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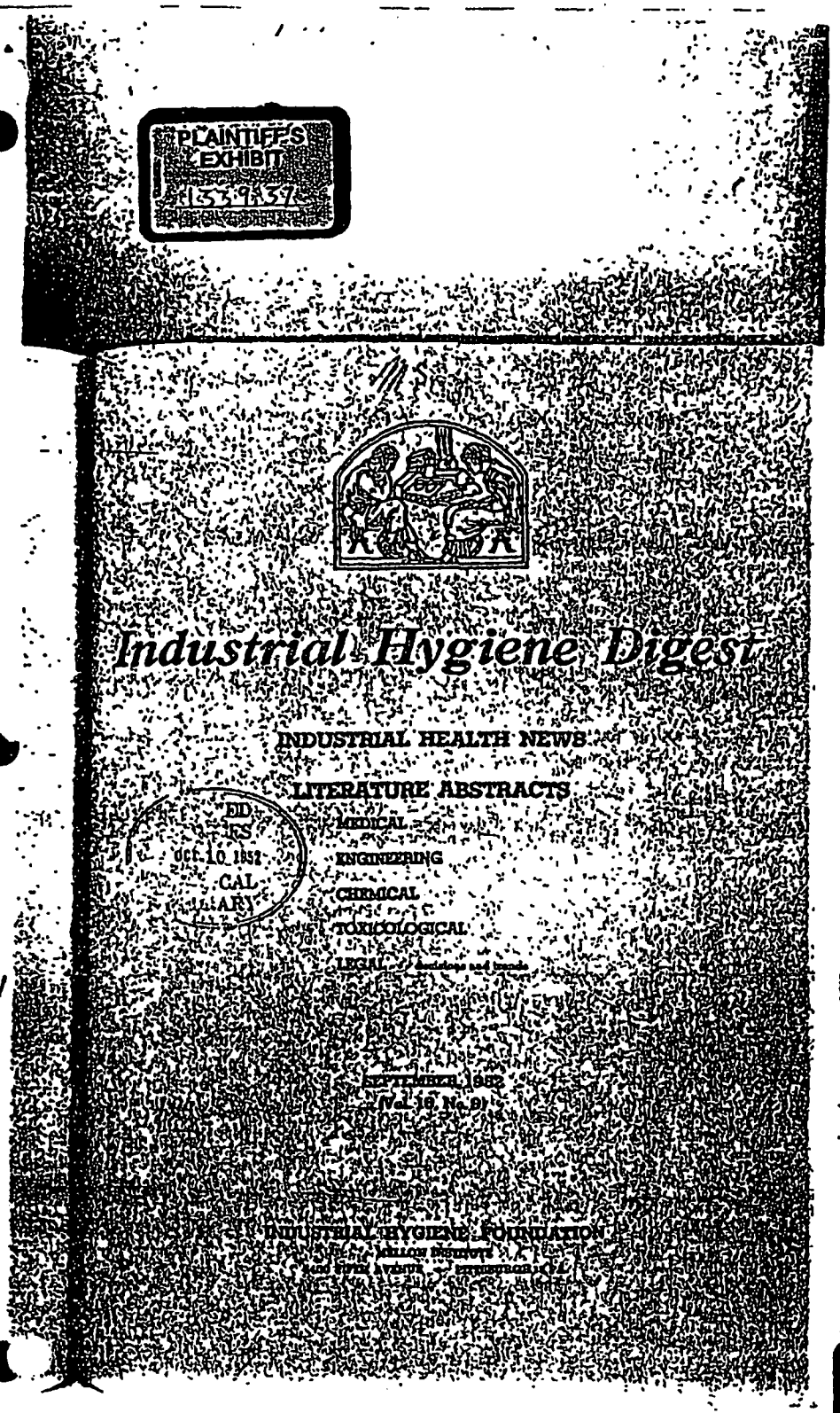

PLAINTIFF'S EXHIBIT N

FOUNDATION FACTS

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

Volume 14 September, 1952 No. 9

KEYNOTE SPEAKER

Mr. L. R. Boulware, Vice President of General Electric Company, will be the keynote speaker at the 17th Annual Meeting of Industrial Hygiene Foundation. His address will be given on November 20 at the General Meeting which emphasizes management aspects. Mr. Boulware has taken a keen interest in the welfare of employees both in the plant and in the community.

NEW ADDITIONS TO FOUNDATION MEMBERSHIP

The following companies have recently affiliated with the Foundation:

Cobalt Chemicals Limited
Eaton Manufacturing Company
Kennametal, Inc.
Michigan Iron & Coke Company
Warner Company

STAFF MEMBERS ATTEND SARANAC SYMPOSIUM

The Seventh Saranac Symposium is being held September 22-26 at The Saranac Laboratory of the Edward L. Trudeau Foundation, Saranac Lake, N. Y. Two of the Foundation's Staff Members will attend. T. F. Hatch, Laboratory Director, will serve as Chairman of a discussion on "The Inhalation of Certain Industrial Substances," at the Monday, September 22 afternoon session. D. C. Braun, Medical Director, will present a paper entitled "The Presentation of Medical Evidence in Controverted Compensation Cases" on the morning of Friday, September 26.

REPRINTS AVAILABLE

Reprints of the paper "A Rational Approach to Air-Pollution Legislation," by George E. Best, are now available to member companies upon request. This paper was presented at the 16th Annual Meeting of the Foundation.

17th ANNUAL MEETING, Nov. 19-20
at Mellon Institute, Pittsburgh

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September, 1952
Volume XVI
No. 9

Industrial Hygiene Foundation
4400 Fifth Avenue
Pittsburgh 13, Pennsylvania

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

Threshold Limits Value for 1952.

The threshold limit values adopted by the American Conference of Governmental Industrial Hygienists in Cincinnati, in April, 1952, are published in *Archives of Industrial Hygiene and Occupational Medicine*, August 1952 (6, 178-180). No changes have been made in the values adopted in 1951. The following additions have been made: cresol, 5; phenol, 5; dimethyl amine, 25; ethyl amine, 25; and methylal, 1000; all parts per million. The radiations section includes gamma and roentgen rays, each 0.3 roentgens per week as before. The figures for radon, thoron, and polonium have been omitted.

Morbidity Statistics Clearinghouse.

A clearinghouse for current studies and surveys of morbidity has recently been established under the auspices of the Public Health Conference on Records and Statistics. Its purpose is to help public health and medical workers find out where specific data on diseases, injuries, and impairments may be obtained. It will also enable those planning new projects involving the measurement of illness to benefit from the experience of others who have undertaken similar tasks. The Clearinghouse will at regular intervals conduct a canvass to learn about studies in progress.

With the permission of those responsible for the projects, lists of new projects containing brief outlines of the methods used and data collected will be released from time to time. The membership of the Clearinghouse is made up chiefly of representatives from state and large city health departments, voluntary health associations, and the Public Health Service. Inquiries may be directed to: Clearinghouse on Current Morbidity Statistics Projects, Division of Public Health Service, Washington 25, D. C.

-- Am. J. Pub. Health, Aug. 1952

OCCUPATIONAL DISEASE STATISTICS

936 Occupational Disease Statistics.

	Conn.[1] Aug. 1952	Ind.[1] Aug. 1952	Mich.[1] July Aug. 1952	Total
Dermatitis	40*	14**		54
Dermatoses			19	19
Inflammatory conditions			1	1
Hernia			6	6
Pneumoconiosis			5	5
Poisoning (Cyanides)	1			1
Silicosis		2	17	19
Silicosis (Dust - free silica)	1			1
Miscellaneous			19	19
Total	42	16	67	125

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

* Chromium and compounds, Dyes and inks, Formaldehyde, Infections, and Plating solutions (N.O.C.) caused one each; Solvents (N.O.C.) caused two; Alkalies, Soap solutions, glue, etc., and Synthetic resins and chemicals caused three each; Poisonous plants caused seven; and Oils, fats and waxes caused seventeen.

** Alkalies, Chlorinated naphthalene, Bronze powder, and Hydraulic fluid caused one each; Rubber and Synthetic resins caused two each; and Oil and Wood caused three each.

LEGAL DEVELOPMENTS

937 Miner--Pulmonary Tuberculosis--Aggravation By Silicosis--Findings of Fact.

A miner, while riding an underground motor, suddenly felt like he wanted to cough, and started to spit blood. His condition while at first being diagnosed as pulmonary pneumonia was later established with further examination as pulmonary tuberculosis. Medical testimony showed without appreciable conflict that the claimant did not at any time suffer or incur silicosis. Diagnostic tests revealed that the tuberculosis was of the pneumonic type, uncomplicated by silicosis, and was not the result either primarily or by inducement or aggravation, of an accident arising out of and in the course of his employment by the mining company. Failing to establish his claim, the claimant was barred from compensation by the Board. The court upheld a finding that the disability complained of was not a compensable one, under either the Workmen's Compensation Law, or the Occupational Disease Law. Davis v. Sunshine Mining Co., Idaho Supreme Court. No. 7837. June 25, 1952.

938 Dermatitis--Allergy to Mica Dust--Agreement to Return to Work Not Enforceable Before Cured--Findings of Fact.

Where a worker contracted occupational dermatitis and her recovery depended, according to medical evidence, on an avoidance of mica, as the probable source of the original incidence of the disease, an order for her to return to work where there was a possibility that mica dust would be present would run the risk of exposing the claimant to further infection before she was completely cured and would not be justified. Cornell-Dubilier Electric Corp. v. Manocchia. Rhode Island Supreme Court. No. 2143. July 9, 1952.

939 Pharmaceutical Employee--Effemination and Permanent Sexual Impotency as Result of Chemical Poisoning--Coverage of Benefits by Compensation Act.

An employee in a pharmaceutical plant while processing a chemical known as stilbestrol which contained female sex hormones inhaled and absorbed dust particles of the chemical causing "permanent impairment

942 Mental Injury--Inhalation of Gas Fumes While Cleaning Gas Tank--Accidental Injury--Causal Connection.

A judgment denying an award of benefits was affirmed where it could not be substantiated that the claimant's mental illness and confinement to an institution was the result of an accidental injury caused by the inhalation of fumes while cleaning a large gas tank for his employer. Pratt v. Townsend & Mantiply Construction Co., Louisiana Court of Appeal, Second Circuit. No. 7789. June 2, 1952.

BOOKS, PAMPHLETS AND NOTICES

943 Annual Report for Year 1950. Great Britain, Chief Inspector of Factories. Her Majesty's Stationery Office, London, Cmd 8445, 249 pp. (Feb. 1952). Price 6s 6d. Available through H.M. Stationary Office, York House, Kingsway, London WC 2, England.

Statistics are given on steam plant explosions, electrical accidents, and gassing accidents from carbon monoxide poisoning. In the field of pneumoconiosis, the Department continued its explorations into unusual aspects and alleged or suspected risks, as from talc and in dusty processes in leather factories. It has continued to follow up a number of welders who some years ago exhibited suggestive x-ray appearances with no evident disability or clinical signs.

-- Cond. from Atm. Poll. Bull.

944 Health Resources in the United States. Personnel, Facilities, and Services. G. W. Bachman and associates. The Brookings Institution, 722 Jackson Place NW, Washington 6, D. C. 344 pp. (1952).

This volume is the result of an extensive investigation of health resources in the United States. Its scope is limited to a review of the nation's health and a factual inventory of health personnel, facilities, and services. The purpose of this limitation is to find a basis for agreement among parties involved in a controversy in which health and economics are barely distinguishable as separate problems. Part 1 briefly reviews health progress since 1900 and fully discusses variations in the level of health among localities and groups. Part 2 consists of an inventory of personnel engaged in health services, excluding most administrative, clerical, maintenance, and similar personnel. One chapter is given to a special study

of medical group practice. Part 3 similarly provides an inventory of facilities and services, including hospitals, specialized services, and resources available for certain beneficiary groups (armed forces, Indians, and a few minor groups). The final chapter deals with health services in industry. It includes the results of a survey by the National Association of Manufacturers and of another by the American College of Surgeons, both with figures on scope of services, appraisal of their value, costs, and other related data. Statistics on the points covered in the book are given in a number of appendixes. -- FFR

945 Compensated Cases Closed in 1949. Workmen's Compensation Board, State of New York, Mary Donlon, Chairman. Research and Statistics Bulletin No. 8, 117 pp. (1952). Available from the Board, 80 Centre St. New York, N.Y.

Reported accidents declined 5% from 1948 to 1949, reversing a trend which had been upward since the last war. The decrease was greater than the decrease in employment. In 1949 as in other years, the accident rate was highest in the summer. The number of compensated death cases was 852 in 1949, a decrease of 124 from 1948. The compensation cost per case averaged higher, both for death and nonfatal accidents. The number of occupational disease cases increased slightly. Dermatitis accounted for 1823 of the 3569 cases. Age appears to be a negligible factor in incidence of occupational disease. Statistical tables occupy a large portion of the report, with classification according to industry, type of accident or disease, and many other factors. -- FFR

INDUSTRIAL MEDICAL PRACTICE

946 Progress of American Industrial Medicine in the First Half of the Twentieth Century. R. T. Legge. Am. J. Pub. Health 42, 905-912 (Aug. 1952).

The dawn of the 20th century practically marked the beginning of industrial medicine in the United States, although pioneer work had been done in a number of fields; 22 papers on industrial medicine and hygiene had been published from 1860 to 1900. The author recounts progress in various fields each decade since that time, giving credit to many organizations and individuals, many of whom are living. Among the problems now demanding attention the effects of the radioactive elements is the greatest

of function and biological change" resulting in his effemination and permanent sexual impotency. The court ruled that the condition was an occupational disease within the meaning of the law and was compensable under the terms of the Workmen's Compensation Act. Consequently, there was no basis for a common law recovery. Affirmed. Stepnowski v. Specific Pharmaceuticals, Inc. New Jersey Superior Court, Appellate Division. No. A-721-50. March 21, 1952.

940 Federal Employers' Liability Act--Pipe Fitter's Helper--Silicosis--Negligence--Safe Place to Work--Findings of Fact.

A pipe fitter's helper for a railroad sued his company for $99,000 damages due to silicosis which the employee averred he contracted by reason of his company's negligence in failing to furnish him with a respirator or a mask while inspecting locomotive sand boxes. The nature of the claimant's work required him to lean over the nozzle of the sanding apparatus of a locomotive while some one turned on the compressed air to see if the sand fell through on the rail. A cloud of dust would arise and naturally the one inspecting would breathe some of it in. The record plainly showed that the practice by railroads generally throughout the nation was not to furnish masks or respirators to men doing the same character of work the claimant had performed. The court ruled that the railroad was not guilty of negligence in failing to furnish the claimant with safe equipment or a safe place to work. Judgment denying recovery affirmed. Ellis v. Louisville & Nashville Railroad Co. Kentucky Court of Appeals. June 20, 1952.

941 Longshoremen's and Harbor Workers' Compensation Act--Railroad Employee--Tuberculo-Silicosis Incurred in Prior Employment--Reimbursement of Medical Expenses from Prior Employer--Subrogation.

When a railroad employee accepted the treatment from his railroad's hospital association for tuberculo-silicosis for which his previous employer, a contracting concern that built naval air bases in the Pacific, was legally and financially responsible, he consented, under the rules of the hospital association, that the association should be subrogated to his rights against the previous employer. An order awarding the hospital the reasonable value of the medical care given the worker was correct and was affirmed. Contractors Pacific Naval Air Bases v. Pillsbury. United States District Court for the Northern District of California, Southern Division. No. 30,951. July 1, 1952.

947 Health Program at a Medical Center. J. B. Feldman and M.D. Kasser. Arch. Ind. Hyg. & Occ. Med. 6, 141-146 (Aug. 1952).

This is a report of the health center established by the International Ladies' Garment Workers' Union in Philadelphia, with particular emphasis on the eye department. The Center is of benefit only to the ambulatory patient. Because most sick members come at the outset of their malady, the condition is attacked in its incipiency. The early recognition of cataract, vascular hypertension, arteriosclerosis, and their associated diabetes and , nephritis must, no doubt, be a factor in prolonging good health. The garment industry presents no occupational hazard which at the present time may be considered of importance. Many persons between 60 and 80 are still in productive work. Prescribing bifocals for people over 40 constitutes a large part of the eye program. Since the Center was created fewer man-hours have been lost; no strike has occurred; and the workers' have received paid vacations and sick benefits.

-- Cond. from Authors' Summary

948 Industrial Medicine and the Group Clinic - A Mutually Advantageous Relationship. J. S. Felton. Arch. Ind. Hyg. & Occ. Med. 6, 147-157 (Aug. 1952).

Those group clinics that have entered into contractual arrangements with medical departments in industry have realized both a monetary and a psychic income from their efforts. The contribution to industry that can be made is needed vitally by plants lacking in professional personnel, or of such size as not to warrant self-staffing a medical department. Group practice offers a possible solution of the problem of source-discovery of constructive health programs for America's 60,000,000 industrial workers now inadequately covered at the manufacturing plant sites. A plea is made for an immediate investigation by group clinics--particularly in industrial areas--of the possibility of the establishment of this mutually advantageous relationship with industrial medicine. In this may lie the better integration of the worker and the nation.

-- Author's Conclusions

949 Incidence and Types of Human Relations Problems. L. E. Himler. Ind. Med. & Surg.. 21, 379-380 (Aug. 1952).

This paper and the two following were presented before the Michigan Association of Nurses at the Conference on Human Relations Problems in Industry at the University of Michigan, in January, 1952. They all deal largely with the nurse's part in handling personality problems. About 20% of employees are not doing satisfactory work so far as

optimum efficiency and productivity are concerned. The same 20% present personality problems. The nurse, in her first contact with applicants for jobs, can make personality appraisals, which should include appearance, intelligence, emotional reactions, attitudes, maturity, temperament, and character. In subsequent contact with employees, the nurse can give valuable counsel and assistance.

950 How Human Relations Problems are Dealt with by Medical Directors, Physicians, and Nurses. W. J. Fulton. Ind. Med. & Surg. 21, 381-389 (Aug. 1952).

This paper is an extensive discussion of the relation of the industrial physician and nurse to personality problems. Analysis shows that fewer than half the employees who visit the medical department have real physical complaints. The rest have feigned, psychosomatic, or environmental difficulties or those under the vague heading of "escape". The paper deals at length with the classification and study of abnormalities. Records of the physician's and nurse's observation are as important in physiological study as in medical examination. Forms of records are suggested. Human relations problems are not confined to the abnormal types; several case histories are given of employees who were normal, happy and safe, but were upset by temporary conditions. There are no set rules for dealing with personality problems, and the author's advice is "Do the best that you can to fit your approach to each individual case, humbly hoping that the approach is the right one."

951 The Techniques and Importance of Interviewing. L. N. Howland. Ind. Med. & Surg. 21, 390-394 (Aug. 1952).

Successful interviewing of employees with problems involves techniques which the author discusses on the basis of his experience. In order to obtain facts, it is often necessary to overcome barriers of skepticism and suspicion of the interviewer's motives. Questions should be neutral and should at first be general. The goal is to encourage the subject to speak freely. The interviewer's probe is similar to the medical probe, which lays aside top layers so as to get to the materials underneath without disturbing the overlying material.

952 Medical Preparation for Retirement. L. Wade. Med. Bull. (Stand. Oil N.J.) 12, 385-391 (Aug. 1952).

Preparation for retirement begins with the preplacement examination. It continues with periodic examinations, more frequent as the employee approaches the retirement age, with attention to social as well

as biological aspects of aging, nutrition, physical activity, and emotional health. Degenerative cardiovascular disease is the cause of most deaths and disabilities among the annuitant group; therefore effort should be concentrated upon that cause of death and disability. The author recommends classroom instruction as the best method of contacting the prospective annuitants. Positive rather than negative advice should be given regarding nutrition.

953 Lifelong Adjustment of Man and Job: the Possible Role of Multiphasic Screening. G. Kuh. Permanente Found. Med. Bull. 10, 301-305 (Aug. 1952).

The continual lifelong adjustment of man and job can be facilitated by improved selective placement, by the recognition that neither physical disability nor age need be a barrier to employment, and by the careful evaluation of man's changing capacities with age. The newer technique of multiphasic screening may offer valuable clues in respect to such changing capacities. In contrast to the unpopular periodic health examination, multiphasic screening seems to appeal to popular interest in periodic checking of health, and thus may not only prove a valuable public health technique but have special implications for job placement.

-- Author's Summary

954 Educational Therapy in the Veterans Administration Rehabilitation Program. L. B. Newman and I. R. Popell. Arch. Phys. Med. 33, 477-485 (Aug. 1952).

The authors describe educational therapy as it functions in the Veterans Administration Hospital at Hines, Illinois. Educational therapy plays an essential role of the sick and disabled veteran and functions in the hospital under the close medical guidance and supervision of the psychiatrist. It should be seriously considered for patients in civilian hospitals and other institutions. Many disabled people can, through total rehabilitation, be gainfully employed and perform duties as well as normal persons. As part of total rehabilitation, educational therapy further aids the disabled to adjust and reorganize their lives for maximum productive usefulness and a future with happiness, satisfaction, respect, and dignity.

-- Cond. from Authors' Summary

955 Observations of Cardiorespiratory Performance in Normal Subjects Under Unusual Stress During Exercise. R. A. Bruce, F. W. Lovejoy, P. N. G. Yu, and M. E. McDowell. Arch. Ind. Hyg. & Occ. Med. 6, 105-112 (Aug. 1952).

The paper presents a comparative study of the effects of unusual stresses on exercise performance in normal subjects. Details of the

method and results are given, dealing with ventilation, heart rate, oxygen debt, and signs of circulatory strain. The reduction in physical-fitness index in the case of normal subjects who were under unusual stress was comparable to that observed in the case of patients moderately disabled by circulatory or pulmonary insufficiency.

-- Cond. from Authors' Summary

956 A Simple Method for the Determination of Vital Capacity-Time Relationship. M. S. Segal, J. A. Herschlus, and M. J. Dalfano. Diseases of Chest 22, 123-129 (Aug. 1952).

A simple ruler-graph device has been described for use with single determinations of the vital capacity on a recording drum apparatus. This permits the rapid determination of the volume of air ejected during each second of the vital capacity tracing on a graphic record. The same record also affords an opportunity for analyzing the contour of the graph for evidence of trapping or change in mid-position. These time relationships enhance the value of the simple vital capacity determination. The relative efficacies of bronchodilator preparations in relieving the bronchospasm of the patient with bronchial asthma or pulmonary emphysema can be determined readily with this technique. This method was compared with the vitalometer. Both methods yield comparable values. The ruler-graph method, however, affords additional significant data, easily obtained by employing the apparatus which is generally in use in laboratories studying pulmonary function.

-- Authors' Summary

957 How the Industrial Medical Department Functions in the Vision Program. D. C. Braun. Sight-Saving Rev. 22, 106-109 (Summer 1952). Reprints available from the Foundation.

The five vision hazards are listed: injuries, corrosive or toxic chemicals, radiant energy, fatigue, and disease. The author adds a sixth, that of improper, inadequate, or inexpert treatment of eye injuries, once they are sustained. Preventive measures for eye hazards are effective, well perfected, and easily applied. It is the industrial physician's responsibility to see that they are carried out. He should have full knowledge of potential eye hazards in the plant and of visual requirements for the various jobs. Testing methods, good lighting, and treatment of injuries, are discussed briefly.

958 Occupational Bronchial Asthma. K. Rejsek. Pracovni Lekarstvi 3, 319 (Dec. 1951) Czechoslovakian

Bronchial asthma can be an occupational disease. It is therefore most important to define what constitutes occupational bronchial asthma.

Since the problem is a difficult one, it is advised that only those cases in which the allergen is exogenous and exists as a component of material used in the work process be considered as occupational. From the point of view of compensation it is essential that the patient should have worked with material. The diagnosis should be made on the basis of a thorough examination of the work place, the identification of the allergen, the taking of a complete case history, and a careful clinical examination of the patient, including the identification of the allergen by skin tests. The following compensation assessment is suggested: 20-40% disability for simple bronchial asthma, 40-80% for complicated bronchial asthma, and 100% for status asthmaticus and cardiac decompensation.

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

Studies of Occupational Cancer. Role of State Health Departments. W. C. Hueper and T. F. Mancuso. Pub. Health Rept. 67, 644-649 (July 1952).

State health departments not only have an important stake in the problem of industrial cancer but are in an especially favorable position to assess its scope as to etiology, epidemiology, and control. Methods of collecting data are suggested. Both morbidity and mortality data should be used. A general survey should show whether cancer is more prevalent in particular industrial locations, and it should be followed by a more thorough study of morbidity, death, and employment records. Information on previous employment can be obtained from industries and from unions. In England, especially, official agencies are charged with the routine study of industrial cancers. In contrast, there is an utter lack of similar information in the United States, and the time has come when this gap in sound public health practice should be closed.

Age Aspects of Environmental and Occupational Cancers. W. C. Hueper. Pub. Health Repts. 67, 773-779 (Aug. 1952)

Numerous observations made in connection with cancers in general and especially with environmental and occupational cancers indicate that neither embryonic cell rests nor senescing tissues play an important or essential role in the development of malignant neoplasms. The author presents a number of arguments to support this conclusion. Many cancers observed in older persons represent the result of prolonged exposures to specific environmental or occupational carcinogenic factors. The long latent period also contributes to the development of cancer late in life.

-- Cond. from Author's Summary

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1036 The Rehabilitation Process in Workmen's Compensation Injuries. S. L. Hanson. Ind. Med. & Surg. 21, 376-378 (Aug. 1952).

The author stresses rehabilitation as a program with each of its component parts successfully carried out, rather than merely a part of compensation procedure, as often understood. This concept should remove a great deal of the controversy that exists in the compensation system. The rehabilitation program can be conducted by private interprise. The work of the two rehabilitation centers operated by Liberty Mutual is described.

1037 Workmen's Compensation and Rehabilitation. D. J. Galbraith. Am. J. Pub. Health. 42, 963-966 (Aug. 1952).

A study of the compensation laws of the states and of the Canadian provinces shows that occupational disease compensation is so haphazard as to show no pattern. The picture is still worse with regard to rehabilitation. "Workmen's compensation, if it is at all worthy of the name, must include rehabilitation as one of its main functions, just as it does monetary payments and medical aid. The day when small cash awards to the industrially disabled can be considered as just dealing is surely past; for that was as it was in the beginning, 40 years ago." The question of responsibility for rehabilitation services is not easy to answer. In Ontario a beginning has been made. A hospital has been established for the convalescent care and rehabilitation of the seriously and permanently disabled. Its 500-bed capacity is constantly taxed. Rehabilitation is the proper function of compensation authorities and under this responsibility much manpower can be salvaged for industry.

1038 Significant Developments in Special Coverages. Insurance Series No. 95 American Management Association, 330 West 42nd St., New York 36, N.Y. 52 pp. (1952). Price $1.25 to non-members of AMA.

Two papers dealing with employee insurance are included in this booklet; one on experience with catastrophe medical coverage, and the other on adequate insurance protection for traveling employees. (American Management Association publishes a number of booklets in this series covering all types of insurance. Information about them can be obtained by writing the above Association.)

1039 It's Time for Coffee. Doris M. Thompson. Mgmt. Rec. 14, 297-299, 318-322 (Aug. 1952). National Industrial Conference Board.

The attitude of many companies toward the custom of a mid-morning cup of coffee has changed and the practice is now generally

accepted if not approved. This paper described the methods used by a number of companies in providing for rest and refreshment periods and for providing coffee and snacks. Where there is no cafeteria, various methods of distribution are used. Some companies provide the service free, others at cost. Comment on the custom is usually favorable.

ACCIDENTS AND PREVENTION

1040 Maintaining Interest in Safety. C. R. Walmer. *Safety Maint. & Prod.* 104, 11-12, 61 (Aug. 1952).

The role of the plant medical department in safety promotion is emphasized. Individual counseling is one of the important techniques; physical examinations and treatment of injuries afford opportunities for counseling on safety. Also, a routine examination may disclose conditions that contribute to accidents. The medical department can aid in detecting causes of accidents, especially when a personal factor is present. The worker should be made to feel that there is a personal interest in his well-being. When routine examinations are on a voluntary basis, the workers and unions should be persuaded that it is to their interest to have them. Analysis of medical records often discloses mechanical or personal causes of accidents.

1041 Don't Forget the Experienced Worker. W. J. Dreeland. Nat. Safety News 66, 28-29, 74-76 (Aug. 1952).

The author points out that experienced workers may develop personality problems as well as newer workers, and cites a number of cases of accidents in persons with long experience, where personality difficulties were responsible. Six steps are suggested for safeguarding workers: (1) manifest a sincere interest in employees' welfare; (2) eliminate all removable hazards; (3) do not tolerate a man who is indifferent or careless about safety; (4) actually practice as well as preach safety; (5) study unsafe working habits of your men and teach them how to overcome them; and (6) assume full responsibility for prevention of accidents.

SKIN DISEASES AND BURNS

961 Examination of the Action of Injurious Substances in Industry on the Physiological Function of the Skin and of the Prevention of Injury by Protective Ointments. I. Testing the Alterations in the Capacity of the Skin to Absorb Water. O. Jacobi. Zent. Arbeitsmed. u. Arbeitsschutz 1, 126-130 (Nov. 1951) German.

Many references are given to work on the effects of alkali, soaps, organic solvents, and other substances on the skin, and on the mode of action of various protective ointments. The author maintains, however, that in order to get a clear picture of the action of various irritants there should be detailed examinations of their effect on the function and properties of the skin. This would necessitate the measurement of capacity to absorb water, carbonic acid excretion, insensible perspiration, elasticity, capillary changes, capacity for neutralizing acid and alkali, fat content, temperature, and other characters. The author describes some of his work on the effect of a number of substances on the power of the skin to take up water.
-- Cond. from Bull. Hyg.

962 Sensitivity to Rubber Materials. An Analysis of One Hundred Twenty-Five Cases of Eruptions Proved to be Caused by Rubber Articles. M. Leider, Dorothy Furman, and A. A. Fisher. Arch. Dermatol. & Syphilol. 65, 587-595 (May 1952).

Some features of 124 cases of sensitivity to rubber and eruptions from it are reported. As in most cases of allergic eczematous contact-type dermatitis, treatment involves strict avoidance of the offending substance. In rubber sensitivity it is sometimes possible to obtain substitutive products because of the great variety in composition. Specific allergens in rubber are not readily discoverable because of the complex nature of the material, but the sensitizing potentials of whatever substances there are in rubber that can sensitize must be low, considering its wide and generally harmless use. -- Authors' Summary

963 A Study of Rubber Adhesives in Shoes as the Cause of Dermatitis of the Feet. I. H. Blank and O. G. Miller. J. Am. Med. Assn. 149, 1371-1374 (Aug. 9, 1952).

An acute dermatitis of the feet may be an allergic, eczematous, contact-type dermatitis. The allergen for those patients we have studied

was most frequently the antioxidant monobenzyl ether of hydroquinone, which is used in the rubber adhesive in the combined linings of the shoe. Some of these patients were specifically sensitive to other rubber antioxidants and accelerators. -- Authors' Summary

964 Occupational Arsenical Dermatitis: A Study among Employees at a Copper-Ore Smelting Work, Including Investigations of the Skin Reaction to Contact with Arsenic Compounds. I. Holmquist. Acta dermato-venereol. 31, Supp. 26, 1-214 (1951).

The sensitizing effect of several arsenic compounds was studied in employees of a copper-ore refinery by means of patch tests. Positive reactions to pure arsenic trioxide were shown in 80.4% of arsenic workers, 35.2% of other employees, and 30.3% of new employees, independently of age groups. Ointments (50% arsenic trioxide) with antipyrene or alkaline base caused more positive reactions than those with petrolatum base. A 1% solution of disodium arsenite caused positive reactions only in sensitized persons, but a 2% solution induced positive reactions in all cases. A 5% solution of arsenic pentoxide affected all persons, while a 2.5% affected only sensitized individuals. Few positive reactions occurred with lead and calcium arsenates, on account of their low solubility. Tests were also made with non-arsenical compounds in solution: 0.5% chromic acid, 0.1% mercuric chloride, 10% nickel sulfate, 5% silver nitrate, and 1% potassium dichromate caused only 1 to 4 positive reactions in a large number of tests. Sodium selenite and selenious acid in 0.5% solution failed to cause allergic reactions. Concentrations of selenious acid above 1% had pronounced toxic irritative effects. Corrosive reactions occurred with sulfuric acid in concentrations above 5%, independently of arsenic exposure. The factory operations are reviewed in detail, and statistics on arsenic sensitization in various operations are given.
-- Cond. from Chem. Abets.

965 Harmful Effects on the Skin of Dichlorodiethylmethylamine (Nitrogen Mustard). M. Leder. Dermatologica 104, 176-179 (1952) German.

Skin changes produced by nitrogen mustard gas were similar to those seen after exposure to ordinary mustard gas. Nitrogen mustard gas appeared to have a longer latent period and produced changes associated with increased sensitivity. -- Chem. Abets.

Worry is like a treadmill--it can wear you to a frazzle, and you still don't get anywhere.
-- Carbo Wheel

966 Industrial Barrier Creams for Protection from Solvents. H. von Gaetsch-Lindenwald. Fette u. Seifen. 53, 751-752 (1951) German.

Various formulations were tested against common industrial solvents. The following were most effective: (1) gelatin 4, glycerol 30, and water to 100 parts; (2) Luviscol (sodium polyacrylate) 10, glycerol 30, and water to 100 parts; and (3) Polyfibron (cellulose ether) 4, glycerol 30, and water to 100 parts. -- Chem. Abstr.

967 Research in Fungicides Results in Protection for Fruit Packers and Sorters against Dermatitis. J. L. Sealey. Occ. Health (USPHS) 12, 139-140 (Sept. 1952).

A number of cases of "left arm dermatitis" occurred among packers and sorters of apples and pears in plants in the Pacific northwest, where sodium chloro-2 phenyl phenate was used as a fungicide. Irritation of the eyes, throat, and nose was also reported. Investigation by the Washington State Board of Health showed that the use of protective clothing, frequent laundering, personal hygiene, temperature control of wash solution, and good ventilation successfully controlled the outbreaks of dermatitis and other irritation. Another fungicide, sodium ortho phenyl phenate, was found to cause less irritation and sensitization than the chloro compound.

968 Dermatitis Venenata Due to Potassium Undecylenate. S. I. Rogers and H. Shatin. Arch. Dermatol. & Syphilol. 66, 289 (Aug. 1952).

A case of dermatitis due to potassium undecylenate is reported. Sensitization to this salt and to other undecylenic acid salts is apparently very rare, judging by the scarcity of reports on such a condition. -- Authors' Summary

CHEMICAL HAZARDS

969 Carbon Monoxide Uptake in Relation to Pulmonary Performance. T. F. Hatch. Arch. Ind. Hyg. & Occ. Med. 6, 1-8 (July 1952). Reprints available from the Foundation.

In man the rate of carbon monoxide uptake in relation to pulmonary performance follows the simple exponential equation for respiratory

exchange of inert gases. The rate of uptake varies directly with atmospheric concentration because the physiological "solubility" of carbon monoxide in blood increases with decreasing atmospheric concentration of the gas. The rate of uptake is independent of the pulmonary circulation rate. At rest, it is primarily dependent upon lung ventilation. Under hard exercise, the diffusion area of the lungs does not increase in proportion to the rise in ventilation rate. Consequently, the rate of carbon monoxide uptake is about equally dependent upon ventilation rate and diffusion capacity. -- Author's Summary

970 Rates of Elimination of Fluoride Stored in the Tissues of Man. E. J. Largent. Arch. Ind. Hyg. & Occ. Med. 6, 37-42 (July 1952).

By means of balance experiments on human subjects, indirect evidence has been obtained that fluoride may be stored in human tissues over periods of months or years during which as little as 3 mg., as sodium fluoride, was ingested daily. Corresponding evidence of storage of fluoride was obtained in the case of a resident, aged 20, of Amarillo, Texas, where the drinking water contains fluoride in concentrations ranging from 2.4 to 4.4 ppm. An equation is suggested to fit the data for long-term depletion of tissue-stored fluoride in man.
-- Adapted from Author's Summary

971 Toxicity of Nitrogen Peroxide Vapors at Very Low Levels. A Preliminary Report. E. Leb. Gray, J. K. MacNamee, and S. B. Goldberg. Arch. Ind. Hyg. & Occ. Med. 6, 20-21 (July 1952).

Animal experiments indicate that amounts of nitrogen peroxide over 8 ppm produce damage in rats and may cause injury to man. In the authors' opinion a maximum allowable concentration of 25 ppm or more is too high.

972 Chromium Intoxication with Special Reference to Hepatic Injury. L. R. Pascale, S. S. Waldstein, Gertrude Engbring, A. Dubin, and P. B. Szanto. J. Am. Med. Assn. 149, 1385-1389 (Aug. 9, 1952).

Acute hepatitis with jaundice was observed in a person employed in the chromium electroplating industry. Chromium was identified in the urine on several examinations. Liver biopsy showed histological changes resembling those found in "toxic" hepatitis. In four other electroplating workers, found to be excreting significant amounts of chromium in the urine, hepatic tests and liver biopsy showed mild to moderate abnormalities. These workers had no symptoms related to the liver or other

internal organs but did have the nasal lesions frequently attributed to chromium intoxication. The appearance of hepatitis in a chromium worker, as well as the existence of hepatic dysfunction in workers with no constitutional complaints, suggests that subtle systemic intoxication of employees of industries using chromium may be a definite health hazard.
-- Authors' Summary

973 Health Hazards in the Plating Room and Their Control. S. Moskowitz. Monthly Rev. N. Y. State Dept. of Labor 31, 25-27, 29-32 (July, Aug. 1952).

Three kinds of occupational injury may occur in the electroplating industry, namely, injury to internal organs, dermatitis, and mechanical accidents. Internal injury may result from exposure to cyanides, cadmium, lead, chromates, alkali cleaning solutions, degreasing solvents, pickling acids, and materials for buffing and polishing. These hazards are all discussed. They can be prevented by proper exhaust ventilation and personal protection. Contact with a number of the same chemicals may cause dermatitis. Preventive measures are discussed, with emphasis on cleanliness. Suggestions are given for safe storage and handling of toxic materials.

974 A Coproporphyrin III Test as a Measure of Lead Damage. 2. Considering Lead Dusts of Relatively Large Particle Size. G. C. Harrold, S. F. Meek, and D. A. Padden. Arch. Ind. Hyg. & Occ. Med. 6, 24-31 (July 1952).

The porphyrin test for lead damage, using a simplified technique which may be adapted to the needs of the physician's office or to large-scale industrial screening programs, is reliable. The correlation of positive results and lead-in-urine values above 0.15 mg. per liter, while very good in certain kinds of lead exposure, is not perfect and does not need to be perfect. The positive deviations due to other causes are negligible in a screening technique and provide the physician with added data to use in evaluating other disease manifestations. Samples may be shipped for considerable distances but when possible they should be analyzed within six days and should not be exposed unnecessarily to heat and light. The porphyrin test does not indicate high lead exposure as soon as urinary lead determinations, and both tests should be used whenever possible. Length of exposure is not a factor in the reliability of the test. The correlations established in this paper refer in the main to relatively coarse lead compounds readily soluble in human lung fluid and blood serum.
-- Cond. from Authors' Conclusions

975 Jaundice Due to Lead Poisoning. L. L. Henderson. Arch. Int. Med. 89, 967-969 (June 1952).

A report of a case of jaundice due to lead poisoning is presented. The jaundice was apparently hemolytic, probably resulting from increased friability of the erythrocytes, caused by the direct action of lead on the cell surfaces. The intoxication was incurred outside the usual hazardous industries (in painting a house) yet involved prolonged severe exposure to lead in its most dangerous form. With the increasing tendency for the home handy man to attempt all kinds of repair jobs without knowledge of adequate protection, such cases are likely to become more frequent.

-- Author's Summary

976 Chronic Mercury Poisoning. P. Burgener and A. Burgener. Schweiz. med. Wochschr. 82, 204-210 (Feb. 23, 1952). German.

This account of chronic mercury poisoning is based on the authors' 30 years experience, during which observations were made on 250 workers in a chemical factory where mercury is used as a catalyst in enormous amounts. The progress of many of these patients has been followed for 10 to 20 years. A number of case histories are given to illustrate the difficulties of diagnosis and the damage done by the poison to the nervous system, the digestive system, the kidneys, and the liver. Particular attention is given to the psychic disturbances--the "mercurial neurasthenia"--and to the mercurial tremor which is illustrated by examples of the patients' handwriting. The bad prognosis in the elderly and in all but very early cases is stated.

--Cond. from Bull. Hyg.

977 Eye Changes Following Exposure to Metallic Mercury. S. Locket and I. A. Nazroo. Lancet 262, 528-530 (Mar. 15, 1952).

Among 51 repairers of direct-current electric meters who handled metallic mercury and were examined for eye changes, 12 showed a matt-brown reflex from the anterior lens capsule. This change seems to depend mainly on length of exposure to mercury, and is not related to symptoms of mercury intoxication at the time of examination. In all cases this brown reflex was bilateral and had no effect on visual acuity. No evidence of retrobulbar neuritis was found in any of the 51 workers examined. It is suggested that this colored reflex from the lens could be used as a screening device for atmospheric mercury levels.

-- Authors' Summary

978 Experimental Studies in Metal Cancerigenesis. I. Nickel Cancers in Rats. W. C. Hueper. Texas Repts. Biol. Med. 10, 167 (Spring, 1952).

This paper reports the experimental procedure used and the results obtained in rats which received pure metallic nickel powder suspended in lanolin by injection into the femur, the pleural cavity, and the nasal cavity. Cancerous reactions were observed in 30% of the 70 animals that died from 7 to 16 months after the start of the experiment. The evidence obtained strongly suggests that finely dispersed nickel may elicit cancerous reactions in tissues of contact. The minimal latent period of the tumors observed was six months. These experimental results are in agreement with reports from English copper and nickel refineries, showing an excessive frequency of cancer of the lung, the nasal cavity, and the nasal sinuses among workers when the inhalation hazard of nickel carbonyl exists. Some previous investigators attributed the occurrence of cancer to arsenic, but this view has been abandoned in recent years. Circumstantial evidence incriminates nickel carbonyl vapor, which is rapidly decomposed in the lungs to carbon monoxide and finely dispersed nickel. Nickel dust inhaled as such may also contribute. No reports of cancer attributable to nickel have been recorded from Canada and Germany, where the Mond process is used.

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

979 Relation of Particle Size of Uranium Dioxide Dust to Toxicity Following Inhalation by Animals. H. B. Wilson, G. E. Sylvester, S. Laskin, C. W. Labelle, J. K. Scott, and H. E. Stokinger. Arch. Ind. Hyg. & Occ. Med. 6, 93-104 (Aug. 1952).

Uranium dioxide at a concentration of approximately 80 mg. per cu. m. and a mass-median-diameter of 0.5 micron has been shown to be considerably more toxic, when inhaled by rabbits and rats, than the same concentration of the dust of 2.3 microns MMD. This was evidenced by a greater renal damage and by the various nitrogen ratios. In all tissues analyzed, deposition of uranium was greater in the 0.5 micron study. In comparison with the earlier study, virtual elimination in vitro of hexavalent uranium effected little if any reduction in the over-all toxicity of particles of MMD 0.5 micron but there was a delay in the change of nitrogen values.

-- Cond. from Authors' Summary

980 Studies on the Visual Toxicity of Methanol. I. The Effect of Methanol and its Degradation Products on Retinal Metabolism. A. M. Potts and L. B. Johnson. Am. J. Ophthalmol. 35, 107-113 (Part 2, May 1952).

The inhibitory effect of methanol, formaldehyde, and formate has been measured on a number of the enzymic reactions of surviving beef retina. The authors conclude that the proximal toxic agent in methanol poisoning is formaldehyde.

-- Cond. from Authors' Summary

981 Studies on the Visual Toxicity of Methanol. II. The Effect of Parenterally Administered Substances on the Systemic Toxicity of Methyl Alcohol. Anita P. Gilger, A. M. Potts, and L. V. Johnson. Am. J. Ophthalmol. 35, 113-126 (Part 2, May 1952).

The acute toxicity of methanol and formaldehyde for white mice has been determined. The LD50 for single intraperitoneal injections of methanol was between 10.5 and 11.0 g. per kg. The LD50 for single intraperitoneal injections of formaldehyde was around 0.07 g. per kg. Antabuse increased the toxicity of methanol by about two times. Glycine protected against methanol poisoning, significantly but slightly. Cysteine did not counteract methanol poisoning. In addition, it apparently formed a highly toxic compound with formaldehyde. Under our experimental conditions, cortisone had no effect on methanol poisoning. Ethyl alcohol significantly increased the toxicity of methanol and formaldehyde and significantly lessenedthe time of death following methanol poisoning. Under our experimental conditions and with white mice, ethyl alcohol, a substance which has been recommended and used as an antidote for methanol poisoning, is definitely harmful from the point of view of life itself. For this reason, use of ethyl alcohol in the therapy of human methanol poisoning should be discontinued pending further investigation.

-- Authors' Summary

982 Acrylonitrile: Spectrophotometric Determination, Acute Toxicity, and Mechanism of Action. H. Brieger, F. Rieders, and W. A. Hodes. Arch. Ind. Hyg. & Occ. Med. 6, 128-140 (Aug. 1952).

A new simple and accurate spectrophotometric method for determining acrylonitrile in air and body fluids is presented. By means of this method the air concentrations of acrylonitrile in an exposure chamber were exactly determined and maintained. Rats, dogs, and rhesus monkeys were exposed for seven hours to concentrations of 100, 75, 50, or 25 ppm. The toxic signs were those of anoxia; death was due to respiratory paralysis. The blood color was, in general dark, but hyperoxygenation was evident soon after exposure to higher concentrations. Histologic changes characteristic of anoxia were found in the brains. Differences in susceptibility between species were confirmed. Cyanide and cyanmethemoglobin were demonstrated in the blood. This proves that the toxic action of acrylonitrile is based on the formation of cyanide in the body. The amounts found were in proportion to the intensity and length of exposure. In rats and dogs the increase of thiocyanate in plasma showed an inverse relationship to the amount of cyanide found.

-- Cond. from Authors' Summary

983 Vapor Toxicity of Carbon Tetrachloride Determined by Experiments on Laboratory Animals. E. M. Adams, H. C. Spencer, V. K. Rowe, D. D. McCollister, and D. D. Irish. Arch. Ind. Hyg. & Occ. Med. 6, 50-65 (July 1952).

The results of single exposures of rats to carbon tetrachloride are tabulated and graphed. The most severe single exposures without detectable adverse effect are suggested as a standard for evaluatingsingle exposures of workmen. When animals were subjected to five-day, seven-hour exposures the maximum vapor concentrations without adverse effect were 25 ppm for the monkey, 10 ppm for the rabbit, and 5 ppm for the rat and guinea pig. In addition the following exposures caused no detect injury in rats: 400 ppm for 0.05 hour daily and 100 ppm for 0.3 hour daily. The philosophy of standards of industrial hygiene is discussed. The recommended limiting concentrations for daily exposures are 25 ppm for the maximum single determination and 10 ppm for the average.

-- Cond. from Authors' Summary

984 Toxicity of Ethylene Dibromide Determined on Experimental Animals. V. K. Rowe, H. C. Spencer, D. D. McCollister, R. L. Hollingsworth, and E. M. Adams. Arch. Ind. Hyg. & Occ. Med. 6, 158-173 (Aug.1952)

The administration of single oral doses of ethylene dibromide yielded LD50's (g./kg.) for laboratory animals varying from 0.420 for female mice to 0.055 for female rabbits. Application caused pain and injury to the eye and only slight irritation of the skin except when confined. When animals were subjected to five-day, seven-hour exposures, the animals tolerated 25 ppm, but not 50 ppm. The acute toxic effects observed in rats were depression of the central nervous system, lung irritation, and injury to the liver and kidneys. The most important chronic toxic effects were lung irritation and liver injury. As tentative conclusions, it is suggested that with single human exposures the maximum intensities which will not cause adverse effects may be represented as 0.1 hour at 800 ppm, 1.0 hour at 200 ppm, and 7.0 hours at 50 ppm. For regular daily seven-hour exposures of human subjects, 25 ppm is the highest concentration that can be considered permissible. More definite conclusions must await actual experiments with human subjects. Precautions for the safe handling of ethylene dibromide are suggested.

-- Cond. from Authors' Summary

985 Fatal Exposure to Methylene Chloride Vapor. S. Moskowitz and H. Shapiro. Arch. Ind. Hyg. & Occ. Med. 6, 116-123 (Aug. 1952).

Four men were exposed to high concentrations of methylene chloride vapor, apparently from escape of the vapor from a still. One was found dead, and the others recovered after four days' hospitalization.

They were all in the lower part of the building, where the vapor had settled without diffusion. Details of findings in the three employees who recovered and autopsy observations on the one who died are given. The lungs, peribronchial glands, heart, and liver were especially affected. The author states that while the cases were not worked up medically as completely as one would have desired, there are data to indicate that, in addition to the better known narcotic and irritant actions of this vapor, it is capable of causing injury to the hemopoietic system.

986 Anticholinesterase Activity of Tributyl Phosphate. J. C. Sabine and F. N. Hayes. Arch. Ind. Hyg. & Occ. Med. 6, 174-177 (Aug. 1952).

Previously published by Atomic Energy Commission and abstracted in Nuclear Science Abstracts. See IHF Abst. No. 767, July, 1952.

987 Statistical Analysis of Normal Human Red Blood Cell and Plasma Cholinesterase Activity Values. J. H. Wolfsie and G. D. Winter. Arch. Ind. Hyg. & Occ. Med. 6, 43-49 (July 1952).

Five hundred forty-nine plasma and 549 red cell cholinesterase activity determinations have been carried out on individual blood samples from 255 healthy, normal male human subjects by using a microadaptation of the electrometric method of Michel. A histogram of the dispersion has been drawn with a calculated normal curve superimposed. The results obtained in this investigation have been compared with those reported by other observers, including results of experiments done by several different techniques. Significant data from the normal cholinesterase activity dispersion are summarized in a table.

-- Authors' Summary

988 Toxicology of Organic Phosphorus-Containing Insecticides to Mammals. K. P. DuBois and J. M. Coon. Arch. Ind. Hyg. & Occ. Med. 6, 9-13 (July 1952).

The organic phosphorus-containing insecticides include the alkyl pyrophosphates, the alkyl thiophosphates, and the phosphoramides. All the members of these groups which are in wide current use as insecticides are highly toxic to insects and mammals. In the development of compounds with high insecticidal activity and low mammalian toxicity the most promising results thus far have been obtained in the thiophosphate series. All of these insecticides appear to owe their principal pharmacological actions to their ability to inhibit cholinesterase, thus increasing the acetylcholine content of the tissues with resultant intensified activity of structures which are normally stimulated by acetylcholine. The phosphoramides differ from the other groups in exerting their effects mainly

on peripheral tissues. In addition they are stable toward hydrolysis and have a long duration of action.

-- Cond. from Authors' Summary

989 Acute Phenol Poisoning. S. J. Evans
Brit. J. Ind. Med. 9, 227-229 (July 1952).

The rapidity of onset of toxic symptoms after exposure to phenol is illustrated by description of several cases, mostly fatal, in which phenol was absorbed by skin contact. Ingestion and inhalation cases are also frequent. Signs, symptoms, and causes of death are discussed briefly. Treatment consists of removal of the phenol from the skin or stomach by washing or lavage, administration of oils, allaying shock, and giving circulatory stimulants. The need for treating phenol and its compounds with due care is stressed.

990 Methemoglobinemia--Recognition, Treatment, and Prevention.
A. F. Mangelsdorff. Ind. Med. & Surg. 21, 395-398 (Aug. 1952).

Methemoglobinemia is one symptom of poisoning by aromatic nitro and amino compounds. It can be produced by very small amounts of these compounds absorbed through the skin or the respiratory tract or by ingestion as demonstrated by a number of reported cases. The formation of methemoglobin in the blood stream is rapidly followed by a reversible reaction to oxyhemoglobin. Early in the course of poisoning the patient feels perfectly well. Only after a large amount of methemoglobin is present in the blood stream does he manifest any symptoms. Early recognition of cyanosis aids in minimizing the effects of the aromatic nitro and amino compounds. Prompt treatment is essential for rapid recovery. A conservative method of treatment is described and recommended. The laboratory spectrophotometer can be used for rapid determination of methemoglobin. A spot test for aniline in air is described. Constant supervision by the medical and industrial hygiene units is necessary to prevent poisoning by these compounds.

-- Cond. from Author's Summary

991 Acute Hemorrhagic Cystitis from Inhalation of a Paint Remover.
G. E. Morris. Arch. Ind. Hyg. & Occ. Med. 6, 22-23 (July 1952).

A paint remover was used that contained 70% benzol and 30% methanol. Rapid excretion of the inhaled chemicals was effected by a diuretic action of whiskey acting on the kidney. The concentration of the benzol and alcohol in the urinary bladder caused an acute hemorrhagic condition known as acute hemorrhagic cystitis. This syndrome has not been previously reported as a cause of cystitis.-- Author's Summary

992 Efficiency of Criteria of Stress in Toxicological Tests.
H. F. Smyth, Jr., C. S. Weil, E. M. Adams, and R. L. Hollingsworth.
Arch. Ind. Hyg. & Occ. Med. 6, 32-36 (July 1952).

In toxicological studies, many and varied criteria are relied upon to demonstrate that a material has produced an effect. The criteria differ widely in the efficiency with which they reveal effect. Data from two laboratories are presented to indicate the value of a more thorough study of the efficiency of the criteria commonly followed in repeated-intake experiments, and to emphasize the high efficiency of liver and kidney weights measured in relation to total body weight.

-- Authors' Summary

993 The Causes of Death among Gas-Workers with Special Reference to Cancer of the Lung. R. Doll. Brit. J. Ind. Med. 9, 180-185 (July, 1952).

The causes of death among a group of pensioned workers of a large London gas company have been compared with those occurring generally among men in London. Among the pensioners, there were 840 deaths against 856 which could have been expected. Individual causes of death (or groups of causes) showed no appreciable difference from the expected numbers with the exception of lung cancer; 25 deaths were attributed to lung cancer against 13.8 expected. The excess mortality from lung cancer occurred principally among employees engaged on the production of gas and on the treatment of waste products (17 observed deaths to 8.6 expected). The deaths occurring among the workers concerned with gas distribution (eight observed to 5.2 expected) were too few to determine whether they were also exposed to any specific risk, or if they were, whether the risk was different from that suffered by the works employees.

-- Author's Summary

INDUSTRIAL DUSTS

994 Coalminers' Pneumoconiosis. W. D. Evans.
Coll. Eng. 28, 465-471, 474, 513-518 (Nov., Dec. 1951).

The author approaches the problem of coalminers' pneumoconiosis from a new angle. The cause of the variation in incidence of pneumoconiosis in British and especially in Welsh mines has long been puzzling. The author discusses the effects of silica in different forms, but rejects silica as a cause of the pneumoconiosis generally encountered in these mines.

because the silica content of the dusts is low. He also finds that the evidence does not support the view that incidence of the disease varies directly with the total dust concentrations. He concludes, then, that the difference in incidence of pneumoconiosis must be due to variations in the coal particles themselves. He classifies the coal dusts of the region as V, Va, F, and D coal, according to the predominance of vitrainous, (Va refers to an opaque modification of vitrainous), clarainous, fusainous, and durainous coal—the so-called macerals. In addition to petrological examination, a maceralogical study has been made by extracting the coals with a solvent and comparing the amounts of the extract by chromatographic methods. The dominant substance extracted has been termed "vitricin" (British Provisional Patent). Vitricin is found in V-coal to a much greater extent than in any other type. Lignite is rich in vitricin. The author has found good correlation between the vitricin content of coals and the incidence of pneumoconiosis in the mines where they prevail. Moreover, it has been demonstrated that the vitricin extracts inhibit the growth of B subtilis and the human type of tubercle bacillus. Larger scale experiments are in progress to investigate that point more thoroughly. Vitricin is apparently non-toxic and can be administered in large quantities. Briefly the author's conclusion is that some grades of coal are relatively harmless because they contain an antibiotic.

995 Coalworkers' Pneumoconiosis. So-called "Anthraco-Silicosis." C. M. Fletcher. Beit. z. Silikose-Forschung. Nos.18-20, 119-150 (1951). English and German.

The pathology of pneumoconiosis of coal miners, a very important problem in Great Britain, is so different from that of classical silicosis that the word "silicosis" should not be used. The terms "coal pneumoconiosis" or "coal miners' pneumoconiosis" are preferable to "anthracosilicosis." Two main types of pathocological changes are found: (1) "simple pneumoconiosis," with focal dust deposition, focal emphysema and a minimal fibrotic reaction, and (2) "complicated or infective pneumoconiosis," with additional massive collagenous fibrosis. Disability occurs only in the second type, and evidence is produced to show that the massive fibrosis is caused by tuberculous infection in a lung already affected by coal dust deposition. Radiographic appearances corresponding to both types are described and illustrated. Neither the total dust exposure nor the silica content of the dust has been correlated with the prevalence of pneumoconiosis. A radiographic classification of pneumoconiosis has been recommended by the International Labour Office and is now used in Great Britain and to a limited extent in other countries. The author pleads for wider acceptance of this classification in order to achieve greater international understanding in the study of pneumoconiosis.

-- Cond. from Author's Summary

996 History of Lung Diseases of Coal Miners of Great Britain. Part 3, 1920-1952. A. Meiklejohn, Brit. J. Ind. Med. 9, 208-220 (July, 1952)

The author brings the history of the lung diseases of coal miners to date. Among the subjects covered are: the controversy regarding the effect of coal dust on the lungs; the acceptance and final rejection of the sericite theory; the effect of mechanization of mines; employment problems of the disabled; and, in general, the increasing knowledge of silicosis and of coal miners' pneumoconiosis, including recent research.

997 Silicosis and Silicotuberculosis in Makers of Mill-Stones. F. M. Troisi. Med. lavoro 43, 9 (Jan. 1952) Italian.

An inquiry as to liability to silicosis and tuberculosis complicating silicosis has been made on a group of 66 workers employed in making millstones, operating hand chisel and mallet on high-silica rock of two varieties, one containing 56% and the other 89% quartz. Physical, x-ray, and laboratory examinations have revealed in the group 5 cases of silico-tuberculosis and 14 cases of silicosis, the former occurring after 16 years and the latter, with evidence of a micronodular type of fibrosis, after 9 years. Such periods of dust exposure prior to the onset of the disease are much shorter than found generally in stone workers operating hand tools and are correlated with the high silica content of the rock. For an adequate control of dust exposure in this work a local exhaust system operating from independent exhaust hoods, so that the worker keeps a maximum distance from the tools, is recommended.

-- Author's English summary in Arch. Ind. Hyg. & Occ. Med.

998 Modifications of Right Heart and Pulmonary Circulation in Silicosis and Silicotuberculosis. V. Reichmann. Med. lavoro 43, 61 (Feb. 1952) Italian.

The problems of the right heart in cases of silicosis and silico-tuberculosis are reviewed, and an opinion is formulated regarding hypertrophy of the path of systolic discharge of the right heart in pneumoconiosis and the possibility of anatomic and functional compensation of the right heart in silicosis. Applications of several methods to particular problems are discussed. The slowing down of the circulation in the pulmonary vessels in cases of nervous-silicosis deserves attention.

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

999 The Value of Protective Dusts on the Phagocytosis of Quartz.
C. van Marwyck and Elisabeth Fischer. Arch. Hyg. u. Bakt. 135, 161-174 (1951) German.

This paper describes tissue culture experiments with macrophages obtained from chick embryo spleen cultures. The technique used is given in detail. The dusts, mostly below 3 microns in size, were suspended in Ringer solution with the plasma fluid before the tissue was added. It was found possible to recognize and count the dust particles within the cells but not to distinguish one dust from another. Calcium carbonate, gypsum, two sources of aluminum metal, and kaolin were studied as protective dusts alone and in mixture with quartz. A series with quartz alone was also run. All measurements were made at intervals between 13 and 44 hours after the mixture had been set up. The proportions of empty to dust-laden cells and the number of free dust particles were counted for given areas, as well as the number of dust particles in dust-laden cells. The last factor was the most significant. The results are presented in detail. Kaolin, gypsum, and black aluminum metal increased the phagocytosis by 20, 40 and 60% respectively. Calcium carbonate and another coarser sample of aluminum were ineffective. It is concluded that there is a good correlation between the increased rate of phagocytosis and the beneficial results of the dust in silicosis experiments of other investigators, and that aluminum metal and gypsum would have a prophylactic effect against silicosis in practice.

-- Cond. from Bull. Hyg.

1000 The Flocculation of Dust in Relation to Aluminum Therapy in Silicosis.
K. G. Schmidt. Staub No. 26, 287-317 (Sept. 15, 1951) German.

The difficulty and expense of removing very fine airborne dust in factories could be greatly reduced if the dust could be flocculated and thus made easier to filter. The author reviews the literature on crystal structures and surface phenomena with main emphasis on colloid phenomena in aqueous suspensions. Experiments on flocculation of quartz in water are described which show the well-known effects of ionic charge and pH. The rapid flocculation of quartz by iron and aluminum precipitated as hydroxides after addition to the quartz is demonstrated by experiments. These observations are used to describe the beneficial effect of aluminum in silicosis prophylaxis as a flocculation phenomenon. It is recommended that factories should be sprayed with sulfates or chlorides of iron or aluminum in dilute solution to counteract the silicosis risk. Therapy by spraying should be continued after the dust exposures have finished. Further investigations will be made.

-- Cond. from Bull. Hyg.

.001 The Harmfulness of Inhalation of Aluminum Hydroxide and Its Action on Pulmonary Tissue. G. Jullien, E. Vellecalle, and M. Leandri. Arch. maladies profess. 13, 31-38 (1952) French.

Conflicting results obtained by various workers on the action of aluminum hydroxide in the treatment of silicosis led the authors to investigate possible harmful effects of its inhalation on guinea pigs. The dust of aluminum hydroxide used had a density of 1.37 and was composed of crystals with maximum dimensions of 2-5 microns. It was resistant to heat (600°C.) to acids, and to strong bases. The animals were exposed 5 to 9 hours. Pulmonary lesions were observed and their histology is described. Aluminum hydroxide acts as an antispasmodic and bronchodilator; hence its favorable action in silicosis. -- Chem. Abstr.

.002 The Phagocytosis of Industrial Dusts in Tissue Cultures. K. W. Jotten and C. van Marwyck. Brit. J. Ind. Med. 9, 173-179 (July 1952).

By using phase-contrast microscopical methods it was possible to enumerate exactly the dust particles taken up by phagocytes in tissue cultures. The description of the best method and the results obtained are substantially those given in the preceding abstract.

.003 Clinical Results Obtained on Silicotuberculosis During Treatment with Massive Doses of Testosterone Propionate. A. Raule and R. Grisler. Med. lavoro 43, 4 (Jan. 1952) Italian.

Eight subjects suffering from silicosis accompanied by active, open tuberculosis and four suffering from active, open pulmonary tuberculosis only were treated with daily doses of 100 mg. of testosterone propionate over a period of 10 to 15 days. There was noted in general a favorable effect lasting for 15 to 20 days and consisting of improvement of subjective conditions, increase of body weight, and rise of the hemoglobin level. In eight cases there was also noted, 10 days after the suspension of the hormone treatment, increased androgenuria. The favorable effect of the testosterone has been ascribed either to the anabolic proteidic action peculiar to the hormone or to improved suprarenal function due in all probability to slowing down of the corticotropic antehypophyseal activity.

-- Authors' English summary in Arch. Ind. Hyg. & Occ. Med.

.004 The Effect of Cortisone on Experimental Silicosis. C. V. Harrison, E. J. King, J. C. Dale, and R. Sichel. Brit. J. Ind. Med. 9, 165-172 (July 1952).

The administration of 5 mg. of cortisone thrice weekly to rats, which had received intracheal injection of quartz into the lungs, modified

the development of experimental silicosis, both in respect of its amount and its distribution. The principal effect of the cortisone appeared to be on the migration of dust cells, which remained much more loosely scattered throughout the lung, mainly in the alveoli, than in animals which received the same amount of quartz but no cortisone. This interference with the accumulation of quartz particles into focal aggregates retarded the development of discrete silicotic nodules. Whether in addition there was a direct inhibition of fibrosis is uncertain, but there is some evidence that this was so. The maturation of fibrous tissue (reticulin to collagen) was not, however, much affected. -- Authors' Summary

1005 The Silica Content of Blood. G. Worth. Klin. Wochschr. 30, 82-83 (Jan. 15, 1952) German.

Silica was determined in the blood of 264 workers in the lower Rhine area, some of whom were exposed to silicosis hazard. The average values for men were 8.4 gamma per ml., women 8.0, persons up to 35 years 9.1, and over 50 years 8.2, with average deviations of 1.4 to 2.5 gamma. There was no significant variation due to silicosis or other diseases. Experimental oral administration of a readily soluble preparation of silica was followed by a rise in the silica content of both blood and urine, reaching its peak at about 6 hours after the first dosage and falling to the original level in about 24 hours. The authors suggest that further investigations should be made with the help of radioactive isotopes.
-- Cond. from Bull. Hyg.

1006 The Bronchographic Picture in Silicosis and Silico-Tuberculosis. O. Orlandi, E. Concina, and B. Bellion. Rass. med. ind. 20, 416-420 (Nov.-Dec. 1951) Italian.

The authors indicate the value of the bronchographic method of examination in silicosis, advise on special precautions to be taken in silicotic patients, and summarize the possible findings by this procedure. The results to be obtained from bronchographic examination include: detection of the presence of bronchial spasm which may be the only alteration in early cases; various deformities of the bronchi found in more advanced cases; and the nature of areas of high light penetration seen in normal radiographs and tomographs. Bronchographic examination should not be regarded as a mere luxury method of diagnosis, but rather as a useful complement to clinical and functional examinations and an indispensible means of determining changes which might pass unobserved. Four photographic reproductions of bronchographs are shown.
-- Cond. from Bull. Hyg.

1007 Findings of Bronchoscopy in Silicosis and Silico-Tuberculosis. E. Concina and O. Orlandi. Rass. med. ind. 20, 424-426 (Nov.-Dec. 1951) Italian.

The importance of the existence of bronchial lesions in silicosis has been underestimated. Bronchoscopy allows direct observations of changes in the tracheal and bronchial mucous membrane, deviations in the trachea and main bronchi, and modifications in the orifices of the lobes and segments. Lavage, aspiration of the bronchial section, and endobronchial administration of adrenaline and antibiotics may be conducted during the process. Inflammation of the mucous membranes and other changes characteristic of silicosis are disclosed by this method. Findings in 25 patients are reported. -- Cond. from Bull. Hyg.

1008 The Value of the Electrocardiograph for Examining Anthraco-Silicotics. F. Lavenne. Institut d'Hygiene des Mines, Hasselt, Belgium, Communication No. 90, 5pp. (1951). French.

The author used the electrocardiograph to examine 11 cases of anthraco-silicosis with clinical signs of loss of compensation of the right ventricle, and 200 cases of anthraco-silicosis, compensated for invalidity but still ambulant, who were doubly classified according to the extent of fibrosis present and according to the amount of emphysema. The findings are presented in somewhat cryptic symbolism. They are held to justify the claim that the electrocardiograph may be of considerable value in establishing early strain on the right side of the heart.

-- Bull. Hyg.

1009 Asbestosis Associated with Bronchiogenic Carcinoma. R. Stoll, R. Base, and A. A. Angrist. Arch. Intern. Med. 88, 831-834 (Dec.1951) German.

Data for statistical proof of any association of asbestosis with pulmonary carcinoma are hard to collect, but three investigators have found carcinoma in 7.5 to 14.8% of cases of asbestosis. A case is reported in which a worker had been exposed to asbestos for 6 years and had refused to wear a respirator. He came under notice with weakness and a persistent cough. Clumps of malignant cells were seen in the bone marrow, and x-ray showed generalized large discrete oval shadows indicative of pulmonary metastases. After death, nodules varying to 4 cm. in diameter were found scattered throughout both lungs, with interstitial fibrosis. Large areas of necrosis existed throughout the lungs, and typical asbestos bodies were seen inside and outside the tumor areas. Metastases were found in the kidneys, brain, and liver. The opinion is suggested that the silicate in asbestos must itself be directly carcinogenic. It establishes an additional reason for preventive measures in the use of asbestos.

-- Cond. from Bull. Hyg.

1010 Studies on Cotton Dust in Relation to Byssinosis. Part 2. Skin Tests for Allergy with Extracts of Cotton Dust. H. R. Cayton, G. Furness, and H. B. Maitland. Brit. J. Ind. Med. 9, 186-196 (July 1952).

Ten extracts were made from four samples of cotton dusts using seven extractive methods including standard methods for the extraction of allergens and bacterial antigens. All the extracts were used for skin tests and were similar in causing two types of reaction, an early wheal and flare and a late reaction, maximal in about 12 hours, of redness and induration. Extracts varied somewhat in potency. Several groups of persons, 291 in all, were compared, including early and advanced byssinotics and other exposed and unexposed, allergic and non-allergic persons. About 90% had a late reaction, which is considered to be due to the direct action on the tissues of a toxic substance extracted from the dust. About 30 to 40% had an early reaction following intradermal injection of a suitable dilution of extract. A small percentage reacted to intradermal injection of high dilutions or to the prick test. Reactors occurred equally in all groups of the adult urban population, so the reaction does not indicate hypersensitivity specific to byssinosis.

-- Cond. from Authors' Summary

1011 Allergy and Related Problems in Flour Milling and Grain Processing. J. F. Shronts. Ind. Med. & Surg. 21, 399-402 (Aug. 1952).

Two surveys totaling 5000 employees in the grain processing industries disclose only 2 to 3 cases of proved allergy per 1000 employees. The cases do not include minor ailments no more severe than colds or hay fever. Allergic cases are slow in developing; 8 to 30 years is the general range. Dermatitis may precede rhinitis or asthma by many years, and its early appearance may explain the low incidence of respiratory cases, as the employee may be transferred or may resign before respiratory symptoms develop. Skin testing of patients for hypersensitivity to the various allergens in flour mill and grain dust is not a simple diagnostic procedure, because tests should be made for members of the fungus family and ragweed and other pollens that may be in the grain. Hyposensitization has been successful in some cases. Diagnosis and case management for allergic patients should be the responsibility of the allergist rather than the industrial physician.

"You say nothing about what you have found, you speak only of what you have lost." Recently translated from a Sumerian tablet this proverb is 3700 years old and pre-dates the Book of Proverbs by 1000 years. -- The Employment Counselor

PHYSICAL ASPECTS OF THE ENVIRONMENT

1012 Binocular Vision in Light Adaptation and Dark Adaptation in Normal Subjects and Coal Miners. Dorothy A. Campbell, Renee Harrison, and Jean Vertigen. Brit. J. Ophthalmol. 35, 394-405, 484-495 (July, Aug. 1951).

The first part of the paper is devoted to establishing a norm with which to compare coal miners. The second part deals with 90 normal coal miners and 275 coal miners with nystagmus. The visual acuity of the normal miners was not so good as that of the non-mining controls, but only a few had large errors of refraction. In other functions there was little differences between the groups: in fact, adduction and stereoscopic vision were better in miners who had worked a long time underground. Nystagmatic miners had poorer stereoscopic vision than normal miners. The results obtained by the tests are shown in explanatory graphs and figures. The final suggestion is made that the level of illumination in coal mines should be at least 0.1 foot-candle to enable a man to use his binocular vision. More modern cap-lamps should be introduced, and efforts made to develop fluorescent strip lighting at the coal-face.

-- Cond. from Bull. Hyg.

1013 Fatigue in Manual Workers. J. J. Gilion ~~Arch. maladies profess. 12, 666-671 (1951).~~

Fatigue in textile workers was estimated by (1) the average time, and (2) the variability in time required to perform a brief repetitive task hour by hour throughout an eight-hour shift. The mean time required was significantly lower at the 3rd and 4th hour than at hours 1 and 8, and histograms revealed a significantly smaller variation in the intermediate hours, indicating that the worker was becoming fatigued at the end of the shift. After the introduction of a rest period of 1 1/2 hours, differences in average times and scatter between 3rd and 8th hours were no longer significant. In a worker more than 60 years of age, the best performance occurred in the second hour, fatigue appeared at the 4th hour and was marked at the 8th hour.

-- Cond. from Bull. Hyg.

1014 Rheumatism in Miners. Part 2. X-ray Study. J. H. Kellgren and J. S. Lawrence. Brit. J. Ind. Med. 9, 197-207 (July 1952).

A clinical, radiological, and psychometric study was made of 84 miners and 111 other workers, all aged 40 to 50. The miners showed

significantly more radiological changes of lumbar disc degeneration and possibly more osteo-arthritis of the knees than either manual or office workers, and there was a significant association between these radiological changes and attacks of pain in the lumbar-sciatic distribution and the knees. The miners also showed more arthritic changes in other joints, such as the elbows and hips. Almost no association was found between complaints of pain and emotional stability, and it is concluded that degenerative joint changes are mainly responsible for the pains mentioned, which had been found to be especially prevalent among miners.

-- Cond. from Authors' Summary

RADIOACTIVITY AND X-RADIATION

1015 Health Physics and Medical Aspects of a Strontium 90 Inhalation Incident. F. P. Cowan, L. B. Farrabee and R. A. Love. Am. J. Roentgenol. Rad. Therapy and Nuclear Med. 67, 805-808 (May 1952).

The urinary elimination of strontium 90-yttrium 90 after inhalation by a human subject was studied. It dropped from 20,300 disintegrations per minute to a low rate in a month and finally to 16 disintegrations per minute, indicating a very small deposition in the bones. It is recommended that in all cases where appreciable quantities of radioactive materials are inhaled, the individual concerned be immediately referred to a physician for a thorough irrigation of the nasal passages. In addition, 24-hour urine samples should be taken immediately following the incident and at intervals thereafter and appropriate analyses for activity made whenever facilities and methods are available. -- Cond. from Authors' Summary

1016 Current Concepts of Therapy of the Radiation Syndrome. J. W. Howland. J. Missouri State Med. Assn. 49, 425-429 (May 1952).

A brief discussion as to the nature of the radiation syndrome is given. Specific comment is made on certain signs and symptoms of definite importance in correct therapy. A discussion of the procedures and agents effective at the present time in modification of the radiation syndrome is given. These are analyzed briefly as to probable physiologic effects. An outline of the present day concepts of correct therapy of the radiation syndrome includes the use of rest, antibiotics, careful nursing care and whole-blood transfusion.

-- Author's Summary

1017 The Acute Radiation Syndrome. Study of Nine Cases and Review of the Problem. L. H. Hempelmann, H. Lisco, and J. G. Hoffman. Ann. Intern. Med. 36, 279-510 (Feb. 1952).

The authors described very extensively the cases of nine persons exposed to penetrating ionizing radiations, of whom two died and one of the survivors had typical manifestations of the acute radiation syndrome. Symptoms and bodily effects are fully described. Therapy can be only supportive; the two patients died in spite of a number of therapeutic measures. The survivor with acute symptoms recovered, and the other six showed no symptoms in spite of exposure as severe as the others. The effects of the different radiations are discussed, and the measurement of dosage is considered in the light of the experience gained.

1018 Examples of the Acute Radiation Syndrome in Man. L. H. Hempelmann. New Engl. J. Med. 246, 776-782 (May 15, 1952).

Abstracts of the case of three persons exposed to single doses of varying magnitudes of total body ionizing radiation (primarily neutrons and gamma rays) are presented. These cases serve to illustrate the lethal, sublethal, and asymptomatic forms of the acute radiation syndrome. Although the exposures occurred as the result of inadvertent nuclear reactions (atomic explosions on a very small scale) the injuries were due solely to ionizing radiations. Flash burns and traumatic injuries due to heat and blast (such as were noted in 85 to 95% of the Japanese victims of the atomic explosions) were not produced in these patients.

-- Author's Summary

1019 Monocytic Leukosis Following Chronic Roentgen-Radium Injury. F. Leibetseder. Med. Klin. 47, 46-48 (Jan. 11, 1952) German.

A radiologist exposed for 20 years to x-rays and Ra developed acute leukoblastosis (monocytic leukemia of the Hittmair type). The illness began as panmyelopathy with megaloblastic anemia. There was continual enlargement of the white cells of the monocytoid type. Death resulted in 6 months. The blood and bone-marrow picture is described in some detail. -- Nuclear Sci. Abstr.

1020 Protection Afforded by Clothing Against Radiation Hazards. F. R. Holden and A. F. Owings. Arch. Ind. Hyg. & Occ. Med. 6, 67-73 (July 1952).

In the control of radioactive contamination, clothing has the following values: (1) protection against ultraviolet and infrared radiation, (2) prevention of the spread of radioactivity, (3) partial protection of the

skin from beta-radiation and complete protection against alpha-radiation, (4) control of ingestion and inhalation hazards, (5) elimination of direct skin contact with radioactive materials. Clothing should preferably be light weight, nonporous, washable or expendable and should provide complete body coverage. Leakage at wrist and ankles should be avoided, and at the neck a tight connection should be made to the respiratory protector. Light-colored clothing reflects infrared radiation and thereby minimizes skin burns. -- Cond. from Authors' Summary

1021 The Concept of a Maximum Permissible Exposure. R. S. Stone. Radiol. 56, 639-661 (May 1952).

The history of the knowledge of effects of x-rays on the tissues is reviewed comprehensively, especially the gradual development of the idea of a maximum tolerance dose. The concept of a maximum permissible exposure now rests on a fairly large number of experiments and observations. The present recommendation of the International Commission is 0.3 roentgen per week measured in free air, or 0.5 roentgen on the body surface. This refers to x-rays or gamma rays of quantum energy less than 3 mev. Complete recommendations from the National Committee on Radiation Protection will be published soon. The principal effects of radiation are discussed.

1022 Instruments for Measuring Secondary Radiation. W. W. Van Allen. Arch. Ind. Hyg. & Occ. Med. 6, 124-127 (Aug. 1952).

The ordinary integrating instruments are not suitable for measuring the secondary radiation to which patients and operators may be exposed. A specially constructed instrument had been used in the Electronics Laboratory of the Public Health Service, but it has been found that at least one of the many types of radiation-survey meters which are commercially given can readily be converted from a rate meter to an integrating meter, with provisions for two or more ranges of either type. Full directions for modification are given, with diagrams.

1023 Radiological Contamination of Food. I. G. Poppoff, O. W. Morrison, and F. R. Holden. Food Technol. 6, 278-280 (1952).

Atomic or radiological warfare will bring the military forces and civilian population face to face with possible radiological contamination of food. In this report consideration is limited to the contamination of food by radioactive particulate matter. Factors influencing the extent of such contamination and the conditions under which food may be safely salvaged are discussed.

-- Authors' Summary

number of advantages in the analysis of compounds of this type; yet few publications have appeared. A method has been developed whereby the air is sampled with a cooled scrubbing solvent, and qualitative and quantitative determinations of single or multiple component vapor-air mixtures are made with an infrared spectrophotometer using a 1.0-mm. cell. A chart of the principal peaks of the spectra of 15 chlorinated hydrocarbons is presented, and methods of measuring recorded spectra and preparing standard curves are described. Recoveries averaged 97%, with an average deviation of 6%. As little as 0.04 mg. of chlorinated hydrocarbon per ml. of sampling solution can be analyzed. By using the proper solvent, the method may be adapted for the determination of the vapors of other organic compounds.

-- Authors' Summary

1030 Portable Slit Ultramicroscope for Determining the Concentration of Submicroscopic Particles in the Air of Industrial Establishments. E. S. Belkin and A. I. Kosenko. Gigiena i Sanit. 21, 50-51 (Aug. 1951) Russian.

A portable ultramicroscope is described. The aerosol to be investigated is aspirated by means of any available suction device. The apparatus has been used successfully in mines and factories.

-- Nuclear Sci. Abstr.

PREVENTIVE ENGINEERING

1031 Auxiliary Mine Ventilation. H. Middendorf. Mechanisches Auffahren von Strecken. 105-110 (1950) German.

This paper summarizes up-to-date information on auxiliary mine ventilation, a subject which becomes more important as the length, depth, and temperature of mine workings increase. In principle, exhaust ventilation is better than blowing, but in long and hot roadways blowers are also necessary. Two procedures have been recently introduced for protecting men during and after shot-firing. One is the use of steel shelters under excess air pressure; the other is the use of mist curtains. The main part of the paper discusses engineering detail. Fans drawing air directly from the outside are better than fans in series. Double units can be designed so that the pressure can be increased as the workings are lengthened. In order to overcome heating by electrical fans, motors with long shafts have been built so that

ENVIRONMENTAL MEASUREMENTS

1024 A Freeze-Out Apparatus for the Collection of Air Contaminants. E. Thelen and S. N. Muchnick. J. Franklin Inst. 253, 505-506 (May 1952).

The authors described an apparatus for collecting analyzable quantities of air contaminants in a short time, even when they are present in low concentrations. The equipment is capable of cooling 2.5 cubic feet of air per minute to -183°C. The apparatus consists of a precooling coil maintained at -72°C., a liquid nitrogen condenser, an evacuated expansion flask, and a blower. At sufficiently low concentrations, such as 200 ppm of ammonia, the equipment can recover 75 to 90% of the contaminant.

1025 A New Method of Estimating Carbon Monoxide in Air. P. Reval and P. Duquenois. Bull. acad. nat. med. 135, 490-492 (1951) French.

In this method a known quantity of air to be tested (2-5 liters) is shaken with sodium sulfite and sodium hydroxide solution to absorb oxygen and carbon dioxide, and then bubbled through a known volume of defibrinated blood, diluted to one-fifth. The carboxyhemoglobin is then estimated by Wolff's method, involving precipitation of the normal blood pigments with acetoacetic acid and estimation of carboxyhemoglobin spectroscopically. It is necessary to calibrate with known carbon monoxide-air mixtures. With 5 liters of air and 20 cc. of diluted blood, concentrations of 1/50,000 can be measured to ± 8%. The relative error is 3% at a part of the curve. The method is slow, but requires no supervision and is useful at low concentrations. -- Bull. Hyg.

1026 Microdetermination of Chromium in Blood. H. J. Cahnmann and Ruth Bisen. Anal. Chem. 24, 1341-1345 (Aug. 1952).

In the course of investigations of lung cancers among chromium workers it became necessary to have a method for the quantitative determination of traces of chromium in blood. As the chromium concentration of most blood samples which had to be analyzed was in the order of magnitude of 0.01 to 0.1 ppm, a method with a high degree of sensitivity and precision was required. A spectrophotometric micromethod is described, based on the well-known reaction of hexavalent chromium with s-diphenylcarbazide,

which results in the formation of a pink color. The reaction is sensitive to 0.005 ppm. if the color is read in a Beckmann spectrophotometer, Model DU. The standard deviation was determined for chromium concentrations ranging from 0.02 to 0.32 ppm, and found to be 0.005 ppm, when 10-ml blood samples were used. -- Authors' Summary

1027 Spectrochemical Determination of Lead in Small Quantities of Blood. H. Murata. J. Chem. Soc. Japan., Pure Chem. Sect., 72, 863-865 (1951).

Lead in small quantities of liquid, such as blood or urine, was determined by an intermittent a.c. arc method with bismuth as the internal standard. The lines used were Pb 2833 and Bi 2898 A. The sample (0.02 cc) was placed on the flat end of a carbon electrode heated to 70°C., evaporated, and heated to 110°C. and the arc was ignited. The standard solution contained 0.1-1000 gamma per cc. lead and 300 gamma per cc. bismuth. One gamma per cc. lead was determined. The continuous d.c. arc and spark method did not give good results. About 30 gamma of lead was found in 10 cc. of the blood of healthy Japanese persons by this method. This value is higher than the value determined by the dithizone method. -- Chem. Abstr.

1028 Polarographic Procedure for Urinary Thallium. C. S. Winn, Edna L. Godfrey, and K. W. Nelson. Arch. Ind. Hyg. & Occ. Med. 6, 14-19 (July 1952).

Urine specimens are digested with a sulfuric-perchloric-nitric acid mixture. The residues are transferred to separatory funnels, and the thallium is oxidized with bromine water. The resulting thallic ion is extracted, in acid solution, with dithizone in chloroform. Lead remains in the aqueous phase. The chloroform solutions are evaporated and digested with the sulfuric-perchloric-nitric acid mixture, the remaining sulfuric acid being removed in a muffle furnace. The resulting residues are taken up on ammonium acetate solution and polarographed. When compared with a standard curve the wave heights so obtained indicate the quantities of thallium present. The standard curve is prepared by adding known quantities of thallium to urine, analyzing in the described manner, and plotting wave heights against thallium concentrations. -- Authors' Summary

1029 Infrared Determination of Chlorinated Hydrocarbon Vapors in Air. P. F. Urone and Mary L. Druschel, Anal. Chem. 24, 626-630 (April, 1952).

Because of the toxicity of chlorinated hydrocarbon vapors in air, their analysis is of importance. Infrared spectroscopy has a

only the end of the shaft is inside the housing. Other points discussed are: the relative merits of different duct materials; heat insulation and joining methods; and small mobile refrigerator units.
-- Cond. from Bull. Hyg.

1032 Refrigeration of Deep Mine Workings in Belgium. Unnumbered communication, Institut d' Hygiene des Mines, Hasselt, Belgium. A. Houberechts, Director. 27 pp. (1951). French.

A scheme for the refrigeration of some workings in the Belgian pit is described. Wet and dry bulb temperatures are the principal factors in determining thermal stress. Continuous heavy work is distressing at an effective temperature of 93.2°F., and impossible above 95°F. In Belgium the accepted limit is 88.8°F. Below 3280 feet underground in damp coal mines, cooling by ventilation alone may be insufficient, and refrigeration may be necessary to attain the desired effective temperature. Sources of heat and effect of cooling are discussed at length, with calculations. Given reasonably good ventilation, refrigeration may be cheaper than increased ventilation. Factors determining choice of installation are listed, and the first such installation in a coal mine is described. Highly satisfactory results are claimed. -- Cond. from Bull. Hyg.

COMMUNITY AIR HYGIENE

1033 The Engineering Approach to Cleaner Air for the Community. H. P. Munger. Am. J. Pub. Health 42, 936-946 (Aug. 1952).

The author reviews methods of sampling, estimating, and eliminating various types of air contaminants. The problem confronting individual plants is inexpensive methods of air pollution control. Little of the knowledge of preventive methods is practically usable for the individual plant. Each plant presents an individual research problem, and the method must be tailored to fit the particular situation. The concentrations, properties, and composition of the contaminants, the topography, meteorology, locations of population centers, and potential market for the separated material must be known. A plant-by-plant analysis is necessary to obtain the most effective control of contaminants. Close cooperation between health and air pollution officers, industry, and research organizations is required for rapid progress.

1034 The Influence of Zinc Oxide Smokes on the Oxidation of Sulfur Dioxide in Coal-Gas Flames. R. F. Littlejohn. J. Appl. Chem. 2, 289-294 (June 1952).

The effect of zinc oxide smoke additions on the dew point and sulfur trioxide content of an aerated coal-gas flame containing sulfur dioxide has been studied. Measurements on filtered and unfiltered gases show that the presence of smoke tends, at first, to increase the amount of oxidation of dioxide to trioxide, but if sufficient smoke is present, the trioxide formed is absorbed and zinc sulfate is formed.
- Author's Summary

MANAGEMENT ASPECTS

1035 Life Stress and Industrial Absenteeism. The Concentration of Illness and Absenteeism in One Segment of the Working Population. L. E. Hinkle and N. Plummer. Ind. Med. & Surg. 21, 363-375 (Aug. 1952).

A study was made of the absences of 1297 telephone operators throughout their working careers. It was found that in any one year a small percentage of employees were responsible for most of the days of absence and number of absences. The same employees fell into the low absence and high absence groups throughout their time of employment. Out of 336 employees with 20 or more years of service, 20 with the highest absence record and 20 with the lowest were selected for intensive study. The 20 women with high absence had experienced many major and minor illnesses pertaining to all bodily systems, disturbances of feeling-state, thought, and behavior, lost-time injuries, and surgical operations. They were as a group discontented, unhappy, difficult to get along with, and difficult to supervise. In each of these respects the opposite was true of the 20 with low absence records. In the entire group of 1297 employees, there was also definite correlation between absences and general attitude and ability to get along with people. The 20 women with high absence rates had been exposed to life situations and experience which were to them stressful, while the 20 with low absence records had been exposed to relatively few such experiences.
-- Cond. from Authors' Summary