefly. They include: injury to the skin and mucous membranes; burns from extensive contact; splash burns involving the eyes; ulcerations, including perforation of the nasal septum; "chrome holes" and similar lesions from fluorine compounds; irritation of the upper respiratory tract; inflammation of the hair follicles; redness, dryness, and chapping of the skin; contact dermatitis or eczematous dermatitis; systemic intoxications from metals; cyanide poisoning; chlor-acne and liver injury from prolonged contact with chlorinated naphthalene and chlorinated diphenyl; and explosion hazards when perchloric acid is used and when hydrogen escapes.

Some of these injuries are infrequent and arise only from accidents. Precautionary measures include pre-employment and periodic physical examinations, protective clothing, eye baths, showers, use of nontoxic materials when possible, protective railings and other mechanical safeguards, proper storage, and sanitary measures. Ventilation is discussed in some detail, including use of noncorrodible material for ducts, and careful maintenance.

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November

IN RE: ABRAMS

HWBB-0014291

CHEMICAL HAZARDS

- 1105 Epidemiology of Beryllium Intoxication. J.H. Sterner and M. Eisenbud. Arch. Ind. Hyg. & Occ. Med. 4, 123-151, (August, 1951).

Developments during the past few years have dispelled many doubts as to the role of beryllium in the etiology of various disease manifestations: (1). The acute toxicity of beryllium per se has been demonstrated in laboratory animals. (2). There have been a number of reports of cutaneous granulomatous lesions which followed the accidental implantation of fragments of fluorescent tubes containing beryllium phosphors, and these lesions have been duplicated in laboratory animals. (3). The number of cases of chronic disease reported in the literature has increased substantially. Of equal significance is the fact that no one has reported similar groups of cases in which beryllium exposure was not involved but in which one finds the characteristic clinical, roentgenologic, and pathologic complex seen in berylliosis. An extensive summary of these three classes of data follows.

-- Cond. from Authors' Summary

- 1106 Anemia in Acute Experimental Beryllium Poisoning. H.E. Stokinger and C.A. Stroud. J. Lab. Clin. Med. 38, 173-182, (August, 1951).

Anemia has been produced in three species of animals, the dog, rat and rabbit, inhaling beryllium salts. The anemia resembles the macrocytic type, is mild in degree, and differs according to species. Attempts at treating the anemia with common blood-regenerating agents appeared to be successful, as was prophylaxis, in limited numbers of one species (rat) whereas the treatment worsened another (dogs). Recovery from the anemia occurred spontaneously, requiring from 3.5 to 4 months in dogs, despite the presence of considerable amounts of beryllium in the tissues.

-- Authors' Summary

- 1107 Mechanism of the Action of Beryllium Dust (Glucina) on the Lungs of Mammals. A. Policard. Compt. Rend. 230, 899-901, (1950). (In French).

Beryllium dusts in physiological solution were injected into the lungs of the quinea pigs by an intratracheal or nasal route under deep anesthesia. The dust particle sizes were determined by the electron microscope as follows: less than 0.2 micron, 43%; 0.2 - 0.4, 46%; 0.4 - 0.6, 8%; greater than 0.6, 3%. Characterization of the beryllium in the isolated sections was made by incineration and dyeing with Ponceau Red. In the mammalian lung hydrated beryllium dust is localized and concentrated in the bronchioles or alveoles. The bronchial epithelium undergoes necrosis and at a distance from the site, hyperplasia of cellular elements leading to the formation of granulomas. The dust finally disappears as the result of phagocytosis or bronchial expulsion.

Cond. from Chem. Absts.

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- 1108 Damage Caused by Boron Compounds. Queries & Minor Notes.
J. Am. Med. Assn. 147, 98, (September 1, 1951).

Can either allergic rhinitis or dermatitis of the face be produced in industry where both boric acid and borax particles fill the air?

Repeatedly since 1881, boron compounds have been reported as causative of both surface and systemic damage. Injury has followed ingestion, hypodermic injection, enemas, pleural lavage, ointment application, and industrial exposure. Hypersusceptibility is the rule, but susceptibility did not enter in a series of fatal cases in which boric acid solution accidentally was substituted for water in nipple bottles for infants. Exposure may be acute or chronic, and the consequences likewise may be acute or chronic. Currently the commonest lesion is that of eczematous dermatitis, with the chief location about the face. Present day concepts of sensitization imply that almost any agent capable of producing a surface lesion may, through tissue damage, create a specific allergy. On this basis a boron-induced allergy becomes tenable, but this is not the usual form of damage.

- 1109 Occupational Cancer and Other Health Hazards in a Chromate Plant: A Medical Appraisal. II. Clinical and Toxicologic Aspects. T.F. Mancuso.
Ind. Med. & Surg. 20, 388-407, (September, 1951).

The author's extensive study of workers in a chromate plant showed that workers exposed to the inhalation of chromate and chromite dust may develop various acute and chronic injuries to the tissues of the respiratory system, which are listed, and are excessively liable to inflammatory and ulcerative conditions of the digestive tract caused by ingestion of chromates. The same reactions may be observed less frequently and to a smaller degree among persons employed in the immediate environment of chromate plants. The exposed workers also exhibit various blood changes which are described. The bleeding time is often lengthened. A variable urine and blood chromium level exists, depending upon the intensity of exposure. This persists for several years after cessation of exposure, and thereby provides a relatively sensitive index of previous exposure. Workers exposed chiefly to chromate dust usually develop a higher blood chromium level than those having contact mainly with chromite dust. The retention of chromium in the various tissues may account for the prolonged excretion of chromium with the urine and may also be related to the delayed cancerous effects observed in the lungs of former chromate workers.

- 1110 An Appraisal of a Urinary Porphyrin Test in Detection of Lead Absorption.
A.L. Brooks. Ind. Med. & Surg. 20, 390-392, (September, 1951).

The author outlines an easy and convenient porphyrin test, requiring little skill, equipment, or time. Persons with no exposure are almost invariably negative. Occasionally a negative test is given by persons with known exposure, for reasons not understood. All persons with definite evidence of intoxication give positive tests. Porphyrin is found in the urine before stippled cells appear. Excessive porphyrin may be found long after cessation of exposure and after disappearance of blood lead, suggesting damage to the hematopoietic system that is not easily repaired. While the test is not conclusive, it can be used to supplement the more widely known ones. Repeated negative findings give reliable assurance that lead poisoning is not impending.

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- 1111 Lead in Relation to Disseminated Sclerosis. A.M.G. Campbell, G. Herdan, W.F.T. Tatlow, and E.G. Whittle. Brain 73, 52-71, (1950).

The history of the association of lead with diseases of the central nervous system was reviewed. The lead content of the soil was studied in the homes of country victims of disseminated sclerosis, all of whom had long been resident in their villages. In the soil of one village the lead content was significantly high. The incidence of the disease in the two villages studied was abnormally great compared with findings in other areas. Lead as an occupational hazard is discussed in relation to conditions resembling disseminated sclerosis. The lead content of the teeth of the patients was on the average significantly higher than in control groups. It is suggested that this evidence implies that lead does play some part in the etiology of disseminated sclerosis and that lead may interfere with some essential mineral, vitamin, or enzyme reaction and thus precipitate demyelination. This is discussed in relation to other diseases of the nervous system.

-- Chem. Absts.

- 1112 Intestinal Volvulus Precipitated by Lead Poisoning. K.E. Berger and E.A. Lundberg. J. Am. Med. Assn. 147, 13-16, (September 1, 1951).

Five cases of volvuli associated with lead poisoning are presented. One was fatal through failure to recognize early that both were present, but the other four patients recovered, after prompt surgery in two cases. The hitherto unmentioned relation of lead poisoning to intestinal volvuli is discussed.

- 1113 How Poisonous is Mercury? J.B. Lawrence. Chem. & Eng. News 29, 3529-3531, (August 27, 1951).

Investigations of the toxicity of mercury vapor, which are reviewed here, have yielded widely varying results. The National Institutes of Health set the permissible limit at 100 micrograms per cubic meter. Much higher concentrations have been found in laboratories kept closed at high temperatures for long periods. While few cases of mercurialism have been found in laboratories or workrooms, except in the hatters' industry when mercury was used, the hazard must be recognized. A number of precautions have been recommended, but they are likely to be neglected on account of the infrequency of poisoning. Spilled mercury may be collected by a "mercury magnet", which is a spiral of copper wire treated with nitric acid and then amalgamated. Washes containing alkali and sulfide convert small drops of mercury to the nonvolatile sulfide. Distillation and cleaning of mercury should be carefully conducted with suitable exhausts. Various forms of detectors are mentioned.

- 1114 Observations in Argyria. R.F. Holden. J. Lab. Clin. Med. 36, 837-838, (1950).

Two cases of industrial argyria resulting from handling of soluble silver salts were studied. A simple objective means of demonstrating early changes was found in a decreased reflection of filtered ultra-violet light from skin and eye surfaces as compared with control subject. The effect was recorded photographically (Kodachrome), and was more prominent than

surface changes demonstrable by ordinary color photography. No definite electrocardiographic abnormalities were found in two cases of industrial argyria, nor in five cases of post-medication argyria. -- Biol. Absts.

- 1115 The Acute, Chronic and Topical Toxicity of Zirconium Carbonate.
J.W.E. Harrison, B. Trabin and E.W. Martin. J. Pharmacol. & Exptl. Therap. 102, 179-184, (July, 1951).

Hydrated zirconium carbonate produced no acute toxic effects when administered orally or intravenously to rats in doses up to 1.5 to 2 g. per kg. No chronic effects were produced in rats receiving up to 20% zirconium carbonate in their food for 17 weeks, or in kittens ingesting food containing 5%. No systemic effects or sensitization followed the application of an ointment containing 20% of the compound.

- 1116 Successful Treatment of Cyanide Poisoning.
H. Hartelius. Nord. Med. 44, 1747, (1950). (In Swedish).

A case of acute cyanide poisoning is described. The patient had swallowed 4 grams of sodium cyanide in order to commit suicide. His life was saved by the administration of oxygen and the intravenous injection of sodium thiosulfate. The various forms of treatment mentioned in the literature are discussed. As adjuvants to oxygen, a combination of nitrites and sodium thiosulfate or of copper chloride and sodium thiosulfate is recommended by the writer.

-- Author's Summary from Brit. J. Ind. Med.

- 1117 Three Men Overcome by Hydrogen Sulfide in Starch Plant. L.W. Spolyar. Ind. Health Monthly (USPHS) 11, 116-117, (August, 1951).

A man draining a gluten vat in a starch manufacturing plant, and two who attempted to rescue him, were overcome by what appeared to be a hydrogen sulfide exposure. One of the rescuers died from a skull fracture sustained from a fall, but the other two recovered in seven days. A sample of the sludge was found to generate hydrogen sulfide in high concentration on standing. Bacteriological examination disclosed the presence of a fungus of the *Geotrichum* species which produces large amounts of hydrogen sulfide in culture.

- 1118 Diesel Locomotives in Mines. Production of Toxic Gases. P.G. Taigel. Abstract. Coll. Guard. 183, 177-180, (August 16); 227-231, (August 23, 1951).

The author reports an extensive investigation of the production of toxic gases, especially carbon monoxide and nitrogen oxides, in the exhaust gases of diesel engines, both in the laboratory and in the mines. The tests were mainly confined to one make of engine and for that reason and others, a number of points deserve further investigation. In the laboratory tests it was found that production of nitrogen oxides decreases with use. However, in the field tests the highest carbon monoxide concentrations were found in old engines that were in need of overhauling. Some concentrations were above the safe limit of 2000 ppm. There is some evidence

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that improved engine conditions result in lower carbon monoxide but increased nitrogen oxides. The indirect-injection types of engines, which are used in the United States, produce less nitrogen oxides than the direct-injection or open combustion types generally employed in Great Britain. Maximum nitrogen oxide production does not occur at the maximum load and speed, but rather at the maximum brake mean effective pressure. The fuel used in most tests was high in nitrogen and sulfur, and a few experiments indicated that the nitrogen oxide production is considerably lower from a low-nitrogen fuel. Several types of conditioners to remove the toxic gases from the exhaust were investigated. They all present difficulties, particularly because they depend upon the human element for efficient operation. It is better to remove the gases at the source. In the discussion several questions were raised and some other brief investigations reported, showing the need of additional study of the problem.

- 1119 Range-Finding Toxicity Data: List IV. H.F. Smyth, Jr., C.P. Carpenter, and Carrol S. Weil. Arch. Ind. Hyg. & Occ. Med. 4, 119-122, (August, 1951).

The earlier lists of toxicities are here extended to include other materials that are handled in commercial quantities or have been evaluated for specific commercial application within the past few years.

- 1120 Morphologic Lesions Due to Acute and Subacute Poisoning with Antifreeze (Ethylene Glycol). D.E. Smith. Arch. Path. 51, 423-433, (April, 1951).

Two cases of subacute poisoning due to drinking "permanent-type antifreeze" (ethylene glycol) in which the subjects died 11 and 12 days after poisoning and six cases of acute poisoning due to the same substance are reported. Focal hemorrhagic necrosis of the renal cortices and extensive hydropic degeneration of the liver and kidneys were features of the cases of subacute poisoning not present in the cases of acute poisoning reported here and by other authors. The crystals of calcium oxalate deposited in the renal tubules and about blood vessels in the leptomeninges are characteristic of poisoning with ethylene glycol but can result from poisoning with a few other substances. The combination of the presence of the crystals and hydropic degeneration in the liver and the kidneys is relatively specific for subacute poisoning with ethylene glycol. A doubly refractile substance of unknown significance was observed within the nuclei of cells of various tissues in these cases. -- Author's Summary

- 1121 Generation of Phosgene During Operation of Trichloroethylene Degreaser. L.W. Spolyar, R.N. Harger, J.F. Keppler and H.E. Bumsted. Arch. Ind. Hyg. & Occ. Med. 4, 156-160, (August, 1951).

Through a series of errors, trichloroethylene was used in a perchloroethylene tank on which the electric limit controls were set for perchloroethylene. The sump thermostat was broken. A space heater was located near the tank, and the temperature of the space heater and stack gases (about 920 F., according to the manufacturer) was not enough to break down trichloroethylene to phosgene, the break-down temperature being 752 to 932 F. Under test conditions, high concentrations of phosgene and trichloroethylene were found. Under adverse weather conditions, back

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pressure in the stack and smoke pipe could develop. The stack barely protruded through the roof and was so located as to produce poor draft. The autopsy findings were consistent with exposure to phosgene, although circulatory collapse from trichloroethylene must be considered.

-- Authors' Summary

- 1122 Erosion of Teeth Due to Tartaric Acid Dust. W.B. Elsbury, R.C. Browne, and J. Boyes. *Brit. J. Ind. Med.* 8, 179-180, (July, 1951).

Erosion of the teeth of girls working in an atmosphere containing dust composed of a mixture of tartaric acid, sucrose, magnesium sulfate, and sodium bicarbonate, is described. Gravimetric analysis of the dust showed an average concentration in the shop of 15 mg. per cu. m. Exposure during 30 hours per week to this concentration, which it is estimated, constituted an average of 1.1 mg. per cu. m. of free tartaric acid, produces clinical erosion of the teeth which may be detectable after an exposure of six months.

-- Authors' Summary

- 1123 Death from Trichloroethylene in a Dry-Cleaning Establishment. A. Bell. *New Zealand Med. J.* 50, 119-126, (April, 1951).

Fatal exposure to trichloroethylene occurred in a very small room in which the operations of dry-cleaning were conducted. The rather crude ventilating system, supplying air from the ceiling, was considered adequate, but leaks from the equipment, gaps in the walls, and partial stoppage of the exit, combined to make the system inefficient. Reclamation of the solvent took place in a separate semi-open shed, and there again, poor maintenance prevented efficient operation. The operators frequently smoked in the dry-cleaning room. Death was considered due not only to the immediate exposure but to continued neglect of precautions. Recommendations are made for satisfactory ventilation, with a graph showing the relation of air changes per hour to solvent evaporated.

- 1124 Pathological Histology of Acute Benzene Poisoning. Observations on Primary Lipoid Formation in the Brain. H. Klein. *Dtschl. Z. Ges. Gerichtl. Med.* 40, 76, (1950). (In German).

A case of fatal benzene poisoning following accidental ingestion is described. Pathologically the condition is characterized by congestion and hemorrhagic edema of the lungs, fatty degeneration of voluntary muscles, dissociation, pericapillary edema and fatty degeneration of the liver, and fatty degeneration of the convoluted tubules of the kidney. The brain and spinal cord show a generalized fatty degeneration of ganglion and glia cells associated with fatty infiltration of the endothelial cells of their blood vessels, accompanied by perivascular edema. No degeneration of myelin sheaths was observed. After 24 hours benzene poisoning could no longer be demonstrated chemically.

-- Brit. J. Ind. Med.

- 1125 Indiana Worker Dead from Accidental Exposure to 2-Amino Pyridine. L.W. Spolyar. *Ind. Health Monthly (USPHS)* 11, 119, (August, 1951).

While attending a production fractionating column, an employee accidentally spilled a bucket full of 2-amino pyridine over his arms and lower extremities. He continued to work in wet overalls for over an

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hour. He became very ill, with dizziness, headache, breathing difficulty, semiconsciousness, and mild convulsions, and died a day later. The autopsy showed engorgement of all cerebral vessels, hepatization of the lungs, hemorrhage of the liver, and a mildly dilated heart. Very little information was found on the toxicity of 2-amino pyridine, although animal experiments indicate that it is toxic even if not lethal. Whether or not skin absorption occurs could not be established in the literature or through the case. It may be assumed that the respiratory hazard is greatest. To minimize the hazard in the future, employees were again instructed to wash immediately after skin contact. The chemical was collected in a drum, eliminating further handling in the liquid stage. Local exhaust systems are being prepared.

- 1126 Methoxychlor. C.J. Krister. Agr. Chemicals 6, 39-41, 93, (July, 1951).

The literature on 2,2-bis (p-methoxyphenyl)-1,1,1-trichloroethane, known commercially as methoxychlor, is reviewed. It ranks high as an insecticide, but in human and animal toxicity it is 21st in the list of common insecticides. A number of tests have shown it to be much less toxic than DDT, and that it decomposes completely in the body, so that there is no storage in fat or other tissues.

- 1127 Organic Pesticides--New Health Hazards. J.C. Ward.
Arch. Ind. Hyg. & Occ. Med. 4, 152-155, (August, 1951).

The author discusses the progress of legislation regarding pesticides and the problems in evaluating their hazards and supplementing present laws. The recommendations include proper warning labels, greater care in airplane distribution, and fuller investigation of chronic effects. Aggressive cooperation of regulatory, advisory, health, and welfare agencies, and especially of governmental industrial hygienists, is urged.

- 1128 Toxicity Hazards. S.F. Bailey and L.M. Smith. Agric. Chemicals 6, 35-37, 109, 111 (May, 1951); 51, 53, 107-113 (June, 1951); also as a chapter in "Handbook of Agricultural Pest Control" by the same authors.

Injury to plants and to persons are both considered, with emphasis on the latter. The most common old and new pesticides are tabulated, with their toxicity by mouth, by inhalation and by skin absorption. Another table describes the gas masks that are used, with their fields of application. Precautions against inhalation and skin contact are described. Some preparations with flammable solvents involve a fire hazard. Legal hazards are discussed, with a brief digest of the laws that apply to protection of the user and to toxic residues.

- 1129 Alterations of the Respiratory Passages by the Inhalation of Bituminous Vapors. P. Zeglio. Rass. Med. Ind. 19, 268-273, (1950). (In Italian).

Although the few references in the literature state otherwise, bituminous vapors produce not only a disagreeable sensation of tickling and burning in the throat, but also a persistent inflammatory condition which affects both the larger airways and the bronchioles. Rhinitis,

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pharyngitis, and laryngitis are described. Rhonchi and sibillant rales are heard in both bases. The roentgenogram shows accentuation of the hilar nodes, exaggeration of bronchovascular markings, and frequent evidence of bronchiectasis at both bases.

-- Biol. Absts.

- 1130 Lesions of Bladder and Kidney in the Dyestuff Industry.
A. Muller. Helvet. Chir. Acta. 18, 1, (1951).

This report is based on a review of the literature and on the author's 25 years' experience in the industrial area of Basle, Switzerland. A total of 161 of the author's own cases are discussed, including 43 cases of papilloma, 96 of carcinoma, and 22 of hemorrhagic cystitis.

The substances probably responsible for the bladder and renal lesions are anthracene and aromatic amines, especially aniline, benzidine, and alpha- and beta-naphthylamine. They are inhaled in the form of gas or dust and excreted in the urine. Ferguson and Gay, however, are of the opinion that the tumors are not produced by the urinary content but rather by the toxic substances present in the blood.

Only cystoscopic examination will permit a definite diagnosis. Necropsy studies on 55 patients convinced the author that these tumors are highly malignant and produce metastases. The tumors are located most frequently in the trigonum, but may occur in other parts of the bladder, the kidney, and the associated region. In the extra-bladder cases, there were also tumors in the bladder. The multiple tumors were not the result of propagation or metastasis. Treatment takes the form of coagulation with the benign growths; with carcinoma, resection of the bladder is necessary; recently total cystectomy has been employed. Measures taken to prevent the development of tumors include improving factory hygiene and changing certain manufacturing methods so as to reduce exposure to noxious substances. Furthermore, workers are kept under medical control, with cystoscopic examinations at regular intervals.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1131 Occupational Tumors of the Urinary Bladder. A. Owe-Larsson.
Nord. Hyg. Tidskr. 12, 353-364, (1950). (In Swedish).

The writer gives a survey of vesical tumors caused by certain chemical agents particularly used in the manufacture of dyes. Different opinions concerning the pathogenesis and various etiological agents are discussed. There is convincing evidence that beta-naphthylamine is carcinogenic. The question of a possible carcinogenic action of benzidine, alpha-naphthylamine, and aniline in man is still a subject of discussion among various authors, but it seems probable that at least benzidine may give rise to vesical tumors. Symptomatology and prophylactic measures are briefly outlined. An account of experimental vesical tumors is also given.

Aniline is used only to a very limited extent in Swedish industry. No cases of occupational tumors of the bladder have been reported in Sweden. The importance for the rubber industry of using pure phenyl-beta-naphthylamine (i.e., not contaminated with beta-naphthylamine) is emphasized.

-- English Summary--Arch. Ind. Hyg. & Occ. Med.

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INDUSTRIAL DUSTS

- 1132 The Solubility Theory of Silicosis. E.J. King.
Wissenschaftliche Forschungsber 60, 212-230, (1950). (In English).

According to the chemical theory of silicosis, which has entirely superseded the mechanical theory, free silica must have a definite solubility in blood plasma. Very finely powdered quartz and other forms of free silica dissolve to the extent of about 14 mg. per 100 ml. of plasma or buffered Ringer's solution. The finely powdered dust of silicates (kaolin, sericite, etc.) releases only about 1 mg. or less silica per 100 ml. into solution under similar conditions. Either natural or synthetic mixtures of quartz and many natural silicates have similar low silica solubilities, seeming to indicate that the silicates have a depressant effect on the solubility of the quartz.

Animal experiments and industrial experience show that fibrosis is produced by free silica, but that mixtures of quartz with silicates produce only a marked foreign body reaction with focal accumulation of the mineral dust in lesions which contain very much less fibrous tissue than those produced by quartz. Thus a parallelism is found between the silica solubility of mineral dusts and their pathogenicity. In the mixtures discussed the contained silicate dusts appear to have an antidotal action, both in respect of solubility and pathogenicity, on the quartz present.

-- Cond. from Author's Summary

- 1133 The Inhibition of Silicosis with Aluminum. E.J. King.
Wissenschaftliche Forschungsber. 60, 278-302, (1950).

As noted in the preceding paper, shale dusts and many silicate dusts, depress the solubility and pathogenicity of quartz. The depressant of silica solubility is aluminum hydroxide, which dissolves from the silicate dusts, and found a layer on the surface of the quartz particles, thereby preventing their dissolution. Finely powdered aluminum metal, aluminum hydroxide, and some varieties of aluminum oxide depress the silica-solubility of quartz powder from 14 mg. per 100 ml. to less than 1 mg., for the same reason. Small percentages of finely powdered aluminum metal or hydroxide (1 or 2%), mixed with powdered quartz, prevent or greatly retard the development of experimental silicosis in the lungs of rats, and the development of nodules in the livers of rabbits.

The results of the American experiments on aluminum treatment of silicosis are discussed. Because of the extreme chronicity of silicosis and the slowness with which it develops, it is not yet possible to arrive at a definite conclusion as to the benefit, or possible injury from the use of aluminum. Caution is therefore advised in considerations of any extension of aluminum prophylaxis or therapy to industry in Europe.

-- Cond. from Author's Summary

- 1134 Pulmonary Tuberculosis in Dockers. (Grain-Workers).
L. Dunner and R. Hardy. Tubercle 32, 164-167, (August, 1951).

In the period of 1941-51, 192 grain-workers were referred for chest investigation--75 were found to have pulmonary tuberculosis; 54 were

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"open" cases. The high tuberculosis incidence, although as yet unconfirmed statistically, is related probably to work-conditions rather than to socio-economic status. It is thought that more comprehensive surveys among grain-workers are warranted on the evidence herein presented, primarily in the interests of the workers themselves. -- Authors' Summary

- 1135 Studies on Aerosols VII. Dust Aggregation with Sodium Chloride Aerosols. Differentiation under the Electron Microscope of Silica Dust Particles and Sodium Chloride Crystals. L. Dautrebande, H. Kahler, J. Lloyd and R.R. Mitchell. Arch. Internat. Pharmacodyn. et Ther. 80, 413-419, (1949). (In French).

Sodium chloride aerosols induce aggregation of fine silica dust particles.

-- Biol. Absts.

- 1136 History of Lung Diseases of Coal Miners in Great Britain: Part I, 1800-1875. A. Meiklejohn. Brit. J. Ind. Med. 8, 127-137, (July, 1951).

The progress in the knowledge of the nature of miners' lung diseases over the period is summarized, with numerous quotations from writers of that time. Although some of the opinions were erroneous and there were many controversies, it was becoming apparent by 1875 that the noxious factor was stone dust rather than coal dust. At the same time it was increasingly recognized that ventilation, sanitary conditions, and working hours were factors, and improvement along those lines led to an extensive decrease in miners' lung diseases.

- 1137 Course, Development, and Prognosis of Silicosis and Silico-Tuberculosis in German Mining Regions on the West Side of the Rhine. G. Worth and E. Dickmans. Tuberkulosearzt 4, 495, (September, 1950). (In German).

A silicosis incidence of 30%, mostly in the first stage, was found among the miners who had worked in the mines for five to ten years. Among those who had worked for 26 to 30 years, 34% have silicosis, of moderate severity in one third of the men. It must be remembered that those with severe silicosis and some of those in the moderate stage have given up underground work. A total of 87 cases of uncomplicated silicosis, and 25 of silicosis with tuberculosis were detected in the years 1936 to 1940 in the 1,072 investigated. The statistics do not permit comparison with the fuller statistics gathered east of the Rhine, but on the whole the authors gained the opinion that the incidence of silicosis is lower in the west region. Still it is considerable, although the rock formations are less dangerous. The authors stress the importance of medical supervision of miners to detect early stages of silicosis, making retraining for other work possible at an early age. -- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1138 Size of Cuttings Produced by Pneumatic Drilling with Different Kinds of Detachable Bits. C.E. Brown. Arch. Ind. Hyg. & Occ. Med. 4, 103-118, (August, 1951).

The size of cuttings produced by pneumatic wet drilling into quartz monzonite with an automatic stoper equipped with four kinds of double-taper, center-hole, detachable bits was determined by sieving samples

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of all the cuttings from the hole and by microscopic measurement of the size of the cuttings in samples of the subsieve cuttings. Dry-sieving determinations were made on all samples of cuttings, and a wet-sieve determination was made on one sample. The mass median diameters of the six samples of cuttings, as determined by sieving, ranged from 180 to 250 microns, and the standard geometric deviations ranged from 4.0 to 5.1.

The calculated number median diameters ranged from 0.076 to 0.66 micron. The percentage by weight of the particles smaller than 3 microns in diameter, determined by extrapolation, ranged from 0.065 to 1.7, and their percentage by number ranged from 80 to 99. These data indicated that the sizes of cuttings produced by the four different kinds of drill bits did not differ widely. (Results are tabulated for each type of bit.) The sieving data followed the logarithmic-probability law as well as, or better than the Rosin-Rammler law. -- Cond. from Author's Summary

- 1139 Organic Compounds of Silicic Acid. XV. The Formation of Organic Silicate Compounds. Luise Holzapfel, W. Engel and P. Fahrnländer. *Kolloid. Ztschr.* 115, 137-142, (1949).

If bovine blood is shaken with quartz particles, cholesterol and fatty acids are absorbed by the quartz. Freshly broken-up quartz has higher absorbing power than old quartz powder. Galactose also is absorbed. Asbestos absorbs cholesterol and fatty acids, as well as a carbohydrate component containing about half of the available galactose. If colloidal silicic acid is injected into rabbits, a galactose compound is formed which is sticky and glue-like and shows saponin reactions. All the compounds mentioned are part of a complex called protagon. The reaction of the quartz or asbestos with living matter appears to involve the formation of rubber-like galactosides and esterification of the silicic acid. (Editor's note--This paper is one of a series dealing with compounds of silicon with fats and organic acids. Some of the papers have biological implications. They can be found in Chemical Abstracts for the past few years.) -- Chem. Absts.

- 1140 Reaction of Quartz and Fatty Substances in Silicotic Lungs. Luise Holzapfel and P. Fahrnländer. *Naturwissenschaften* 35, 314, (1948).

In continuing previous work model tests showed that interaction of quartz or asbestos and blood causes a preferred adsorption of lipoids, with splitting-up of the cholesterol ester component into cholesterol and fatty acid. This process is considered an essential feature of the silicosis mechanism. For the reaction it is not necessary to have colloidal silica, since any fresh silica surface is adequate; a fatty surface does not react. (See Editor's Note in preceding abstract.) -- Chem. Absts.

- 1141 Blood Protein Fractions in Silicosis and Silico-Tuberculosis. H. Bauer. *Arch. f. Hyg. & Bakt.* 133, 265, (1950). (In German).

Early diagnosis of tuberculosis as a complication of silicosis presents an important but difficult problem. Roentgenograms, clinical manifestations, tuberculin tests, and serologic reactions are frequently of little aid in diagnosis. The erythrocyte sedimentation rate is not necessarily conclusive. The author has made an extensive study of the

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blood protein fractions, which behave differently in the presence of an exudative inflammatory process and in the presence of a proliferative cirrhotic inflammation. Fibrinogen and globulin and their fractions to a varying degree are increased at the expense of proteins in the presence of exudative inflammatory processes. The gamma globulin fraction is primarily increased in the presence of chronic inflammation with productive and cirrhotic processes. Weltmann's reaction, the Costa test, the cadmium sulfate reaction, and Napier's aldehyde test were compared as indications of the deviations of the gamma globulin. Each proved effective in a large percentage of cases, but none gave unequivocal results. Riebling's hydrochloric acid-collargol reaction was most useful in indicating severe hepatic impairment and cardiac decompensation.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 1142 Electron Microscopy of Asbestosis Bodies and the Fibers of Asbestos.
J. Champeix and J. Bouteville. Arch. Maladies Profess. 11, 607, (1950).
(In French).

Asbestosis bodies recovered from sputum have a central fiber of asbestos coated with a colloidal gel, which is probably protein. Removal of the enveloping gel by micromanipulation reveals some transparency of the edges of the asbestos fiber, believed to result from solution. Fibers shorter than 10 microns are not found in the bodies and it is suggested that the smaller fibers dissolve completely. On this evidence the authors suggest that pulmonary fibrosis may result from solution of asbestos rather than from some physical irritation. -- Brit. J. Ind. Med.

- 1143 Studies on Aerosols. VI. Effect of Aluminum Powder and of Sodium Chloride Aerosols upon the Pulmonary Deposition of Silica Dust (Long Exposure). L. Dauthebande and W.C. Alford, D.A. Irwin, E.R. Mitchell, E.C. Thompson, F.L. Weaver and E.J. Wood. Arch. Internat. Pharmacodyn. et Ther. 80, 388-412, (1949). (In French).

Prolonged inhalation of sodium chloride aerosols produces no harmful effects in rabbits and rats. The mixture of silica and aluminum aerosols with air containing a high concentration of quartz dust lessens the amount of dust deposited in the lungs. Histologic examinations of lung sections shows that the distribution of the aerosol-treated dust in the lung is less conducive to the development of silicosis than in the case of untreated dust. -- Biol. Absta.

- 1144 Air-Borne Dust Conditions in British Wartime Flax Scutching Factories.
K.L. Goodall and P.J. Hardwick. Brit. J. Ind. Med. 8, 161-178, (July, 1951).

The literature on flax dust hazards is reviewed, and data are given on the dust and health conditions existing in British flax scutching factories between 1943 and 1945. Air-borne dust concentrations in the flax scutching rooms were high at the time, and dust surveys were made in order to ascertain the causes of these conditions and to remedy them. The overall average measured was 31 mg. per sq. m., with a range of 3 to 208 mg. The amount of mineral content varied from 15 to 40% with free

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be determined after exposure to noise and are usually found to be diminished. Clinically, diagnosis is not difficult, particularly in a young person with no previous history of hereditary or acquired aural disease who works under noisy surroundings and who presents a progressive perceptive deafness. It has been suggested that the presence of an otitis media offers some measure of protection, but this is not borne out by careful observation. Prophylaxis should be directed toward reduction of the noise at the source and the use of some form of ear warden. In certain occupations the cochlear damage sustained is not a great handicap, nor does it interfere with the pursuit of the work.

In flying personnel, however, it is a matter of great importance as it may restrict their field of activity. Occupational deafness is recognized as such in five countries only--Germany, Bulgaria, Mexico, Czechoslovakia and the U.S.S.R. -- Brit. J. Ind. Med.

- 1148 Decompression Sickness. Report of Two Unusual Cases. W. Welham and C.L. Waite. U.S. Armed Forces Med. J. 2, 1201-1204, (August, 1951).

The principle of the stage method for decompression is discussed. The two cases occurred after driving to moderate depths (25 to 30 feet). The stage method of decompression relieved one patient on the first trial, and apparent recurrence of symptoms in the other were attributed to sprain.

RADIOACTIVITY AND X-RADIATION

- 1149 Relative Importance of External and Internal Radiation Hazards From an Atomic Bomb Detonation. A.L. Baletti and F.R. Holden. Nov. 8, 1950. 13 pp., (AD-268(H)). Naval Radiological Defense Lab.

External- and internal-radiation hazards are known to exist simultaneously after a contaminating-type atomic bomb detonation. Theoretical postulates (based on empirical data) show that for initial tactical and salvage operations occurring the first 24 hours after an atomic bomb detonation, external radiation is of greater tactical importance. As radioactive decay comes into play and localized high-radiation areas are bounded and probably somewhat decontaminated, emphasis shifts to internal hazards. These internal hazards can persist for long periods since only small concentrations are required to produce devastating internal effects in man. -- Nuclear Sci. Absts.

- 1150 Tolerable Radiation Doses. L. Kerwin. Laval Med. 16, 489-505, (April, 1951). (In French).

Based on a discussion of the action of x-rays on human blood, lungs, skin, and genital organs, a critical examination is made of the problem of minimum harmful doses and maximum security factors. It is concluded that the maximum daily dose of 0.1 r, often accepted as tolerable, produces observable effects and, if multiplied by a factor of only 5, can become damaging. 32 references. -- Nuclear Sci. Absts.

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- 1151 The Detection of Radiation Hazards: Instruments and Personnel.
W.F. Bale. Radiology 56, 656-660, (May, 1951).

The ideal characteristics of an x-ray survey meter are stated. Such an instrument is not yet available, nor is there any instrument which is calibrated for both beta and gamma intensities. G-M counters are satisfactory for testing beta activity in food and water. Two types of personnel dosimeters are needed, one for casualty segregation purposes and one for disaster relief workers. A description is given of a simple, inexpensive radiation-detection gadget which might prevent panic if distributed widely.
-- Nuclear Sci. Absts.

- 1152 X-Ray Protection Coefficient of Plate Glass.
C. Garrett. (Dec., 1949). 11 pp., (NRC-1975). Atomic Energy Commission.

The protection coefficient of armor-plate glass for direct and scattered x-ray beams in the energy region 60 to 250 kilovolts was measured experimentally as the ratio of the thickness of lead to the thickness of glass which will absorb x-rays to the same extent. It was found to be 0.01. This is below required protection and armor-plate glass should not be used as a protective material in x-ray installations. -- Nuclear Sci. Absts.

- 1153 Platelet Values in Personnel Engaged in Roentgen Diagnostic Work.
H. Mossberg. Acta Radiol. 34, 186-192, (September, 1950).

Among personnel occupied in roentgen diagnostic work the author has found a definite decrease in the platelet count in about one third of the cases. On account of these findings the author is of the opinion that the platelet count should be used as an integral part of the routine blood control of personnel engaged in radiological work.

-- Author's Summary--Arch. Ind. Hyg. & Occ. Med.

- 1154 Atomic Bomb Injury: Radiation. C.L. Dunham, E.P. Cronkite, G.V. LeRoy, and S. Warren. J. Am. Med. Assn. 147, 50-54, (September 1, 1951).

This paper is one of a series requested by the Council on National Emergency Medical Service to inform the medical profession on civil defense problems. Effects of radiation are classified according to distance and time. Methods of diagnosis are described. The discussion of treatment is confined to that of the syndrome of acute whole body radiation injury, including very severe, severe, moderately severe, and mild cases.

- 1155 Damages in Growing Bones Produced by X-Rays, and Ways to Avoid Them.
C. Montag. Strahlentherapie 84, 314-324, (1951). (In German).

Focal doses of 440 r or more can cause deformation in growing human bones and retardation or cessation of growth. Even 420 r doses produce retardations. On the other hand, no damages are observed with doses of 275 to 300 r, even when repeatedly applied. On the basis of these observations several precautions are recommended, such as the reduction of the single dose and the use of the smallest possible focus skin distance.

-- Nuclear Sci. Absts.

- 1156 Shoe Fitting Fluoroscopes. Anon.
Tenn. Ind. Hyg. News 8, 1-3, (July, 1951).

Attention has been called repeatedly to the hazards of shoe-fitting fluoroscopes and their prevention. This paper describes an investigation made by the Tennessee Department of Public Health and the recommendations made for safeguarding the machines, including regulation of the dosage rate, automatic timers, aluminum filters, and warning signs.

ENVIRONMENTAL MEASUREMENTS

- 1157 The Rapid Estimation of Mercury in the Atmosphere of Workrooms.
M. Buckell. Brit. J. Ind. Med. 8, 181-182, (July, 1951).

The method utilizes the acid permanganate scrubbing solution of Kuziatina but determines the trapped mercury by extractive titration with standardized dithizone in chloroform instead of allowing the sample solution to stand with the reagent. Using an extractive titration, interference from copper is minimized. The method is sensitive to mercury dusts as well as vapor. Working details are given.

- 1158 Sensitized Paper for Estimation of Mercury Vapor. F. Stitt and Y. Tomimatsu. Anal. Chem. 23, 1098-1101, (August, 1951).

A sensitized paper was required for use with a portable instrument for estimation of ethylene in air. The authors have developed a method for preparing sensitized paper, which is both uniform and reproducible ($\pm 5\%$) in its response to mercury vapor. Filter paper is impregnated with red selenium by soaking in potassium selenocyanate solution, draining, and exposing to a hydrogen chloride atmosphere. This paper was compared with selenium sulfide paper prepared in three different ways. The selenium paper is superior to the others in some respects, especially in uniformity and reproducibility in preparation.

- 1159 Determination of Fluorine in Monofluorinated Organic Compounds in Air and Water. J.M. Salsbury, J.W. Cole, Jr., L.G. Overholster, A.R. Armstrong, and J.H. Yoe. Analyt. Chem. 23, 603-608, (April, 1951).

A procedure is presented for the determination of fluorine in four physiologically active monofluorinated organic compounds when the compound is present in low concentration in air or water. The compounds studied were sodium fluoroacetate, methylfluoroacetate, 2-fluoroethanol, and diisopropyl fluorophosphate. The absorption of the compound from the air is accomplished by scrubbing with a higher alcohol such as hexyl alcohol. This alcohol is also adapted to serve as the high temperature medium for converting the combined fluorine to fluoride, which is subsequently determined either by a modified thorium nitrate titration or by a colorimetric technique. In water, fluoride is formed by refluxing a mixture of

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potassium metaperiodate, silver perchlorate, and perchloric acid. A modified Willard-Winter separation is used before titration of fluoride. Fluorine may be quickly determined in quantities of the compounds down to 0.01 ppm in a 10-l. sample of air and down to 2 ppm in a 20-ml. sample of water. Diverse ions usually found in potable water do not interfere with the reaction. Factors influencing the determinations are discussed.

-- Authors' Summary

- 1160 The Determination of Low Concentrations of Hydrogen Sulfide in Gas by the Methylene Blue Method. A.E. Sand, M.A. Grafius, H.W. Wainwright, and M.W. Wilson. Bur. Mines. Report Invest. No. 4547, 19 pp., (Sept., 1947).

The determination of sulfur compounds in very low concentrations is essential in the process of making synthetic gas from coal. The methylene blue method was found most suitable, and this report gives the results of investigation of the best procedure in the use of the method. Organic sulfur compounds are converted into hydrogen sulfide, which is determined colorimetrically. As little as 0.001 grain per hundred cubic feet of gas can be detected, with a reproducibility of 5%. Full details of the method, which must be closely followed, are presented.

- 1161 Sampling and Determination of Aldehydes in Diesel Engine Exhaust Gas and in Mine Air. H.W. Busch and L.B. Berger. Bur. Mines, Rept. Invest. No. 4531, 9 pp., (August, 1949).

This report describes a colorimetric method, based upon the use of the Schiff-Elvove reagent, for the determination of the aldehyde content of Diesel-engine exhaust gas and of air containing low concentrations of the exhaust gas. The method is sensitive to less than 0.01 mg. of formaldehyde. A 1% aqueous solution of aldehyde-free methyl alcohol was found to give adequate preservation over a two-week period. A 500-ml. sample is sufficient for aldehyde concentrations from 2 to 20 parts per million. The midjet impinger apparatus may be used to collect large air samples with low aldehyde concentrations, with an efficiency of about 74%, which does not give a serious error in determining the low concentrations usually encountered. The described sampling methods have proved practicable in field studies.

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- 1162 Cold-Surface Collection of Volatile Atmospheric Contaminants. R.D. Cadle, Myra Ralston and P.L. Magill. Anal. Chem. 23, 475-477, (March, 1951).

The analysis of contaminated atmospheres is often complicated by the low concentrations involved. However, cold surfaces can often be used to concentrate volatile materials. The sampling of volatile atmospheric contaminants by cold-trap techniques was studied in order to determine the efficiency of such methods and to develop improved equipment. Formaldehyde at concentrations in air of a fraction of a part per million was collected with about 80% efficiency at liquid nitrogen temperatures by using metal packing in the traps. Without packing only 50% efficiency was achieved. Similar results were obtained with low concentrations of benzene and sulfur dioxide. A convenient cold-trap system was developed, consisting of a dry ice-cooled coil followed by a liquid nitrogen-cooled metal-packed

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U-tube. The results of this work have been very helpful in studying the composition of smog in Los Angeles County and should be applicable to many air pollution problems.

-- Authors' Summary

- 1163 Investigation of a Photoelectric Device for the Determination of Low Concentrations of Dust. D.E. Stone, L.J. Kane, T.E. Corrigan, H.W. Wainwright, and C.E. Seibert. Bur. Mines, Rept. Invest. No. 4782, 6 pp., (March, 1951).

A method was developed for testing instruments for continually determining low concentration of dust in gas. The Ess instrument, although satisfactory in other respects, had a sensitivity of only 0.75 grain per 100 cubic feet. Work is continuing with the object of improving this factor. The calibration curve is similar to the anode voltage curve of the phototube. Greatest sensitivity was obtained at an illumination of 0.5 foot-candle.

-- Authors' Summary

- 1164 The Spectrochemical Analysis of Air-Borne Dusts for Beryllium. L.E. Owen, J.C. Delaney and C.M. Neff. Am. Ind. Hyg. Assn. Quart. 12, 112-114, (September, 1951).

Samples may be collected by filtering a measured quantity of air through a small filter paper; by an electrostatic precipitator modified so that the dust is collected on a filter paper; or by collecting deposited dust by wiping a contaminated surface. The sample may then be prepared by dry-ashing followed by the addition of sulfuric acid, or wet-ashing with sulfuric acid. It is then collected in a very dilute standard molybdenum solution, which serves as an internal standard. Details are given for the spectroscopic examination, intensity measurement, and calculation of the beryllium content.

- 1165 Thermal Precipitator for Gravimetric Estimation of Solid Particles in Flue Gases. J. Bredl and T.W. Grieve. J. Sci. Instruments 28, 21-23, (January, 1951).

The instrument described is designed to collect all the solid matter from a representative sample of flue gases, and to handle a sufficiently large sample of gas for the deposit to be easily weighed. Its advantages over the usual filtering methods are that it does not offer excessive resistance to the gas flow, and that it is apparently capable of retaining the smallest size of particle present in flue gases. In addition, the use of Al foil collecting surfaces facilitates accurate weighing as, unlike the usual filtering materials, their capacity for adsorbing moisture is negligible.

-- Atm. Poll. Bull.

- 1166 Dispersion Staining with Phase Contrast Microscope Accessories. The Microscopic Identification of Quartz. G.C. Crossmon. Science 110, 237-238, (September 2, 1949).

A method for the identification of quartz is described, in which the sample is immersed in liquids with suitable indices and high dispersion. When observed with a phase microscope, the particles appear highly

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colored, more so than with non-phase objectives. The colors are not as brilliant as in dark-field illumination, but the microscope adjustments are simpler and critical numerical aperture relationships between condensers and objectives are not necessary.

- 1167 Determination of Free Silica by Dispersion Staining Microscopical Methods. G.C. Crossmon. Am. Ind. Hyg. Assn. Quart. 12, 117-120, (September, 1951).

The dispersion staining method, previously used in the examination of other materials, has been applied by the author to free silica determination. Two procedures are described, a dark-field and a phase microscope method. In either method, two samples are covered with suitable immersion liquids, one with a refractive index of 1.544 and the other 1.553. Under the described conditions, the silica particles appear as colored images against a dark background, the color differing according to the immersion medium and the method. The immersion liquids are mixtures of diethylene glycol monobutyl ether and cinnamic aldehyde in proportions to give the two refractive indices. Results can be made quantitative to the nearest 10%. The use of polarized light aids in the identification of the particles. Further investigation will be necessary to determine the accuracy in distinguishing free silica from materials of very similar index and birefringence. The phase microscope method is more fully described in an earlier paper (see preceding abstract).

- 1168 Electric Gas Filter for Analytical Purposes. T. Wilner. Am. Ind. Hyg. Assn. Quart. 12, 115-116, (Sept., 1951).

An electric filter for collecting small amounts of substances in the form of aerosols is described. It can be used in different ways so that the collected material can be weighed directly or flushed out for analysis. The capacity is small so that the contents need not be diluted unnecessarily. Illustrations of the instrument and description of the high-tension apparatus are given.

PREVENTIVE ENGINEERING

- 1169 Recirculation of Cleaned Air from Cast Iron Machining. R.H. Avery. Am. Ind. Hyg. Assn. Quart. 12, 130-134, (September, 1951).

In cast-iron machining, two kinds of dust are produced: 98% by weight consists mostly of iron, largely coarse, and graphitic carbon dust, all less than 40 microns in size. The latter constitutes most of the nuisance dust. Recirculation is essential on account of the large volume of air that must be handled. Therefore efficient removal of the dust is necessary. It has been successfully accomplished by a two stage process; first, a medium-efficiency centrifugal collector or a high-efficiency dry dynamic precipitator with chip trap precleaner, and second, an oil-bath type air cleaner. The latter has a number of advantages,

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including handling high dust loads, occupying minimum space, use of oil which does not evaporate, and self-cleaning. Laboratory tests gave an efficiency of 99% for the assembly.

- 1170 A Venturi Scrubber for Cleaning Industrial Gases.
W.P. Jones. Heat. & Vent. 48, 73-75, (April, 1951).

A recently developed Venturi gas scrubber consists of a Venturi passage with an arrangement of water jets around the throat such that gases at high velocity atomize a curtain of liquid into a fine mist which subsequently coalesces as velocity is reduced. The principle and applications of the scrubber are described. Performance data for a variety of aerosols are given. Typical results cited are: up to 99.6% removal of sulfuric acid mist, 99% removal of open-hearth steel-furnace effluent, and 90% removal of sodium sulfate and carbonate fumes from the burning of concentrated black liquor in the kraft pulp process. Other applications include secondary lead smelters, wood distillation gas cleaning, and phosphoric acid plants. Various modifications have been used in particular installations.

- 1171 Permissible Mine Equipment Approved During the Calendar Year 1950.
H.B. Brunot. Bur. Mines. Inf. Circ. No. 7606, 8 pp., (May, 1951).

This list supplements those published for previous years and includes all equipment approved in 1950. The equipment comprises air compressors, coal drills and drilling machines, loading and conveying equipment, electric drive units for blower fans, mining machines, machinery-moving equipment, and a few miscellaneous items.

- 1172 Allaying Coal Dust during Operation of Continuous-Mining Machines in Utah.
W.M. Merritts and T.T. Reay, Jr. Bur. Mines Inf. Circ. No. 7608, 12 pp., (June, 1951).

Experiments in a mine where a continuous-mining machine had been installed led to the following conclusions: dust can be allayed satisfactorily by the use of water sprays on the machine, if it is properly installed; the use of wetting agents materially improves the laying of dust; efficiency and safe operation of the machine are increased because of better visibility when dust is allayed; and respirators are no longer required.

- 1173 Ventilating Methods and Safety Measures Used in the Temporary Ventilation of the King Solomon Tunnel, Frisco, Summit County, Colorado. R.L. Bolmer and G.B. Fritts. Bur. Mines Inf. Circ. No. 7603, 15 pp., (June, 1951).

A geological survey of this mine was desired, but it had been idle for 25 years, and had only one entrance, and its atmosphere was low in oxygen. The cost of fan installation for temporary use was prohibitive. Ventilation was accomplished by use of an air compressor and pipe laid as the exploration progressed. Analyses of the air were made regularly. The cost of ventilation for 20 days exploration was \$1,536. The results

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show that similar underground workings can be ventilated with a relatively small volume of compressed air, provided the underground atmosphere consists of air deficient in oxygen only and does not contain concentrations of carbon dioxide or other gases difficult to dilute or remove; also provided the time element involved in ventilation is not too essential.

- 1174 Exhaust Systems Can Get Exhausted. R.T. Pring and W.S. Schamel. Safety Mgmt. & Maint. 102, 28-30, 54, (Sept., 1951).

Protection against industrial atmospheric contaminants consists not merely in having an exhaust system, but also in proper design and selection of the equipment and in its careful maintenance. A number of important points concerning both these factors are discussed. Piping design should be such as to eliminate points where dusts may settle out. Adequate wear plates, adjustment features, inspection covers and cleanouts must be included. Elbows should be of a large throat radius of 1-1/2 to 2 diameters. Primary construction factors of exhaust systems are: heavy construction and material selection, accessibility for inspection; protection for maintenance personnel, and mechanical features. The maintenance program must include a study of the system during initial operation to recommend additional features that will enhance the performance. After the installation is completed, a final set of readings should be taken and made a matter of record.

This becomes the operation standard against which all future tests are compared for determining the efficiency level of operation. A chart of daily, weekly, monthly, and quarterly, or annual inspection requirements is given. The program should include not only pressure tests and visual test, but air sampling at the outlet and in the plant. Several sampling methods are suggested. Maintenance as conducted at an asbestos mill is described and cited as good practice.

- 1175 Unclogging of Bag Filters by Air Turbulence. P.K.C. Wiggs. Heat. Air Treatment Engr. 14, 117-119, (April, 1951).

The principle of the method of unclogging is to take the outgoing air from the fan and feed it back to the outside of the filter. The fan is effectively short circuited, and the air flow approaches the free air rating of the fan, giving a very high velocity. The air follows a helical path round the filter bag which becomes slack as there is little pressure difference across the fan. The turbulence of the air which enters the annular space round the filter tangentially causes violent shaking of the cloth. The filter cake is released in less than two seconds, leaving the walls of the filter uniformly clean.

-- Atm. Poll. Bull.

- 1176 Bureau of Mines Approval System for Respiratory Protective Devices. S.J. Pearce. Bur. Mines Inf. Circ. No. 7600, 6 pp., (April, 1951).

The meaning of approval of respiratory protective devices is explained, with a number of points of advice to those wishing to submit such devices for approval.

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- 1177 List of Respiratory Protective Devices, Approved by the Bureau of Mines. S.J. Pearce and L.B. Berger. Bur. Mines, Inf. Circ. No. 7570, 16 pp., (June, 1950).

This circular lists the respirators, gas masks, and self-contained breathing apparatus that had obtained official certification of approval from the Bureau of Mines on June 1, 1950.

COMMUNITY AIR HYGIENE

- 1178 The Meteorological Aspects of Air Pollution. C.D. Robson. Am. Ind. Hyg. Assn. Quart. 12, 121-129, (September, 1951).

Meteorology is a practical factor in any air pollution study, for it can aid in abating chronic air pollution problems and may prevent those problems from becoming acute. To do this, industrial hygienists should have a fundamental understanding of: air movements in the free atmosphere; common topographical modifications of weather; the use of meteorological methods needed to measure the temperature gradient and the turbulence characteristics of wind throughout the pollution diffusion layer; and measurement of meteorologically significant concentrations of pollution.

-- Author's Summary

- 1179 Large-Scale Odor and Dust Control. Results in Nuisance-Free Refuse Handling Station. W.A. Xanten. Heat. & Vent. 48, 65-67, (August, 1951).

A centrally located refuse transfer station in Washington, D.C., handles tons of dusty, malodorous garbage and ashes daily. Dust-free and odorless operation is assured by a ventilating, filtering, and deodorizing system which has proved effective through a full year of operation. The construction and operation of the station are described.

- 1180 Eighty-Seventh Report on Alkali, Etc., Works by Chief Inspectors for 1950. H.M. Stationery Office, London. Price 1S 9d. Abstracted in Coll. Guard. 183, 123-125, (August, 2, 1951).

The activity of the inspectors consists in investigating complaints of atmospheric pollution from chemical factories, including fumes from spoilbanks and emission of sulfur dioxide, fly ash, smoke and other pollutants. Some conditions are described in detail, with successful or attempted means of prevention, and research leading to improvement. Emission of pollutants in individual cases was reduced by various means, such as the use of cyclones, grit arrestors in cyclones, wetting dusts, and filtering, washing of gases, and covering spoilbanks with soil.

-- Coll. Guard.

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- 1181 Report of the Commission on Noxious Fumes of the State of Maryland, 1950-1951. 21 pp.

A survey of atmospheric pollution included enumeration of factories potentially contributing to pollution, the extent of corrective measures, and the extent of morbidity in polluted and non-polluted areas. One division of the survey was concerned with the Baltimore area, and the other with the state as a whole. Only 22% of the sources were provided with protective measures. The only definite correlation between diseases and air pollution was shown in higher incidence of colds in polluted areas. However, it is pointed out that a number of other effects of air contamination were outside the limits of the survey, made with limited funds. Increased appropriations for a more extensive survey are urged upon the legislature.

MANAGEMENT ASPECTS

- 1182 What Makes an Employee Information Program Click?
W.E. Wood. *Dun's Rev.*, pp. 20-24, (April, 1951).

The Virginia Electric and Power Company has developed a program for informing employees on the company's philosophy, policy, affairs and problems, believing that the employees should have a natural interest in those subjects. During the first 18 months staff meetings attended by company officers, department heads, and district managers, were conducted by executives responsible for the program. Each meeting was divided into three periods: current events; outline; and question, answer, and suggestion. Then followed two years of similar meetings of groups of supervisors of all grades, not over 20 in each group, conducted by staff members who had attended the first series.

Finally, beginning October, 1949, meetings of non-supervisory employees were held under the same plan. Questions that could not be answered immediately were referred back to higher officers, but every effort was made to provide sincere and non-evasive answers to all questions. Annual meetings of all employees in a locality with executives who direct the program have also been held. A questionnaire in December, 1950 revealed that 86% of the employees favored continuing the program. The estimated cost of the program is about \$100,000 a year. Its development has taken a large amount of the time of busy executives. However, the company is convinced that it has well repaid the expense and work.

The results indicate that the employees are becoming happier and more contented; showing an increasing interest in the company's affairs, problems, and policies; helping furnish a better, more courteous, and more efficient service to the public; promoting the cause of free enterprise; and actively assisting the company in opposing the socialization of the industry. The program seems to have the sympathetic support of the unions.

The discussions in the program did not include wages, hours, or other conditions of employment, but recent contract negotiations with one of the unions were conducted in a decidedly more friendly atmosphere than in the past.

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- 1183 Selling Industrial Hygiene to Management.
Am. Ind. Hyg. Assn. Quart. 12, 99-111, (Sept., 1951).

The discussion includes the following papers: The Official Agency by L. Greenburg; The Insurance Company by E.G. Meiter; The Smaller Industry by R.P. Gleason; The Larger Industry by C.M. Berry. In each paper, the most effective method of educating management in the value of industrial hygiene is considered. The authors all agree on the essentials. Industrial hygiene in a plant is primarily the responsibility of top management; therefore, the first contacts must be made with those highest in authority, and it should be demonstrated to them that control is for the benefit of both the organization and the worker. Then management should be given guidance in deciding what to do and how to do it; that may necessitate a thorough survey of the plant.

Another avenue of education is through the labor union. This approach has been used with great efficiency through some unions. The aid of the sales department can be enlisted. In all dealings, the industrial hygienist should be practical and friendly and should maintain his professional status.

- 1184 Research on Health Education in Industry. Special Report. Congress on Industrial Health. Arch. Ind. Hyg. & Occ. Med. 4, 161-165, (Aug., 1951).

This report was prepared by a committee appointed by the Ninth Congress on Industrial Health to explore needed research on health education in industry, to plan studies on content and type of programs, materials, and methods of evaluation, and to suggest practical means for carrying out such studies. The work was divided among four subcommittees, and their summarized reports are presented. Briefly, the plan includes surveys of present health programs and education programs, a systematic review of prior research, tests of methods of overcoming resistance to health programs, study of written, visual, and other methods, comparison of groups of industrial workers with and without health service and health education programs and only one of those programs, and demonstrations and case studies of formal health education programs.

- 1185 Establishment and Function of an Industrial Mental Hygiene Service.
O.B. McAtee. Am. J. Psychiat. 107, 623, (February, 1951).

Four years' experience in the employee health program of the Tennessee Valley Authority convinced McAtee that there exist unusual opportunities for the promotion of mental health in industry. The psychiatrist's activities in industry should include: a consultation program for the purpose of ensuring therapy for employees, orienting the medical staff in mental hygiene, and conducting research through analysis of cases; supervisory training in human relations; studies of particular groups of employees where problems are alleged to arise; staff function as advisor to personnel, management and labor. The psychiatrist must continue to be a good clinician and humbly remain an explorer.

-- Arch. Ind. Hyg. & Occ. Med.

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- 1186 Emotions Can Be Killers. Lydia G. Giberson.
Nat. Safety News 64, 28-29, 75-78, (Sept., 1951).

Accidents, except those arising from the physical environment, come from a weakness or maladjustment of the victim. The two basic causes, inattention and lack of physical coordination, remain after management has taken all proper safety precautions. In accident-prone workers those conditions are always present. Those workers can be classified as follows: (1) the manic depressive; (2) the daydreamers; (3) the chronic worriers; (4) the crippled personality; (5) the lonely personality; and (6) the paranoid personality. Any of these may exist in a mild form; persons with serious personality defects are usually automatically excluded from hazardous occupations.

Some of these disorders are amenable to treatment, and in other cases proper placement will prevent exposure to sources of injury. On the other hand, inattention and lack of coordination may sometimes be caused by physiological fatigue from under-nourishment; mental fatigue from long periods of concentrated work; financial difficulties; or temporary shock, from death in the family and other causes. These conditions can usually be remedied by sympathetic treatment. The need of keeping in mind the whole picture of the industrial worker is emphasized.

- 1187 Times Absent vs. Days Absent as a Measure of Absenteeism. B.J. Covner and Max Smith. Personnel 28, 23-27, (July, 1951).

The problem was to determine which of two attendance measures--times absent (TA) or days absent (DA)--was the better for analyzing absenteeism causes, evaluating performance and certain other purposes. Reliability or consistency of measurement was the criterion of superiority. Using the attendance records of office personnel in a large manufacturing company, TA's and DA's per month were computed for more than 200 people for various six-month and twelve-month periods. DA's and TA's of one period were compared with the DA's and TA's of corresponding periods of different years. Times absent was found to be a more reliable measure of absence than days absent. For comparing departments, the percentage of people meeting a specific standard of attendance appears to be a more stable figure than the average TA for the department.

-- Authors' Summary

- 1188 Neurotic Cases Among Industrial Workers. A Practical Working Method of Rehabilitation. Anon. Ind. Health Bull. (Canada) 6, 1,2,4, (August, 1951).

The Roffey Park Rehabilitation Center, near London, was established by a group of about 200 British industrialists during the last war for the care and rehabilitation of neurotic workers. The treatment consists of outdoor life, balanced diet, and restful surroundings with the latest techniques of emotional, physical, and occupational therapy treatment rarely before applied to the victims of mental illness. The usual hospital atmosphere is almost absent, and informality prevails. About 1000 patients, all entering voluntarily, have been treated annually since 1944, and a large majority have been returned to work.

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- 1189 Employment of the Older Worker. T.G. Klumpp.
Conn. Health Bull. 65, 247-255, (August, 1951).

The author presents a strong argument against compulsory retirement of employees at a fixed age. First considering the human side, he points out that most workers are not prepared for retirement and prefer work to idleness. The aging process is continuous, and there is no definite age at which one becomes old. Many persons in positions of responsibility are well over 60, including those elected to public office beyond that age, in contrast to the policy of retiring workers at 65 or 70. Examples of the accomplishments of persons over 80 are cited, including a man who lived to 146.

The argument that older persons grow more conservative is refuted by a number of examples of older men with progressive ideas. Moreover, those retiring to idleness must be supported by the rest of the population. The last point is elaborated in the discussion of the economic side of retirement. If State or Federal old age pensions prevail in 1980, the cost to the country may be over 25 billion dollars. The argument that the aged must give place to the younger workers neglects the probability of increased employment through the development of new industries. If one-fifth of the 24 million over 65 years which we will probably have by 1980, are employed at \$2500 per year, it will lighten the burden of support by 12 billion dollars. Retirement may be necessary or desirable in many cases, but it should be on a selective basis, not at a fixed age.

The author concludes by a brief discussion of the employment of the partly disabled, to which a number of the same arguments apply. A pension tax rebate to encourage employers to hire older workers has been proposed, and the author suggests that a similar plan in the case of disabled workers would be beneficial.

- 1190 Organizing for Disaster Control. W.H. Shearon.
Chem. & Eng. News 29, 3694-3697, (Sept. 10, 1951).

The Texas City disaster of 1947 awakened industrial plants to the real possibilities of effective disaster control systems. The organizations described are confined to the Gulf Coast, but the general plan is being adopted in other localities. The industries in those regions have cooperated for mutual aid in case of disaster, with details differing according to conditions. The mutual aid system has taken firm hold as an idea and has proved highly satisfactory in actual practice.

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ACCIDENTS AND PREVENTION

- 1191 Job Accidents Increase: 110,000 Injured in First 1951 Quarter.
Anon. Labor Inf. Bull. 18, 10, (August, 1951).

Work injuries in manufacturing increased both in actual number and in relation to man-hours worked during the first quarter of 1951, according to preliminary reports received by the Bureau of Labor Statistics. The average frequency rate for all manufacturing establishments reporting was about 4%

higher than that for the fourth quarter of 1950, and 16% above the rate for the first quarter of 1950. However, the monthly rate for the quarter had a downward tendency. The number of injuries for the three months totaled 110,000, with 400 deaths and 5,600 permanent disabilities. The figures are classified according to industries. The highest increase was 12.1% in the office, store and restaurant fixtures industry, while the greatest decreases were shown in sawmills and planing mills.

- 1192 Accident Trends in the Chemical Industry. S.M. MacCutcheon.
Chem. & Eng. News 29, 3609-3611, (September 3, 1951).

In the period 1940 to 1950 the chemical industry has experienced accident frequency rates, and severity rates except in 1940, well below those of industry as a whole. Since 1945 the frequency rate has been falling steadily. The fatal case rate has generally been below that of all industry. Only about 40% of the injuries in the chemical industry have been due to chemical process accidents. Safety consciousness on the part of management, employee education, and industrial hygiene have contributed to the excellent record.

- 1193 Safety Consciousness--An Evaluation. S.M. Walker.
Bur. Mines Inf. Circ. No. 7595, 8 pp., (March, 1951).

Few men are inherently safety conscious; therefore that quality must be derived from others, ordinarily the workers' supervisors, who, in turn, must look to their superintendents to provide good examples. If the worker is to avoid injuries, the top officials must point the way. Safety cannot be bought, and lip-service to safety doesn't prevent injuries. The results of a survey are presented showing the extent of safety consciousness in a number of mines.

-- Cond. from Author's Summary

- 1194 The Human Elements as Cause of Industrial Accidents.
V. Mauro. Folia Med. 33, 453, (September, 1950). (In Italian).

According to Mauro, the human element is responsible for the majority of industrial accidents. Prevention involves medicosocial problems and is based on physiology, psychology, psycho-technics, and pedagogy. In workers of either sex the main causes of accidents include sight and hearing deficiencies, insufficient motor and reflex coordinations, alcoholism, and fatigue. Industrial accidents are more frequent in young workers of either sex than in the elder. In women, menstruation, pregnancy, lactation, and menopause may have a predisposing role. Modern prophylactic measures consist of aptitude tests to determine the fitness of the worker for the particular task, familiarity with the place of work, periods of rest, and improved environmental conditions. A sustained proper temperature, adequate illumination and ventilation, and control of noises in industrial centers all have beneficial effects on the morale of the workers, and this contributes to prevention of accidents.

-- Arch. Ind. Hyg. & Occ. Med.

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- 1195 Achievements in Mine Safety Research and Problems Yet to be Solved.
A.C. Fieldner. Bur. Mines, Inf. Circ. No. 7573, 31 pp., (June, 1950).

The average number of lives lost in coal mining has been reduced by 48% in the last 40 years. The greatest reduction, 79%, has been in gas and dust explosions. Research in the mining experiment stations may take much credit for this reduction. Ignition has been prevented by the use of permissible explosives, electric lamps, and permissible electrical equipment. Propagation has been stopped by adequate ventilation and by general rock-dusting. Most explosions in recent years are traceable to violation of safety rules; failure to maintain adequate rock dusting, and poor maintenance of electrical equipment. The decreases in fatalities from electrical contacts, falls of roof and coal, and haulage have been lower, and those hazards present most of the unsolved problems in safety research. Some of the problems are scientific and technologic, but many of them deal with human nature and mine management. For further reduction of fatalities from gas and dust explosions we need a more general application in mining practice of knowledge gained from research.

- 1196 Why Men Were Killed at Pennsylvania Anthracite Mines in 1950.
J.J. Forbes and H.F. Weaver. Bur. Mines, Inf. Circ. No. 7609, 13 pp., (June, 1951).

This study covers the Federal investigation of 76 of the 92 fatalities in the anthracite industry of Pennsylvania during the year. This is the first time that detailed reports have been assembled on such a broad basis. Management failure was responsible for 17% of the fatalities; employee failure, 42%; joint or undetermined failure, 12%; unforeseen causes, 24%; and unknown causes, 5%. Therefore, approximately 71% were the result of human failure and could have been prevented. The cases were investigated in detail and numerous recommendations for preventing similar occurrences are made.

In summary the author urges a more determined effort to prevent human failure by proper education of each supervisor and employee in the fundamentals of safety. The safety educational facilities of the Bureau of Mines and other agencies should be utilized to supplement management's program. Employees should take special training courses offered by those agencies. "Anything that can be done to awaken individual responsibility in the mine safety problem is a definite advance toward the successful elimination of mine accidents."

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- 1197 Effect of High Pressures on the Explosibility of Mixtures of Ethane, Air, and Carbon Dioxide and of Ethane, Air and Nitrogen. R.E. Kennedy, I. Spolan, W.K. Mock, and G.S. Scott. U.S. Bur. Mines, Rept. Invest. No. 4751, 11 pp., (November, 1950).

Continuing the work of the Bureau of Mines on the explosibility of gas-air mixtures, this report describes the effect of pressure upon the explosive limits of ethane-air-carbon dioxide and ethane-air-nitrogen mixtures. Pressures up to 900 lbs. per sq. in. were used. Pressure has a minor effect upon the lower limit of flammability, but a marked effect upon the upper limit. The fact that no gas or vapor will explode when the oxygen content of the atmosphere is reduced below a specific amount

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for each combustible, permits control and elimination of explosion hazards by means of oxygen control. Detailed results are given in tables and graph.

- 1198 Effect of High Pressures on the Flammability of Natural Gas-Air-Nitrogen Mixtures. G.W. Jones, R.E. Kennedy and I. Spolan. Bur. Mines, Rept. Invest. No. 4557. 16 pp., (November, 1949).

The effect of pressures from atmospheric to 3000 psi upon the flammability of mixtures of natural gas and air was determined. The pressure has only a minor effect on the lower limit up to a pressure of 500 lb.; above that point the pressure reduced the lower limit considerably. However, increased pressure has a marked effect on the upper flammability limit. The effect of addition of nitrogen was also studied, and the conclusion on prevention of explosions by oxygen control are stated.

- 1199 Coal-Mine Explosions and Metal-Mine Fires in the United States in 1949. J.J. Forbes, W.J. Fene and H.B. Humphrey. Bur. Mines, Inf. Circ. No. 7572, 17 pp., (July, 1950).

Deaths from explosions and fires in 1949 totaled 17, compared with 48 in 1948 and an average of 106 for the years 1944-47. The improvement is credited to safeguards and attention accorded to those hazards. Statistics are given dealing with causes, types of mines, and states, and additional vigilance is urged in order to bring about further reduction.

- 1200 Report of Research and Technologic Work on Explosives, Explosions, and Flames, Fiscal Year, 1950. B. Lewis. Bur. Mines, Rept. Invest. No. 4793, 67 pp., (June, 1951).

This report summarizes fundamental research and technical studies conducted by the Explosives and Physical Science Division for the 12 months ending June 30, 1950. The subjects include explosives research, chemical and physical tests on explosives, flame and combustion research, flammability of gases and vapors, and experimental coal mine and dust explosions.

- 1201 Fighting Fire with Fog. J.F. O'Regan. Safety Mgmt. & Maint. 102, 18-22, 52, (Sept., 1951).

Water fog or spray is an essential factor in modern fire protection. The trend in all types of fixed and portable fire fighting equipment has been to develop equipment that will utilize the inherent superior cooling power of the fog. Another step to produce better fire protection has been to inject wetting agents into the water feeding the fog nozzles. This, as we have already seen, produces a superior class "A" extinguishing agent. Along this same line, but not previously mentioned, mechanical foam liquid is now being injected into the water feeding modified fog nozzles. This produces what is known as fog-foam which is a superior extinguishing

agent for gasoline and other highly volatile flammable liquids. It is the opinion of the writer that fog will play an ever increasing role in the field of fire protection, reducing property losses and safeguarding human lives.

- 1202 Mysterious Ammonia Explosions. T.R. Hughes.
Refriger. Eng. 59, 859-862, 914, (Sept., 1951).

Losses of large amounts of ammonia from breaks in refrigeration systems are common, but in rare cases the escaping gases ignite and explode with serious damage. The cause of these explosions is a mystery, because all experimental work indicates that mixtures of ammonia and air are not explosive. The author discusses possible causes. It is generally believed that some other substance than ammonia, present in the escaping gas, is ignited. The possibility of decomposition of some of the ammonia into hydrogen and nitrogen is discounted on the face of the evidence. Explosions occur most frequently in small and poorly maintained plants. A number of precautionary measures are suggested, including remote control for shutting off compressors, use of noncombustible materials for engine rooms, provision of relief valves, and properly designed purging equipment and traps.

MISCELLANEOUS

- 1203 The Persistence of Dust in Occupied Rooms.
E.J. Lowbury. J. Hyg., 48, 1, (1950).

As a preliminary study of the survival of bacteria in floor dust, experiments were designed to investigate the persistence of dust in rooms. Small amounts of insoluble fluorescein as a powder or precipitated in blanket wool were scattered in rooms which were thoroughly dusted daily. Measurable quantities were detectable in the floor sweepings for three weeks.

-- Brit. J. Ind. Med.

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- 1204 Note Concerning Human Respiratory Irritation Associated with High Concentrations of Plankton and Mass Mortality of Marine Organisms. A.H. Woodcock.
J. Marine Research 7, 56-62, (1948).

Nose and throat irritations, similar to those naturally occurring in the Venice Beach region of the Gulf coast of Florida during July, 1947, can be produced by breathing air artificially laden with small drops of the Gulf of Mexico water which contains (or contained) 56×10^6 dinoflagellates per liter. The presence of naturally produced drops of sea water in the air along Venice Beach, Florida, during a time when respiratory irritation occurred, is indicated. Approximate drop size range and concentration is given. Simple experiments show that respiratory irritation is always associated with the presence of small drops of "red water" in the air. "Red water" stored without preservative for several weeks retained its

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irritating qualities apparently undiminished. The persistence of the irritant through weeks of storage without preservative and through large temperature changes indicates a rather stable substance. Drops from effervescing heated "red water" were more irritating than drops from effervescing water at room temperature, and these later drops seemed more irritating than spray drops produced by the hand atomizer. The irritant passed through a fine bacteria filter (1 to 1.5 micron openings). When air-borne, the irritant can be so reduced in concentration, by inhaling through absorbent cotton, that it ceases to affect the respiratory system.

-- Author's Summary

- 1205 A Study of Salaries of Industrial Hygiene Personnel. A Report of the Temporary Committee on Survey of Salaries. L.M. Petrie, Chairman. Am. Ind. Hyg. Assn. Quart. 12, 83-86, (June, 1951).

The results of a survey of the salary status of industrial hygiene personnel, from 700 returned questionnaires, are tabulated according to type of employer (government, industry, and all others), professional background and activity, and length of service. The median overall salary was found to be \$6,700.

- 1206 What You Should Know about Biological Warfare. Speaker's Kit. Federal Defense Administration, Washington 25, D.C. 12 pp. mimeographed and four printed pamphlets. (1951).

This booklet has been designed to provide source material for discussion leaders and speakers on the subject of biological warfare. One basic speech to be used as a guide. The kit also includes four publications of the Federal Civil Defense Administration on the subject. (See I-H-F Abst. 665, June, 1951, for one of these publications.)

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