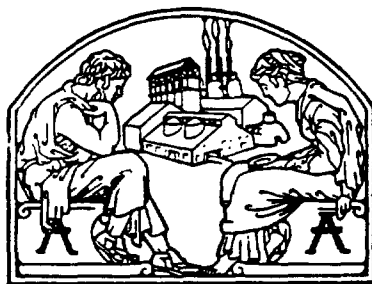


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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

JANUARY, 1961

(Vol. 25, No. 1)

INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH 13, PA.

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IN RE: ABRAMS

November 1992

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

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INDUSTRIAL HYGIENE FEATURES

Disability retirement and mortality of American railroaders is the subject of Abst. No. 17.

Abst. No. 20 is concerned with psychiatry in industry.

The injured knee is considered in Abst. No. 21.

See Abst. No. 27 for a discussion of problems in industrial cardiology.

Consult Abst. No. 33 for clinical experiences in the treatment of tetanus.

The primary irritant nature of cement is discussed in Abst. No. 34.

The successful treatment of second-degree burns with amniotic membranes is considered in Abst. No. 38.

An investigation in the fatal gassing in an acetylene manufacturing plant is described in Abst. No. 49.

Data on the effects on human volunteers of exposure to air containing gasoline vapor are presented in Abst. No. 50.

Information on the toxicity of allylamines is given in Abst. No. 51.

Industrial methemoglobinemia is discussed in Abst. No. 56.

The design and performance of the aerosol spectrometer is the title of Abst. No. 57.

A clinical discussion of 69 cases of respiratory disease of bagasse workers is given in Abst. No. 60.

Abst. No. 66 is concerned with tuberculosis: a study of its synergistic mechanisms.

Abst. No. 70 presents a clinical and roentgenological study of kaolin workers.

FOUNDATION FACTS

NEW MEMBERS. The Foundation is very pleased to welcome to membership six companies:

American Viscose Corporation
Armco Steel Corporation
Hanley Company

Hughson Chemical Company
Petroleo Brasileiro S.A.
Powdered Products Company

ENGINEERING SERVICES FOR MEMBERS: The Foundation has recently participated in a program in the design of a new plant by a member company to include sound health protection measures. The incorporation of engineering control procedures in the original design plans will insure the most efficient and effective means of preventing injurious and objectionable exposures.

Two engineers from another member company spent a day in our laboratories for the appraisal of their dust-counting and analytical procedures for evaluating dust exposures.

DR. PAUL GROSS, the Foundation's Research Pathologist, participated in an informal discussion on The Feasibility of Sponsoring Conferences on the Subject of Respiratory Diseases and Occupational Health at a meeting of the Pennsylvania Tuberculosis and Health Society held in Philadelphia on January 16.

WILLIAM J. SCHREIBEIS, the Foundation's Industrial Hygiene Engineer, has been elected Secretary-Treasurer of the Pittsburgh Section of the American Industrial Hygiene Association.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1 Fourth Annual Institute for Physicians in Industry.

Columbia University School of Public Health, Administrative Program of Continuation Education, announces the 4th Annual Institute for Physicians in Industry, February 3-7, 1961. These institutes are designed to give the industrial physician a period of intensive study in new subject areas which will be of value to him in his practice in the ever-changing field of industrial medical care. Consideration is also given to subjects which are covered in specialty board examinations for the industrial physician. Intensive instruction will be offered in some or all of the following subjects: epidemiology, biostatistics, toxicology, radiation, air pollution, occupational medicine (general review), and applications of insurance in occupational medicine. The institute is co-sponsored by the American Academy of Occupational Medicine. For further information inquiries may be directed to the Program of Continuation Education, School of Public Health and Administrative Medicine, 600 West 168th Street, New York 32, N. Y.
-- J. Occ. Med.

2 Course in Laryngology and Bronchoesophagology.

The Department of Otolaryngology, University of Illinois College of Medicine, will conduct a postgraduate course in Laryngology and Bronchoesophagology from March 13-25, 1961, under the direction of Paul H. Holinger, M. D. Registration will be limited to 15 physicians who will receive instruction by means of animal demonstrations and practice in bronchoscopy and esophagoscopy, diagnostic and surgical clinics, as well as didactic lectures. For information please write to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Ill.
-- Can. Med. Assn. J.

3 Refresher Course, School of Hygiene.

The 4th Annual Refresher Course of the School of Hygiene, University of Toronto, will be held February 6-8, 1961, at the School. The importance of chronic disease will be discussed on the first day, with special reference to institutional care and its problems. On the second day, the field of radioactive materials will be covered including the uses of radioactive substances in industry, diagnostic and therapeutic applications, and protection against radiation damage. The third day is a cooperative venture with veterinarians and the Ontario Veterinary College, Guelph. Subjects to be discussed are milk sanitation and animal diseases transmissible to man. The course is designed mainly for physicians in public health and preventive medicine. Hospital administrators and other interested persons will be welcome on the first day and veterinarians on the third day. The whole course costs \$35, or \$15 for one day only. Checks, payable to the Chief Accountant, University of Toronto, should be sent to the Director, Division of Postgraduate Medical Education, Faculty of Medicine, University of Toronto, Toronto 5, Canada.
-- Can. Med. Assn. J.

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Mar. 13-16 National Health Council, National Health Forum, "Health and Communication", New York, N. Y.
 Mar. 18-21 Missouri State Medical Association, Kansas City, Mo.
 Mar. 20-22 Dallas Southern Clinical Society, Dallas, Texas
 Mar. 20-24 American Surgical Association, Boca Raton, Fla.
 Mar. 23-25 American Orthopsychiatric Association, New York, N. Y.
 Mar. 28-31 American Association of Anatomists, Chicago, Ill.

OCCUPATIONAL DISEASE STATISTICS

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

	Conn. <u>Oct.</u>	Mich. <u>July-Nov.</u>	Pa. <u>Nov.-Dec.</u>	Tenn. <u>Nov.</u>	Total
Anthraco-silicosis			1		1
Asthma, carbon dust				1	1
Bronchitis				1	1
Dermatitis	20*	23	40	16	99
Endrin poisoning				1	1
Fumes (unidentified)			1		1
Lead poisoning			1		1
Lung cancer			1		1
Pneumoconiosis		5	31		36
Pneumoconiosis (suspected)			1		1
Pneumonitis			1		1
Respiratory infection			1		1
Respiratory irritation			2		2
Silicosis		29			29
Silicosis (suspected)			6		6
Tuberculosis			2		2
Miscellaneous		3			3
Total	20	60	88	19	187

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to plants, fruits, and vegetables 1; occupational dermatitis due to oils and greases and metal cutting compounds 5; occupational dermatitis due to solvents 1; occupational dermatitis due to drugs 1; occupational dermatitis due to other chemicals: acids 1, alkalies 1, nickel 1, synthetic resins or resin compounds 2, unidentified 1; occupational dermatitis—other: infection 3, miscellaneous 1, soaps or detergents 1, unidentified 1.

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11 California Begins Anti-Smog Drive; Vehicle Fume-Suppressors Required.

Smog-saturated Californians are seeking new means of alleviating their atmospheric problems. A law was passed last April by the California legislature requiring every new car registered in the state to be equipped with an anti-smog device within a year after the state's Motor Vehicle Pollution Control Board tests and approves at least two such devices. The new legislation also provides that within 3 years practically all cars and trucks in the state must have fume suppressors. If the procedures are successful, the market for anti-smog devices could be tremendous. California has the largest number of autos of any state with 7,500,000 registered vehicles, of which at least 6,500,000 may be required to use the smog-control apparatus. Trade sources predict that sales of such anti-smog devices over a 3-year period after they become mandatory in California could amount to almost \$700,000,000. They estimate the average cost of a smog-suppressor at \$100. Manufacturers working on anti-smog devices—automobile parts producers, chemical concerns, research companies, and a host of others—are concentrating on 2 main types. One is an afterburner that uses a pilot flame. The other is a catalytic converter. To a great extent, both resemble and replace the muffler and are locked to the exhaust pipe or are placed under the car's hood. The present high cost of anti-smog devices results from the materials used in producing them. Many converters use catalyst made with platinum and most afterburners utilize expensive, heat-resistant steel or ceramic materials.

-- J. Air Pollution Control Assn.

BOOKS, PAMPHLETS AND NOTICES

- 12 Modern Occupational Medicine. Second Edition. A. J. Fleming, C. A. D'Alonzo and J. A. Zapp, editors. Lea & Febiger, Washington Square, Philadelphia 6, Pa. 587 pp. (1960). \$12.

This book, which was written by 22 duPont medical and health authorities, provides essential knowledge on how to organize a medical service in industry, the influence of physical and chemical environments on health, and the control of occupational hazards. Much of the data presented does not appear in print elsewhere. There are added chapters on biostatistics in occupational medicine; mental illness and the application of psychiatry; emotional factors in diseases of the skin; occupational diseases of the chest; industrial vs. therapeutic chemicals in the etiology of aplastic anemia; and environmental hazards. Fully revised chapters include those on organic and inorganic lead; physical examination and diagnosis; physical environment and occupational health; industrial noise; surgical considerations; safety; and the nurse in industry. Of special interest to general practitioners, internists and resident physicians is the section on effects, signs, symptoms and treatment of frequently encountered acute poisonings. Executives, plant managers, safety engineers, public health physicians, toxicologists, insurance doctors, lawyers and nurses will find this book to be a quick and dependable reference.

- 13 Tensions—and How to Master Them. Public Affairs Pamphlet No. 305. G. S. Stevenson and H. Milt. Public Affairs Pamphlets, 22 East 38th St., New York 16, N. Y. 28 pp. (1960). 25 cents.

This pamphlet is a condensation of the book, "Master Your Tensions and Enjoy Living Again" by the same authors, published in 1959 by Prentice-Hall, Inc. The danger-signals of tension, its causes, and its remedies are described in the present pamphlet. Among the suggestions for relieving a "moderate case of tension" the pamphlet suggests: (1) Talk it out. (2) Escape for a while. (3) Take one thing at a time. (4) Get rid of your anger. (5) Stop driving for superiority. (6) Even when you are right, give in sometimes. (7) Do something for somebody else. Doing something for somebody else, the pamphlet points out will do 3 special things for a person: It breaks the stranglehold of moodiness. It brings to the fore a feeling of strength. It brings forth a person's sense of sharing and generous impulses.

INDUSTRIAL MEDICAL PRACTICE

- 17 Disability Retirement and Mortality of American Railroaders. W. J. Gerstle.
Ind. Med. & Surg. 29, 570-576 (Dec. 1960).

The retirement system of the American railroader while administered by the Federal government reflects in many aspects the character of American railroads as a private industry. There is a high percentage of disability retirements of which over 90% are in the age group 50-64 years. Diseases of the circulatory system, of the nervous system and sense organs and of the bones and organs of movements account for two-thirds of all disability pensions. The incidence of malignant neoplasms is low as a cause of disability retirement. The mortality of the American working railroader is lower than the corresponding figures for the non-railroader and finally, the mortality of the age annuitant among the U. S. railroaders matches exactly the respective mortality of the non-railroaders in the U.S.A.

-- Author's summary

- 18 Cultural Attitudes Towards Aging and their Implications for Public Planning. E. S. Cohen.
J. Am. Geriatrics Soc. 8, 337 (1960).

The basic problems of aging populations, particularly those associated with the increasing trend toward their cultural exclusion, and the reasons for current unfavorable attitudes toward the elderly are examined. Factors such as the shift from agrarian to industrial society, the shift from rural to urban concentrations of population, and the growth of cultural diversity with changes in family size do not offer an entirely satisfactory explanation according to the author. There has been a shift in public opinion which to some extent has been manipulated by environment and by circumstance, but also by a conscious change of values in social organization. Scientific organizations and educational efforts could be used to change public opinion with regard to planning for the aged. Accurate information should be acquired regarding the reasons for the current prevalent rejection of older citizens and attempts should be made to induce a change in public opinion and an altered sense of values regarding the aged. A new image of the older person should be created with the help of mass media and the techniques of the public relations industry. Respect and a sense of tradition should be developed as one of the most effective and time-honored methods of maintaining a positive attitude towards aged citizens. Community efforts should be organized in the appropriate direction and the aged citizenry itself should be developed into a responsible social and political force.

-- Can. Med. Assn. J. Absts.

- 19 Mental Health and Industrial Change. S. G. Rogg.
Arch. Environmental Health 1, 265-270 (Sept. 1960).

Economic necessity has changed us from a society where the individual was part of a stable family group to a position where man has become an independent unit. The sense of satisfaction in completely producing an article has been destroyed, leading to a decline in personal responsibility for work done. While society correctly feels that everybody has the right to earn a living, this seems in many cases to have created the feeling that this right does not bear any responsibility regarding the work done. A free society requires that home, school, and community foster a sense of responsibility and fulfillment of obligations. There have been many failures here. Industry, burdened with these failures, must decide how best to handle them. When industry assumes the responsibility of hiring a man it also has the obligation to require from him an active assumption of responsibility regarding his work.

-- J. Am. Med. Assn. Absts.

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streptomycin, or PAS. The "conversion" rate achieved with the experimental regimens was approximately 5 times higher; it was 3 times higher when the patients who underwent operation were included. Eighteen patients were treated in the second study, and 7 of the 8 who received 1 g. of cycloserine daily and 40 mg. of pyrazinamide per kg. (not to exceed 3 g. daily) became noninfectious with drugs alone. Of the 10 patients who received the same dose of pyrazinamide and 5 g. of kanamycin weekly, 2 became non-infectious with drugs alone and one with drugs and surgery. Toxic reactions associated with kanamycin, cycloserine, and pyrazinamide appeared frequently, but were not severe enough to contraindicate such chemotherapy.

-- Cond. from authors' summary

- 25 Reactions to Influenza Vaccine Inoculations. J. M. Lynch, et al.
A.M.A. Arch. Ind. Health 21, 574-578 (June 1960).

Local and systemic reactions to 4,699 influenza vaccine inoculations, given National Institutes of Health employees in 1957 and 1958, were studied. Within the limited scope of the study, potency in terms of CCA units per cubic centimeter as well as number of strains of virus in the vaccine, did not seem to have a bearing on the number or severity of reactions. Local reactions were relatively high but minor in severity. Systemic reactions, likewise, were not excessive or unusually severe, and absenteeism was low. Reaction patterns for persons receiving 2 inoculations during the 1958 season were compared. Reactions after administration of vaccine from 3 different manufacturers were noted. -- Authors' summary

- 26 Tests of Ventilation in Males 60 Years of Age and Over. A. Wigderson and M. Kohan.
Can. Med. Assn. J. 83, 1068-1069 (Nov. 12, 1960).

Tests of ventilation, one-second timed vital capacity, three-second timed vital capacity and maximal mid-expiratory flow rate were performed on 50 male patients over 60 years. Ventilatory performance is reduced with age. Spirometric studies may reveal expiratory delay when this effect is a result of the aging respiratory system rather than significant tracheobronchial disease. The value of spirometric studies in the aged is therefore quite limited.

-- Authors' summary

- 27 Problems in Industrial Cardiology. F. W. Wilson. J. Occ. Med. 2, 585-587 (Dec. 1960).

Problems peculiar to cardiology in industry are discussed. The diverse problems of the various workmen's compensation law are presented briefly. The classification of heart disease as related to industrial health is listed. It is recommended that unity of opinion among cardiologists as to cardiac problems in industry be encouraged by the setting up of more expert panel plans and by continued action of special study committees. -- Author's summary

- 28 Some of the Problems of Employment of the Cardiac in Industry. A. C. Kerkhof.
Ind. Med. & Surg. 29, 484-489 (Oct. 1960).

Employment of the cardiac is a major problem today and is increasing in importance. Much of the difficulty comes from fear on the part of the employee, the labor unions, and industry. Excessively liberal interpretation of workmen's compensation laws is a major factor in employment of the cardiac patient. The individual physician's role in workmen's compensation has a most important bearing on the "contest" philosophy presently obtained in these cases. Questionnaires and documented findings show that the cardiac patient can take his place in industry. Workmen's compensation cases involving cardiac patients comprise a proportionately large percentage of the total costs of workmen's compensation. Both industry and labor have unique problems associated with employment of the cardiac and education is needed to change some of the current attitudes which hinder the cardiac from employment. Changes in workmen's compensation laws are urgently needed. Work classification units should be encouraged and supported by physicians. The physician's attitude, interest, and approach toward the individual involved in employment is still the primary determining factor

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seriousness had been discounted by the patients or physicians. The development of clinical tetanus in 7 of the 123 patients after delayed surgical procedures or remanipulations or compound fractures, long after the initial injury, is emphasized. The prolonged viability of C1 tetani was demonstrated also by the fact that C1 tetani could be cultured from tissues excised from an old wound one year after the injury. The patient who recovers from tetanus cannot be presumed to have developed immunity to the disease. The authors recommend that such patients should be given a series of toxoid injections to establish active immunity. The chief cause of death in patients with tetanus has been acute respiratory arrest during a convulsion. Since 1946 the authors have focused the treatment of patients with tetanus on the prevention and control of respiratory arrest by around-the-clock emergency care and the use of thiopental sodium solution for elevating the threshold of excitability and securing quicker and more effective relief of convulsions and seizures of respiratory arrest. With this plan of management the mortality has been reduced from 65.1% to 21.2%. The use of thiopental is recommended.

-- J. Am. Med. Assn. Absts.

SKIN DISEASES AND BURNS

- 34 The Primary Irritant Nature of Cement. G. E. Morris.
Arch. Environmental Health 1, 301 (Oct. 1960).

Portland cement and similar cements used in the building trade for reinforced concrete, mortar, plaster, etc., consist of lime, clay, and silica in varying proportions. "Cement itch", or dermatitis, has been known for years and is common among workers handling such products. Recently, much has been written about the part the chromium salts play in the cause of such dermatoses. The European writers, especially, believe that cement dermatoses are due in large measure to sensitization to water soluble chromate compounds present in the cement. There is no adequate proof, however, that sensitization to chromate or dichromate is the major fact in cement dermatitis. Nowhere has the author been able to find any note of primary ulcers of the skin due to the action of cement. In the present paper the author reports on 2 such cases.

- 35 Contribution to the Evaluation of the So-Called Baker's Eczema. J. A. v. Preyss.
Berufsdermatosen 8, 68-72 (Apr. 1960). German.

The author presents an account of the legal prohibitions in Germany in regard to additives in flour. There is a list of chemical substances used as bleachers and improvers of flour which have to be considered in relation to baker's eczema. Of these substances persulfates are the chief allergens although recent observations suggest that benzoyl peroxide is also of importance in this respect. Since April 1, 1957 when additives to flour such as persulfate were prohibited in the German Federal Republic the incidence of the so-called baker's eczema has diminished greatly. This is of much importance from the viewpoint of occupational skin diseases entitling to compensation. In an experience of 70 cases of baker's eczema seen in the period 1954-1959, it was found by skin testing, that allergy to persulfate was very frequent but that after 1956 no patient though sensitive to persulfate suffered from eczema.

-- Cond. from Bull. Hyg.

- 36 Patch Test Study to Determine Cutaneous Reaction to New Compounds. J. V. Clauder.
Arch. Environmental Health 1, 407-416 (Nov. 1960).

Methods to determine the primary cutaneous irritant and allergenic action of any given substance are discussed. These are the prophetic patch test in which 2 applications to the skin are made, the repeated insult method in which repeated consecutive applications are

type of tinea capitis caused by *T. tonsurans*. The excellent results obtained with the new antibiotic, griseofulvin, would seem to indicate that this drug will replace roentgen-ray epilation as the preferred treatment for all forms of scalp ringworm.

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

- 40 Nickel Sensitivity as a Cause of Infusion Reactions. J. C. Stoddart. *Lancet* 2, 741 (1960).

Many of the cannulae used for routine intravenous infusions are made of nickel or of nickel-containing alloy. Though large numbers of infusions are given via such cannulae everyday, no previous case of nickel dermatitis from this cause has been described. That this type of reaction can occur was evidenced by the observation of skin eruption in 2 patients, associated with intravenous infusions within a 3-month period in one hospital. One of these patients also experienced an alarming anaphylactoid reaction. As nickel sensitivity is relatively common, it is suggested that a proportion of hitherto unexplained infusion reactions may be due to nickel cannulae which may produce manifestations of either the immediate or delayed type of hypersensitivity.

-- Can. Med. Assn. J. Absts.

CHEMICAL HAZARDS

- 41 The Problem of Chronic Carbon Monoxide Poisoning. O. Zorn and P. D. Kruger. *Ind. Med. & Surg.* 29, 580-581 (Dec. 1960).

The authors had the opportunity to study industrial carbon monoxide exposure in coke and metallurgical works. From a toxicological and clinical study of the concept of chronic carbon monoxide poisoning, they reached the conclusion that "chronic CO poisoning" in the true sense does not exist. They identified the so-called chronic carbon monoxide poisonings as "light, recurring carbon monoxide poisoning."

-- Authors' conclusions

- 42 Hygienic Problems in the Use of Tertiary Butyl Chromate as an Inhibitor of Metal Corrosion. J. Roubal and M. Krivucova. *Arch. Gewerbepathol. Gewerbehyg.* 17, 589-596 (1960). German.

From animal experiments made by the authors it is concluded that tertiary butyl chromate in certain industrial conditions can cause pneumonic changes, narcosis and necrotic lesions of the skin. Atmospheric concentrations should never be greater than 0.1 microgram per liter of chromium trioxide; contamination of the skin should be avoided; closed apparatus for mixing with paraffin and with automatic filling should be used, and special care taken with the finished product; when paper impregnation is carried out in a paper calendar machine at temperatures of 50° to 70°C those parts of the machine where the temperature is higher than 20°C should be enclosed and provided with exhaust ventilation.

-- Cond. from Bull. Hyg.

- 43 Determination of Tetramethyllead and Tetraethyllead in Gasoline by Mass Spectrometry. H. E. Howard, W. C. Ferguson and L. R. Snyder. *Anal. Chem.* 32, 1814-1815 (Dec. 1960).

A rapid analysis of gasoline for tetramethyl- or tetraethyllead is accomplished by a mass spectrometric procedure. The mass spectrum of the sample is compared with the mass spectrum of two synthetic blends of known concentrations of tetramethyl- and tetraethyllead.

-- AC Briefs

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- 48 A Contribution to the Study of Early Diagnosis of Occupational Saturnism. G. Paoletti. Rass. med. ind. 28, 386-399 (Sept.-Oct. 1959). Italian.

This paper first deals with occupational lead poisoning in general terms touching on the history of this condition which has been recognized and described since very ancient times. Next the author outlines the circumstances of the lead hazard as it affects workers in potteries when they are handling insufficiently baked china and when handpainting or color-spraying the articles. He describes the cases of three women workers who were recently treated for lead poisoning, and compares the older investigation techniques, which estimated the lead content of blood and urine and looked for basophilia, with more recent methods, which study the exchange of porphyrin in the blood and urine. He considers that an increase in the protoporphyrin content of the red cells is an early, constant and specific sign of occupational lead poisoning.

-- Bull. Hyg.

- 49 Fatal Gassing in an Acetylene Manufacturing Plant. A. T. Jones. Arch. Environmental Health 1, 417-422 (Nov. 1960).

The results obtained in this investigation, coupled with postmortem results and a description of the circumstances and position in which the deceased operator was found, seem to make reasonable the following deduction: Because of difficulty in seeing the low level of carbide in the generator by viewing from outside, or for some unknown reason, the operator must have placed his head inside or very closely over the filler hole of the hopper. This would require him to lean over the hopper in such a way that if overcome he would probably be held up in that position. In so doing he would be exposed to an atmosphere deficient in oxygen, and containing a high concentration, possibly up to 80% acetylene. Such an atmosphere could produce very rapid unconsciousness. In this situation, with no one else on hand, the person would continue to breathe such atmosphere until death, due to anoxemia, impure acetylene, or a combination of the two, ensued. In an American episode the responsible agent for the fatality was considered to be phosphine. The air in the vicinity of the hopper in this case contained up to 12% of acetylene and a consequent average of about 8 ppm of phosphine, to which several hours exposure per day would possibly occur. Chronic poisoning by phosphine was thought to be the prime cause. As a temporary preventive of such an incident, the use of compressed airline respirators, to be worn by operators when working around open hoppers was recommended. On a long term basis, some means of ascertaining the carbide level without the need of opening the hoppers, such as radioactive isotope indicators or glass ports in the hopper with good illumination was suggested.

-- Cond. from author's summary

- 50 The Effects on Human Volunteers of Exposure to Air Containing Gasoline Vapor. A. Davis, L. J. Schafer and Z. G. Bell. Arch. Environmental Health 1, 548-554 (Dec. 1960).

The effects sustained by 10 volunteers when exposed to low concentrations of the vapor of each of 3 gasolines for 30-minute periods were compared. The 10 volunteers were subjected to exposure to each gasoline in concentrations of approximately 200, 500 and 1,000 ppm in air. The only significant effect observed was that of eye irritation. This effect was documented by both subjective response to a questionnaire and by objective change in the pattern of conjunctival blood vessels as determined from photographs of the eyes of the subjects. Under the conditions of the experiment, no differences in effect were noted among the 3 gasoline samples. For each of the gasoline samples, however, there was a significant difference in effect at different concentrations of vapor. Equations for the curves of probability of response vs. vapor concentration were computed for both the subjective responses and the objective conjunctival changes. From these relationships, it was determined that the subjective response to conjunctival irritation is the more sensitive indicator of the two methods of assessing the effect.

-- Authors' summary

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- 55 Application of Radioactive Plant Protection Chemicals for Illustration and Quantitative Evaluation of Spray Deposits. A. Nordby and K. Steenberg. J. Agr. Eng. Research 4, 174-180 (1959).

A method is reported for studying the distribution of spray chemicals in orchard trees. A fungicide was irradiated in a reactor. By activity measurements, amounts of spray deposit on leaves can be determined quantitatively. Radio-autograms illustrate the distribution on single leaves. Examples are given of the application of this method on Norwegian apple tree varieties. The effect of precipitation after spraying on amount of leaf deposits is shown.

-- Nuclear Sci. Absts.

- 56 Industrial Methemoglobinemia. H. C. Halsted. J. Occ. Med. 2, 591-596 (Dec. 1960).

Methemoglobinemia, the primary effect of poisoning by the aromatic nitro and amino compounds, has been considered. A review of the basic biochemical mechanisms involved in the production of methemoglobin from the normal blood pigment, hemoglobin was discussed. Essentially from the standpoint of personal observations the author has further considered the varying aspects of recognition, treatment, and control of chemical cyanosis. Watchful waiting plus general supportive measures are adequate for the treatment of mildly or moderately cyanosed persons. Patients who are severely cyanosed require vigorous and adequate medical therapy. Methylene blue is recommended as the most valuable single drug available to bring about the rapid reduction of methemoglobin to normal hemoglobin. Careful attention must be given to adequate industrial hygiene control measures for whenever the aromatic nitro-amino compounds are handled they constitute a constant hazard to exposed personnel.

-- Author's summary

INDUSTRIAL DUSTS

- 57 The Design and Performance of the Aerosol Spectrometer. A. Goetz, H. J. R. Stevenson and O. Preining. J. Air Pollution Control Assn. 10, 378-383, 414, 416 (Oct. 1960).

The aerosol spectrometer effects the quantitative separation and the deposition of air-borne particulate matter in a pattern, which is geometrically defined over a size range controllable by the operating conditions between Stokes' diameters of 3 microns to 0.03 micron. The derivation of the size- and mass-distribution in polydisperse aerosols from such deposit patterns, requires procedures which are described in detail in another paper.

-- Authors' conclusions

- 58 Discrimination between Rock and Coal Particles in Thermal Precipitator Samples of Respirable Dust. R. J. Donato. Ann. Occ. Hyg. 1, 280-290 (Apr. 1960).

In the examination of samples of air-borne dust obtained in coal mines with the thermal precipitator it is often desirable to discriminate between rock and coal particles. The author reviews the various possible ways of doing this, and describes 2 methods in detail. One of these is an incineration method for use with a densitometric evaluation, and the other is a microscopical technique in which modified dark-field illumination is used. Both these methods were used successfully in discriminating between rock and coal (or between coal and non-coal) particles in thermal precipitator samples prepared in the laboratory. It is concluded that of the 2 the incineration method with densitometric counting is much the simpler, and lends itself the more readily to routine analysis where estimates of concentration are wanted on a comparatively large scale. The microscopical method would be used only where detailed investigation of individual particles was necessary, e.g., to determine whether a given particle was a mixture of rock and coal, and if so, how much of its surface was rock. Particles smaller than 1 micron can be assessed with considerable confidence, and the lower limit of size is probably about 0.5 micron.

-- Bull. Hyg.

heavy smoker. The bronchi of 15 non-smoking gold miners, with varying degrees of silicosis were examined and it is suggestive that silicosis in itself plays no part in the enlargement of these glands. There appears to be no increased incidence of enlarged mucous glands in the bronchi of cases of acute pneumonia and tuberculosis. No significant histochemical difference have been observed in the bronchial gland mucus of miners and non-miners.

-- Author's summary

- 63 A Case of Caplan's Syndrome in a Roof Tile Maker. D. S. Hayes and E. Posner. Tubercle 41, 143-145 (Apr. 1960).

The patient was a man of 50 who had been employed making roof tiles in a factory in Stokes-on-Trent. Over most of the man's exposure the tiles were hand-made from a local clay in a mold, the inside of which, was dusted with fine coal dust or quartz sand to prevent the clay from sticking. Both these materials were stored in open bins adjacent to the molding benches so that each manipulation of the mold produced a cloud of dust. The patient had been exposed to this dust for 17 years. He suffered from rheumatoid arthritis for 12 years; his father had been a victim of the disease. The x-ray film of the chest shows the very characteristic appearance of Caplan's syndrome. Five other cases of pneumoconiosis have been discovered by mass radiography surveys; two of them in women. The present case is the first example of Caplan's syndrome reported in this occupation.

-- Bull. Hyg.

- 64 The Fate of Inhaled Particles in the Early Postexposure Period. (2) The Role of Pulmonary Phagocytosis. C. W. LaBelle and H. Brieger. Arch. Environmental Health 1, 423-427 (Nov. 1960). (See IHD Abst. 601, June 1959).

A method has been developed by which the number of free phagocytic cells in the lungs of rats can be estimated. This method has been used to show that the amount of dust eliminated from the lung during the early postexposure period is proportional to the number of free phagocytic cells present, and that the kinetics of the elimination of the particles is identical, within the experimental error, with the kinetics of the disappearance of phagocytic cells following exposure to dust, whether the latter is given by injection or inhalation. It is therefore, concluded that transport of deposited particles by phagocytes in the primary mechanism by which inhaled dust particles are eliminated from the lung following inhalation.

-- Authors' summary

- 65 The Results of Chemotherapy in Silicotuberculosis. C. S. Morrow. Am. Rev. Respiratory Diseases 82, 831-834 (Dec. 1960).

Eighteen patients with active extensive silicotuberculosis, 16 of whom had cavities, received chemotherapy for various periods of time; most of them had between 3 and 12 months of treatment. Three regimens were employed, all of which contained isoniazid. The results of therapy in this group of patients were excellent; 16 showed reversal of infectiousness and 11 demonstrated roentgenographic improvement. Cavity closure, however, occurred in none of the 16 patients with cavities. This paper reflects the excellent results reported in the recent literature on the chemotherapy of silicotuberculosis.

-- Author's summary

- 66 Tuberculosilicosis: A Study of Its Synergistic Mechanisms. P. Gross, M. L. Westrick and J. M. McNerney. J. Occ. Med. 2, 571-575 (Dec. 1960). Reprints available from Industrial Hygiene Foundation upon request.

Iron-contaminated quartz dust, when injected intratracheally in combination with tuberculin into sensitized guinea pigs, produced a greatly exaggerated tissue response. In many of the animals, the resulting disease resembled experimental tuberculosilicosis. The modification of experimental silicosis by an immune reaction, as exemplified by the pulmonary tuberculin reaction, supports the hypothesis that the development of tuberculosilicosis is dependent upon a reciprocal stimulation of tissue responses caused respectively by silica dust, on the one hand, and by sensitivity to the tubercle bacillus and its products, on the other, as postulated by Vigliani and Pernis.

-- Authors' conclusions

not differ significantly from that of the general population in the area of corresponding age and race. The lung changes seen in kaolin workers does not represent a form of silicosis. Uncomplicated kaolin pneumoconiosis appears to be due to retention in the lungs of finely divided kaolin which is almost completely inert. Clinical and animal experimental studies indicate that the combination of tuberculosis and heavy dust exposure is the causative factor in those cases showing progressive massive fibrosis. The paper contains 24 references to the subject.

-- Cond. from author's summary

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 71 Medical Problems of Passengers Related to Air Transportation. K. E. Dowd.
Mod. Med. Canada 15, No. 3, 87 (1960).

For the guidance of physicians, suggestions are made regarding air travel for incapacitated patients. These are included in information presented under the following headings: circulatory system, respiratory system, accident cases, surgical conditions, blood diseases, locomotor system, blind passengers, stretcher cases, immunization requirements for international travel, smallpox, yellow fever, cholera, and passenger problems of jet aircraft. Conditions acceptable for air travel are indicated. Attention is drawn to those acceptable following certain provisions, and under circumstances as outlined, and also to contra-indications. Stretcher cases will usually be accepted on most commercial airlines in case of emergency only and must be accompanied by a qualified attendant. Where saving a life is involved, the airline practice is to disregard factors of inconvenience to other passengers, and to accept the sick person, provided this does not offer a threat to the safety or health of others. In practically no case should authority be given for air travel of persons in the terminal stages of illness. The problems of jet aircraft have introduced special protective measures, particularly in the event of rapid decompression. With the new jet aircraft structural design, however, there should be no serious risk of decompression. Time and experience will prove whether the various protective devices such as oxygen equipment will ever be required. The former specialty of aeromedicine has become "aerospace medicine". Now embracing the "outer universe," it affords opportunity for extensive research and investigational study in the future.

-- Can. Med. Assn. J. Absts.

- 72 Determination of Environmental Limits for Everyday Industrial Work. A. R. Lind.
Ind. Med. & Surg. 29, 515-518 (Nov. 1960).

A subject was exposed to a wide range of climates, with effective temperatures from 13 to 31.5°C, while he walked continuously for 60 minutes on a treadmill at an energy cost of 210 kcal./m.²/hr. Rectal temperature reached equilibrium within this period of 60 minutes, at approximately the same value (37.8 ± 0.1°C) over a range of "neutral" climates from effective temperature 13°C to about effective temperature 27 or 28°C; above this climatic range rectal temperature equilibrated at higher levels. Flexibility of the thermoregulatory system allowed the rectal temperature to be maintained at a steady level irrespective of climatic variations within the "neutral" zone, and the reason for the higher equilibrium-level of rectal temperature in "hotter than neutral" climates is discussed. This criterion could usefully be applied to describe climatic limits for everyday work in industry or elsewhere.

-- Author's summary

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- 78 Regulatory Problems in Controlling Ionizing Radiations. M. M. Udel.
Arch. Environmental Health 1, 497-501 (Dec. 1960).

The physician responsible for administering a program to prevent injury from ionizing radiations will face certain problems. Some of these are derived from legislation and codes; some relate to developing competence in the field; and others are characterized as human factors. Solutions to several of these problems are cited. The responsibility of preventive medicine to deal effectively with this hazard, particularly in educating the public, is emphasized.

-- Author's summary

- 79 Research in the Radioactive Contamination of the Environment. C. P. Straub.
Arch. Environmental Health 1, 302-310 (Oct. 1960).

Although this paper essentially reports radioactivity levels in Cincinnati samples, radioactivity is being determined in many areas on a wide variety of samples. The work is by no means complete, and more studies are needed to define the current levels of specific radionuclides in environmental media. Those areas showing higher levels should be studied in greater detail to determine the sources of these higher levels and also to follow the movement of the radionuclides of interest through the various segments of the environment and the food chain to man. With such information at hand remedial measures may be instituted to minimize the transfer of radioactivity through the environmental cycle to man. It is not too soon to plan and carry out studies which will provide means for controlling the spread of specific radionuclides directly to man or through his food chain. Information on environmental sources of radioactivity is needed to provide a better basis for indicating permissible occupational exposures. If environmental sources result in significant exposure to the individual, it may be necessary to consider the reduction of occupational levels to a point where the combined hazard will be minimized. Furthermore, exposure from occupational sources may be controlled more easily than exposures from environmental sources.

-- Author's conclusions

ENVIRONMENTAL MEASUREMENTS

- 80 A Tracer Technique to Measure Deposition of Stack Emissions. E. J. Schulz, et al.
Am. Ind. Hyg. Assn. J. 21, 343-349 (Oct. 1960).

This investigation indicates that the tracer technique described is a useful tool in the quantitative measurement of the particulate deposition rate of industrial emission. The variable decompositions of uranine solutions exposed to the atmosphere in dust-fall containers prevents the use of dust-fall jars as sampling devices. Based on the laboratory study, uranine can be dispersed as a tracer into stack at stack-gas temperatures up to 600°F without decomposition. With direct stack injection, losses of tracer in the stack must be determined for each application. In using uranine it is mandatory that background fluorescence be determined in the area to be investigated. However, the technique is not limited to uranine. Any soluble material that satisfies the requirements of a tracer can be employed with this method.

-- Authors' conclusions

- 81 Lead, Carbon Monoxide and Traffic. A Correlation Study. R. S. Brief, A. R. Jones and J. D. Yoder. J. Air Pollution Control Assn. 10, 384-388, 413 (Oct. 1960).

Atmospheric levels of lead and carbon monoxide were studied at 6 locations in a Northeastern United States' City, wherein the traffic density varied from 0-99 vehicles/min. Positive correlations have been developed between lead and traffic density and between carbon monoxide and traffic density. The correlations obtained conclusively point to vehicle exhaust as a source of lead and carbon monoxide in the atmosphere. -- Authors' summary

- 85 Problem and Control of Air Pollution in the Australian Heavy Clay Industries. J. L. Sullivan and R. P. Murphy. *J. Inst. Fuel (London)* 33, 436-442 (Sept. 1960).

The emission of dense smoke and soot from the heavy clay industries is a problem affecting many countries. Control of this problem presents certain difficulties mainly because some ceramic products require special firing techniques which are not always attainable by mechanical methods. There will be an inevitable delay before the ultimate solution is found. Consequently, the use of hand-fired intermittent kilns, which now constitute the main problem, is likely to continue for some time. This paper describes a method of hand-firing by which smoke can, in most cases, be reduced to an acceptable level without significantly increasing effort. In Australia, the method which is termed split-firing, is gaining acceptance and in many cases has enabled firms to comply with clean-air ordinances. Soot emission is not appreciably reduced by split-firing but other methods, namely the use of low volatile fuel in the early stages of firing and stack collection, are discussed. -- APCA Absts.

- 86 New Way to Scrub Incinerator Gases. S. Smith. *Air Engineering* 2, 40-42 (May 1960).

A package scrubber is described for application to flue-fed incinerators for domestic rubbish and garbage in apartment buildings. In New York City there are 11,000 flue-fed incinerators that burn approximately 600,000 tons of refuse annually. A scrubber will limit outlet dust emissions and make incinerators acceptable under air pollution ordinances. Hot, dirty flue gases are first sprayed to cool, saturate the gas, and remove coarse dust particles. The conditioned gas then passes upward through an impingement baffle plate cleaning stage. After impingement cleaning, the gas passes through an entrainment separator at the top of the unit and leaves clean and free of entrained water. Efficiency up to 96% is claimed. Cost is approximately \$2,500, not including installation. Operating costs per year are \$100 for equipment, maintenance and repairs; \$263 for power and \$33 for water.

-- Cond. from Public Health Engr. Absts.

- 87 Industrial Dust Suppression and Collection. C. G. McKeown. *Smokeless Air* 30, 303-312 (Summer 1960).

Dust collectors of the cyclone, bag, scrubber of coke bed and water spray types are discussed. A wet scrubber-cyclone collector called the "Equitrace" is described. It consists of a series of concentric rings in the body and thimble of the cyclone. It is claimed that these concentric rings prevent the water from being thrown to the outer periphery of the cyclone and permits even contact of water with the dust. It is also stated that the "Equitrace" cyclone yields a good degree of dust collection in that the concentric rings give a high efficiency collector effect. A cupola installation drawing is shown.

-- Public Health Engr. Absts.

COMMUNITY AIR HYGIENE

- 88 Comprehensive Area Surveys in New York State. C. S. Maneri and W. H. Megonnell. *J. Air Pollution Control Assn.* 10, 374-377 (Oct. 1960).

Under the New York State Air Pollution Control Board's program, comprehensive area surveys will be made in all sections of the state to evaluate existing or potential air pollution problems. Necessary local or regional rules and regulations, as deemed appropriate, are based on the findings. Source sampling usually is not undertaken but emission estimates are obtained from fuel and gasoline consumption, refuse incineration, industrial processing, and other sources. Estimates are based on emission values reported for similar operations

the majority of the observed eye irritation found in the photo-oxidized systems studied. At the concentrations present in the photo-oxidized mixtures, epoxides, most aldehydes, ketones, nitrites, ketene, ozone, alkyl nitrates, and acyl nitrates were not eye irritants. Terminal olefins in general led to the greatest amounts of irritation. Internal olefins were of lesser importance in the formation of eye irritants in spite of their rapid rates of reaction. Saturates did not contribute to eye irritation because of their slow rates of reaction.

-- Authors' summary

- 93 Air Quality for California Communities. M. H. Merrill.
J. Occ. Med. 2, 579-584 (Dec. 1960).

The California state legislature has enacted bills requiring the Department of Public Health to establish standards for air quality and motor vehicle exhaust by February 1, 1960. This paper describes the procedures that are being followed by the department in setting standards for air quality. It describes the expected pattern for the standards in California and also summarizes the efforts of others to set limits for industrial or atmospheric contaminants.

-- Author's summary

- 94 The Development of Motor Vehicle Exhaust Emission Standards in California. J. A. Maga and G. C. Hass. J. Air Pollution Control Assn. 10, 393-396, 414 (Oct. 1960).

The motor vehicle exhaust standards adopted by the California State Department of Public Health included carbon monoxide. The standards represent a first attempt to set vehicular emission standards as a basis for control legislation. Judgments and decisions were of necessity made on the basis of present knowledge of the smog problem. As new data become available, the standards will be revised. The process of considering the standards has in itself been useful in defining questions which must be answered in order to make sound decisions in the field of vehicle exhaust control. The setting of the first numerical standards should not be allowed to detract from continued research into the mechanism of smog formation and the relative contribution of the motor vehicle.

-- Authors' conclusions

MANAGEMENT ASPECTS

- 95 Management's Interest in Medical Care Plans. S. W. Wirpel.
Monthly Labor Rev. 83, 147 (Feb. 1960).

There is no essential difference between labor's view and that of management as to their responsibility for medical care. They differ as to a question of costs and willingness to sacrifice money to pay for the desired level of medical care. Both management and labor must gear their programs to meet the needs of the community. A limited group-practice or open panel plan could operate on about \$200 per employee per year: at the present in most industries about \$100 per employee is available. The company and union should agree to contribute an amount in lieu of a wage increase for 1, 2, or 3 years until sufficient capital is available to acquire needed facilities. A framework should be developed for a community plan open to all groups and individuals in the community. An annual choice of participation or non-participation of group practice or open panel or a limited traditional type of hospital-surgical insurance should be permitted. A community approach is needed, not a nation-wide union-management plan limited to this or that union or industry.

-- J. Occ. Med. Absts.

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be rationally supported, understood, and defended. To achieve a marked degree of success in the sale of a product or service it is necessary to create and maintain a nationwide appeal. This applies to Blue Cross. It must be presented as a nationwide product in order to reach the maximum number of potential consumers. Its survival depends upon its presentation as a national product.

-- J. Occ. Med. Absts.

ACCIDENTS AND PREVENTION

- 100 New Electronic Fire Detector. Anon. Safety Maintenance 120, 49 (Dec. 1960).

An electronic tube, capable of detecting fire by sensing its ultraviolet radiation, has recently been developed. The tube—smaller than a golf ball—is insensitive to direct sunlight, normal illumination enclosed in glass, cosmic and nuclear radiation. Some applications for the ultraviolet radiation detector are: (1) As a flame-out detector: in boiler fire boxes, furnaces, ovens, kilns, etc. (2) As a fire detector: in stores, warehouses, chemical plants, refineries, aircraft, power substations, fur storage vaults, etc. (3) As a communications device: ship to ship or man to man signaling. (4) As a remote control device, blind to sunlight: to operate garage doors, etc. (5) As a smoke detector: in warehouses, fur storage vaults, cargo ships, boiler and furnace stacks, ventilating ducts, etc. (6) As an electrical arc detector: generators, motors, switchgear, welding controls, etc.

- 101 Nightmare Hazards: Explosions Caused by Passing Cars or Combing One's Hair. Anon. Safety Maintenance 120, 19 (Dec. 1960).

Technicians in the Experimental Fuze Unit of the Arsenal Operations Division at Picatinny Arsenal, Dover, New Jersey, work with hazards they cannot see—low-energy initiators which can be detonated by small electrical currents. The low-energy explosives are so sensitive to electromagnetic fields that they may be detonated by impulse from the generator of a passing car or even the static electricity created by a person combing his hair. Safety experts have undertaken an elaborate safety program which greatly reduces the possibility of an accidental detonation. All light switches and bulb sockets are specially-designed explosion-proof fixtures. Telephones are designed to prevent emanation of electric waves. The clothing of all workers is carefully monitored. Only conductive-soled shoes and cotton clothing are worn, since regular-soled shoes prevent drainage of static electricity, and clothing of synthetic materials tends to create static electricity. Chemically-treated flame-resistant uniforms with no pockets or cuffs which would collect explosive dust are provided. Jewelry and combs are prohibited. When explosive items are removed from their protective aluminum foil wrappings to be packed into casings, technicians wear metal "wristlets" to which ground wires are attached. Visitors drag metal canes after them to drain off any static electricity. Nothing is overlooked to protect the safety of those who work with sensitive explosives.

- 102 Some Tips on Safe Lifting. C. A. Pease. Safety Maintenance 120, 24-26 (Nov. 1960).

The author, who is Supervisor of Physical Education at the University of California in Berkeley, has illustrated his paper with some excellent photographs pertaining to the subject. The main points to safe lifting are: (1) Get the center of the weight as high above the ground as possible. (Stand it up if it is a sack. Stand it in a corner if it is a box.) (2) Get the object as close as possible to the supporting column (your backbone). (3) Set the feet, legs and back (back as nearly vertical as possible). (4) Lift with the arms first, and roll the object over the knee. (5) Pull the object as close to you as possible. (6) Stand up with the load, using the legs, thus placing little or no strain on the back. (7) Now turn your FEET if your assignment requires turning, NOT your hips or shoulders.

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