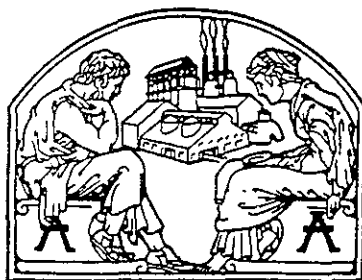


IN RE: ABRAMS November 1992



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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

SEPTEMBER, 1954

(Vol. 18, No. 9)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -:- PITTSBURGH 13, PA.

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FOUNDATION FACTS

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

Volume 16

September, 1954

No. 9

TECHNICAL CONFERENCES IMPORTANT PART OF ANNUAL MEETING

Constant changes in the nature of materials and methods of processing create new health hazards. Industrial health specialists must be prepared to cope with these problems when they arise.

The technical conferences to be held on the first day of Industrial Hygiene Foundation's 19th Annual Meeting, November 17, have been planned with this need in mind. For the most part, topics have been selected to help those specialists whose job it is to safeguard the health of the worker, to anticipate the problems that lie ahead and to tackle the unfamiliar hazards at hand.

The Medical Conference, in particular, is designed to "forecast" coming events in the field of industrial medicine rather than to review problems or achievements of the past. Included on the program are papers on new hazards introduced by the use of radioactive materials in industry, newer concepts of physiology in relation to the industrial environment, and a re-evaluation of the present methods and scope of physical examinations.

The Engineering Conference will bring to the attention of plant engineers new developments and ideas on engineering measures that may have effects on the work environment. Included are developments in the catalytic combustion of organics; a new method of physicochemical dust suppression in final products; and specific instances of measures taken to control temperature, ventilation, and noise. Another paper will deal with the pros and cons of open plant construction.

The Chemical-Toxicological Conference will consist of discussions of the relationships among environmental health and several new processes and materials which have recently come into use in industry. Among the subjects to be considered fully are the vinyl plastics and resins bonded with glass fibers, vanadium and vanadium compounds, and some of the newer techniques in welding.

The legal aspects of industrial health problems will be taken up at the Legal Conference. Topics include a legislative review of workmen's compensation, a discussion of the medical and legal aspects of the causal relationship between occupational exposure and the incidence of compensable dermatitis, and papers on current developments in compensation for impairment of hearing and on the legal responsibility of employers for the prevention of occupational injuries.

The Medical-Legal Conference will encompass the administration of workmen's compensation laws, with representatives of management, government, medicine, law, and industrial hygiene participating in a panel discussion.

Invitations and preliminary programs for the conferences and the management meeting will be mailed in the near future, so be sure to keep open the dates, November 17 and 18.

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HAVE YOU READ?

SOME PERSONAL OBSERVATIONS ON INDUSTRIAL HEALTH IN THE UNITED STATES OF AMERICA, Bryan Harvey, British Journal of Industrial Medicine, Vol. 1, No. 3 (July, 1954), pp. 222-228.

The old axiom that one often fails to see the trees for looking at the forest applies even to the scientific world. Therefore, it is somewhat enlightening to stand back with a visitor from another country to take a critical look at the industrial health picture in the United States.

Mr. Bryan Harvey, one of H. M. Inspectors of Factories in the British Factory Department, was awarded a Rockefeller Foundation Fellowship for graduate studies in the Harvard School of Public Health in order to study industrial health in this country. In his article on "Some Personal Observations on Industrial Health in the United States of America" he sets forth his impressions gained in the course of his American visit.

Mr. Harvey discusses the underlying philosophy of the American system of industrial health, as he sees it, and points out both its defects and its virtues. Although his outlook may at times be conditioned by the opinions and prejudices from which it is not possible to divorce oneself entirely, his observations are penetrating and thought-provoking.

He points out that while compensation insurance, the backbone of the American system, has done so much to stimulate the control of known occupational hazards, it may not to the same extent encourage either the medical profession or the industrial hygienists to discover new industrial diseases and hazards. He contends that American industry, in insisting on scientific proof of toxic dangers and their presence in the atmosphere, seems to delay to some extent the application of measures of control.

This attitude has led to the development of more and more accurate and involved means of air analysis in an effort to be more convincing to management. Air sampling and analysis techniques involve considerable theoretical training in America, he found, and are much more widespread than in England.

Particularly noticeable, both in the academic field and elsewhere, Mr. Harvey says, is the fact that, among the lines of defense proposed against industrial poisons, substitution is the last, whereas in England it is the first. This, he feels, is at variance with American views on industrial safety.

The most marked impression taken home by Mr. Harvey was the lack of coordination of the efforts of the various persons interested in the subject of industrial health and, as a result, the lack of statistics of industrial disease for the nation as a whole. In England, the Factory Department acts as an industrial enforcement service to establish the minimum standards without reference to geographical barriers.

Mr. Harvey, however, does not discount the tremendous work which is being done in this country to improve industrial conditions, and he is high in his praise of the

startling progress made in so few years. Industrial hygiene, he states, is pre-eminently the American contribution to industrial health. Progress is most obvious in the field of atmospheric control, where American skill and ingenuity have been employed to solve ventilation problems involving both toxic hazards and comfort of workers.

Industrial medicine in the United States the author sees as clinical medicine applied to the factory as a group rather than to the individual as in private practice. He noted the remarkable reduction in lost time from accidents where a medical department has been set up and credits this to improved treatment of injury and to rehabilitation, but feels that the industrial medical departments could give a more prominent place in their outlook or activity to problems of industrial toxicology instead of leaving this phase largely to the industrial hygienist.

Mr. Harvey was particularly interested in the trend towards preventive medicine and the increasing role that physical examinations are playing to keep people at work and to keep them efficient while they are at work.

On the whole, the picture he paints of industrial health in the United States has many bright spots, and a little retouching could remove most of the defects as he sees them.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

953 New Periodical on Noise.

A new publication entitled, "Noise Control", sponsored by the Acoustical Society of America, will begin publication January, 1955. It will be designed for the reader who has practical noise problems. It will be well illustrated, articles will be as short as possible, and mathematics will be held to a minimum. Advanced technical knowledge of acoustics will not be necessary for adequate understanding of the contents. The annual subscription rate will be \$8.00. Additional information can be obtained from Noise Control, 57 E. 55th Street, New York 22, New York.

954 Symposium on Applications of Radioactivity in the Rubber and Plastics Industries.

A three-day symposium will be held at the Sheraton-Plaza Hotel, Boston, October 6th through 8th, 1954. The primary objective of the symposium will be to acquaint members of the plastics and rubber industries with the uses and possible future applications of radioisotopes in research, development, and process control. Among the topics considered will be health physics, in a paper by C. R. Williams.

955 American Medical Association, Occupational Medicine Section. Recommendations for Residencies.

Among the recommendations made by the House of Delegates of the American Medical Association in revision of the Essentials of Approved Residencies and Fellowships, are those for residencies in Occupational Medicine. Specifications are given for intramural training in basic disciplines and in related fields and for clinical training and research; also for residency in industry. A year of continuous

service is proposed, and specifications are made regarding professional personnel, facilities, and industrial medical practice. -- J. Am. Med. Assn.

Liberty Mutual Research Center.

Liberty Mutual Insurance Company opened its Research Center at Hopkinton, Massachusetts, in January, 1954, devoted to studies in accident prevention. The company will work on its policyholders' specific problems rather than on general setting of standards and approval of equipment. Emphasis is to be made on the causes underlying industrial casualty losses. Noise is one of the first problems being attacked. Fatigue is another of the problems for early study. -- Ind. Bull. of Arthur D. Little, Inc.

National Safety Congress and Exposition.

Preliminary programs of the 42nd National Safety Congress and Exposition, Chicago, October 18-22, 1954, have been distributed. Programs and other information can be obtained from National Safety Council, 425 North Michigan Avenue, Chicago 11, Illinois.

Recent Appointments.

Dr. E. A. Irvin became Medical Director of Ford Motor Company on July 1. He is succeeded as Medical Director of Cadillac Motor Division, General Motors Corporation, by Dr. Douglas J. Wood. -- Ind. Med. & Surg.

Dr. Graham A. Vance has been appointed to the new post of Western Regional Medical Officer of the Pennsylvania Railroad, with headquarters in Chicago. -- Ind. Med. & Surg.

Dr. Harry E. Tebrock, Medical Director of Sylvania Electric Products Incorporated, has been appointed assistant clinical professor of industrial medicine at New York University--Bellevue Medical Center's Institute of Industrial Medicine.

I firmly believe that we are justified in our assumption that the year 2000 will find our grandchildren looking back to mid-century with pity--pity because of what they will regard as the harsh, primitive life we lead today. Our scientists and technologists can look back with pride, but they have barely knocked on the door of molecular and atomic understanding. If we do not miss our chance, a new and wonderful world awaits us.

-- Henry E. Ford, as quoted in Industrial Research Newsletter

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OCCUPATIONAL DISEASE STATISTICS

59 Occupational Disease Statistics.

	Conn. ¹ July 1954	Ind. ¹ Aug. 1954	Total
Allergy, aniline	1		1
Dermatitis	56 *	4 **	60
Pneumoconiosis (dust, inorganic)	1		1
Silicosis		2	2
Silicosis (dust, free silica)	1		1
Total	59	6	65

Occupational disease cases reported to the State Board of Health.

* Acids, dust (inorganic), fluorine and compounds, fumigants, insecticides and disinfectants, oil and solvent (combination exposure), paints and lacquers, synthetic resins and chemicals, tar and allied substances, and turpentine caused one each; chromium and compounds, formaldehyde, poisonous plants, rubber chemicals, and soap solutions, glue, etc. caused two each; cyanides, and medications caused three each; plating solutions (N.O.C.), and solvents (N.O.C.) caused four each; alkalies caused five; and oils, fats, and waxes caused eighteen.

** Nickel, oil, poison ivy and synthetic glues caused one each.

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LEGAL DEVELOPMENTS

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Silicosis--Death Benefits--Statute Construed--Law at Time of Death Applicable.

The award of death benefits to the widow of an employee who died of silicosis was properly determined by the law in effect at the time of the death of the employee and not the law in effect at the time the original claim was filed by the employee. The widow received an award of compensation for 104 weeks plus \$400 funeral expenses. Prior to his death, the employee had received compensation totaling \$5,975. The employer contended that the award to the widow was to be determined by the law in effect at the time the employee's claim was filed which limited the total compensation to \$6,500 plus \$200 funeral expenses. This limitation had been removed prior to the employee's death. The court ruled that the date of death was controlling in death claims and that the award was properly determined in accordance with the law in effect at the date of death. Affirmed. Jankowski v. American Magnesium Corporation. New York Supreme Court, Appellate Division, Third Judicial Department. No. 28-28. March 31, 1954.

-- CCH

Silicosis--Death Benefits--Statute Construed--Law at Time of Death Applicable.

The award of death benefits to the widow of an employee who died as a result of silicosis contracted in the course of his employment was properly determined by the law in effect at the time of the employee's death and not by the law in effect at the time the original claim was filed by the employee. The widow received an award of 104 weeks compensation plus funeral expenses. Prior to his death the employee had received \$5,000 in compensation. This amount was the maximum compensation payable at that time. The court ruled that the law in effect at the time of death governed death claims. The court also ruled that the employer could not raise the defense that the claim was filed more than two years after the death of the employee where the employer had made a part payment of the funeral bill which operated as an advance payment of compensation. Affirmed. Burcia v. St. Joseph Lead Company. New York Supreme Court, Appellate Division, Third Judicial Department. No. 164-8. June 18, 1954.

-- CCH

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962 Occupational Disease--Anthraco-Silicosis--Extent of Disability--Medical Board's Determination of Medical Facts Without Hearing.

On appeal, the court reversed and remanded the three matters before it involving the claims of three miners who were afflicted with anthraco-silicosis, a compensable malady under the statute provided the disease totally disables the worker. The compensation board, after affirming the award to one miner and before reviewing the other two cases, referred the matter to the medical board who reviewed only the recorded medical testimony and declared that the claimants were only "partially disabled." After numerous appeals, the claimants were allowed to appeal to this court. The court ruled that under the statute the claimants were entitled to a hearing by the medical board and that the board did not meet its procedural requirements when it disposed of the medical issues without taking testimony, or calling for briefs. The failure of the board to hear the claimants was a matter of substance. Reversed and remanded for proceedings in accordance with this opinion. Unora v. Glen Alden Coal Company. Pennsylvania Supreme Court. No. 302. March 25, 1954. -- CCH

963 Heart Condition--Arising Out of Employment--Clothing Spotter--Causal Connection--Evidence.

A clothing spotter for a retail cleaning company was properly awarded compensation for disability occasioned by a heart attack where the evidence showed that in lifting a basket of clothing which weighed about a hundred pounds, he overtaxed his heart which resulted in a myocardial strain with acute cardiac decompensation. The court found that there was substantial evidence to support the finding that the claimant's injury was causally connected with the lifting of the heavy basket. Affirmed. Rubin v. Elite Store Cleaners, Incorporated. New York Supreme Court, Appellate Division, Third Judicial Department. No. 107-22. April 24, 1954. -- CCH

964 Inhalation of Gas Fumes--"Accident" Defined--Coverage by Act--Jurisdiction of Commission--Common Law Action.

Compensation was improperly awarded a claimant by the commission when it was shown that her disability was caused by the prolonged and intermittent inhalation of natural gas fumes, and she properly sought recovery in a common law action when the employer failed to establish that the inhalation was the result of an accident. The claimant was employed by a chicken processing company, and her work was performed next to a "singing" machine fueled by natural gas. Occasionally the burner went out causing the escape of unburned gas. The lower court held that the commission was in error in awarding compensation for an illness caused by the fumes as the condition was not the result of an accident covered by the act. The court upheld this decision stating that the inhalation was not "an unexpected***event happening suddenly and violently***and producing***symptoms of an injury." Affirmed. Rush v. Swift and Company. Missouri Court of Appeals. No. 22,021. May 3, 1954. -- CCH

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BOOKS, PAMPHLETS AND NOTICES

Legal Medicine, Pathology and Toxicology. Second Edition. T. A. Gonzalez, M. Vance, M. Helpern, and C. J. Umberger. Appleton-Century-Crofts, Inc. 35 West 32nd Street, New York 1, N. Y. 1349 pp. (1954). \$18.00.

This book, first published in 1937 and now completely rewritten and enlarged, gives full details for the medicolegal investigation of cases due to violence, and sudden death from unexplained causes. The text is based on an average of 16,000 such cases handled yearly in New York City. The first chapters deal with signs of death, medicolegal autopsy, unexpected and sudden natural death, and types and complications of trauma. The causes of trauma considered include blunt force, knife, and bullet wounds, asphyxia, poisons, heat, electricity and roentgen rays. About 150 pages deal with toxicology, with individual consideration of a large number of poisonous materials, grouped into gaseous, metallic, nonmetallic inorganic, volatile organic, nonvolatile organic, volatile organic, and ethyl alcohol. Occupational diseases and toxicology as such are considered rather briefly in one chapter, but much of the other material is of direct concern to that field. The final 350 pages are devoted to analytic toxicology. Specific directions, apparently well selected from the literature, are given for detection of each poison, and a copious bibliography appears at the end of each chapter. A long list of color reactions is presented.

Among the miscellaneous subjects included are: the relationship between the government and the physician; the rights and obligations of physicians; malpractice; examination of blood; and microscopical examination of hairs. The 658 illustrations, which include the effects of poisons on the organs as well as injuries, aid in clarifying the descriptions.

-- FFR

966 Social Science in Medicine. L. W. Simmons and H. G. Wolff. Russell Sage Foundation, 505 Park Avenue, New York 22, N. Y. 254 pp. (1954). \$3.50.

The great progress that medicine has achieved has been due mostly to increasing knowledge of physical and biological sciences, and medical science is generally regarded as having to do almost exclusively with research of a physical or biological nature. On the other hand, there has been a growing recognition of the part that personal and social factors play in disease, and medical leadership

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is turning increasingly to the social sciences. This book considers the individual in his three aspects: as an organism in his physical surroundings, as a group member in his society, and as a person in his culture. The impact of these surroundings on health and illness is discussed, beginning with a study of society, culture, and the individual, and proceeding to a consideration of the links between social and cultural stresses and disease. A special chapter considers the patient's stress reactions in a hospital setting. The author warns against too easy applications of simple formulas to particular cases; each must be fully considered in its own situation. There is very much to be learned about the relation of social environment to disease. Fields for research are suggested. -- FFR

67 The Rehabilitation of Industrial Hand and Arm Disabilities. A Series of Papers Presented at the Second Annual Conference and Demonstration for Compensation Insurers and Physicians, April 28, 1953. Sponsored by Institute for Crippled and Disabled, 400 First Avenue at 23rd Street, New York 10, N. Y. 47 pp. (1954). \$1.00.

The eleven papers presented at this conference are given. The subjects include various phases of the treatment and care of injured hands, prosthetic devices and other means of rehabilitation, psychological factors in rehabilitation, vocational prospects, the importance of rehabilitation in workmen's compensation, and coordination of activities between the carrier and the rehabilitation agency. A case presentation illustrating the various subjects discussed was a feature of the program. -- FFR

68 Annual Report for 1953, Research Institute for Public Health Eng. T. N. O., 12, Koningskade, The Hague, Netherlands. 36 pp. (1954). Dutch with English summary.

The principal research work for the year has been under the headings: (1) hygiene of water, soil, and air; (2) industrial hygiene; and (3) hygiene of housing. The subjects under investigation in the industrial hygiene field included: measurement of noxious dusts in factories and study of the correlation between dust and silicosis, especially in the ceramic industry; development of apparatus for dust determination and international deliberations concerning dust determination and its interpretation; measurement of lead content of the air in factories and research or chemical analysis of lead-containing dusts; climatological determinations in factories where work is done at high temperatures; and measuring noise and investigating its effects. -- FFR

A Day Nursery, started by the Mooresville (N. C.) Cotton Mills for children of employees working on the daytime shift, now takes care of the children of second-shift workers during the day, giving parents a chance to sleep. Youngsters are taken to and from their homes by company transportation.

-- Personnel Executives' Newsletter

INDUSTRIAL MEDICAL PRACTICE

Training in Occupational Medicine. Report of the Committee on Education and Training. Industrial Medical Association, 1954. Ind. Med. & Surg. 23, 360-365 (Aug. 1954).

The results of a questionnaire on education in industrial medicine are reported. The schools replying totaled 48. Currently 39 medical schools are offering formal instruction in industrial medicine. The average number of instruction hours in all years is 17.7 hours per school. In 37% of the schools replying the instructor is a full-time faculty member, but 61% of the instructors are specialists in industrial medicine and are employed by industry, government agencies, insurance companies, or as consultants. Most of the training includes didactic lectures, field trips, seminars, presentation of clinical material, and demonstrations.

-- Cond. from summary

970 The Responsibility of the Physician in Workmen's Compensation. A. O. Dawson. Compens. Med. 6, 3-6 (Mar.-May 1954).

The author speaks from his experience as Moreland Act Commissioner for the Study of Workmen's Compensation and Costs in New York State. The present New York law allows the injured workmen the free choice of physician. This places certain responsibilities on the physician, especially appearing before the Compensation Board at a specified time and maintaining his fee within specified limits. A number of violations of the law by physicians and hospitals have occurred. Appeals have been made to medical societies and hospital groups to clean their own houses. The cost of medical care in compensation cases in New York is \$70.14, as compared with \$36.00 in New Jersey, and similar figures in other states. This is partly due to free choice of physicians, but leads to the suspicion of overcharging. This matter is being investigated. The often liberal interpretation of the compensation law in such matters as heart disease is criticized.

971 The Prevalence of Certain Diseases among Executives in Comparison with Other Employees. C. A. D'Alonzo, P. M. Densen, A. J. Fleming, and Mary G. Munn. Ind. Med. & Surg. 23, 357 (Aug. 1954).

In general, with the exception of the possible increased prevalence of peptic ulcers, there is no evidence in these data that executives of the E. I. du Pont de Nemours & Company are in any worse state of health than other employees of approximately the same age.

-- Authors' conclusions

- 972 Why Not Call It Human Maintenance? Anon. Occ. Hazards 16, 28-29, 56-59 (Aug. 1954).

The Industrial Medical Association gives an annual award to the company in the United States or Canada that has developed the most constructive health maintenance program in a short period. The award for 1953 was given to the Imperial Oil Company. This paper describes the program of that company. Among the features described are: the confidential relation of the medical department and the employee; periodic examinations that are voluntary except in special cases; detection of unsuspected severe ailments by the periodic examination; referral of non-occupational diseases to the family physician; attention to mental health; industrial hygiene; and responsibility of the industrial nurse. The point is made that human maintenance is as important as maintenance of machinery.

- 973 Artificial Respiration by Mouth-to-Mask Method. J. O. Elam, E. S. Brown, and J. D. Elder, Jr. New England J. Med. 250, 749-754 (May 6, 1954).

Mouth-to-mask ventilation was studied in nine apneic adults. The method appears to be the ideal emergency procedure for artificial ventilation because: (1) the patient's alveolar oxygen tension can be rapidly elevated and normal pulmonary gas composition can be rapidly established; (2) no equipment is essential, the most elaborate accessory being a simple face mask (without the mask a mouth-to-nose technic with a handkerchief "filter" is effective); (3) the operator knows immediately when the patient is being ventilated; and (4) sufficient inflating pressure is automatically exerted to ensure delivery of an adequate volume, since the operator tends to compensate for changes in airway resistance and in lung compliance.

-- Authors' summary

- 974 Emergency Intermittent Positive-Pressure Respirator. E. A. Pask. Lancet 267, 217-219 (July 31, 1954).

A device is described with which intermittent positive-pressure artificial respiration can be carried out over long periods. The device is simple and can be made from components which are easily obtainable.

-- Author's summary

- 975 The Electromyogram in Industrial Medicine. A. A. Marinacci. Ind. Med. & Surg. 23, 345-348 (Aug. 1954).

The electromyogram in industrial medicine is able to give definite objective findings. In suspected lesions it is able to substantiate the presence or absence of such lesions. Its value in malingering and hysteria is obvious. Also, the EMG is able to detect and differentiate traumatic from non-traumatic lesions. Thus the EMG takes its place beside x-ray as a valuable adjunct in the field of industrial medicine.

-- Author's summary

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- 976 Occupational Aspects of Rheumatic Diseases--A Review. Bernice Mintz and L. J. Goldwater. *Ind. Med. & Surg.* 23, 335-342 (Aug. 1954).

Statistics on rheumatism are compiled from a number of sources. In spite of deficiencies in the knowledge of rheumatic diseases, confusion in terminology and criteria, differences in methods of collecting data, and other difficulties, certain facts are evident: (1) the rheumatic diseases constitute a significant morbidity problem with important economic implications from the point of view of loss of productivity and wages; (2) most individuals affected by these diseases can continue to work, but the more severely disabled may require job adjustments; (3) certain occupational factors, such as exposure to cold and dampness, heavy work, and postural conditions, and acute trauma, appear to be associated with an excessive incidence of arthritis and rheumatism.

-- Cond. from authors' summary

- 977 The Allergic Employee. Follow-Up Studies--The Injected Pilot Group. Margaret S. Tenbrinck. *Ind. Med. & Surg.* 23, 354-356 (Aug. 1954).

Some of the treated cases reported in a previous paper (IHF Abst. 848, Aug. 1952) were retested after the lapse of a year. There was a marked difference between the "cure rate" for pollenosis and perennial rhinitis cases (15 and 45% respectively). Of 23 untreated individuals only eight reported spontaneous improvement. None showed a decrease in skin reactivity for periods up to five years.

-- Cond. from author's summary

- 978 The Fundamental Problems of Industrial Hygiene in the Cracking of Petroleum. M. I. Fongauz. *Gigiena i Sanit.* No. 12, 10-14 (1953). Russian.

Examination of typical cracking plants showed that while the total concentration of hydrocarbons in the atmosphere of catalytic installations was substantially below that occurring in thermal cracking plants, the concentration of aromatic hydrocarbons was several times higher in the former plants. The lesser incidence of man-days lost through sickness in the catalytic plants in comparison with the thermal plants is caused to a large extent by a greater degree of mechanization of this operation and not by an inherently lower level of toxicities encountered by the operating personnel. The majority of the latter show more rapid pulse and higher blood pressure than normal. Some 25-33% show the reverse trend, however. Better ventilation procedures are advised for the plants.

-- Chem. Absts.

- 979 Oxygen Consumption during Work, as an Index of Heart-Circulatory Function. M. Pasargiklian, E. Sartorelli, and G. Cornia. *Giorn. ital. tuberc.* 7, 193-202 (1953): Italian.

Determinations of oxygen consumption by the Knipping Apparatus, on healthy people, pneumopathic and cardiopathic patients, at rest and under

muscular activity showed oxygen consumption to be practically the same and increasing proportionally with the work in all subjects, except cardiopathic patients with congestive failure, whose oxygen consumption increased only slightly with increasing work. -- Chem. Absts.

SKIN DISEASES AND BURNS

980 Newer Trends in Industrial Dermatology. M. H. Samitz. Compens. Med. 6, 7-17 (Mar.-May 1954).

In two earlier papers (IHF Absts. 914, Sept. 1953, and 1029, Oct. 1953), the author reviewed recent progress on dermatitis from a number of substances. In this paper he considers two sources of dermatitis from chromium compounds, namely (1) in railroad employees working with diesel locomotives, and (2) in cement workers. The remainder of the paper deals largely with the responsibilities of the dermatologist, his education, and his relations with governmental agencies, other scientists, labor, and management. His concern must be broadened to include economic and social problems. He can assist in inaugurating the new trend in medicine, which includes a change in concept from curative to preventive dermatology.

981 "Why Doesn't the Worker's Skin Clear Up?" An Analysis of Factors Complicating Industrial Dermatoses. G. E. Morris. Arch. Ind. Hyg. & Occ. Med. 10, 43-49 (July 1954).

Most patients who have eruptions caused from contactants at work or at home have a clearing within a reasonable time when removed from contact with the chemical. Twenty-four causes are listed why some patients do not experience such a clearing. -- Author's summary

982 Treatment of Dermatoses with Local Application of Hydrocortisone Acetate. H. M. Robinson, Jr., and R. C. V. Robinson. J. Am. Med. Assn. 155, 1213-1216 (July 31, 1954).

A concentration of 1.0% hydrocortisone acetate was found to be relatively ineffective in the treatment of dermatoses regardless of the vehicle used. A large proportion of patients with atopic dermatitis experienced temporary relief under the treatment, but in all cases relapses occurred when therapy was

discontinued. Out of 71 cases of contact dermatitis, 49 were temporarily improved and seven were not benefited. Similar results were obtained in other types of dermatitis. The addition of antibiotics did not appreciably alter the effect of the hydrocortisone acetate. No adverse reactions or side-effects were noted.

-- Cond. from authors' conclusions

983 Sensitivity to Bacteria in Industrial Injuries. K. A. Baird.
Compens. Med. 6, 18-19 (Mar.-May 1954).

Many injuries in industry consist of superficial breaks in the skin by mechanical trauma or chemical action. There is then danger of bacterial "infection", or more correctly a reaction of immunity to the presence of bacteria. Most cases are easily cleared up by the use of antiseptics and antibiotics and removal of discharges. In a few cases, however, a dermatitis persists long after the original superficial wound has healed. The condition is seldom recognized as sensitivity or allergic reaction to the products of bacteria. The author has successfully treated such cases by a vaccine. The method of application is described, and several case histories are given.

984 Dermatoses among Food Handlers. G. E. Morris.
Ind. Med. & Surg. 23, 343-344 (Aug. 1954).

Of 2,001 dermatological cases, 110 were seen among food handlers, and 82 of these were judged to be due to something encountered in their work. Trauma and its overtreatment, soaps and detergents, and fungus infections of the hands were the most common causes of lesions seen among food handlers. Patch tests were performed, and the cause in many cases was determined by them. Of the non-occupational cases seen among food handlers, the three most common causes were dermatophytosis of the feet; pyoderma; and atopic neurodermatitis.

-- Author's summary

985 Acute Dermatitis in a Factory Producing Phthalic Anhydride. T. Kito and K. Tosu.
J. Sci. Labor (Japan) 29, 625-629 (1953). Japanese with English summary.

Acute dermatitis (erythema or vesicula) occurred in some of the workers at a phthalic anhydride factory. By a skin test, naphthoquinone found in the crude product seemed to be the pathogen.

-- Chem. Absts.

986 Dermatitis of the Feet Due to Shoes. H. Shatin and M. Reisch. Arch. Dermatol. & Syphilol. 69, 651-666 (June 1954).

A group of hospitalized patients with dermatitis of the feet due to shoes is studied. Thermoplastic box toe is shown to be the factor in the majority of cases, and rubber is the essential ingredient in thermoplastic material that is the actual

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offender. It is pointed out that the antioxidants and accelerators in rubber are actually the basic sensitizers. Cure of the dermatitis by substitution of a shoe with a flannel box toe for the thermoplastic box toe is easily obtained. Diagnosis of shoe dermatitis has been greatly simplified since we have learned that thermoplastic material is the most common sensitizer. -- Authors' summary

CHEMICAL HAZARDS

⁹⁸⁷ Problems of Health in the Marketing of Chemicals. V. K. Rowe and E. M. Adams. Arch. Ind. Hyg. & Occ. Med. 10, 50-53 (July 1954).

The chemical manufacturing industry, in general, recognizes the responsibility it has for the safe handling and use of its products. The actual hazard to health and the responsibility assumed for safety of use all vary greatly under the influence of the following factors: type and degree of hazardous properties, nature of use, and class and number of customers. It is possible to obtain information on hazardous properties, to devise precautions which will assure the safe use of chemicals, and to determine the appropriateness of any chemical for a recommended use. Education of the customer with regard to the hazardous properties of a product and appropriate uses for it is an endless task, but also it is one which pays dividends. -- Authors' summary

⁹⁸⁸ Small Plant Approach to Processing Noxious Organics. E. R. Bleu and W. L. Kleiber. Ind. Eng. Chem. 46, 1566-1569 (Aug. 1954).

The production of fine chemicals in a small plant introduces a number of problems which are considered in this paper. A typical installation is described. Versatility and low capital investment are combined in the choice of batch type equipment for fine organic chemicals. The matter of safety and fume prevention is one of major concern. Safety can never be overemphasized, and maximum protection must be provided for operating personnel. Explosion-proof electric equipment is standard. All reaction vessels are provided with an automatic carbon dioxide extinguishing system. The safety committee constantly seeks to improve operating procedures and other aspects of manufacturing. Corrosion resisting equipment and vacuum distillation of halogen-evolving organics are among the features discussed.

- 989 Range-Finding Toxicity Data. List 5. H. F. Smyth, Jr., C. P. Carpenter, C. S. Weil, and U. C. Pozzani. Arch. Ind. Hyg. & Occ. Med. 10, 61-68 (July 1954).

Nearly 150 organic compounds that have been investigated since the publication of the last previous list in 1951 are tabulated. The data include single-dose oral toxicity, skin penetration, concentrated vapor inhalation, primary skin irritation, and eye injury, as determined on experimental animals.

- 989 Gas-Mask Protection against Decaborane. W. H. Hill and J. L. Svirbely. Arch. Ind. Hyg. & Occ. Med. 10, 69-76 (July 1954).

The chemical and animal-exposure tests reported in this paper show that complete protection against decaborane vapors may be obtained for many hours by the use of a conventional chemical cartridge respirator filled with silica gel. Activated carbon is about half as effective, and materials like soda lime and triethanolamine on unglazed china would be useful for only a very few hours. A combination of several of the tested materials, for instance, a layer each of soda lime, silica gel, and activated carbon, might offer real advantages in many cases, particularly where other boranes are mixed with the decaborane. Work on the effectiveness of such masks for other boranes is contemplated.

-- Authors' conclusions

- 991 Concentration of Carbon Monoxide in Blood of Smokers and Non-Smokers. F. Valic and D. Duric. Arhiv. Hig. Rada, 5, 49-55 (1954). Croatian with English summary.

Determinations of chemically bound carbon monoxide in blood of smokers and non-smokers show a normal distribution with a mean of 0.180 ml. CO per 100 ml. blood in non-smokers and 0.759 ml. in smokers respectively, with standard deviations of ± 0.0855 and ± 0.398 respectively. There is no significant difference in the carbon monoxide content of the blood between the male and female group, nor between the subjects from town and village. -- Cond. from English summary

- 992 Review of Literature on Health Hazards of Fluorine and Its Compounds in the Mining and Allied Industries. S. J. Davenport and G. G. Morgis, Bur. Mines Inf. Circ. 7687, 55 pp. (June 1954). Publications Division, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

The industries in which fluorine and its compounds are used are listed, and the hazards in the industries using fluorine compounds most extensively are discussed. The physical and toxic properties of about 70 fluorine compounds, organic and inorganic, are tabulated. The effects of fluorine compounds on plants, animals, and man are reviewed. Hydrogen fluoride is discussed with reference to toxicity, permissible limits in air, first-aid treatment, and prevention and

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control of poisoning. Finally fluoridation of water is discussed. The bibliography which is the basis of the review contains 101 references.

- 993 The Effect of Fluorine-Free Food on Dental and Periodontal Structures as Revealed by Roentgen Studies. J. F. McClendon and J. Gershon-Cohen. Am. J. Roentgenol. Radium Therapy 71, 1017-1020 (June 1954).

Dental caries and periodontoclasia were produced almost uniformly in rats fed on a water cultured fluorine-free diet and fluorine-free water. This caries could be prevented by the addition of fluorine to drinking water.

-- Authors' summary

- 994 Prevention and Mitigation of Fluorosis (Endemic). Part 2. T. K. Wadhwani. J. Indian Inst. Sci. 36A, 64-69 (1954).

A study was made on nine human subjects regarding the ameliorative role that vitamin C plays in mitigating the toxicity of ingested fluorine. Skiagrams are given of radius and ulna before and after the administration of 100 mg. vitamin C for 42 days. All reported general relief, lessening of pain in the joints, improvement in the movement of limbs, but increased generalized pain all over the body, which might be due to the release of fluorine from the bones or some process of rearrangement taking place in the bones.

-- Chem. Absts.

- 995 Poisoning by Sewer Gas with Unusual Sequelae. L. J. Hurwitz and G. I. Taylor. Lancet 261, 1110-1112 (May 29, 1954).

Poisoning by sewer gas is now rare, but a few cases have been reported. A recent case is described in full. Neurological and cardiovascular effects indicated that hydrogen sulfide was the toxic agent. Hydrogen sulfide is present in sewer gas only when there is contamination with acid. In this case sulfuric acid had escaped into the sewer. Partial recovery had occurred three months after the accident. The case emphasizes the need of precautions when entering a sewer.

- 996 Occupational Phosphine Poisoning. H. T. Phillips. Med. Officer 91, 118-119 (Mar. 12, 1954).

Exposure to phosphine gas is unusual. The incident reported concerned 14 men laying a concrete foundation for a road. A batch of cement of German origin was used. It contained 6 ppm of phosphine, probably from traces of calcium phosphide. An odor reminiscent of acetylene or carbide was noticed, and was very pungent when the cement was wet. Unpleasant but not severe symptoms were experienced during a week while the batch of cement was in use. Anorexia, headache, nausea, abdominal pains and epistaxis were reported, but recovery followed cessation of exposure. Neither hemolysis nor jaundice was present. Cement manufacturers are investigating the matter. -- Cond. from Bull. Hyg.

- 997 Chlorine Trifluoride. H. J. Horn. Atomic Energy Comm. Publication MLCR-22; AD-21625. 45 pp. (Nov. 1953).

Two dogs and 20 rats were exposed to an average concentration of 5 ppm of chlorine trifluoride for a total experimental time of six weeks. Chlorine trifluoride was shown to be locally reactive to fur, skin, and mucous membranes with which it comes in contact. This local irritation eventually resulted in overwhelming pneumonia in the dogs. Only one rat died during the course of the experiment, but autopsy of all the rats revealed marked gross lung pathology. Microscopic sections supported the gross findings and revealed purulent bronchiolitis, bronchiectasis, broncho-pneumonia, and abscesses in those animals which died and lesser degrees of pathology in the survivors.

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

- 998 Review of Literature on Health Hazards of Metals. 1. Copper. Sara J. Davenport. Bur. Mines Inf. Circ. 7666. 114 pp. (Nov. 1953). Obtainable from Publications Division, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa.

This is the first of a series of papers on the health hazards of important metals. The history of copper is traced from the earliest times (about 5000 B. C.). The subjects covered include sources of poisoning, industrial poisoning, toxicity, copper content of body organs, and results of copper deficiency. The 230 papers cited have been well summarized.

- 999 Clinical Assessment of Industrial Lead Poisoning. E. Messmer. Med. Klin. 49, 218-223 (Feb. 5, 1954). German.

The author emphasizes the essential difference between lead encephalopathy due to poisoning by inorganic lead, and the cerebral symptoms due to tetraethyl lead from gasoline. The symptoms of each are described. The symptoms of tetraethyl lead poisoning are always acute and cerebral, while those of inorganic lead poisoning are chronic. True chronic poisoning by tetraethyl lead is practically unknown, because the amount of lead volatilized is small, and because the compounds formed in the body are rapidly excreted. Some risk of lead poisoning, however, may occur in airplane tank attendants, especially during the cleaning of motor parts, when the burning of leaded gasoline may produce fine lead dust. The most reliable criterion in diagnosis of inorganic lead poisoning is the spectrographic analysis of blood. The "blue line" on the gums is found only in inorganic lead poisoning, and must be carefully distinguished from a deposit of lead sulfide on the margin of the gums. Liver injury from direct toxic action on the liver cells is probable, but lead nephritis and arteriosclerosis can be associated with exposure to lead only in the sense of aggravation of any disorder of the kidneys or arterial association already present, and no causal association with peptic ulcer has been established.

-- Cond. from Bull. Hyg.

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- 1000 Porphyrin Content of the Bile in Lead Poisoning. A. Saita and L. Moreo. Med. lavoro 45, 84-92 (Feb. 1954). Italian.

The contents of porphyrins in the bile were determined on 12 patients with acute lead poisoning and nine in a chronic stage. Particular attention was given to the behavior of the coproporphyrin isomers in the bile. The authors' researches have indicated that: (1) lead poisoning causes a higher biliary elimination of porphyrins (three times the normal amount); (2) this increase is more evident in acute than in chronic poisoning; (3) coproporphyrin and protoporphyrin only are found in the bile of subjects suffering from lead poisoning in the normal ratio to each other; (4) elimination of protoporphyrin in the bile due to lead poisoning has almost the same behavior as that of protoporphyrinemia; and (5) the bile in lead-poisoned patients contains more coproporphyrin III in proportion to coproporphyrin I than in normal subjects. Theoretical aspects of these findings are discussed. -- Cond. from authors' summary (Arch. Ind. Hyg. & Occ. Med.)

- 001 Mercury in the Air of Coal Mines. M. A. Kulbasov. Gigiena i Sanit. No. 2, 31-33 (1954). Russian.

In the use of mercury fulminate detonators in coal mines the concentration of mercury vapor in the air may rise to over 0.3 mg. per cu. m. in selected areas of the shaft. It is suggested that other detonators be substituted for those containing mercury, in the interest of industrial hygiene. The permitted mercury concentration for industrial areas of U. S. S. R. is stated to be under 0.01 mg. per cu. m. -- Chem. Absts.

- 002 Clinical Showing of Initial Forms of Chronic Mercury Poisoning. N. N. Sadchikova. Gigiena i Sanit. No. 1, 29-34 (1954). Russian.

Initial phases of chronic mercury poisoning are characterized as a form of toxic neurosis; the highest sensitivity to mercury is found in people with relatively unstable nervous systems. Alternation or inversion of taste and olfactory senses and sensitivity are observed in the second phase of mercury poisoning. -- Chem. Absts.

- 1003 Toxicity of Tetrahydrofuran. Hofmann and H. Oettell. Arch. exptl. Pathol. Pharmacol. (Naunyn-Schmiedeberg's) 222, 228-232 (1954). German.

Tetrahydrofuran has a hypnotic effect at 6%; the onset is slower than with ethyl ether and longer lasting. Repeated inhalation for six hours each time of ten to 193 mg. per l. air causes narcosis and irritation of the mucosas. No liver damage was discovered in rabbits and cats treated with the compound. In contrast to dioxane, it did not cause kidney damage. Skin irritation was observed mainly when the liquid was permitted to evaporate on the skin. -- Chem. Absts.

- 1004 Carbon Tetrachloride. Industrial Hygiene Data Sheet. M. M. Luckens. Safety Maint. & Prod. 108, 41-42 (Aug. 1954).

The physical properties and toxic action of carbon tetrachloride are reviewed. References are given to methods of detection and analysis. Safe methods of storage and handling, and precautions and remedial measures are discussed briefly.

- 1005 Poisoning from Carbon Tetrachloride Used in Removing Adhesive Tape from the Skin. B. L. Hardin. Med. Ann. Dist. Columbia 22, 224-225, 227 (1953).

The author reports a typical case of carbon tetrachloride poisoning of a 52-year old woman, weighing 110 lbs., due to inhalation of vapor from three ounces of carbon tetrachloride used in removing adhesive tape from her chest.

-- Biol. Absts.

- 1006 Toxicities of Trichloroethylene and Tetrachloroethylene and Fujiwara's Pyridine-Alkali Reaction for Trichloroacetic Acid. L. Friberg, B. Kylin, and A. Nystrom. Acta Pharmacol. Toxicol. 9, 303-312 (1953).

Tetrachloroethylene is more toxic than trichloroethylene to experimental animals. Human subjects inhaling air containing trichloroethylene in concentrations approximately corresponding to the hygienic concentration limit (100 ppm) seven hours per day for five days excreted 250-500 mg. of trichloroacetic acid per liter of urine, as determined by the Fujiwara reaction. Others treated similarly with tetrachloroethylene for three days excreted less than 15 mg. trichloroacetic acid per liter of urine.

-- Chem. Absts.

- 1007 Carbon Disulfide in Animal Blood. K. Miyagawa. Shikoku Acta Med. 4, 210-216 (1953). Japanese.

When dogs were submitted to inhalation of carbon disulfide vapor, (0.2-1 mg. per l.) the difference of concentration in arterial and venous bloods comes to zero in a short time, and at a lower concentration of carbon disulfide the venous blood becomes higher in concentration than arterial blood. When the vapor inhalation is stopped, the carbon disulfide concentration is higher in the vein and becomes negligible in a short span of time. The carbon disulfide concentration in the blood dealt with is 0.5 to 3 gamma per gram of blood.

-- Chem. Absts.

- 1008 Lymphoid Leucosis Due to Benzene. R. Poinso, J. N. Bondil, and G. Ruf. Bull. mem. soc. med. hop. Paris Nos. 1/2, 13-16 (1954). French.

An unusual case of benzene poisoning is reported. A man who had been employed for nine years in spraying a cellulose paint with a benzene base on airplanes

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had chronic benzene poisoning which did not prevent him from working. His red cell count was 4,600,000 per cu. mm. during 12 months of observation, while the white cell count rose from 15,000 to 32,800. Teleradiotherapy brought the white cell count down to 6,600 in three months. This hyperplasia due to benzene is much rarer than aplasia. Other references in the literature are quoted. The condition has been obtained by experiments on mice; a latent period, often prolonged, is characteristic. No definite systematic accompanying pathological changes were detected. The condition is considered to call for immediate treatment and the value of teleradiotherapy is stressed. -- Cond. from Bull. Hyg.

- 1009 Some Toxic Properties of Dimethylnitrosamine. J. M. Barnes and P. N. Magee. Brit. J. Ind. Med. 11, 167-174 (July 1954).

Dimethylnitrosamine (DMN) is a potentially useful solvent on which little toxicity data have yet been presented. Prompted by the occurrence of two cases of liver injury in men handling DMN in the laboratory of a large firm, a study of its action on experimental animals was undertaken. In rabbits, rats, mice, guinea pigs, and dogs, DMN in doses of 20 to 40 mg. per kg. produces a severe liver necrosis ending fatally. Other organs are not damaged. The lesions have some features in common with those produced by carbon tetrachloride but also some distinctive features. In dogs, rats, and guinea pigs a striking feature is hemorrhage into the gut and peritoneal cavity. The features of intoxication are briefly discussed. -- Authors' summary

- 1010 Toxicity of Dibenzylmethylamine. E. Moisset de Espanes and B. Weksler. Rev. soc. argentina biol. 29, 195-199 (1953). Spanish.

The compound has a hypotensive action and kills rabbits by respiratory standstill. Its toxicity is not modified by administration of either diallylbarbituric acid or coramine. Effects in toads are also described. -- Chem. Absts.

- 1011 Papilloma of the Bladder in the Chemical Industry. A Study of Its Cause and Prevention. The Association of British Chemical Manufacturers, Cecil Chambers, 86, Strand, London W C 2, England. 18 pp. (1953). Limited number of copies for distribution at above address.

This booklet describes the present and proposed work of the Association in dealing with the occupational hazard of papilloma of the bladder in the dyestuffs industry. This report presents the results of a five-year study. Attention was mainly focused on the suspected compounds, alpha-naphthylamine, beta-naphthylamine, and benzidine. The report concludes that occupational exposure to the three compounds causes an increased death rate from tumor of the bladder. It is suggested that the risk of contracting the complaint from "mixed exposure" to all three substances is about 33 times that of the population at large and that the relative risks with exposure to the substances in the order given are 16, 61, and 19 times,

respectively. No evidence was found even to suggest that the manufacture or use of aniline causes bladder tumors. The Association will continue to act as a clearing house for knowledge on the industrial and scientific aspects of the problem. Papilloma of the bladder has been prescribed in Great Britain as an industrial disease.

- 1012 Tumors of the Urinary Bladder in Workmen Engaged in the Manufacture and Use of Certain Dyestuff Intermediates in the British Chemical Industry. Part 2. Further Consideration of the Role of Aniline and of Auramine and Magenta (Fuchsine) as Possible Causative Agents. R. A. M. Case and Joan T. Pearson. Brit. J. Ind. Med. 11, 213-216 (July 1954).

The availability of additional records led to reconsideration of some of the evidence relating to the risk of bladder tumors in workmen engaged in the manufacture and use of aniline and the manufacture of magenta and auramine. No statistical evidence has been found to suggest that the manufacture or use of aniline in the British chemical industry between 1910 and 1952 has caused occupational tumors of the bladder. The manufacture of auramine or magenta between the same dates appears to involve a definite bladder tumor hazard. The statistical analysis does not reveal the causal factor in this risk, and it should not be assumed that the finished products are necessarily dangerous. No studies have been made on the use of these products.

-- Cond. from authors' summary

- 1013 Working Conditions Ambient to Inert-Gas-Shielded Metal-Arc Welding. L. Silverman and H. Gilbert. Welding J. 33, 218S-229S (May 1954).

On the basis of the study reported it is apparent that inert-gas-shielded metal-arc welding does not create any unusual health hazards. Fume and gas concentrations are not markedly different from those in conventional electrode welding. Ozone concentrations exceed permissible limits outside the helmet in the working zone if no control is applied. Ozone concentrations inside the helmet are below recommended limits on account of dilution and ozone decomposition. Ozone concentrations are higher on aluminum than on stainless steel. No significant hexavalent chromium concentrations are produced with stainless steel. Iron fume should be controlled within specified limits (15 mg. per cu. m.). Silica fume concentrations exceed permissible limits with 5% silicon-aluminum alloys unless local ventilation is used. Total fume concentrations should not exceed 15 mg. per cu. m. when silicon is only an impurity. The silica concentrations should not exceed 0.1 mg. per cu. m. Oxides of nitrogen concentrations are below allowable limits even in the absence of ventilation. Fume concentrations are independent of the type of shielding gas. Less fume per unit weight of electrode is produced by the inert-gas method than by ordinary welding. Operators sensitive to gaseous products such as ozone should use local exhaust supplemented by air-supplied helmets if necessary. Lateral exhaust ventilation is the most efficient. Apparently the present specified filter glass gives adequate protection from infrared rays, but the question is being studied and a highly absorbent infrared glass is recommended at present.

-- Cond. from authors' summary

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- 1014 Possibility of Poisoning in the Use of Benzene Hexachloride in Whitewashing of Living Quarters. T. F. Savchuk, *Gigiena i Sanit.* No. 12, 43-45 (1954). Russian.

Benzene hexachloride mixed with whitewash formulations, especially those with freshly slaked lime, yields appreciable amounts of trichlorobenzene which vaporizes into the atmosphere after the composition is used for the painting of walls, etc., as an insecticidal paint. The results of several animal tests confirm this potential toxicity, as do several cited cases of temporary and relatively mild nature which had occurred with human subjects. -- Chem. Absts.

INDUSTRIAL DUSTS

- 1015 Pulmonary Fibrosis in Soft Coal Miners. An Annotated Bibliography on the Entity Recently Described as Soft Coal Pneumoconiosis. H. N. Doyle and T. H. Noehren, *Public Health Bibliography Series No. 11.* Public Health Service Publication No. 352. 59 pp. (1954). For sale by Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. 25 cents.

This publication contains 83 abstracts of papers on silicosis and other pneumoconioses in soft coal miners. The disease now receiving the designation of soft coal pneumoconiosis is not fully understood and is the subject of speculation as well as research. The abstracts, arranged in chronological order from 1834 to 1953, some of which are several pages long, provide a summary of the present knowledge of the disease.

- 1016 The Treatment of Complicated Pneumoconiosis with Isoniazid. W. E. Miall, P. D. Oldham, and A. L. Cochrane. *Brit. J. Ind. Med.* 11, 186-191 (July 1954).

A trial of the effects of isoniazid on pneumoconiosis was conducted on about 100 coal miners, all under the age of 52, with early complicated pneumoconiosis and with sputum negative for tubercle bacilli. One-half the group chosen at random were given 200 mg. isoniazid daily in two three-month courses at home. Definite or suggestive radiological progression occurred in 21% of the treated, and 30% of the controls, but the difference is not statistically significant. The trial showed no evidence that isoniazid has any dramatic effect in these cases, but the relative insensitivity of the trial did not exclude results compatible with some effect, the limits of which are discussed. No serious complications or resistant tubercle bacilli were encountered. -- Cond. from authors' summary

- 1017 Silica and Collagen in the Lungs of Silicotic Rats Treated with Cortisone.
B. D. Stacy and E. J. King. *Brit. J. Ind. Med.* 11, 192-197 (July 1954).

The lungs of cortisone-treated and control silicotic rats have been analyzed for silica and collagen, and the lymph glands for silica. The experiments tested the effects of cortisone on both developing and established experimental silicosis. In both experiments cortisone (1) decreased the transport of quartz dust from the lungs to the hilar lymph nodes, and (2) inhibited the formation of collagen in the lungs. The results have been correlated with previous histological findings.

-- Authors' summary

- 1018 Stratigraphical Studies in Silicosis. E. Zanetti and A. Cardani.
Med. lavoro 45, 65-83 (Feb. 1954). Italian.

One hundred cases of silicosis have been examined from the roentgenological point of view, with a particular care for the stratigraphical analysis. The cases have been divided into three groups. In the first one, at the stage of reticulation and nodulation, the stratigraphy is intended to highlight the distribution of reticulum and noduli and to study the behavior of the hilar and parahilar lymph nodes. In the second group, including the nodular confluent forms and the initial conglomeration, the purpose of the stratigraphical examination is to analyze the closest areas, their extension, their margins, and their thickness. In the third group, including the most serious cases, the aim of the stratigraphical analysis is to study the densities, the emphysema, the alterations of the hilus, the tracheobronch tree, but especially to see if there is an eventual association with tuberculosis.

-- Cond. from authors' summary (*Arch. Ind. Hyg. & Occ. Med.*)

- 1019 Studies on the Nature of Silicosis: The Polymerization of Silicic Acid Sols in Vivo
F. F. Holt and Deirdre M. Yates. *Brit. J. Exptl. Pathol.* 35, 52-59 (1954).

When radioactive silicic acid is administered to rats intraperitoneally, the relative silicon contents of their liver and kidney tissues depend on the pH and the concentration of the silicic acid solution. From these observations is deduced the fate of silicic acid which is produced by the dissolution of quartz particles retained by phagocytes. Using a theory developed in earlier papers that fibrosis in silicosis requires the solution and subsequent polymerization of silicic acid, explanations are given for observations which previously appeared anomalous when explained by the usually-accepted simple solubility theory.

-- Biol. Absts.

- 1020 Silicosis and Asthma. Queries and Minor Notes, *J. Am. Med. Assn.* 155, 1457. (Aug. 14, 1954).

The question is: "In a person with asthmatic bronchitis, would exposure to silica be harmful over a period of years even if nodulation or secondary infection did not occur?" The reply states that etiologically there is no known relationship.

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Foremost in disabling silicosis, emphysema stands out as the cause. Emphysema alone with its shortness of breath may lead to a condition simulating asthma and has no specific association with silicosis. In a silicotic patient with emphysema, a coexisting bronchitis may exaggerate the emphysema and thus further the total disturbances. On an organic basis, exposure to silica will not be more harmful to an asthmatic person than to any other worker. On a psychogenic basis, the asthmatic person is prone to react unfavorably to any dust and therefore on an emotional basis may not get along well in the presence of silica dust. The correspondent is referred to the report of the Third Symposium on Silicosis at Saranac Lake, 1937 for a fuller discussion.

- 021 Distribution of Mineral Particles and Fibers in the Lung after Exposure to Asbestos Dust. J. F. Knox and J. Beattie. Arch. Ind. Hyg. & Occ. Med. 10, 30-36 (July 1954).

The particle-size distributions in the incombustible and acid-insoluble residues from the lungs of 27 persons who had been exposed to asbestos dust were determined. The number of particles with greatest lengths in excess of 26 microns was considerable up to the eighth year after the last exposure to asbestos dust and then sharply fell. The number of particles within the size ranges of five microns and less and between five and 15 microns remained constant over a very long period in those cases which showed no sign of asbestosis or minimal fibrotic change. The cases of severe asbestosis showed a significant rise in the numbers of such particles.

It is considered that the mechanism which is concerned with the production of human asbestosis is not the same as that which is responsible for the production of asbestotic changes in experimental animals exposed to high concentrations of asbestos dust. The appearance of such changes seems to be related to the breakdown of asbestosis bodies which may liberate some fibrogenic agent.

-- Authors' summary

- 022 Mineral Content of the Lungs after Exposure to Asbestos Dust. J. F. Knox and J. Beattie. Arch. Ind. Hyg. & Occ. Med. 10, 23-29 (July 1954).

The mineral content of the lung parenchyma; the lung hilar region, and the tissues of the pleural and subpleural regions of the lung has been determined in lungs from 27 workers in the asbestos-textile industry. The exposure time varied from five to 33 years, and the time interval between the last exposure to dust and death (survival time) was from less than one year to 21 years. There was an indication that the mineral material found in the lungs increased in amount as the exposure time lengthened. The amount so accumulated varied considerably from person to person. As the survival time increased, the mineral content of the lung tended to decline but again at a very variable rate. The severity of the asbestotic lesions in the lungs found at death was related not to the mineral content but to the sum of the exposure and survival times.

-- Authors' summary

- 1023 Pneumoconioses and Their Prevention. W. Kikuth and H. W. Schlipkoter. Deut. med. Wochschr. 79, 290-293 (Feb. 19, 1954). German.

Current thought on the origin and development of silicosis and other pneumoconioses is reviewed, and dust coagulation by aerosol sprays is discussed as a dust suppression technique. Aerosol therapy is then discussed, especially the therapy by aerosol inhalation of electrically charged sprays of spa water from Wiesbaden, which is chiefly sodium chloride fortified by calcium and many other ions in smaller concentrations. It has been found that the electric charge decreases the droplet size. Quartz powder was shaken with Wiesbaden water and after spraying was examined in the electron microscope. The quartz particles were surrounded by salt crystals. The quartz had lost its capacity to adsorb colloidal silver. However, in intraperitoneal animal tests the treated quartz was found to be as fibrogenic as the untreated material. Further efforts will be made to explain the beneficial effect of salt inhalation sprays which has been observed.

-- Cond. from Bull. Hyg.

- 1024 Recommendations on the Prevention and Suppression of Dust in Mining, Tunneling, and Quarrying, Adopted at a Meeting Held under the Auspices of the International Labor Office, Geneva, Switzerland, December 1-17, 1952. Bur. Mines. Inf. Circ. 7677, 16 pp. (Mar. 1954). Publications Division, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

The recommendations adopted at this meeting, first published as a supplement to Occupational Safety and Health, by the International Labor Office, are presented here. They relate to dust prevention and suppression in the various operations in mining and quarrying. A list of papers presented at the meeting by experts from various countries is included.

- 1025 Focalized Pulmonary Coccidioidomycosis. A Surgical Disease. J. H. Forsee and R. B. Perkins. J. Am. Med. Assn. 155, 1223-1227 (July 31, 1954).

Coccidioidomycosis is a highly infectious specific fungus disease that until recent years was seen only in the endemic region of the Southwest but has been observed in other sections since World War II, mostly in military personnel who had been in the endemic area. It is not contagious and infection results only from inhalation of chlamydospores in dust. From the study of clinical and pathological findings presented in 50 consecutive cases of focalized pulmonary coccidioidomycosis treated with primary excisional surgery, the authors conclude that extirpative surgery is the treatment of choice.

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- 1026 Farmer's Lung: A Form of Bronchopulmonary Moniliasis.
P. H. Soucheray. Minnesota Med. 37, 251-253 (Apr. 1954).

Three cases of idiopathic pneumonitis or pneumoconiosis in farmers are described. In each case there was a history of uncomfortable exposure to the dust from moldy silage, dyspnea or cough over a period of months, and improvement when the patient was removed from his environment. *Candida albicans* was isolated from one patient's sputum culture on three occasions. The diagnosis of pulmonary moniliasis is, however, very difficult to make, and the author presents that diagnosis as tentative for this series of cases. He concludes that farmers should be dissuaded from farm practices that result in the propagation and dissemination of moldy dust, because the pulmonary mycoses are extremely debilitating and may leave permanent residuals if exposure is repeated. -- J. Am. Med. Assn.

- 1027 The Action of Dust Formed in the Production of Fluorescent Lamps.
O. Y. Mogilevskaya. Gigiena i Sanit. No. 4, 20-25 (1954). Russian.

Dust from zinc-beryllium silicate composition rapidly causes the formation of nodes in rat lungs. Beryllium oxide dust produces a similar effect but more slowly and zinc oxide dust does not produce this effect at all but does cause a sclerotic process. Dusts of this type are used in fluorescent lamp production, and warnings for suitable health protection are given. -- Chem. Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1028 Noisome Noise--What Are Its Limits? J. V. Grimaldi.
Mech. Eng. 76, 568-570 (July 1954).

The essentials of the effects of noise are reviewed, including safety, speech interference, and other effects, as well as hearing loss. A feature of the paper is a graph showing the estimates of safe frequency-intensity levels as made by a number of investigators. The data as plotted indicate no grouping of points which might furnish a trend line, but instead demonstrate the wide separation of authoritative opinions. The recent increase in the number of compensation claims for hearing loss brings the problem to an annoying degree of perplexity because of the complexities that are indicated. Whatever economic danger is present lies in the lack of objective information on the subject.

- 1029 Shock-Turbulence Interaction and the Generation of Noise. H. S. Ribner.
National Advisory Committee for Aeronautics, Technical Note 3255. 60 pp.
(July 1954).

The propulsion of aircraft by means of jets gives rise to intense noise as an unfortunate byproduct. It appears from both theoretical and experimental evidence that the interaction of turbulence with shock waves must often play a part in the production of noise. This paper is a highly technical discussion of the subject, which should provide a qualitative guide to the generation of noise by the shock structure in a supersonic free jet.

- 1030 American Standard Safety Color Code for Making Physical Hazards and Identification of Equipment. Standard Z53.1-1953. Sponsored by National Safety Council. American Standards Assn., Inc. 70 E. 45th Street, New York 17, N. Y. 11 pp. (1953). 50 cents.

The increasing use of color in industry for safety and identification of equipment has made it necessary to recommend uniform standards for choice of colors for such purposes. A suitable code is presented in this publication. The use of color should not be accepted as a substitute for the complete elimination of hazards when possible. Since ordinary color names are indefinite, a uniform method of designating colors is necessary. Designation can be provided by the American Standard of Spectrophotometric Measurement for Color or that for Determination of Color Specifications, with auxiliary specifications according to Munsell notations or by dominant wavelength and excitation purity. The fundamental specifications of safety colors are tabulated.

- 1031 Responses of Unacclimated Men under Stress of Heat and Work.
C. H. Wyndham, N. B. Strydom, J. F. Morrison, F. D. du Toit, and J. G. Kraan.
J. Appl. Physiol. 6, 681-686 (May 1954).

In earlier studies the effects of heat and work on trained and acclimatized African laborers were studied. The present investigation was concerned with raw recruits. During work, their rectal temperatures rose to new equilibrium levels. These levels were closely related to the rates of work but uninfluenced by wind velocity, in the air temperature ranges of the experiments (90° F during light work to 84° F during hard work.) Rectal temperature during rest and work was uniformly 1.3° F higher than that of acclimatized men. This difference gives acclimatized men an advantage of 3.6° F saturated air temperatures. The cause of the difference is discussed.

-- Cond. from authors' summary

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- 1032 Thermal Responses of Men with High Initial Temperatures to the Stress of Heat and Work. C. H. Wyndam, N. B. Strydom, J. F. Morrison, F. D. du Toit, and J. G. Kraan. *J. Appl. Physiol.* 6, 687-690 (May 1954).

New recruits with symptoms of mild illness and rectal temperatures above 100° F readily attain rectal temperatures of 104° F in conditions of moderate and severe heat stress. At such temperatures most men were distressed. On the level of initial resting rectal temperature, it is possible to predict which men will develop the highest rectal temperatures during work in hot conditions.

-- Authors' summary

- 1033 A New Method of Acclimatization. C. H. Wyndham, N. B. Strydom, J. F. Morrison, F. D. du Toit, and J. G. Kraan. *Proc. Transvaal Mine Med. Officers' Assn.* 33, 1-10 (May 1953).

The present method of acclimatizing new mine laborers in the Rand to heat is to reduce the working hours. Another method under trial is to allow the men to work full time in a mildly hot stope (86° F wet bulb) for six shifts and then to move them to the hottest working area for a second six shifts, while keeping them under special supervision. Trials on 205 recruits show that three points must be watched: (1) all the laborers who do not sweat well on the first two days must be reported, and rectal temperatures must be measured in the middle of the shift on those days; (2) all recruits who are "off color" must be reported, and the decision whether they continue work will depend on body temperatures; and (3) no boys must be made to work excessively hard. If these precautions are followed there should be no greater danger from heat stroke than with the present method.

-- Cond. from Bull. Hyg.

- 1034 Raynaud's Phenomenon Due to Vibrating Tools. Neurological Observations. J. Marshall, E. W. Poole, and W. A. Reynard. *Lancet* 261, 1151-1156 (June 5, 1954).

A clinical survey of 37 men with Raynaud's phenomenon due to the use of vibrating tools is reported. There was evidence of persisting nerve damage in many of these men: motor weakness, sensory loss, and the development of premature numbness in response to ischemia produced by cuffs and nerve clamps. Damage to the peripheral nerves may be responsible not only for the neurological deficits but also for the vasospasm of the attacks.

-- Authors' summary

- 1035 Raynaud's Phenomenon in Workers with Vibratory Tools. R. P. Jepson. *Brit. J. Ind. Med.* 11, 180-185 (July 1954).

A study of 34 patients suffering from Raynaud's phenomenon is reported. The diagnosis of this malady must at present be made on clinical grounds, since vascular tests do not show good correlation. The incidence of the phenomenon and time of onset varies with the type of vibratory tool used. Some forms of tool

affect nearly all workers exposed for one or more years. The severity reaches a maximum within a few years of its first appearance and further exposure does not apparently change its severity. There is little evidence to suggest that Raynaud's phenomenon, once established, will disappear even though the patient is removed from the cause. In a few cases, the ailment did not appear until after the patient had discontinued the use of vibratory tools. Raynaud's phenomenon rarely interferes with the patient's work. It may, however, limit the enjoyment of his leisure in gardening, swimming, or outdoor games.

-- Cond. from author's summary

RADIOACTIVITY AND X-RADIATION

¹⁰³⁶ Radon Levels Found in Mines in New York State. S. J. Harris. Arch. Ind. Hyg. & Occ. Med. 10, 54-60 (July 1954).

The concentrations of radon and its daughter products in underground work areas may exceed the accepted limit of 10^{-11} curies per liter, and may present a significant health hazard. Such concentrations were found in caverns and iron mines. The data indicate that the determination of radon concentrations can be suitably made by sampling for the short-lived daughter products. It appears that these decay products attach to dust nuclei in the air, and that their total activity may be related to inert dust loading in the air. In this study, all dusts samples analyzed for radon decay products agreed reasonably well with the direct gas samples, and any error appeared to be on the safe side. The dust-sampling technique should be further developed as a replacement for the rather expensive flask system for measuring radon concentrations.

-- Cond. from author's conclusions

¹⁰³⁷ Fatal Post-Radiation Pneumonitis. A. G. W. Whitfield, R. Lannigan, and W. H. Bond. Lancet 267, 117-119 (July 17, 1954).

A fatal case of pneumonitis following radiotherapy is described. The findings are in full accord with those published by other workers. It is important that clinicians should be aware that pneumonitis of this kind may follow radiotherapy in which the customary dose is not exceeded.

¹⁰³⁸ An Evaluation of the Pulmonary Radiation Dosage from Radon and Its Daughter Products. J. Shapiro. Atomic Energy Comm. Publ. UR-298, 150 pp. (Apr. 1954).

The pulmonary radiation dosage from the radon-radon daughter product

atmosphere was investigated by measuring the radioactivity deposited in the lungs of rats and dogs breathing in an exposure chamber containing 2×10^{-8} curies of radon per liter. The results indicate that most of the radiation dosage to the lungs is produced by these daughter products, removed as particulates from the air, rather than by gaseous radon and the daughter products decaying in the lungs.

-- Cond. from Nuclear Sci. Absts.

- 1039 Radiological Safety in Cathode-Ray Sterilization. S. Levin.
Nucleonics 12, 54-57 (June 1954).

Conservative estimates and assumptions, based on the limited data now available, are used in calculating shielding requirements for a typical sterilization unit. A broad safety program is described, to reinforce personnel protection afforded by the shielding of the installation.

- 1040 Batch Processing of Film for Radiation Protection of Personnel. R. J. Magill.
Arch. Ind. Hyg. & Occ. Med. 10, 37-41 (July 1954).

Batch processing of dosimetry film yields greater accuracy with less expensive equipment than do conventional methods. Conditions of development are more closely controlled because fresh solutions are used for short periods of time and because agitation is performed at the optimum rate. Standard exposures processed with the unknowns make it possible to correct a standard calibration curve for the usual small differences in development and film speed. Suitable equipment is described.

-- Cond. from authors summary

- 1041 Anoxia as a Factor of Radioresistance. A. Lacassagne.
J. radiol. et electrol. 35, No. 1-2, 12-15 (1954). French.

The mechanism of radioresistance appears to be the lessening of the reactions of secondary oxidations, caused by the oxidizing agents freed by irradiation. The best means, therefore, of augmenting radioresistance consists in diminishing the amount of free oxygen in the tissues.

-- Nuclear Sci. Absts.

- 1042 Oxygen Poisoning and X-Irradiation: A Mechanism in Common.
Rebeca Gershman, D. L. Gilbert, S. W. Nye, P. Dwyer, and W. O. Fenn.
Science 119, 623-625 (May 7, 1954).

Physiological mechanisms common to both oxygen and x-radiation injuries are discussed. From the experiments reported and the considerations presented, it is concluded that both irradiation and oxygen poisoning produce some of their lethal effects through at least one common mechanism, possibly that of the formation of oxidizing free radicals.

-- Nuclear Sci. Absts.

IN RE: ABRAMS
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- 1043 Influence of X-Irradiation on Oxygen Poisoning in Mice.
Rebeca Gershman, D. L. Gilbert, S. W. Nye, and W. O. Fenn.
Proc. Soc. Exptl. Biol. Med. 86, 27-29 (May 1954).

The survival time of mice in six atmospheres of oxygen was about 40 minutes. The average survival times were prolonged 12, 22, 34, and 146 minutes, respectively, when the mice were irradiated (8800 r) 30, 48, 72, and 84 hours previously. Anorexia may have contributed to the observed protection.

-- Authors' summary

- 1044 The Effect of Levulose on Radiation Sickness. K. Fochem.
Strahlentherapie 93, 466-472 (1954). German.

Fructose (levulose) can be used in radiation sickness to detoxicate the liver and diminish unpleasant side effects. The damage to the liver during high dosages of x-irradiation and the therapeutic effects of fructose were determined by means of the bromosulfophthalein test.

-- Nuclear Sci. Absts.

- 1045 Determination of Radon in the Air. G. Delibrias.
J. phys. radium phys. appl. 15, 78A-80A (May 1954). French.

A method is described for the determination of traces of radon in the atmosphere. The maximum sensitivity of the determination is 10^{-12} or $1/10^6$ of the tolerance dose. The measuring apparatus consists of an ionization chamber and a continuous current amplifier.

-- Nuclear Sci. Absts.

- 1046 Removal of Radioactive Substances from Water by Biological Treatment Processes.
G. E. Eden, G. H. J. Elkins, and G. A. Truesdale. Atomics 5, 133-142 (May 1954).

Techniques for the removal of radioactive contaminants from water and sewage are reviewed. The methods generally involve the use of an aerobic bacterial slime, supported on grains of sand to form a slow sand filter, or suspended as a flocculent sludge. The efficiency of both processes for removing several more common radioisotopes is quantitatively investigated.

-- Nuclear Sci. Absts.

- 1047 Psychological Aspects of Atomic Disaster. E. C. Adams.
Calif. Med. 81, 29-32 (July 1954).

The psychological conditions following an atomic disaster must be considered from two viewpoints, namely, the effects on masses and on individuals. Panic can be avoided by planning for evacuation and for medical measures, by assuring the public that such measures are being taken, and by avoiding sensationalism on the part of broadcasters and others in case of disaster. Effects on individuals vary from apathy to extreme depression. Suggestions are given for handling the various types of cases.

- 1048 Koppers' Blueprint for Defense. J. H. Redmond.
Occ. Hazards 16, 42-43, 64-65 (Aug. 1954).

The tornado in 1953 severely damaged the Norton Company's plant in Worcester, Massachusetts, and revealed deficiencies in the company's organization for dealing with disaster. The Koppers Company, profiting by this example, also found its disaster plan weak in some respects and developed a defense security plan, with the possibility of an atomic attack especially in mind. The plan is briefly described. Other companies are advised to develop ideas fitted to their own problems.

ENVIRONMENTAL MEASUREMENTS

- 1049 Determination of Hydrocarbon Gases as Air Contaminants.
E. R. Quiram, S. J. Metro, and J. B. Lewis. Anal. Chem 26, 352-354 (Feb. 1954).

Gaseous hydrocarbons are adsorbed on silica gel at -73°C , then desorbed into evacuated gas sampling container or bomb and finally analyzed by a mass spectrometer. Methane, ethane, propane, and isopropane were determined in concentrations of three to eight ppm. Approximately 95% recovery of C_3 , C_4 , and C_5 hydrocarbons was obtained, while the recovery of ethane was only fair (60%).

- 1050 Determination of Ethylene Dibromide and Ethylene Chlorobromide in Air.
B. H. Kennett. J. Agr. Food Chem. 2, 691-692 (June 23, 1954).

In fumigating various fruits for the destruction of the larvae and eggs of the fruit fly, rapid and simple methods for determining organic halogen compounds in air are required. In the method described, either of these compounds is absorbed in ethyl alcohol and decomposed with sodium hydroxide, and the liberated halogen is estimated by the Volhard thiocyanate method. Full directions are given.

- 1051 Determination of Hydrogen Sulfide and Sulfur Dioxide in Air. 1. Errors in Iodometry.
Y. Kitano and H. Takakuwa. Japan Analyst 3, 7-10 (1954).

Errors in the iodometric determination of hydrogen sulfide and sulfur dioxide in air were studied and the following suggestions were made to avoid errors. An absorbing tube containing sodium thiosulfate solution should be connected through a ground-glass joint to the iodine tube in order to trap escaping iodine while air is

being bubbled. Distilled water and starch indicator should be previously treated with iodine. The iodine tube should be cooled to 0° to reduce evaporation of iodine.

-- Chem. Absts.

1952 Separate Determination of Sulfur Dioxide and Aerosol Sulfuric Acid in Air.
M. V. Alekseeva and K. A. Bushtueva, *Gigiena i Sanit.* No. 4, 13-16 (1954).
Russian.

Sulfur dioxide is determined colorimetrically after absorption in 0.01 normal sodium hydroxide in 5% aqueous glycerol, followed by treatment of a 2-ml. specimen with fuchsin-formaldehyde reagent. A fresh 3 ml. of the absorbent solution is then blown free of sulfur dioxide by air after acidification with 0.3 normal hydrochloric acid, and the usual sulfate determination is made.

-- Chem. Absts.

1953 A Servomechanism for Measuring Aerosol Size and a Servomechanism for Controlling Particle Size in the Dioctyl Phthalate Generator. R. L. Bradshaw.
Atomic Energy Comm. Publication ORNL-1660, 36 pp. (Jan. 1954).

A servomechanism is described which continuously measures and records particle size of homogeneous aerosols in the range from approximately 0.1 to 0.2 micron radius. The principles of operation are explained, and limitations of the instrument are discussed with suggestions for improving the operation. Circuit diagrams and pictures of the instrument are shown. A servomechanism for controlling particle size in the dioctyl phthalate aerosol generator is described. The principles of operation are explained, and the results of tests of the mechanism on an analog of the generator are discussed. Reasons are advanced for the unsatisfactory operation of the instrument on the actual generator and suggestions for improvement are given.

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

COMMUNITY AIR HYGIENE

1954 Meteorology in Air-Pollution Engineering. G. B. Bell, E. Robinson, and D. H. Hutchison. *Arch. Ind. Hyg. & Occ. Med.* 10, 1-10 (July 1954).

The meteorological problems described occurred as parts of large scale engineering investigations. The examples show that the meteorologist is able to team with the engineer in answering questions concerning: (1) location of industry

with respect to air pollution problems; (2) relation of downwind concentrations in regard to fumigation patterns; (3) extent of reduction of emission of effluents to avoid air-pollution trouble; and (4) determination of blame for air-pollution problems. The answers to these and other questions can come from meteorological data properly interpreted for the engineer's use. This requires that the meteorologist be thoroughly familiar with plant operations, and that the engineer realize how the weather can contribute in making a plant either a welcome or an unwelcome member of its community. The experience gained by industry in solving air pollution is reducing the cost of each succeeding problem.

-- Cond. from authors' conclusions

- 1055 Air Pollution Review, 1949-1954. L. C. McCabe. Ind. Eng. Chem. 46, 1646-1650 (Aug. 1954). Reprints obtainable from Reprint Department, American Chemical Society, 1155 Sixteenth Street, Washington 6, D. C. 50 cents.

This review of recent progress in air pollution control includes the work of various organizations and summaries of the results of a number of investigations. The studies in St. Louis, the Detroit-Windsor area, Pittsburgh, Los Angeles are especially considered. The investigations concerning the London fog of 1952 and the Paza Rica fog in 1950, and the Donora episode are also reviewed briefly.

MANAGEMENT ASPECTS

- 1056 Why Employees Resist Change. (Condensation). P. H. Gasden, Jr. Advertiser's Digest 19, 28 (July 1954).

When changes are made in factory or office procedure, it is natural for workers to resist change. There are four general reasons for their resistance: complacency, habits, implication of criticism, and insecurity. These sources of resistance can be overcome by participation. When a work simplification program, for instance, is established on a participating basis, there is no problem of complacency, habit patterns are changed voluntarily, criticism is avoided (since it is shared), and security fears are quieted. No one resists his own new ideas. He gladly cooperates, if he feels he shares the credit.

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IN RE: ABRAMS

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- 1057 Bargaining with Unions on Union Welfare Funds. W. K. Ross.
Mgmt. Rec. (Natl. Ind. Conference Board) 16, 262-263, 288 (July 1954).

The three basic reasons for the abuses which have developed in some joint labor-management welfare funds are: (1) the failure on the part of employers to take an active interest in the welfare fund and to comprehend the long-range implications of their disinterest; (2) the failure on the part of the principals involved in establishing the fund to understand the technical and actuarial basis of the welfare fund and their failure to seek competent advice; and (3) the practices which are being followed by some insurance companies, agents, and brokers in the solicitation of welfare fund business. These factors are discussed and remedies are suggested.

- 1058 Time Off with Pay. H. Stieglitz. Mgmt. Rec. (Natl. Ind. Conference Board) 16, 258-261, 285-288 (July 1954).

A survey of 218 companies regarding pay for vacations, holidays, and other occasions for time off is reported. During the past few years the most noticeable development has been the granting of a third week of vacation, especially to longer-service employees. Paid holidays are also increasing. The practices the companies surveyed with respect to these and other forms of pay for time off are tabulated.

- 1059 Company Retirement Plans: Their Legal and Tax Aspects. R. B. Wiltse.
Mgmt. Rev. 43, 536-543 (Aug. 1954).

The highlights of the major legal and tax problems involving the qualifying of retirement plans, the deductibility of employer's contributions, and the taxation of the benefits to employees are discussed. The qualifying requirement emphasize two basic principles: (1) the plan must be for the exclusive benefit of the employees and their beneficiaries; and (2) there must be no discrimination in favor of highly paid employees, officers, and stockholders. Beyond those essentials, there are many complex problems to be considered. Insurance managers and personnel directors should acquire a general understanding of the problems and make liberal use of their legal and tax counsels.

- 1060 Physical Rehabilitation and Reemployment of the Handicapped. F. H. Krusen.
Arch. Ind. Hyg. & Occ. Med. 10, 11-15 (July 1954).

On the occasion of the author's receipt of the National Physicians' Award for 1953 from the President's Commission on Employment of the Physically Handicapped, he briefly considers various aspects of the subject. Proper restoration of handicapped persons depends on: (1) appropriate, definitive treatment and physical rehabilitation of the handicapped person in the hospital; (2) proper vocational rehabilitation; and (3) well-established programs for employment of the handicapped. Each of these aspects is discussed.

- 1061 Industrial Psychiatry: Aid to Human Relations. A. G. Larke.
Dun's Rev. & Modern Ind. pp. 130-135 (Feb. 1954).

The author reviews the status of the psychiatrist in a number of companies and describes some cases wherein the industrial psychologist was able to solve personality problems. Industrial psychiatry, which received an impetus from the wartime search for a guide to human motivation, but suffered a setback after the war's end, seems now to be on the threshold of coming of age in America's industry.

ACCIDENTS AND PREVENTION

- 1062 Carbon Dioxide for Extinguishing Transformer Fires in Chambers. B. Funk.
Elektroteknikeren 48, 23-26 (Jan. 22, 1952). Danish.

An automatic, permanent carbon dioxide installation in a transformer may extinguish intense oil fires. The gas supply must be generous and amount to at least 1 kg. per cu. m. The first test proved that this low specific carbon dioxide consumption suffices for extinguishing fires even in strong winds and if the chamber has large openings. It would be safer to design an installation to use 1.5 kg. per cu. m. for a minimum extinguishing time of 30 to 45 seconds. -- Chem. Absts.

- 1063 Pyrophoric Metal Powder and Metal-Dust Explosions. J. Breidenfeld.
Metall 8, 94-97 (1954). German.

The factors which influence the spontaneous ignition of pyrophoric powders are discussed. Magnesium, aluminum, cobalt, nickel, and iron powders are pyrophoric under certain conditions, depending somewhat on their heat of combustion, conductivity, and surface area. The factors which tend to produce dust explosions with magnesium and aluminum powders are considered. Wet grinding is a method for prevention of such explosions. It is especially important to prevent sparks especially in the case of magnesium. -- Chem. Absts.

- 1064 Qualitative Effect of Extinguishing Agents on Burning Diborane. P. D. George.
Ind. Chem. Eng. 46, 1709-1710 (Aug. 1954).

Burning diborane gas is considerably more difficult to extinguish than are ordinary burning gases, such as hydrogen and ethane, and the danger of explosive self-reignition is greater. Carbon tetrachloride must never be used on a boron

hydride fire. Diborane can continue to burn in much lower concentrations of oxygen than can ordinary gases, hence larger and more concentrated quantities of effective fire extinguishing agents must be used. Burning diborane gas escaping from a closed system is most effectively combatted with copious quantities of water judiciously and continuously applied. In some cases, such as a fire in a vessel a liquid or solid boron hydride, water cannot be used. Such agents as carbon dioxide must then be applied. Similar considerations apply to other boron hydrides such as liquid pentaborane and solid decaborane.

-- Cond. from author's summary

1065 Thermal Explosions of Diborane-Oxygen Mixtures.

A. T. Whatley and R. N. Pease. J. Am. Chem. Soc. 76, 1997-1999 (1954).

Diborane-oxygen mixtures explode after an induction period within a range of concentrations at 105 to 165° C. Since slow decomposition of diborane is occurring simultaneously at these temperatures, perhaps pentaborane may be the sensitizing agent. Both hydrogen and ethylene narrow the explosion limits.

-- Chem. Absts.

1066 Safe Storage, Handling, and Use of Commercial Explosives in Metal Mines, Nonmetallic Mines, and Quarries. (Revision of Inf. Circ. 7380).

D. Harrington and J. H. East, Jr. Bur. Mines Inf. Circ. 7674, 28 pp. (Feb. 1954). Publications Division, U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

Since the publication of the earlier edition in 1946, the production and use of commercial explosives in the United States have continued to increase. The present circular brings the information up to date on production and use of the various explosives, their classification, and safe use. Under the last heading adequate training of persons using explosives is emphasized.

1067 Sensitivity of Explosives to Ignition by Electrostatic Discharges.

F. W. Brown, D. J. Kusler, and F. C. Gibson. Bur. Mines Rept. Invest. 5002, 8 pp. (Sept. 1953). Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

The first report on this subject (Rept. Invest. 3852) was issued in 1946. The apparatus used in the investigation was later redesigned and rebuilt. The new apparatus is described. The graphs showing the results of various tests and the conclusions are substantially the same as in the earlier report.

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1068 Factors Affecting the Incendivity of Permissible Explosives.

N. E. Hanna, J. E. Tiffany, and G. H. Damon. Bur. Mines Rept. Invest. 5051, 11 pp. (Apr. 1954). Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

The data given in this paper come from a critical survey of the results obtained in the testing of over 700 different explosives. This information is supplemented by data from several other research investigations. Conclusions were derived on the effects of density, rate of detonation, and addition of chlorides, and nitrates. Among the factors that did not affect incendivity or gave inconclusive results are: addition of nitrocotton, progelling of the explosive oil, and particle size of the ingredients.

1069 A New Method of Measurement of the Incendivity of Explosives to Firedamp.

R. L. Grant, C. M. Mason, and G. H. Damon. Bur. Mines Rept. Invest. 5050, 4 pp. (Apr. 1954). Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

A new method, called the oxygen-value test, for measuring the incendivity of explosives for firedamp, is being tested at the experimental mine. It has been applied to a range of basic compositions. Typical results are tabulated. From the results obtained to date, a tentative classification of explosives has been set up to evaluate their relative firedamp incendivity. The results will be compared with those of analogous studies in the large gallery. -- Cond. from authors' summary

1070 The Development of Permissible Requirements for Safe Underground Diesel Haulage.

M. D. Elliott and R. S. James. Bur. Mines Inf. Circ. 7673, 12 pp. (Dec. 1953). Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

The history of the use of diesel mine locomotives is reviewed and the safety considerations in their use are discussed, with references to earlier publications of the Bureau of Mines. The more important of the safety requirements are: (1) proper ventilation to maintain a healthful working environment; (2) protection of intake and exhaust openings by flame arresters where explosive gases or dusts may be encountered; (3) maintenance of all surfaces below 400° F. and other adequate precautions against fire hazards; and (4) adequate regular maintenance. The test procedures used by the Bureau insure that approved equipment meets the stringent requirements.

1071 Administration of the Federal Coal Mine Safety Act.

J. Westfield, H. F. Weaver, and C. M. Keenan. Bur. Mines Inf. Circ. 7685, 76 pp. (June 1954) Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa. Free.

A review is presented of the activities of the Bureau of Mines in administering the Coal Mine Safety Act and other regulations. The inspection procedure

is described and statistics of inspections and investigations are presented in detail. A list of field personnel is included.

1072 A Consideration of Industrial Accidents as a Means of Withdrawal from the Work Situation. A Study of their Relation to Other Absences in an Iron and Steel Works.
J. M. M. Hill and E. L. Trist. Human Relations 6, 357-380 (1953).

In an investigation of the reasons for a higher accident rate in Great Britain than in America, the question of accidents as a means of withdrawal from the work situation was considered. An intensive investigation of accident frequency was made in a company with detailed records. Total absences, forms of absence, total time lost, types of mishap, and natures of the injuries were tabulated. The length of service of the workers was taken into account. The prevailing accident pattern consists of common mishaps causing superficial injuries leading to relatively short absences. Some accidents may be wholly or partly motivated (however unconsciously) by the person himself. Accidents may also be positively associated with other forms of absence leading to temporary withdrawal from work. Analysis of the statistics confirmed these beliefs. Consideration of the data suggests that absence phenomena may reflect the relationship of the person to the employing institution. The need for further study is emphasized.

-- Cond. from Bull. Hyg.

1073 Organizations with Programs Beneficial to Coal-Mine Employees.
W. D. Walker, Jr., and S. P. Polack, Bur. Mines Inf. Circ. 7665, 20 pp. (Aug. 1953). Obtainable from Publications Div., U. S. Bureau of Mines, 4800 Forbes Street, Pittsburgh 13, Pa.

This publication shows the various avenues of safety available to the coal miner and his employer as well as to organizations and agencies whose duty it becomes to teach the job "know-how" for reaching the common goal of greater safety for the largest number of coal miners. The material listed includes publications, films, demonstrations, and courses provided by the Bureau of Mines and state mining departments, programs conducted by mine operators, and mine workers' organizations, and the service provided by institutes, societies, schools, and other educational organizations.

Definition of Leadership: "We are leading successfully, we are sensing the pulse successfully, when we get people to do the work we want them to do, in the way we want it done, when we want it done, because they want to do it."

-- The Management Review

03119909

IN RE: ABRAMS November 1992

MISCELLANEOUS

- 1974 Industrial Air-Sampling for Anthrax Bacteria. M. A. Gordon, M. D. Moody, Anne M. Barton, and F. M. Boyd. Arch. Ind. Hyg. & Occ. Med. 10, 16-22 (July 1954).

The occurrence of a case of human anthrax in a newly established rural North Carolina textile mill led to fears that the disease might be introduced among live-stock in the vicinity, with possible creation of a new enzootic area. Imported goats' hair was suspected as the source of the infection. Air-sampling studies were made and samples of hair-fiber mixtures representing the stages of manufacture were examined. Air sampling by several methods disclosed B₁ anthracis organisms in nearly half of the locations. Two of six samples of hair-fiber mixtures gave positive tests. After removal and exclusion of infested hair from the mill, subsequent samples gave entirely negative results.

-- Cond. from authors' summary

- 1975 Nine Years' Engineering Experience with Water Fluoridation in Connecticut. W. J. Scott. Conn. Health Bull. 68, 269-274 (July 1954).

Experience with fluoridation in Connecticut evidenced from several installations of various types and going back over a period of nine years indicates that fluoridation can be carried out safely, adequately and economically. Evidence has accumulated to show that the addition of fluoride ions to our Connecticut waters which are generally deficient in fluorides, is a highly desirable step toward prevention of tooth decay. The benefits should be realized in an increasing number of Connecticut communities. The opportunity for children to develop through childhood into adult life with healthier sounder teeth should not be passed by. Benefits begin at birth and last through adult life. -- Author's summary

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