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SEPTEMBER, 1947

INDUSTRIAL HYGIENE DIGEST

(Vol. II, No. 9)

Literature Abstracts

• MEDICAL

• ENGINEERING

• LEGAL decisions and trends

Industrial Health News



INDUSTRIAL HYGIENE FOUNDATION

4400 FIFTH AVENUE
PITTSBURGH, PA.

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FOUNDATION FACTS

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

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Vol. 9

September, 1947

No. 9

Program for 12th Annual Meeting Completed

The program for the 12th annual meeting of Members of Industrial Hygiene Foundation, which will be held here November 20, has just been completed. Copies will be sent to Members within a few days.

William B. Given, Jr., President of American Brake Shoe Company, a Foundation trustee, will deliver the keynote address opening the meeting on "A Better Place to Work." Other program highlights:

Sumner T. Pike, a member of the U.S. Atomic Energy Commission, on "Atomic Developments and Industrial Management;"

J. Stevens Stock of Opinion Research Corporation on "What the Community Asks of the Plant," the results of public opinion polls;

J.J. Wittmer, M.D., Assistant Vice President of Consolidated Edison Co., on "Health Insurance---Its Meaning for Management;"

H.A. Vonachen, M.D., Medical Director of Caterpillar Tractor Company on "Industrial Health Case Histories for Management and Labor;" and

V.P. Ahearn, Executive Secretary, National Industrial Sand Association, on "Establishment of Health and Welfare Funds Under the Taft-Hartley Act."

Meanwhile, plans for the four round-table conferences are nearing completion. The agenda will be mailed in the near future. Admission to the conferences is restricted to one representative from industrial member companies. The conferences, which will be held on November 19 and 21, the day before and the day after the main meeting, are as follows:

Nov. 19 --- Medical Conference -- For physicians only

+ Nov. 19 --- Engineering Conference -- For plant engineers, operating men, etc.

+ Nov. 19 --- Legal Conference -- For attorneys, financial and compensation men; (afternoon only) industrial relations and other interested executives.

Nov. 20 -- Annual Meeting for Management

Nov. 21 --- Chemists Conference -- For chief chemists, industrial toxicologists, hygienists, etc.

The conferences are planned for specialists from member companies; the main meeting for management representatives. Admission is by invitation.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

1027 Progress Against Disease.

The tuberculosis vaccine, BCG (bacillus of Calmette and Guérin, its discoverers) will be manufactured at the University of Illinois, designated by the U.S. Public Health Service as its sole manufacturer. It will be distributed through city, state and federal health agencies, at a cost of approximately half a cent a dose. It is hoped that if all who are not infected are treated, tuberculosis sanitariums will not be needed in 20 to 40 years. With this announcement the final phase in the campaign against tuberculosis may well have been opened. Smallpox, yellow fever and malaria were brought under control by the contributions of individuals or relatively small research groups. Against tuberculosis the public has been called upon for extensive contributions, and similar campaigns are now shaping up against infantile paralysis, cancer, and syphilis. If a recent report from Russia is any indication, the next great advance may be toward the control of cancer. Recent Soviet literature reports a cancer vaccine which is claimed literally to dissolve cancer. The American medical profession will view this latest contribution with considerable skepticism, until confirmatory experiments are made. -- Chem. and Eng. News (Aug. 4, 1947)

1028 The Underground Gasification of Coal.

Some progress in the gasification of coal in the mines in the United States was reported in Abstract 636 (June, 1947). More extensive information on similar experiments in Russia is now at hand. Three methods have been tried: (1) parallel gallery or borehole producer; (2) radial borehole or percolation; and (3) sloping seam or stream. All three give some promise of success under proper conditions. Some details of production and the composition of the gas are given. -- J.L. Boyle. Internat. Ind. (Aug., 1947)

1029 Medical Research Planned by Atomic Energy Commission.

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Establishment of a Division of Medical Research in the Atomic Energy Commission is planned following the recommendations of the Medical Board of Review. The work of this Division as planned includes: further research for the protection of employees and of others who may be exposed to atomic hazards; conductance and encouragement of research on the possible beneficial uses of radiation, including supplying isotopes to scientists in other countries when there is a sufficient supply; and assisting universities in the training of medical men and scientists with an adequate background of health physics. -- Chem. and Eng. News (July 21, 1947)

Occupational Disease Statistics

1050-1 Occupational Disease Statistics.

	Calif. ³ May 1947	Conn. ² Aug. 1947	Ind. ² Aug. 1947	Mich. ² Aug. 1947	Ohio ¹ June 1947	Wis. ² July 1947	Totals
Carbon Monoxide	1					3	4
Carbon Tetrachloride	3						3
Carbon Tetrachloride (acute)			1				1
Chemical Poisoning (N.O.C.)	13				10	3	26
Conjunctivitis	234					9	243
Dermatitis	675	37	9	16	244	124	1105
Heat	10						10
Hernia				2			2
Infections						4	4
Inflammatory Conditions	164					5	169
Lead Poisoning	11				7	6	24
Miscellaneous					129		129
Noise	4						4
Pneumoconiosis		1		2	11		14
Pulmonary and Bronchial Affections	11						11
Silicosis				11	34		45
Silico-tuberculosis						2	2
Skin Diseases (other than dermatitis)					5		5
Sulphur Dioxide Gas						1	1
Tuberculosis						1	1
Tuberculosis (due to contact)					1		1
Undulant Fever			1			1	2
Upper Respiratory Affections	10					1	11
Totals	1136	38	11	31	441	160	1817

(1) Occupational Disease Cases reported to the Industrial Commission.
There were 74,508 days lost, including one death from lead poisoning, one from chemical poisoning (unspecified), seven from silicosis and one from pneumoconiosis.

(2) Occupational Disease Cases reported to the Department of Industrial Relations and tabulated by the Department of Public Health.

(3) Occupational Disease Cases filed with the Department of Industrial Relations and tabulated by the Department of Public Health.

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Legal Developments

1031 Schedule Losses and Listed Disabilities--A Plea for Revision of the Compensation Laws.

The primary purpose of the compensation law is threefold: (a) to furnish promptly proper medical attention to the injured workingman for as long as it may be necessary, (b) to pay adequate financial compensation for as long as the resultant disability continues, and (c) to aid in the rehabilitation of the disabled workingman so far as it may be possible. The schedule loss or listed disabilities section of the various compensation laws runs counter to purpose (b). This section of the laws, aside from being haphazard and arbitrary, does not consider several essential, individual factors, which vary with each case and which must be taken into account when the schedule loss is fixed. The more important factors to be considered are: (a) the age of the injured person, (b) the sex of the injured person, (c) the occupation of the injured person, and (d) the psychic effect of the injury. Provision should be made for compensation for serious disfigurement of the extremities. Claimants who sustain a trivial permanent partial disability resulting in a minor schedule loss and claimants who, despite a serious permanent partial schedule loss disability, demonstrate a long-continuing ability to work and to earn their usual salaries may have their cases settled on a schedule loss basis. All other cases with permanent partial disabilities causing schedule losses should not be settled, and the claimants should receive compensation for the remainder of their lives. If this is not feasible, the schedule loss figures should be revised upward, sharply, so that compensation paid for schedule loss disabilities will be commensurate with the injury sustained and the resulting functional defect. -- Author's summary. -- S. Kahn. Occ. Med. 3, 457-464 (May, 1947)

1032 Memorandum on the Workmen's Compensation Acts, 1925-1945.

The British Workmen's Compensation Act is summarized in this report. Pneumoconioses do not come within the provisions of this act but are covered in other legislation. -- (Great Britain) Ministry of National Insurance, 19 pp. H.M. Stationery Office, London. Price 4d. (1946)

1033 "Threat" to Ohio Compensation Law Fades.

The Industrial Commission of Ohio is a complete unit for the administration and operation of the workmen's compensation law, and only a very small part of the work is turned over to persons or other agencies. Six other states have similarly exclusive funds. The Ohio Commission also maintains a Safety and Hygiene Division, makes safety codes and conducts other miscellaneous safety work. The Ohio Compensation fund is at present over \$161,000,000 and is probably the largest in the world. A bill introduced in the last General Assembly, which would have again permitted private insurance companies to write workmen's compensation, died in committee. The Commission feels encouraged to go forward with plans for greater success. -- G.L. Coffinberry. O.I.C. Monitor (July, 1947)

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1034 Woodman's Pneumothorax--Causal Connection with Effort of Sawing--Statute of Limitations--"Accident" Construed.

Medical testimony was conclusive that claimant had suffered a pneumothorax, or lung collapse, and evidence was sufficient to establish a causal connection between the lung deflation and the strain of sawing wood, in the course of employment. Claimant's delay in filing claim was explainable, and did not serve to prejudice the defendant. -- Dortch v. Louisiana Central Lumber Co. Louisiana Court of Appeal, Second Circuit. No. 7042. June 3, 1947. (CCH)

1035 Occupational Disease From Typing.

Evidence supported the finding of the board that claimant, over a period of six or seven years, had actually developed an occupational disease as the result of using her hands continually in the operation of a typewriter and adding machine. The compensable condition was described as "ganglia on the dorsum of both hands." -- Macyseaki v. Carocelum Leasing Corp. New York Supreme Court, Appellate Division, Third Judicial Department. No. 117-15. May 14, 1947. (CCH)

1036 Worker's Suicide--Causal Connection with Disability from Industrial Injury --Death Benefits.

Medical opinion suggested that the decedent worker's suicide resulted from melancholia growing out of disability caused by an industrial accident, making the connection between the worker's death and the accident a question of fact. An award of death benefits was accordingly affirmed. -- Commissioner of Taxation and Finance v. Hedstrom-Spaulling, Inc. New York Supreme Court, Appellate Division, Third Judicial Department. No. 127-27. May 16, 1947. (CCH)

Books, Pamphlets and Notices

1037 Analysis of Provisions of Workmen's Compensation Laws and Discussion of Coverages. Insurance Dept., Chamber of Commerce of the United States, Washington, D.C. 36 pp. (July 1, 1946)

The booklet is designed to provide both employees and employers with an easy-to-read analysis of benefits allowed under state Workmen's Compensation Law and of the insurance requirements for complying with those laws. First are 13 pages of general information, definitions and explanation. The bulk of the information is presented in 14 charts, classed under death benefits, total disability benefits, etc. Chart V is concerned with occupational diseases, giving tabulated information on coverage, medical provisions, claim filing, and limitations on compensation. Chart VI is limited to silicosis, with information also on partial disability and exposure requirements. Second injury funds, rehabilitation funds, accident reports, special provisions for minors, etc., are covered in additional charts.

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- 1038 A Biometric Study of Ten Years Medical Service. Standard Oil Co. (New Jersey) and Affiliated Companies. Med. Bull. (S.O.N.J.), 7, No. 1. 199 pp. (Apr., 1947)

Extensive statistical tables and charts are presented, covering disabilities among employees of the company in North and South America. A few of the 14 general conclusions comparing domestic and South American groups are: (1) the frequency rate of industrial injuries and days of disability per employee have always been higher in the South American companies; (2) the number of cases of sickness and of non-industrial injury and the days of disability per employee is higher in the United States; (3) occupational diseases and disability due to industrial accidents play only a minor role in total medical absenteeism; (4) outstanding causes of disability in all locations are common cold, influenza, and minor gastro-intestinal diseases; with them are ranked in the United States, arthritis and allied diseases of the musculo-skeletal system, and in South America, malaria and diseases of the uro-genital system; and (5) pulmonary tuberculosis is kept to a minimum by physical examinations.

- 1039 Outline of Occupational Disease Control Through Engineering. Bull. No. 83. Div. of Labor Standards, U.S. Dept. of Labor. 36 pp. (July, 1946)

This Bulletin summarizes the well-known facts of the most common health hazards and their prevention by engineering methods.

- 1040 ~~Health~~ Copper and Health. Copper and Brass Research Association, 420 Lexington Ave., New York 17, N.Y. 47 pp. (June, 1947)

The first chapters deal with the former belief that copper is poisonous and show through the pros and cons of the literature that it was finally demonstrated that copper is not poisonous except in such large quantities that it is immediately rejected by the system. Neither does it accumulate in the organs. It is also shown that copper poisoning, as an occupational disease, does not exist and that effects attributed to copper have other causes. Copper cooking utensils have been used since ancient times, and ill effects sometimes blamed on the copper dishes have been disproved. The presence of copper in all foods is shown in tables, and the modern discovery of the necessity of copper in human diet is discussed. The role of copper as a plant food is also reviewed.

- 1041 The Management Leader's Manual for Operating Executives, Supervisors and Foremen. Number One. J.O. Rice and M.J. Docher, Editors. American Management Association, 330 W. 42nd St., New York 18, N.Y. 192 pp. (1947) Price \$3.00 with discounts to members and for quantities.

The stated purpose of this manual is to bring some of the best available information on human relations and operating problems, in the form of a number of papers previously published by the Association to a larger number of people. These studies all deal with the theme of improving relations with groups and individuals, and have been published during the last few years. It is planned to issue similar volumes with new material annually. There are 22 individual papers by different

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authors, classified according to general subjects. Typical and suggestive titles are: "The Essentials of Democratic Leadership;" "Developing Democratic Work Teams," "Women Workers Analyze the 'Good' Supervisor;" "Competitive Enterprise vs. Planned Economy;" "How to Give Workers a Sense of Security;" "How to Conduct an Employment Interview;" "What's Your Management I.Q.?" Some of the articles are partly or wholly in outline form, and the one last mentioned includes a number of yes-or-no questions to be answered. Blank pages are provided for notes.

Industrial Medical Practice

1042 Fallacies and Control of Respiratory Infections With Special Emphasis on Influenza. F.S. Brien. Can. Med. Assoc. J., 56, 650-655 (June, 1947)

The author reviews the theory and general experience with air-borne diseases and protective methods. Influenza is one of the air-borne diseases, although the air-borne virus has a shorter life than many of the disease-producing bacteria. He then discusses influenza, its nature, types, and transmission. Irradiation and glycol mist methods are of little use in preventing spread, on account of the explosive nature of the outbreak of the disease. Therefore immunization of the individual is the most promising method. Advice is given on types of material to be used in vaccination, and it is especially pointed out that vaccination should occur before the epidemic season.

1043 Streptomycin in Tuberculosis. H.C. Hinshaw, Marjorie M. Pyle and W.H. Feldman. Am. J. Med., 2, 429-435 (May, 1947)

Hinshaw and his associates administered streptomycin to more than 100 patients with tuberculosis of various types. Experience with this antibiotic agent proved that tuberculosis is amenable to antibacterial therapy. Streptomycin is predominantly bacteriostatic rather than bactericidal, and its therapeutic value is limited by the fact that after exposure to streptomycin for weeks or months strains of *Mycobacterium tuberculosis* which are resistant to the effects of the drug may be isolated. Hence streptomycin is of most value in conditions in which temporary suppression of the infection will enable the patient to gain the ascendancy over his disease, as in cases of hematogenic tuberculosis, including generalized miliary tuberculosis and tuberculous meningitis. For these conditions large doses (1 to 3 Gm. daily) must be given parenterally for several months. For meningitis intrathecal injections are imperative also during the early weeks of treatment. Exudative pulmonary disease, ulcerating lesions of the respiratory tract and tuberculous draining sinuses have responded to treatment with streptomycin. It has some place in the treatment of bilateral renal tuberculosis or tuberculosis of a solitary kidney. It is also used before and after thoracic surgery for pulmonary tuberculosis. Because of the potential toxicity, use of the drug may be contraindicated in conditions which will respond satisfactorily to the usual methods of treatment. -- J.A.M.A.

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- 1044 Influenza Vaccines. Editorial, J.A.M.A., 134, 1177 (Aug. 2, 1947)

There are four influenza vaccines on the market at present: (1) the first, containing inactivated influenza virus obtained by the elution of adsorbed virus from chick red cells; (2) one produced by the selective removal of inactivated virus from the extraembryonic fluids of the infected chick embryo by high speed centrifugation; (3) inactivated virus precipitated on calcium phosphate; and (4) inactivated virus precipitated on protamine. The first two methods were in use by the U.S. Army with apparent success. The centrifuge method yields the purest product and highest yield and concentration. It is also the best for avoiding allergic complications. Profound or fatal anaphylaxis is rare but has occurred from the use of influenza vaccine on untested patients. It is recommended that all persons be tested intradermally with 0.02 cc. of undiluted vaccine before the administration of each prophylactic dose.

- 1045 Changes in the Lungs in 126 Cases of Asbestosis Observed in Finland. C. Wegelius. *Acta Radiologica*, 28, 139-152 (1947)

Asbestosis of the lungs is an industrial disease not often hitherto observed in Scandinavia, only five cases have been published from Norway. In Finland, where a considerable asbestos industry has been established for a couple of decades, asbestosis of the lungs appears to occur to an appreciable extent. The author gives an account of 126 cases of asbestosis of the lungs, 94 or 75% of these cases being the mild, 23 or 18% in the moderate and 9 or 7% in the advanced stage of asbestosis. The roentgenological characteristics of the changes in the lungs, the differential diagnosis, the classification in different stages and the importance of the time of exposure are discussed in detail. The different stages of asbestosis of the lungs are illustrated by typical pictures. -- Author's summary.

- 1046 Asbestosis. P. Luton and J. Champeix. *Arch. Mal. Prof.*, 7, 365-378 (1946) (French)

The authors list the following symptoms of asbestosis: (1) Functional signs; (2) Radiological findings; (3) Sputum, characterized by the presence of asbestos fibers and bodies. After a presentation of several case histories and their accompanying x-ray films and sputum photographs, it is concluded that diagnosis can only be made by a combination of observations: functional, radiological, sputum. Because of the progressive nature of the disease, yearly examinations should be made with comparison of the measurements of respiratory function (spirometry, etc.) and x-rays. But functional signs must guide the physician when a change of environment is advisable, and when the worker can be said to have contracted asbestosis. -- From J.I.H.&T.

- 1047 Mechanism and Consequences of Accumulation of Dust in Bronchial and Arterial Sheaths in the Course of Pneumoconiosis. A. Policard. *Presse Med.* 55, 213 (Mar. 29, 1947) (French)

According to Policard, inhaled dust particles are phagocytosed in the alveoli. Dust loaded cells pass into the conjunctival spaces of the

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sheaths and into the lymphatics. They block the lymphatics, and edema of the sheaths results. Segmentary fibrosis of the sheaths may be partly due to collagen fibers and partly to reticulin fibrillae. The more or less fusiform thickening of the peribronchial and perivascular sheaths explains the existence of nodules in the lung, which must be distinguished from the silicotic nodules, since they do not contain hyaline fibers and cannot be detached easily from the surrounding tissue. Phosphocalcareous impregnation of the sheaths rather than calcification results from the accumulation of mineral dust, since the carbonate of lime is neither solid nor crystalline but is a combined molecular substance of protein complex, causing radio-opacity of the sheath. The conjunctival layer of the sheaths loses its normal elasticity with consequent embarrassment of the respiratory movements, causing dyspnea. The dust particles interfere directly with the nutrition of the arterial wall, causing periarteritis, and accumulation of dust in the peribronchial sheaths is responsible for an indirect disturbance of the nutrition of the wall of the adjacent pulmonary artery. Sclerosis of pulmonary areas results from progressive obliteration of pulmonary arteries, and atelectasis results from progressive obliteration of the bronchi. -- J.A.M.A.

1048 Nitric Acid Fume Pneumonia--A Case Report. P. Treiger and C. Przypyszny. Ind. Med., 16, 395-397 (Aug., 1947)

(1) A case of "nitric acid fume pneumonia" was presented, with the postmortem findings. (2) The prognosis depends directly upon concentration of fumes and duration of exposure. (3) Fatal termination resulted because of the pulmonary "fibrosis" after control of pulmonary edema, cardiac failure, and bronchopneumonia was attained. -- Authors' conclusion.

1049 Residual Mustard Gas Bronchitis: Effects of Prolonged Exposure to Low Concentrations of Mustard Gas. P. Morgenstern, F. Koss and W.W. Alexander. Ann. Internal Med., 26, 27-40 (1947)

Several hundred employees exposed to low concentrations of vapor in a mustard gas filling plant over a period of 2-1/2 years showed a large percentage of residual chronic bronchitis which often progressed to bronchiectasis. (2) Many of these people became partially or totally disabled because of the persistent paroxysmal cough which followed moderate exertion. (3) History and clinical findings are most important in the diagnosis of chronic mustard gas bronchitis. Films of the chest taken at regular intervals may appear practically normal or show only minimal changes in spite of the fact that the patient has severe symptoms. Lipiodol studies may demonstrate a secondary bronchiectasis. (4) Treatment is symptomatic and includes postural drainage, and expectorants and nebulized penicillin for acute exacerbations. Patients should be removed from exposure to smoke, fumes or dust. -- Biol. Absts.

1050 Prevention of Reaction to BAL. M. Tye and J.M. Siegel. J.A.M.A., 134, 1477 (Aug. 23, 1947)

Preparation of the patient with ephedrine sulfate shortly before the injection of BAL may lessen the intensity or prevent entirely the side effects of this valuable remedy.

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- 1051 Use of BAL in Treatment of Heavy Metal Poisoning. C.R. Welfare.
N. Car. Med. J., 8, 219-223 (Apr., 1947)

According to Welfare there is evidence that arsenic produces intoxication in man and animals by depressing intracellular tissue respiration. It produces this depression by attaching itself to sulfhydryl radicals of enzymes responsible for the metabolism of fats and carbohydrates, thus interfering with the function of these enzyme systems. British Anti-Lewisite (BAL), a dithiol (2,3-dimercaptopropanol), by supplying more readily available sulfhydryl groups, is able to remove arsenic from the enzyme systems and thereby reactivate tissue respiration. BAL is a potent antidote for poisoning by other heavy metals such as mercury producing toxic effects in a manner similar to that of arsenic, and BAL is probably useful in the treatment of poisoning by bismuth, gold and antimony. On the basis of animal experiments it would appear that BAL is contraindicated in cases of poisoning by lead, thallium and selenium. While best results in heavy metal poisoning are obtained by early treatment with BAL, the compound was also effective when treatment was started three weeks after the appearance of erythema with a scaling eczematoid process and edema in a pregnant woman aged 39 with syphilis to whom mapharsen had been given: complete recovery resulted from the administration of a total dose of 3,750 mg. of BAL. -- J.A.M.A.

- 1052 Basophil Granulation: During the Course of Industrial Lead Poisoning.
M. Duvoir, L. Derobert, A. Hadengue and Fallot. Arch. d. Mal. Prof., 7, 329-331 (1946) (French)

Although basophil granulation stippling is considered the most constant sign of lead poisoning, it is known that after a time the sign may not be present although there are manifest, fixed lesions. It is also known that after exposure through change of employment has ceased, the stippling may diminish or even disappear. No previous study has been made, however, on this diminution of granulation stippling during the course of exposure. A study of 537 workers exposed to lead poisoning has made possible their grouping into four categories: (1) Subjects who had not previously had lead poisoning and in whom basophil granulation appeared, 26.4%; (2) Those who show basophil granulation when first exposed to lead, with subsequent disappearance of the stippling, 48.5%; (3) Persons in whom basophil granulation is found to persist during exposure, 19.2%; (4) Those in whom the stippling appears, disappears, and then reappears, 5.8%. The disappearance of basophil granulation is most marked in older workers, since it is found that 71.4% of the subjects in category (2) had been employed for more than five years, 38.3% less than five years. Since the observations were made during the course of a year, it is believed that reappearance after an initial disappearance is not common, as shown by the low percentage in whom the disappearance was transitory. Daily oscillations in the amount of stippling are insignificant, but generally in the direction of diminution, which bears out the general conclusion that in spite of constant exposure to lead, the basophil granulation stippling tends to decrease on this exposure. -- J.I.H.&T.

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- 1053 M-Dinitrobenzene Poisoning. Mobilization by Alcohol and Sunlight.
Karel Rejsek. Acta Med. Scand., 127, 179-191 (1947)

For the diagnosis of m-dinitrobenzene poisoning it is suggested that serum should be examined by means of the polarograph after the deposited poison has been mobilized by alcohol (drinking beer). Whereas before the consumption of alcohol nitro compounds are not found in the blood, the typical double wave of dinitro compounds obtained with the polarograph confirms the diagnosis of dinitrobenzene poisoning. -- C.A.

- 1054 Nutrition Studies. I. Description of Physical Signs Possibly Related to Nutritional Status. H.R. Sandsted and R.R. Anderson. Pub. Health Repts., 62, 1073-1085 (July 25, 1947)

An outline of physical signs possibly related to nutritional deficiency and which may be useful for the evaluation of nutritional status of population groups is presented. The nutritional significance of many of these signs remains to be determined and no attempt is made here to answer the controversial questions regarding their etiology. This outline in no way is presented as establishing final criteria for nutritional evaluation. However, it is believed that by determining the prevalence of these signs in population groups and their relation to other evidences of malnutrition, such as faulty diets and unusual laboratory findings, we can increase our knowledge of the meaning of these signs as well as obtain a useful estimate of the nutritional status of the groups studied. -- Authors' conclusion.

- 1055 Nutritional Factors in Prevention and Treatment of the Hepatic Injury Due to Industrial Poisons. J.H. Eddy, Jr. South M.J., 40, 171 ff. (Feb., 1947)

Eddy thinks that the primary object in preventing damage to the liver caused by industrial poisons must be to substitute less toxic agents where that is technically possible. Next, a good health program in the plant must include proper placement of workers, regulation of respirators, rotation of employees and periodic examinations. Protection should be given to the worker by regulating his diet to insure an adequate consumption of protein. In a plant where TNT was handled the workers were advised to include in their daily diets one quart of milk, two eggs, meats, gelatin, and cheese. When exposure is heavy methionine should be given by tablet. Several cases are cited in which workers suffering from hepatitis due to exposures to carbon tetrachloride and TNT recovered when treated with methionine. -- From Occ. Med.

- 1056 Resuscitation of the Asphyxiated. Queries and Minor Notes, J.A.M.A., 134, 1209 (Aug. 2, 1947)

The main inquiry concerns the relative value of oxygen with 7% carbon dioxide and pure oxygen for resuscitation, especially after exposure to carbon monoxide and to gases from burning buildings. It is also asked why firemen can keep working in a smoky or low-oxygen atmosphere until they reach pure air and then lose consciousness. Animal experiments are cited in answer to the first question, showing that there is little difference whether the mixture or pure oxygen is administered. The important point

is to get oxygenated blood to the heart and brain as quickly as possible, by providing as much pulmonary ventilation as the lungs will take without rupture. Two theoretical and unproved explanations are given for the second question: (1) the irritating gases and excitement reflexly stimulate the circulation, and (2) probably more important, the effects of anoxia accumulate and are not pronounced enough to cause collapse until fresh air is reached. To this may be added the "lightheadedness" caused in a normal person by taking several deep gasps of air in rapid succession.

- 1057 The Early Treatment of Injuries. R.A. Smith.
Brit. J. Phys. Med., 10, 15 ff. (Jan.-Feb., 1947)

The Author gives a personal impression of the treatment of a considerable number of industrial injuries. He deals with the early management of the major types of injury and draws attention to the more important difficulties encountered during the first few hours of their treatment. It is a subject that one has to approach from a practical point of view. In the tabulation of such a series of impressions a certain incoherency is inevitable, but an attempt at clarification is made by dividing the subject matter for consideration under three headings: (1) difficulty in recognition of shock, (2) difficulty in recognition of extent of injury, and (3) difficulties arising during treatment of shock. -- Occ. Med.

- 1058 Trauma in Malignant Bone Tumors. B.L. Coley.
Am. J. Surg., 73, 300 ff. (Feb., 1947)

The Author considers that the role of single injury in the development of sarcoma of bone has been overemphasized and that a critical evaluation of each case and a decision based on a scientific appraisal of all the known facts has not been the rule. Little support of the traumatic theory has been afforded by the pathologist; no laboratory experience seems to favor it. It is difficult to explain why so few injuries are followed by the development of bone sarcoma. So-called expert testimony may be colored by the profit motive. Only qualified authorities summoned by the court can give testimony of real value. -- From Occ. Med.

- 1059 Venereal Diseases in Relationship to Industrial Medicine.
W.G. Annan. Brit. J. Phys. Med., 10, 23 ff. (Jan.-Feb., 1947)

This report is based on personal experience of the author. He outlines the salient points relative to diagnosis, treatment and general management of venereal disease and lays stress on the pitfalls which the industrial medical officer may encounter in the question of diseases scheduled for workmen's compensation. The author enumerates conditions due to venereal disease which have been considered to be of occupational origin. To guard against victimization of infected persons, employers and employees should be informed that infection through ordinary contact is so unlikely as to be almost excluded. Victimization must, of necessity, lead to concealment and thus have the reverse effect of that desired. -- From Occ. Med.

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- 1066 An Interim-Progress Report of a Survey of Undergraduate Education in Industrial Medicine in Medical Colleges. E.W. Brown. Ind. Med., 16, 389-394 (Aug., 1947)

This report involving 28 medical colleges includes data on total hours devoted to industrial medicine, time given to field work, title of department teaching industrial medicine, and nature of the curriculum. The plans for changes in a few schools are outlined. Rather extensive discussion is reported in full.

- 1067 Industrial Medicine in Japan. J.S. Felton. Occ. Med., 3, 465-496 (May, 1947)

The statutory background of industrial medical care and industrial hygiene in Japan are outlined. The in-plant medical programs in two wartime Japanese industries and associated employee facilities are described. In the main, from the evidence presented, the war worker in Nippon had good medical attention for himself and his family, and adequate in-plant facilities were present to help him in his factory existence. -- Author's summary.

Industrial Health Hazards and Their Effects

- 1068 Industrial Selenosis. R.F. Buchan. Occ. Med., 3, 439-456 (May, 1947)

Selenium in certain combinations is toxic. It may be ingested, inhaled or absorbed through the skin. Excretion may be through the lungs or in the urine and the feces. A report on five cases of industrial selenosis due to less than 0.2 part per million of hydrogen selenide is given. Predominating symptoms were nausea, vomiting, metallic taste in the mouth, alliaceous breath odor, dizziness and extreme lassitude and fatigability. Urinary excretion levels were indicative of absorption of selenium. Present evidence indicates no satisfactory means of deselenization. Prevention is dependent on a realization of the inherent hazard and on adequate engineering and medical control. An extensive bibliography is appended. -- From Author's summary.

- 1069 Gilt Used in Printing Trades. Queries and Minor Notes. J.A.M.A., 134, 1516 (Aug. 23, 1947)

Dust in the atmosphere from gilt powders used on labels is well tolerated and will not cause anything analogous to silicosis. Prolonged exposure may cause a mild condition discernible in the chest x-ray film, to which the term "benign pneumoconiosis" is applicable. Gross exposure may lead to minor irritation along the respiratory tract on a mechanical basis. Asthma or other indication of an allergic state may result from the use of glue or gum arabic in the process. The upper limit of tolerance for nuisance dusts approximates 50 million particles per cubic foot of air. Any excess should be controlled by exhaust systems.

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- 1064 Copper Fever. L. Friberg. *Sartryck ur Nordisk Hygienisk Tidskrift*, (1947) (Swedish with English summary)

Fifty cases of metal fume fever occurring in a large industry in Sweden are described. The workmen affected were cleaning copper dust from apparatus used in the manufacture of butanol. Particle size was of the order of 1 to 15 microns. The symptoms were like those in metal fume fever from breathing zinc oxide--headache, chills, fever and leukocytosis. The wearing of air masks proved to be good prophylaxis. The illustrations in this paper include charts of temperature changes, symptoms, and blood counts. Captions are given in both Swedish and English, as is the summary. -- J.I.H.&T.

- 1065 Ferro-Silicon Manufacture. Anon. *Monthly Rev. (N.Y. State Dept. Labor)* 26, 20 (Apr. 1, 1947)

A silicosis problem arises in ferro-silicon manufacture, not from silica dust, but from silica particles released as fumes from the electric furnace. These fumes contain about 48% of amorphous free silica, plus ferric oxide and carbon. However, there is little exposure in the actual working area, because the fumes rise almost vertically. However, an x-ray investigation of the workers is under way.

- 1066 Silicosis in the Pottery Industry of North Staffordshire. Retrospect and Prospect. A. Meiklejohn. *Trans. Brit. Ceram. Soc.*, 46, 132-146 (June, 1947)

After defining the stages in which silicosis develops, the history of the disease in the ceramic industry is traced from the early eighteenth century when flint was first introduced. Statistical data are presented to show the distribution of the disease among work-people in the various processes of manufacture. The replacement of flint by alumina as a placing medium has removed the danger of silicosis from the china section of the industry, but the danger must remain in the earthenware section since flint constitutes up to 40% of the body. Under the new Social Insurance scheme which will come into force in July, 1948, further opportunities will be presented to check the development of silicosis at an early stage. -- Author's abstract.

- 1067 Carbon Tetrachloride Intoxication with Acute Hepatic and Renal Failure Treated with Peritoneal Lavage. Report of Case. C.C. Pearson. *Proc. Staff Meetings Mayo Clinic*, 22, 314-320; Pathologic Aspects. A.H. Bagenstoss, *ibid.* 321-326; Clinical Aspects. A.M. Snell, *ibid.* 327-330 (Aug. 6, 1947)

The first paper describes a case of carbon tetrachloride poisoning and its treatment. The patient had used a gallon of carbon tetrachloride to clean fresh paint from the stairway of his home in addition to other lesser exposures. Severe characteristic symptoms were experienced, including albuminuria, oliguria, nausea and vomiting, and severe liver damage. Peritoneal lavage was instituted on the patient's third day in the hospital, with some apparent success, but the patient contracted bronchopneumonia and pulmonary edema and finally died. Facts and possible

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explanations of several contributing factors are discussed. Baggenstoss presents the postmortem observations. The anatomic diagnosis were toxic hepatitis with hypertrophy and regeneration of the liver, jaundice, hypertrophy of kidneys with toxic degeneration of tubules and regeneration, uremia, general peritonitis, edema of lungs with bronchopneumonia in both lower lobes and edema of the brain. The appearance of the liver and kidneys suggested that almost complete repair had occurred and that if life could have been maintained for a few more days this anatomic restoration might have been followed by restoration of function and ultimately complete cure. Snell discusses the clinical picture of carbon tetrachloride poisoning in some detail, and points out that no specific treatment is known. Various treatments are of aid in relieving some phases of the disease, but since the principal danger is renal insufficiency and subsequent cardiac dilatation and failure, early recourse to peritoneal lavage or the use of an artificial kidney would offer the best prospects when anuria and azotemia are present.

1068 Death From Exposure to Carbon Tetrachloride. B. Linde.
Ind. Hyg. News Letter, 7, 7 (Aug., 1947)

Two workers were removing rust preventive grease from the steam drum of a water-tube boiler during installation, in a space mostly enclosed, without ventilation or respiratory protection. Approximately one quart of carbon tetrachloride was used per hour for two days. One man felt nauseated at the end of that period. The other collapsed, grew worse with gastrointestinal and liver symptoms during hospitalization, and died after six days. Two other fatal cases are reported anonymously in the same publication. Two men were painting the floor of a small shop with paint thinned with carbon tetrachloride purchased in containers which did not contain on the label any description of the hazards or precaution for the use of the contents. Both died about two weeks later. A third man cleaning the same floor with a long-handled mop, and working erect, recovered after two days. These cases emphasize the necessity of ventilation, respiratory equipment, and proper labeling.

1069 Trichloroethylene. Chemical Safety Data Sheet SD-14. Manufacturing Chemists' Assoc. of the U.S., 608 Woodward Bldg., Washington 5, D.C. 12 pp. Price 20 cents. (1947)

A summary of useful information is presented about this widely used solvent. The fire hazard is negligible and most of the numerous precautions to be taken are to prevent its leakage or spillage where it may be inhaled or ingested or come in contact with the skin. References are given to methods of detection and determination. Symptoms, first aid measures, treatment, and control methods are described.

1070 Degreasers and Their Dangers. Experience in the Handling of Solvents.
H.L. Krieger. Ind. Med., 16, 403-404 (Aug., 1947)

The following measures for handling permachlor (trichloroethylene), in open containers are essential for safety: (1) the open surface area of the container should be under 100 sq. in. and should be covered when

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not in use; (2) shaking the solvent, using a brush or spray or locating degreaser operations where air currents may cross the surface of the tank should be avoided as these practices increase the amount of evaporation; (3) allow sufficient time for the stock to dry before removing to the work bench; (4) the worker should not stand directly over the solvent. The foreman should check the average amount of permachlor used in his department. Cautions regarding the larger mechanically controlled tanks: -- (1) workers should be thoroughly trained in the running of degreasing equipment and in the hazards associated with the work. They should then be anchored to the job; (2) Annual or semi-annual examination of all workers; (3) Absolute control of every gallon of solvent used; written requisitions preferred; (4) Rigid routine inspection by safety inspector, industrial hygienist and the medical department.

- 1071 Phosgene From Welding Operation Causes Complaint. P. Hill.
Ind. Hyg. News Letter, 7, 13 (Aug., 1947)

Peculiar fumes causing complaints in a carbon arc copper welding operation in a Pennsylvania plant were traced to vapors from a degreasing tank in the next room. Although both operations were apparently adequately ventilated, the irritating fumes were very noticeable in the vicinity of the arc when the air current came from the degreaser. Although the concentration of trichloroethylene from the degreaser was quite low, it was apparently sufficient to produce noticeable quantities of phosgene in the arc. The degreasing apparatus was replaced by an alkali wash, and widespread use of chlorinated hydrocarbons was forbidden.

- 1072 Oxygen Poisoning in Man. Part I. K.W. Donald.
Brit. Med. J., 1, 667-672 (May 17, 1947); 712-717 (May 24, 1947)

Previous research into the effect of increased tensions of oxygen on man up to the commencement of this work is briefly described. An account is given of experiments to determine the tolerance of groups of men to such tensions of oxygen under varying conditions. The signs and symptoms of oxygen poisoning in man are described. The possibility of pulmonary damage by increased tensions of oxygen is discussed. Electrical and chemical changes in the central nervous system are briefly described. The relation of oxygen poisoning to epilepsy and the possibilities of further useful investigations are discussed. The danger of breathing oxygen at increased tensions is emphasized. -- Author's summary.

- 1073 Chronic Phosphorus Poisoning. H. Heimann. Monthly Rev. (N.Y. State Dept. Labor), 26, 17-20 (Apr. 1, 1947); 22-24 (May 1, 1947)

The report is prompted by the recent occurrence of three cases of phosphorus poisoning, and includes a presentation of the cases and a review of the literature on the subject. The subjects included in the literature are acute and chronic poisoning and effects on the osseous system, blood, kidneys, liver, and central nervous system, general cachexia, and a brief discussion of possible poisoning by red phosphorus. Each of the cases reported brings out several interesting points which are discussed. Suggestions are given for preventive measures, including local exhaust ventilation, and frequent medical examination, including dental x-rays.

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- 1074 Byssinosis in the Cotton Trade. C.I.C. Gill. Brit. J. Ind. Med., 4, 48-55 (Jan., 1947)

Byssinosis is a respiratory disease affecting workers inhaling dust in cotton mills, possibly an allergic manifestation. The strippers and grinders are the principal sufferers. In the early stage byssinosis is characterized by Monday morning fever accompanied by a dry, irritative feeling in the throat and a short, hacking cough. There may be sneezing, an urticarial rash, and conjunctivitis. This usually lasts for several months and then subsides. Ten to 20 years later a metallic cough develops with a sticky sputum. The disease progresses insidiously with fatigue, dyspnea, decreased working capacity, and asthma-like nocturnal attacks. The classical signs are those of bronchitis and emphysema, as are the demonstrable pathological findings. X-rays are not diagnostic. Preventive measures include hooding the carding machine and attaching a suction fan. In addition all persons with a history of asthma, bronchitis, hay fever, eczema, or recurrent urticarial attacks should be excluded from the carding room, as should mouthbreathers, those with nasal pathology, and those people with emphysema. -- J.I.H.&T.

- 1075 A Study of the Working Conditions in the Manufacture of Glass-Fiber Insulation Materials. H. Desoille and V. Dhers. Arch. d. Mal. Prof., 7, 332-344 (1946) (French)

The conclusions drawn by the authors are substantially the same as reported in American literature, namely, that there is no major health hazard from inhalation or contact, but that fiberglass often causes an itching dermatitis which can be minimized by taking suitable precautions, such as change of clothing, frequent washing, and medical selection of workers. The authors consider possible substitutes but conclude that most of the known materials that could be used are more injurious than fiberglass. -- From J.I.H.&T.

- 1076 Vocational Schools. I. General Industrial Hygiene Program. May R. Mayers. Monthly Rev. (N.Y. State Dept. Labor), 26, 25-28 (June, 1947); 31-32 (July 1, 1947)

Vocational schools give instruction in processes used in industry and therefore the hazards of industry are present--mechanical, and, to a growing extent, chemical. The author points out that the school is analagous to the small plant in potential hazards, and especially that the building is usually a made-over classroom schoolhouse, without regard for special ventilation or other preventive measures. The customary procedure in surveys and establishment of medical service and plants is described, with the recommendation for a similar procedure for schools. Periodic physical examinations of students are customarily made, but more attention should be given the physical capacity of the student for certain types of work.

- 1077 Vocational Schools. Report of Survey of Vocational Schools, New York City. Adelaide R. Smith. Monthly Rev. (N.Y. State Dept. Labor), 26, 29-31 (July, 1947)

A survey of 20 vocational schools in New York City revealed no evidence that they are producing or have produced any cases of occupational

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disease. A number of possible hazards were found present only in a slight degree, or were prevented by attention to exhaust ventilation and other remedies. However, certain undesirable conditions were brought to light whose correction will result in a definitely higher standard of occupational hygiene.

Control Methods

- 1078 Upkeep Program for Dust and Fume Collectors. A.V. Bolt.
Factory Man. and Maint., 105, 76-77 (Aug., 1947)

The author outlines 12 points which constitute a good preventive maintenance program for collectors, including emptying cyclones at the end of each eight-hour shift, checking all machinery daily, checking motors and belt tension, cleaning tunnels, and inspecting fire control equipment weekly, cleaning overhead ductwork every three weeks, scraping fan blades and housings and changing oil in the bearings every four weeks, inspecting the entire system every three months, and overhauling the entire system during the summer vacation shutdown.

- 1079 Dust Control by Combined Centrifugal and Electrostatic Principles.
E.H.R. Pegg. Heat. and Vent., 44, 78-80 (May, 1947)

A combination of centrifugal and electrostatic precipitation utilizes the advantages of each method, namely the large volume of dust that can be removed by the centrifuge and the high efficiency for small particles which is possessed by the electrical precipitator. In the unit illustrated, the precipitator is inserted between the centrifugal collector and the fan. Because the bulk of the dust is deposited in a drawer where it is easily disposed of, the maintenance of the unit is a minor item.

- 1080 Filter Type Dust Collectors. L.J. Weischaus.
Chem. Eng., 54, 113-115 (Aug., 1947)

The author discusses the theory of filter dust collectors and describes some successful applications. He first points out that filter cloth does not in itself collect dust. Rather, it is a framework on which a filter cake is permitted to build, and the filter cake is the dust collector. With the aid of a cross section of the cloth he shows that the side with the filter threads is the best collecting side. A soft material is desirable but not too soft. The necessary softness and amount of napping depend upon the nature of the material to be filtered. For instance a fibrous material will interlace with the nap so much that it is difficult to remove in cleaning. In some ways felt is a desirable filter material but eventually dust penetrates so far into the pores as to make it impermeable and uncleanable. Asbestos, nylon, rayon, etc., have particular advantages and disadvantages. The most used cleaning methods are shaking or beating and reverse air flow. The merits and problems of

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these methods are discussed. Suitable air-cloth ratio is also important. The bag type is the most convenient form, and the proper proportions should be observed. It is a general rule that the length should not be over 30 times the diameter. Three particular applications are discussed briefly: collection of asbestos in a cloth bag type; filtering city air with a very low dust concentration, by first shoveling asbestos floats into the bag; and high-temperature, highly acid dust, such as carbon black at 350° F. All these types of filtration have been accomplished successfully.

1081 Air Filtration. N.S. Billington. Air Treatment Engr., 10, 142-144, 168-171, 193-196, 215-218 (May, June, July, Aug., 1947)

The paper is divided into three main sections: (1) a review of the functions of an air-filter installation, with particular reference to the ventilating plant; (2) a summary of some of the relevant literature, chiefly of American origin; and (3) a survey of the author's research on ventilating plant filters. In Part I, the varying needs of different types of buildings, and the various types of dust sampling are discussed. In the second, the work of Rowley and Jordan is reviewed. In the research reported in Part 3, several types of filters--metal wool, fabric, paper, glass silk, and cotton wool--were compared in efficiency under working conditions. Natural time and accelerated tests were included. Some empirical relations between efficiency, resistance, and velocity were established. Fabric and wool filters were found to have similar properties, and the conclusions of Page are supported.

1082 Impregnation of Air Filters With Polystyrene. R. Weber. Z. Naturforsch., 1, 217-219 (1946)

The operation of aerosol filters is improved by impregnation of the filter fibre with a polystyrene dispersion. The efficiency of filtration is determined by passing through air carrying a known concentration of oil mist, and measuring the residual mist by light scattering. When treated with 1.2% basis filter wt., of aqueous polystyrene dispersion (I.G. Farbenind., "Polystyrol EF-Milch"), the light scattering of filtered gases drops from 6-8 for the untreated filter to 0.005 for the treated filter. This latter value corresponds to 0-0.20 mg. oil per cu.m. No noticeable change in performance is observed after a half year's storage. The operation is attributed to the insulating properties of the polystyrene. -- C.A.

1083 Design of Injectors for Low Pressure Air Flow. G.E. McElroy and Editors Heat. and Vent. Heat. and Vent., 44, 82-96 (July, 1947)

Up until the publication by McElroy in 1945 (see Abst. 186, Feb., 1947) there was only a very limited basis for design of air injectors. The present article is intended to distill the essentials primarily applicable to industrial ventilation. Engineers concerned with design of ventilation will be repaid by a study of both the original and the present treatment.

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- 1084 The Walker-Macard Mine Fan. Anon. Coll. Guard., 175, 173-180 (Aug. 8, 1946)

An axial flow, variable pitch type of mine ventilating fan is fully described. The variable pitch is claimed to overcome some of the disadvantages of the axial flow fan.

- 1085 Dust Problems in the Mines of the Pennsylvania Anthracite Region. L.E. Johnson. U.S. Bureau of Mines, Technical Paper 704. 34 pp. (1947) Price 15 cents from Supt. of Documents, U.S. Govt. Printing Office, Wash. 25, D.C.

Experiments have been conducted by the Bureau of Mines in the anthracite region of Pennsylvania in cooperation with several large mining companies to determine methods of eliminating or reducing dust concentrations. The dust produced in anthracite mining is harmful if breathed in large quantities over long periods. Much of the dust contains free silica and consequently rates of mortality and morbidity from respiratory diseases have been high. Very high dust concentrations, sometimes as high as 4,500 m.p.c.f., can be obtained in the vicinity of some operations when no dust control methods are used. No single measure of control is applicable to all dusty operations, and several methods of prevention have been practiced with considerable success. A number of these methods are discussed, including: (1) use of spray nozzles on undercutting machines; (2) conversion of pneumatic drilling machines to wet-type; (3) proper placement of boreholes and choice of amount of explosives for blasting; (4) spraying of the working place before and after blasting; (5) controlled ventilation; (6) use of quartz-free or low quartz material for haulage; (7) performing dusty operations in separate shifts or off shifts; (8) use of respirators as a last resort, and then only if proper and systematic care is taken of the respirators. Routine dust sampling, keeping roadways clean and periodic x-ray chest examinations are recommended. Management and most employees are fairly well convinced of the desirability of dust control and desire and welcome guidance. The discussion of dust control methods is extensive, and in connection with spraying, types of nozzles, size of trunk lines, types of pumps, use of water distribution systems for fire control, and effect of water on gases and on visibility, are considered. The paper should be read in its entirety by those responsible for the operation of bituminous mines as well as anthracite.

Lost-Time Accidents Cost \$100 Plus

The Westinghouse Electric Corporation plant at Lima, Ohio, finds that all lost-time accidents have an initial cost of \$100. This includes: professional medical service, safety investigations, reports of industrial commission and supervisor, possible machine or property damage, time of personnel involved, production loss, training time for substitute personnel, decreased efficiency on return to work. Additional expenses not included in this base figure comprise: outside hospital costs, compensation, ambulance, trusses, lawyer's fees, etc. The company reports that sending their foremen a monthly budget statement summarizing each department's accident expenses has helped cut down the accident rate. -- The Foremen's Letter (August 13, 1947)

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- 1086 The Suppression of Dust from Pneumatic Picks. Twenty-Second Report of the Coal Dust Research Committee of the Monmouthshire and South Wales Coal Owners' Association. From Abstract in Coll. Guard., 175, 95-96 (July 18, 1947)

This report continues the discussion of the subject of the 19th (Abst. 1211, Dec., 1946), describing three new spray attachments that have been examined since the previous report was issued. Some defects were found in the operation of all three as they stand. However, one of them, the Holman adapter, with some modification, gives promise of being satisfactory, working at a low pressure. Whether or not wet pneumatic picks can supersede water infusion in a face worked by pneumatic picks still depends upon many factors. Pneumatic pick operators greatly object to water being splashed or sprayed on them from the pick. Consequently, a valve having no water drain, keeping the spray as near as possible to the pick steel, and avoiding leaks are important from this point of view. Maintenance of the pick itself is also essential.

- 1087 Dust Consolidation on Mine Roadways. Interim Report. South Wales Pneumoconiosis Joint Committee. 38 pp. (Apr., 1946)

This report describes two experiments on treatment of mine roadways with a wetting agent, Lissaprol N, which can be applied in solution with calcium chloride, thus eliminating one spreading operation. In one experiment it was thus mixed, but in the other the Lissaprol solution was applied first, then water, then the calcium chloride. In the first case the treatment was repeated at 5, 9 and 13 months; in the second, dry calcium chloride was applied to the slightly watered roadway after six months. Tables are given showing the reduction in air-borne dust, the cost of treatment, and analyses of samples of floor dust throughout the period. -- Bull. Hyg.

- 1088 The Control and Elimination of Silicosis in the West Coast Haematite Iron Ore Industry. J. Craw. Brit. J. Ind. Med., 4, 30-47 (Jan., 1947)

The haematite deposits are in two locations, north and south. The north mines produce pulmonary fibrosis, the south do not. The disease has probably been prevalent for at least 40 years, i.e., before the advent of pneumatic drills. Uncomplicated pneumoconiosis or radiological reticulation is not, of itself, an incapacitating condition. The single incapacitating and death-causing factor is infection, usually tuberculosis. The condition of dustiness in the West Cumberland mines before 1935 was intense, many millions of particles per c.cm. A new regime was introduced in 1935. Dust allaying by the mist projector has diminished the dust content of the air to an average of 2,500 particles per c.cm., i.e. approximately 250 particles of silica per c.cm. A complete medical service selects only fit men for work. Workmen are radiographed before admission and periodically thereafter. The results of engineering and medical control has resulted, after a 10-year period of trial, in 100 per cent success. Although it is too soon to predict, it is suggested that silicosis will probably cease to be a problem if the incidence of tuberculosis is strictly controlled and eventually eradicated. -- Author's summary.

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- 1089 Historical Relationship of Mining, Silicosis and Rock Removal.
T. Holman. Brit. J. Ind. Med., 4, 1-29 (Jan., 1947)

The history of rock removal is reviewed with special attention centered upon rock drilling and the associated silicosis hazard. The development of efficient rock drills is discussed in detail. It is closely related to the increase in the silicosis hazard, for which little has been done until relatively recently in a preventive way. However, the proven preventive measures are even now not universally employed. The following recommendations are made: (1) The elimination of all dry drilling where dust is permitted to enter the atmosphere. (2) The elimination of all separate water taps and cocks near the drills so that water must pass down the hollow steel immediately the drill begins work by single lever control. (3) A highly efficient system of ventilation. (4) The venting of all drills to prevent air passing down the drills. (5) The lining of all underground passages with cement sprayed from cement guns. (6) Bright illumination of all working places and passage-ways by electricity. (7) Compulsory use of gloves by all underground workers. And (8), Periodic medical examination of all men working underground. -- J.I.H.&T.

- 1090 The Influence of Calcium Carbonate on Settling Characteristics of Silica Dust. M.W. First and L. Silverman. J. Ind. Hyg. and Tox., 29, 259-264 (July, 1947)

Settling curves for silica and calcium carbonate dusts and their mixture show no significant differences in any respect when mean size, size frequency distribution and specific gravities are similar. The composition of dust clouds of their mixtures remains constant during the settling period. Mean particle size in a mixed cloud produced from like-sized components, decreases with time at the same rate as for clouds of each component. When the clouds have markedly different mean particle sizes, the declination rate of mean particle size is intermediate between the rates for the components. It appears that for still air settling in large spaces calcium carbonate has no accelerating effect on the settling characteristics of silica dust as measured by lightfield counting technique.

- 1091 Causes for High Toxic Vapor Dispersion from Degreasing Installations.
B.F. Postman. Heat. and Vent., 44, 98 (Apr., 1947)

The author mentions 21 possible causes for spread of toxic fumes from degreasing installations. They can mostly be classified under wrong kind of ventilation, excess heating, excess movement of material, insufficient covering of tanks, location too near other types of activity, and poor operator technique.

- 1092 Carbon Tetrachloride. Controlling Chemical Hazards, Series No. 9. U.S. Dept. of Labor, Div. of Labor Standards. 20 pp. For sale by Supt. of Documents, U.S. Govt. Printing Office, Wash. 25, D.C. Price 10 cents. (1947)

The usual information on hazards is presented in pocket-size form, including physical properties, rules for handling, labeling, engineering controls, ventilation, general safety measures, and first aid. The essentials are given briefly and copies of this booklet should be at hand wherever carbon tetrachloride is used commercially.

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- 1096 Handling Vinylidene Chloride. R.C. Reinhardt.
Chem. and Eng. News, 25, 2136 (July 28, 1947)

Vinylidene chloride (1,1-dichloroethylene) polymerizes readily and is the basic monomer for a number of thermoplastic polymers now in commercial production. When stored without a polymerization inhibitor between about -40° and +25° C., in the presence of air or oxygen, the oxygen dissolves and reacts rapidly to form a peroxide. Often a flocculent polymer is precipitated at the same time. The peroxide is violently explosive, and since it is adsorbed on the precipitated polymer, any separation of this polymer by filtration, evaporation or drying will result in an explosive composition. Compounds containing reaction products with ozone are particularly dangerous. The safest method of preventing explosion of vinylidene chloride is storage in the absence of oxygen. Next best is the use of phenol-type polymerization inhibitors. If a stored solution shows the presence of peroxide by formation of polymer (if no catalysts have been added) or by a sharp acid odor, it can be purified by several washes with 5% sodium bisulfite solution or 10% sodium hydroxide. Residues should be destroyed by contact with hot water. The vapor toxicity is of the same order as that of ethylene dichloride, the flash point is -10° C., and the explosive limit range in air is 7 to 16% in air at room temperature. All these properties emphasize that vinylidene chloride should not be stored or handled in the presence of air.

- 1097 Use of DDT Insecticides. Industrial Data Sheet D-F-3. National Safety News, 56, 39-42 (Aug., 1947). Reprints obtainable from National Safety Council.

As has been set forth in a number of papers, DDT is poisonous only when ingested or when inhaled or in contact with skin, in large amounts. The precautions to be taken, therefore, are the use of respirators and goggles when spraying, and in large scale work, extreme care that food is not contaminated by the spray. There are no adequate data on which to base a maximum allowable concentration. The only fire hazard is that of the solvent, and the effect of the solvent upon toxicity is also to be considered. Periodic medical examinations are recommended for constant users. This Data Sheet gives physical properties, forms in which DDT is used, rules for shipping and storage, details of worker protection, and first aid measures.

- 1098 Solubility of Enamel Protected by Sodium Fluoride and Other Compounds. J.C. Muhler and G. Van Huysen. J. Dental Research, 26, 119-127 (1947)

Compounds other than sodium fluoride, e.g. stannous fluoride, may be used in reducing enamel solubility. Imperfect and indirect evidence indicates that reagents taken up by powdered enamel are tenaciously retained following washing with water. -- C.A.

- 1099 Solvent Control Committees. R. Reider.
Safety Eng., 94, 17, 30 (July, 1947)

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The solvent committee plan is recommended for control of solvent hazards. The committee should include representatives of management, and the production, stores, medical, safety, fire and purchasing

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- 1093 A Study-Control Plan for Minimizing Hazards of the Plating Industry.
R.R. Kampe. *Safety Eng.*, 93, 12-13, 26-30 (June, 1947); 26-29 (July, 1947)

The numerous major and minor hazards of the plating industry are discussed with recommendations as to remedies. Preliminary cleaning involves the use of caustic cleaning solutions or of trichloroethylene or similar degreasers, each constituting a well-known hazard. The acid solutions used are mild, but care must be taken with concentrated acids, especially perchloric. (See recent articles on perchloric acid.) Acids and cyanides should not be stored together. Among the electrical hazards is the escape of hydrogen from the plating solution where a possible spark may cause an explosion. Cleanliness helps to avoid sparks. Exhaust systems are necessary in many operations, but they require special care. Combustible materials should be removed from the ducts periodically, and in chrome plating chromic acid must be cleaned out. Numerous mechanical hazards are to be considered and machinery guarded. Many fires and explosions have been caused by glue pots boiling over. Tell-tale lights, pilot lights and automatic fire alarm systems will reduce that hazard. A number of sanitary and good housekeeping rules are included.

- 1094 Use of Plastic Chips in the Control of Chromic Acid Mist.
J.E. Molos. *Ind. Med.*, 16, 404-405 (Aug., 1947)

(1) A floating baffle of plastic chips is an effective device to help reduce the atmospheric concentration of chromic acid mist over a chromium plating tank. (2) Local exhaust ventilation to exhaust the gases and the spray incident to chromium plating must be provided to insure healthful working conditions even when plastic chips are used. (3) The effectiveness of the floating baffle varies with the blanket thickness, the thicker the blanket the less chromic acid in the atmosphere. (4) Upon further investigation plastic chips may be found to be satisfactory for adequately controlling workers' exposures at chromium plating installations where existing ventilation is not fully effective. (5) The use of plastic chips can result in a substantial economy in operations through the conservation of chromic acid used in the plating solution and considerable reduction in the deterioration of plant equipment. Further development may indicate the possibility of the use of lower ventilation rates than are now being recommended for chromium plating tanks without a floating baffle. In such an event additional savings may be effected through reducing power consumption and heat loss. -- Author's conclusions.

- 1095 Aqua Ammonia. Chemical Safety Data Sheet SD-13. Manufacturing Chemists' Assoc. of the U.S., 608 Woodward Bldg., Washington 5, D.C. 14 pp.
Price 20 cents. (1947)

The hazards from the vapor of aqua ammonia lie in the intense irritating action on the respiratory system in high concentrations, and corrosive action on metals, affecting electrical equipment. Although ammonia burns under some conditions, the fire hazard is negligible in commercial practice. This circular contains a list of the hazardous properties, directions for use of shipping containers, loading, unloading, storage, handling, and waste disposal, and discussion of health hazards and their control.

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departments, with the chief responsibility on one or two persons. The committee should become familiar with the composition, use, and physical and toxic properties of all solvents used, should formulate the standards for requisition and use, and should establish safe control measures for each type of solvent. Substitution should not be permitted without review by the committee.

1180 Custodial Services in Plant Sanitation. J.S. Felton.
Ind. Med., 16, 331-335 (July, 1947)

Present day sanitary standards in industry are discussed, and the failure in maintaining these standards is demonstrated. (2) Specific remedies are outlined which are productive of better housekeeping and improved sanitation in work areas. These are: (a) Establishment of central supervision of maintenance personnel. (b) Institution of selective placement procedures. (c) Development of a training course in custodial services wherein study topics will consist of discussions of types of work areas; cleaning material; methods of application; times of cleaning; toxic substances; plant construction; maintenance of materials; infestations; food handling; injuries; matron service. (3) Adjuvant remedies are described which consist of training of non-custodial personnel, installation of clean janitor storage areas, re-adjustment of illumination to accepted standards, painting of machinery and environs, and installation of local exhaust ventilation. (4) A plea is made for a change of status of maintenance personnel to a higher rung on the occupational ladder, through morale building and increased incentive. (5) The results accomplished by improvement of plant sanitation are enumerated. -- Author's summary.

Methods of Detection and Determination

1181 New Low-Speed Anemometer. Anon. Coll. Guard., 175, 130-131 (July 25, 1947)

A new hot-wire anemometer for the measurement of air velocities below five feet per second is described and illustrated. It was developed by the (British) National Physical Laboratory, and its essential feature is a thermocouple whose hot junction is in a quartz tube where it is heated to a constant temperature by a conducting nichrome wire in a parallel bore of the tube. The cold junction is held in the air stream to be measured, and the temperature difference which varies with the air velocity, can be calibrated by use at known velocities. A 2-volt lamp battery serves to heat the wire, and a small but robust microammeter measures the voltage. The sensitivity is very high, a difference of 3.17 millivolts for the range 0 to 2 feet per second. However, the instrument is not as yet ready for actual pit operation, because: (1) care must be taken to hold the instrument in the right direction for accurate readings; (2) the operating components are affected by a dusty atmosphere; and (3) the battery and measuring instrument have not yet been made an integral part of the anemometer.

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- 1102 An Instrument for Measuring Particle Diameters and Constructing Histograms From Electron Micrographs. E.E. Hanson and J.H. Daniel. J. Appl. Physica, 18, 439-443 (May, 1947)

An instrument for shortening the time and labor required in constructing particle size histograms from electron micrographs is described. Representative histograms obtained with the instrument for GR-S lattice are shown. Linear, surface, and volume-equivalent diameters of non-spherical particles are defined, and variations in the instrument for plotting such diameters are proposed. -- Authors' summary.

- 1103 A Photoelectric Instrument for Comparing the Concentrations of Very Dilute Aerosols, and Measuring Low Light Intensities. F.T. Gucker, Jr., H.B. Pickard and C.T. O'Konski. J. Am. Chem. Soc., 69, 429-438 (1947)

This article describes the design, construction, and operation of a sensitive photoelectric instrument which was developed primarily for measuring smoke penetrations through efficient gas mask filters. The instrument measures the photocurrents produced by the light scattered at right angles from smokes which are intensely illuminated in a suitable smoke cell. A vacuum-type phototube views the scattered light, and photocurrents are measured potentiometrically using a balanced DC amplifier as a null-point indicator. The stray-light and leakage currents are balanced electrically. A new scaling circuit compensates for the deviations of the high resistors (10^7 to 10^{10} ohms) from their nominal values, and allows a direct comparison of photocurrents within a few per cent and hence a direct reading of filter penetrations. The sensitivity of the instrument is 10^{-9} g./liter of a dioctyl phthalate smoke of 0.3 micron diameter, or 5×10^{-9} lumen. The unit is small, rugged, and self-contained, incorporating suitable circuits for checking the operation of the vacuum tube, the condition of the phototube and the smoke cell, the scaling circuits and the batteries. Penetration measurements with this instrument are self-consistent, and agree well with those obtained with instruments developed elsewhere during the last four years. The instrument can be calibrated to measure smoke concentrations. It is applicable to a wide range of uses in colloidal chemistry and photometry. -- Authors' summary.

- 1104 New Meters Employing Light-Sensitive Cells for the Measurement of Erythema Energy. G.P. Kerr. Rev. Sci. Instruments, 18, 472-473 (July, 1947)

The applications of some well-known principles to the measurement of erythema energy with light-sensitive cells are described. Two meters, operating on different principles are described. Quantitative data are presented on the spectral and absolute sensitivities of the meters. -- From Author's summary.

- 1105 Determination of Small Amounts of Carbon Monoxide in Air by Various Reference Methods. M. Shepherd. J. Research Nat'l. Bur. Standards, 38, 351-358 (1947)

Samples containing respectively, about 0.04 and 0.01% carbon monoxide were carefully prepared by the pressure-dilution method and sent

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to many laboratories engaged in military service during the war. In this cooperative analysis some very fine work was done and eight methods were used. All of the methods demand the use of known mixtures of carbon monoxide in air for calibration and check of performance. All the methods must provide for interference. The Roughton method, in which the sample is freed from oxygen and thereafter the carbon monoxide is absorbed by the blood, showed interference within the analytical procedures rather than as the usual prelude to them. The blood is specific with respect to absorption of carbon monoxide but after this step the carbon monoxide must be separated from interfering gases in the blood. Other methods are susceptible to interfering gases which must be removed at the start. Such removal is easiest in the case of the colorimetric and gravimetric procedures. The iodometric method requires the most complicated and costly apparatus and is most troublesome to keep in good order. The colorimetric method is simple and the inexpensive apparatus is easily kept in good running order although it is not as accurate for larger quantities of carbon monoxide unless the original sample is first diluted with carbon monoxide-free air. The colorimetric is most rapid and easiest. This assumes that known mixtures are available under pressure. -- C.A.

1106 A Simple Technique for Carbon Monoxide in Blood. A. Lambrechts and R. Roseman. *Compt. rend. soc. biol.*, 140, 801-803 (1946) (French)

Two cc. of distilled water and 0.2 cc. of the blood sample are placed in the annular compartment of a Conway dish. A paper disc moistened with 0.15 cc. of 0.01 normal palladium chloride is placed in the central compartment. One cc. of 10% phosphoric acid is added to the diluted blood, the dish is sealed, and kept at 56° for 20 min., then the degree of darkening of the paper disc is estimated. -- C.A.

1107 Combined Absorption and Titration Tube for Volumetric Determination of Carbon Dioxide. E.J. Roberts. *Anal. Chem.*, 19, 616 (Aug., 1947)

An apparatus for rapid and accurate determination of carbon dioxide produced by various methods of decomposition is described and illustrated. It depends upon absorption in a known quantity of standard hydroxide solution and titration after addition of barium chloride. The apparatus is protected against the absorption of excessive atmospheric carbon dioxide and the small amount entering from various sources can be easily ascertained in a blank determination.

1108 Detection and Estimation of Microquantities of Cyanide. A.O. Gettler and L. Goldbaum. *Anal. Chem.*, 19, 270-271 (Apr., 1947)

This article describes a modification of the Prussian blue test for cyanide. An impregnated filter paper serves as an absorbing agent for the cyanide which is evolved from tissue samples. The paper is Whatman No. 50 which is impregnated successively with 10% ferrous sulfate and 20% sodium hydroxide. After hydrocyanic acid absorption the paper is washed with dilute hydrochloric acid and distilled water. A blue stain remaining after drying indicates cyanide and the color intensity is proportional to the amount present. A small glass flange paper holder is described.

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The orifice (stain) diameter is adjusted for the quantity of cyanide; for 0.2 to 1 micrograms 4 mm. is ideal; 1 to 5 micrograms 10 mm. is used; and for 5 to 20 micrograms, 15 mm. is recommended. -- J.I.H.&T.

- 1109 Estimation of Microquantities of Cyanide. J. Epstein.
Anal. Chem., 19, 272-274 (Apr., 1947)

This method will determine as little as 0.2 micrograms of cyanide (or thiocyanate ion). The method depends upon the conversion of cyanide to cyanogen chloride with chloramine T solution. The cyanogen chloride is then reacted with a mixture of pyridine containing 0.1% bis-pyrazolone and 1-phenyl, 3-methyl, 5-pyrazolone. This reaction results in a blue dye which is stable for 30 minutes and obeys Beer's Law between 0.2 and 1.2 micrograms of cyanide ion. -- J.I.H.&T.

- 1110 Determination of Mercury in Biological Material. F.L. Kozelka.
Anal. Chem., 19, 494-496 (July, 1947)

A simplified dithizone method for the determination of mercury in biological material is described. The uniqueness of this new method is the quantitative distillation of mercury from the Kjeldahl flask during and subsequent to the digestion without the loss of the metal. This procedure separates the mercury from all the non-volatile salts of the other metals contained in the specimen. Washing the mercury dithizonate with nine normal ammonium hydroxide obviates the necessity of treating the dithizone extract with potassium bromide or sodium thiosulfate and performing a second digestion and extraction, as required by the previously described methods. Consistent recoveries with an error of less than two micrograms are obtainable, which appears to be adequate for toxicological or clinical purposes. -- Author's summary.

Laboratory Toxicological Studies

- 1111 The Possibility of Toxic Effects from 2,3-Dimercaptopropanol in Conditions of Impaired Renal or Hepatic Function. G.R. Cameron, F. Burgess and V.S. Trenwith. Brit. J. Pharmacol., 2, 59-64 (1947)

Rabbits and rats with renal damage differed in no way from normal controls in their response to large doses of 2,3-dimercaptopropanol (BAL) unless there was complete or almost complete failure of renal function. Animals with hepatic damage experienced toxic symptoms and some died after doses of BAL well below the fatal level for normal animals. -- C.A.

- 1112 Central and Autonomic Effects Following the Combined Administration of Sodium Arsenite and 2,3-dimercaptopropanol (BAL). T. Koppányi and F. Sperling. J. Pharmacol., 89, 350-355 (1947)

Rabbits receiving BAL intramuscularly and subsequently sodium arsenite by vein, develop an "explosive" reaction characterized by crying,

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motor excitement, constriction of the pupils, profuse salivation and lip sweating, lacrimation, brady cardia, reaction of the conjunctiva, and reddening of the lids and uvea. The same occur if the arsenite is given first and the BAL later. These effects, particularly the central excitement, also occur under pentobarbital narcosis. The effects are opposed or counteracted by atropine only if they are referable to parasympathetic stimulation. Cats and dogs do not develop pupillary constriction as a result of combined administration of BAL and arsenite, but may show involuntary micturition and defecation. All of the above phenomena are of relatively short duration and none of the animals died. Compounds of BAL and arsenite prepared in vitro and then injected did not produce the characteristic effects described above. Arsenates, arsphenamines, and mercurials did not elicit the characteristic central and peripheral effects after administration of BAL. Possibly arsenite and BAL react in vivo to form a new substance which is responsible for the extremely sudden development of the symptoms described. -- C.A.

1113 A Contribution to the Study of Experimental Indium Poisoning. L. Vignoli, Y. Poursines, H. Ollivier and R. Merland. Arch. d. Mal. Prof., 7, 356-364 (1946)

Indium is an extremely rare metal, but seems destined to be of some industrial importance as its production increases. Indium chloride in sodium citrate was injected subcutaneously into white rats to produce acute and subacute intoxication. The acute form is defined as the cause of death in three to six days, and subacute in six to 17 days. Liver, kidneys, and myocardium were attacked in all cases. Degeneration of the parenchyma and of the myocardium varies with the rapidity of evolution. In the acute forms the lesion is a hyalin degeneration of protoplasm and nucleus, leading to necrosis of more or less large areas. In the liver, necrosis is distributed in small islands; in the kidneys the tubules are also attacked. Hyalin degeneration of striped muscle fibers also occurs. In the subacute form the lesions are smaller and in one case submaxillary gland involvement was noted on the 17th day. Photomicrographs of these degenerative processes accompany the paper. -- From J.I.H.&T.

1114 Toxicity of Arsine Solutions for Tissue Slices. W. Hughes and G.A. Levvy. Biochem. J., 41, 8-11 (1947)

Arsine entering the blood stream may escape reaction with the red cells sufficiently long to be fixed by the body tissues. Under conditions of the experiments arsine was as toxic as arsenite to the kidney but considerably more so to the liver. This may explain the high toxicity of this gas when it is rapidly inhaled. Its toxicity also decreases with decreasing concentration inhaled. This is probably due to the fact that since more of the gas will be fixed by the erythrocytes, and thus transformed into less toxic arsenic derivatives, less gas will be available to be transported through the body. The oxygen uptake of kidney and liver was greatly decreased when slices of the surviving organs were exposed to arsine solutions of known concentrations. -- C.A.

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- 1115 The Relation Between Survival Time and Dosage with Certain Toxic Agents.
G.E.P. Box and H. Cullumbine. Brit. J. Pharmacol., 2, 27-37 (1947)

Experiments are described in which mice were exposed to mustard vapor and rats to phosgene gas. By use of the reciprocal of survival time the transformed variate (rate of dying) was proportioned to the dosage, had stable variance, and appeared more normally distributed than time or the log of time. Methods are suggested for dealing with data when in some groups the animals do not all die. -- C.A.

- 1116 Toxic Effects of Tetranitromethane. A Contaminant in Crude TNT.
R.F. Sievers, E. Rushing, Helen Gay and A.R. Monaco. Pub. Health Repts., 62, 1048-1061 (July 18, 1947)

Tetranitromethane fumes are given off from crude TNT in sufficient quantity at room temperature to be fatal to cats confined in an exposure chamber. Tetranitromethane in concentrations ranging from 3.3 to 25.2 p.p.m. produced marked irritation of mucous membranes of eyes, mouth, and upper respiratory tract, acute pulmonary edema, mild methemoglobinemia, and probably fatty degeneration of liver and kidneys. Tetranitromethane in concentrations of 0.1 to 0.4 p.p.m. caused mild irritation in cats but no other untoward effects with exposure for six hours on two consecutive days. A chemical procedure (tentative) is presented for the determination of tetranitromethane in atmospheric samples. -- Authors' conclusions.

- 1117 Hexaethyl Tetraphosphate. Queries and Minor Notes,
J.A.M.A., 134, 1516 (Aug. 23, 1947)

Concerning the toxic effects of hexaethyl tetraphosphate as considered in a previous note (see I-H-F Abst. 837, July, 1947), another correspondent submits the point that 0.35 cc. or five drops may be fatal to man if ingested, on the basis of animal experiments. The substance is a very potent anticholinesterase agent and certain toxic effects may be expected, although severe poisoning has not been reported. Conspicuous symptoms in experimental animal poisoning are extreme cyanosis and dyspnea. Atropine appears to be valuable as a remedy.

\$2 Million For Heart Disease Research

Congress has appropriated an additional \$500,000 to the National Institute of Health of the U.S. Public Health Service to enable it to expand its program of research activities related to cardiovascular diseases. During the fiscal year ended June 30, 1947, the Institute spent \$131,734 for research in heart disease and, in addition, made grants in the amount of \$857,660 to universities and other institutes and to individuals for research on this subject. Congress had previously voted a somewhat larger appropriation for these activities for the current fiscal year, and this additional \$500,000 will bring the total appropriation for this purpose in the neighborhood of \$2,000,000. -- S.L.I.S. (Aug. 15, 1947)

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- 1118 The Absorption and Excretion of the Solid Polyethylene Glycols ("Carbowax" Compounds). C.B. Shaffer and F.E. Critchfield. J. Am. Pharm. Assoc., 36, 152-157 (May, 1947)

The extent of gastrointestinal absorption of several solid polyethylene glycols including those designated as "Carbowax" compounds 1000, 1540, 4000, and 6000 has been determined following their administration to rats and to humans. In rats no absorption of the two higher molecular weight compounds was noted and with the two lower molecular weight compounds absorption was slight. When administered intravenously to human subjects "Carbowax" compounds 6000 and 1000 were excreted readily and to a high degree. -- Authors' summary.

Radioactivity and X-Radiation

- 1119 The Medical Sequelae of the Atomic Bomb Explosion. G.V. Le Roy. J.A.M.A., 134, 1143-1148 (Aug. 2, 1947)

This is a partial review of the results of the Army and Navy medical missions which investigated the results of the atomic bombs in Hiroshima and Nagasaki, limited largely to the syndrome of injury due to large amounts of gamma radiation. The radiation injuries were not responsible for most of the deaths, but form the most complex field of study, as a number of organs were affected. Moreover, the other three effects, those of mechanical energy, heat, and light (visible, infrared and ultraviolet) differ only in degree from those already known from other sources. The relation of alpha and beta rays and neutrons to the production of casualties is not at all clear. The principal effects of the radiation included vomiting, fever, diarrhea, leukopenia, purpura, epilation, mucous membrane ulceration, and anemia. The two major phenomena which endangered life were the gastrointestinal disturbances and the destruction of the hematopoietic tissues. The vomiting, which occurred very soon after the bombing, and the diarrhea and ulceration of the bowel that came later created a serious situation. The damage to the bone marrow was even more serious. Regeneration began soon after the injury, but the extent was too slight and the types of cells needed most were produced in the smallest quantities. Severe leukopenia persisting one to three weeks was certain to permit the development of overwhelming infections in any part of the body, resulting in septicemia. Fatal hemorrhages could occur from many parts of the body. The proper objectives in the treatment of exposed patients can be stated simply: (1) maintain fluid and acid-base balance; (2) control infectious processes; (3) combat hemorrhagic tendency; and (4) correct the anemia. "It does not seem unreasonable to believe that in the hospitals of the western world where plasma, electrolyte solutions, whole blood and penicillin are available, a much lower mortality rate could be achieved than was observed in Japan. How satisfactory the thoroughly modern treatment of the syndrome of radiation injury might be is difficult to predict.

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- 1120 Gross Autopsy Observations in the Animals Exposed at Bikini.
J.L. Tullis and S. Warren. J.A.M.A., 134, 1155-1158 (Aug. 2, 1947)

(1) Ionizing radiations of the atomic bomb are lethal for goats, pigs, guinea pigs and rats exposed to them under varying conditions. (2) The gross pathologic observations are fairly characteristic and similar in the four species studied. (3) The sensitivity to ionizing radiations varies somewhat among the four species, the guinea pigs being by far the most sensitive, the pigs being slightly more sensitive than the goats and the rats comparatively resistant. (4) The flimsiest of shielding seems to afford ample protection from thermal radiation, but heavy armor does not always protect from the ionizing radiations. (5) An underwater atomic bomb explosion is more lethal than an air explosion, since the spray which showers down on the ships in the vicinity carries with it fission products which contaminate their surfaces, cannot be removed easily and remain dangerously radioactive for long periods of time. -- Authors' conclusions.

- 1121 Film Badges for Radiation Monitoring. D. Holiday.
Ind. Hyg. News Letter, 7, 8 (Aug., 1947)

The film badges mentioned in some papers on radioactive hazards are described. A film badge consists of a special film sensitive to x-, gamma, and beta rays, sealed in a waterproof cover with a lead cross fastened to the outside of the badge. The less penetrating beta rays darken the portion of the film not protected by the cross. The penetrating x- and gamma rays affect the unprotected portion only slightly but interact with the lead to give secondary radiations which expose the film underneath the cross. With such a badge the total ionizing radiation received by the wearer in a given period of time can be determined, and they are universally used by the Manhattan district. The badges are usually worn one to two weeks, and are then developed and the density determined. Each lot of film should be standardized separately and the film must be kept under rigorously controlled conditions. Several commercial companies furnish badges, develop films, evaluate exposures and store films for each subscriber. The construction and use of the badges is described in a recent Safety Code for the Industrial Use of X-rays by the American Standards Association.

Industrial Relations, Personnel

- 1122 Tuberculosis in Industry. Sula Freeman.
Ind. Nursing, 6, 36-38, 44-45 (July, 1947)

The extent of mass x-ray examinations by National, state and local organizations is increasing constantly. The industrial nurse has an important part to play in connection with these surveys. "The industrial nurse is the key person in any teaching program for mass health. She must be well posted on the latest developments in the tuberculosis control movement. She must know the facts concerning cause, symptoms and treatment of tuberculosis. With tact and patience she must be able to convey these thoughts

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to workers, many of whom are ignorant, fearful, prejudiced, and sometimes even antagonistic. She must reach the employer as well as the employee. Management must be convinced of the need for healthy employees.....A Chest X-ray for Every Member of the Plant! Nothing short of this goal should satisfy the industrial nurse." Some general description of methods is given, with statistics on the results of some surveys in Texas.

Psychiatry in Industry. C.C. Burlingame.
Am. J. Psychiatry, 103, 549-553 (Jan., 1947)

The development and progress of industrial psychiatry is reviewed with special emphasis placed on the advances made in 1946. It has become recognized that the task of the psychiatrist is to fit the man to the job, a job in which he finds satisfaction and an outlet for self-expression. The main contributions of 1946 were in the problems of conversion to peacetime production, reemployment of the veteran, industrial health, the placement of the handicapped, the analysis of certain occupations carrying special psychological health hazards, and personality problems in the managerial group. Oak Ridge psychiatrists concluded that the causes of emotional disturbances in industry lie primarily within the individual and the exciting mechanisms lie in the home or in his social surroundings rather than in the industrial environment. -- J.I.H.&T.

1124

The Administrative Problems of the Industrial Consultant Nurse.
Gladys A. Jahnce. Ind. Med., 16, 286-290 (June, 1947)

A questionnaire was sent to the 37 nurse consultants in the separate autonomous governmental units over the United States, regarding administrative problems. Based on the replies, the following problems are discussed, in the reverse order of importance as judged from the replies at the present stage: (1) problems pertaining to qualifications and salaries for industrial nurse consultants; (2) personnel attending conferences; (3) the lack of industrial hygiene taught in medical schools and the lack of understanding of industrial medicine; (4) work and relationship of public health and industrial hygiene workers; (5) the nurse in industry (the nurse's relations with management and with the medical profession); (6) lack of industrial nursing taught in schools and lack of understanding of industrial nursing; (7) problems that evolve about relationships with federal, state, and intra-agency personnel; (8) team work of industrial hygiene personnel; and (9) the consultants program and her position as it is affected by administration. The problems, especially the last ones, are discussed at some length, but with the feeling that in most cases no conclusion can be drawn at the present time.

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The Industrial Nurse in a Small Plant. Irene Lussier.
Ind. Nursing, 6, 29-35 (May, 1947)

This is a comprehensive treatise which should be helpful to management as well as to industrial physicians and nurses. The writer points out the advantages to a small plant of a part time industrial doctor who gives his orders to a qualified industrial nurse. The nurse can be more than a first-aid as she is able to serve the employees where definite symptoms indicate the carrying out of the plant physicians instructions. Relations of the

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nurse to management and to employees are discussed. The routine of a nurse day, as summarized by the writer is the answer to the question, "Is an industrial nurse necessary in a small plant?"

- 1126 The Fortune Survey (Attitude of Factory Worker Toward His Job).
Editorial, Fortune, 35, 5, 6, 10, 12 (May, 1947)

A brief look at U.S. factory workers in the Fortune Survey for January (not abstracted) revealed a factory worker who was dispirited, resigned and frustrated, and found his job more boring than did people in some other fields. A second survey reported here dealt with the factory worker exclusively and covered more questions. The picture presented is not so disheartening as before, but still reveals some sore spots in the present system of mass production. By overwhelming majorities (67 to 88%) they say that their present work is neither too tiring nor too fast, and is essential to the success of the company. With equal unanimity they believe they can keep their present jobs as long as they like. On the other hand, half of the workers seem frustrated because their work gives them no opportunity for personal initiative. Forty-one per cent think that even a job well done is a blind alley. They have little belief in the security of their old age. Over half would choose a different occupation if they had it to do over again. Members of the two big unions, and especially of the C.I.O., are more dissatisfied with their lot than non-union workmen or members of independent unions. "The impression grows that neither management nor unions are facing the facts. They seem to be trying to cure the patient by dosing him with the outmoded specifics of cafeterias, washrooms and baseball teams on one side, seniority, shorter hours, and higher pay on the other. Whereas the simple fact is that the worker wants to be treated like a human being. He wants to be able to hope for advancement, to have honest effort recognized, and to have an outlet for personal initiative."

- 1127 ABC's of the New Labor Law. Modern Ind., 14, 54-64, 150-152 (Aug. 15, 1947)

The chief provisions of the Taft-Hartley Act are explained briefly and simply, in alphabetical order.

Rehabilitation

- 1128 Jobs Analyzed for Work Hazards. G.E. Metz.
Factory Man. and Maint., 105, 126-127 (Aug., 1947)

This is a brief description of the job analysis and placement program that has proved successful at the RCA Victor Division at Camden. A chart shows the disabilities permitted in particular jobs, and reference is made to this chart both in initial placement and in reassignment. Job analysis also takes account of general hazards in the various occupations, and many previously unknown hazards were uncovered in making the survey for the program.

- 1129 Operation of an Urban Sheltered Workshop for the Tuberculous. R.L. McNamara and Agnes W. Brewster. Pub. Health Repts., 62, 971-991 (July 4, 1947)

The Altro Work Shop in New York City provides a medically supervised work period for tuberculous patients who have been discharged from treatment but whose work tolerance is low and who need a graduated work schedule to attain their full occupational potentialities. This article describes its operation, including source and status of patients, kind and progress of work, and history after discharge.

Absenteeism, Hours of Labor, Etc.

- 1130 Hours of Work and Output. M.D. Kossoris. Monthly Labor Rev., 65, 5-14 (July, 1947)

The author summarizes a survey of manufacturing establishments, recently completed by the Bureau of Labor Statistics, analyzing the effect of number of hours worked per day and the number of days worked per week upon such production factors as absenteeism, efficiency, industrial injuries and output. In turn, these factors are related to the type of work performed, the shift worked, and the sex of the worker. Longer hours generally resulted in greater output but at a regressive rate and at the expense of increased unit labor cost. Absenteeism and injuries also increased with longer hours. In general, the eight-hour day and the 40-hour week give better efficiency than longer hours, provided the worker has any control over his rate of production. Many angles of the time schedules are considered: increase of days from five to six, increase of hours from eight to nine, 10, 11, for the same number of days per week, and the reverse changes, the effect of wage incentives, and many of these involve exceptions to the rule and additional factors to be considered. For these details this review, or the full report to be published later, must be consulted. However, a few other conclusions are well established, among them: (1) postwar efficiency at a 40-hour week is better than prewar efficiency; (2) a seven-day week always had unfavorable results; (3) the absenteeism rate always increased with longer hours, more for women than for men.

- 1131 Sickness Absenteeism Among Industrial Workers, Fourth Quarter of 1946. W.M. Gafafer. Pub. Health Repts., 62, 1095-1097 (July 25, 1947)

In the last quarter, all classes of disease (causing absences of eight days or longer) showed a decrease of 44% in rate below the corresponding quarter of the preceding year and below the 10-year average 1937-1946. The 1946 rate for influenza and grippe was less than one-third that for 1945. Sickness rates for the entire year show a striking decrease although the percentage decreases are lower than for the quarter.

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Insurance and Medical Economics

- 1132 Promptness of "First Payments" of Compensation During First Half of 1947 (In Wisconsin). Stat. Release No. 3228, Workmen's Compensation Statistics, Statistical Dept., Industrial Commission of Wisconsin. (July 18, 1947)

First payments of compensation are classified as "prompt" or "late" whether or not the payment was received by the injured employee within 15 days after the commencement of his disability. Prompt payments by all insurance companies were 86.0% in the first half of 1946 and 85.0% in the first half of 1947; by all self insurers, 78.1% correspondingly in 1946 and 79.1% in 1947. Similar data for other years are given, and individual insurance companies and self-insurers are listed in order.

Accident Prevention

- 1133 Industrial Hygiene for All Workers. Evaluation of Present Facilities. J.G. Townsend. Ind. Med., 16, 281-284 (June, 1947)

There are signs that industrial hygiene is coming of age. The groups with which it is concerned---industry, labor and the people as represented by Congress---have now recognized the contribution of industrial hygiene to the well-being of the nation's economy. The evidence of the interest by Congress is the appropriation of grant-in-aid funds to the states for industrial hygiene activities. The author recounts recent progress in industrial hygiene, and immediate and ultimate goals. The most important of the ultimate objectives is the extension of industrial hygiene to cover every worker.

- 1134 Safety is a Science. J.C. Bradley. Southern Power and Ind., 65, 46-49, 116-117 (1947)

Safety precautions are reviewed. A large number of lead poisoning cases were caused by the use and handling of paints; Titanox was found to have all the good points of lead pigments except for a few special cases, where special precautions are taken to avoid poisoning. Pigments containing cadmium and manganese have also been dispensed with. Silicosis has been greatly reduced by the use of compressed-air masks and periodic x-ray examination. -- C.A.

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- 1135 Non-Occupational Poisoning With Tetraethyl Lead. E.N. Marchenko and G.A. Beilikis. Gigiena i Sanit., 11, 17-23 (1946) (Russian)

The widespread use of tetraethyl lead in petroleum fuels in the past few years was responsible, indirectly, for a large number of poisonings

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of individuals and groups up to 49 persons. It was caused by its use as a fuel for heating and cooking stoves, lighting, kindling, as a solvent, spray, or by the use of insufficiently cleaned drums or tank cars. The greater percentage of poisoning was due to inhalation of vapors or combustion gases, but the greater percentage of fatalities was caused by its entry by mouth; of these, 19% were caused by food and 72% by drink. Recommendations are given for stricter control and better education of personnel. -- C.A.

1136 Detonation of Ammonium Nitrate Fertilizer. U.S. Bureau of Mines.
Chem. and Eng. News, 25, 2143 (July 28, 1947)

Extensive tests show that under certain conditions of heating and confinement alone, ammonium nitrate fertilizer obtained at the scene of the Texas City disaster, is quite explosive. A 5.2 lb. charge of the fertilizer enclosed in 1/4 inch seamless tubing, 3 inches in diameter and 20 inches in length, detonated with great violence, completely shattering the bomb. The experiment was repeated with similar results in several laboratories.

1137 Medical Aspects of Industrial Safety. R.P. Brasler.
Ind. Med., 16, 397-400 (Aug., 1947)

The author traces the development of a safety program in his company, beginning with a period where safety features were haphazard and accident rates were high, and ending with a highly efficient organization with very low accident rates. Features of the program include a study of accident-prone individuals, a classification of workers according to disabilities, instruction classes for new employees, placing responsibility on supervisors, and the use of standard accident forms.

Miscellaneous

1138 Physiological Adjustments of Human Beings to Sudden Change in Environment.
N. Glickman, T. Inouye, S.E. Telser, R.W. Keeton, F.K. Hick and M.K. Fahnestock. Heat. Pip. and Air Cond., 19, 101-115 (July, 1947)

Five healthy male medical students, clothed in 90% cotton union suits and wooden sandals, were subjects for six experiments each. They remained in a comfortable room for a control period of one hour, at 76° F. dry bulb and 30, 60 or 80% humidity. They then went into a hot room at 98.5° F. dry bulb and 66% R.H. for one or two hours. This allowed a variable amount of perspiration to accumulate on the skin and in the union suit. The subjects then returned to the comfortable room for one hour. Observations on rectal and mean skin temperatures, evaporative weight loss, blood pressure, pulse rate and comfort rate were obtained. After presenting data on each of these points, the authors conclude that in general, the physiological adjustments made by healthy young adult males on passing from a comfortable to a hot moist environment, and vice versa, occurred rapidly and placed little strain on the cardiovascular system.

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- 1139 Thermal Responses and Efficiency of Sweating When Men Are Dressed in Arctic Clothing and Exposed to Extreme Cold. E.S. Belding, H.D. Russell, R.C. Darling and G.E. Folk. *Am. J. Physiol.*, 149, 204-222 (Apr., 1947)
Analysis of Factors Concerned in Maintaining Energy Balance for Dressed Men in Extreme Cold; Effects of Activity on the Protective Value and Comfort of an Arctic Uniform. Same authors, *ibid.*, 149, 223-239 (Apr., 1947)

Theory and practice of protection against cold by heavy clothing, especially arctic uniforms, are discussed in these papers. The principal practical conclusion is that the uniforms are too cool for still or lightly exercising men, but too hot when they exercised heavily, on account of accumulation of sweat in the outer layers. The amount of sweating of different individuals varied widely.

- 1140 The Transfer of Heat Through Sun Helmets.
Brit. J. Ind. Med., 3, 225-236 (Oct., 1946)

The basic problem of the sun helmet is discussed and experiments directed toward improvements in the helmet are reported. Improvement is possible by the use of larger ventilators and lighter, thicker materials. Lining pith helmets with aluminum foil is apparently the best solution.

- 1141 Fatigue and Sweating. S.D. Gerking and S. Robinson.
Am. J. Physiol., 147, 370 ff. (Oct., 1946)

The maintenance of efficiency under conditions of high temperature and humidity is dependent on the ability to maintain the rate of sweating. The factors which control the rate of perspiration have been studied by Gerking and Robinson, who caused experimental subjects to do a constant amount of work on a treadmill under controlled conditions of temperature and humidity. If the initial rate of sweating was moderate, 600 to 800 Gm. per hour, it was maintained for a long period. If, however, the initial rate was about 1,400 Gm. per hour, the sweating rate declined from 10 to 80 per cent by the sixth hour of the experiment. The decline in sweating rate was greater in humid than in dry heat and also greater when men wore army tropical uniforms than when they wore only shorts. Water balance was maintained by ingestion of 0.1 per cent sodium chloride solution. The decline of the rate of sweating is probably due to some sort of fatigue of the sweating process. It results in failure of the cooling mechanism and a rise of body temperature of about two degrees centigrade. The sodium chloride content of the sweat becomes greater (more like the plasma) as work is prolonged. Best performance is achieved by replacing hour by hour the water lost in the sweat. Replacement of salt or of glucose on an hour by hour basis is of little advantage compared with water replacement. -- J.A.M.A.

- 1142 The Application of Ergography to Disability Evaluation. F.A. Hellebrandt and Helen V. Skowlund. *Am.J. Occ. Therapy*, 1, 73-79 (Apr., 1947)

The importance of disability evaluation to the scientific practice of Occupational Therapy is discussed. Its multiphasic inter-related objectives are presented and the methods upon which it relies are

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classified as clinical, motor ability, and physiological tests. The finger ergograph is taken as an example of a simple exercise tool which lends itself to flexible adaptation in the objective estimation of the functional capacity of the neuromuscular system. The technique of ergography is discussed in the light of 158 experiments made on seven normal adult women. The evidence presented substantiates the following conclusions: (1) The character of the ergographic fatigue curve indicates the severity of the work performed. (2) Fatigue curves are characteristic for each subject. (3) When systematically carried on to the limit of capacity, repetitive exercise augments strength and endurance. (4) Total work output shows daily variations. (5) The slope gradient of the normal training curve varies markedly from individual to individual, even when experimental conditions are rigidly standardized. (6) Daily exercise effects a more rapid rate of improvement in volitional work capacity than does biweekly exercise. -- Authors' summary and conclusions.

1143 The Eve Method of Resuscitation. L.D. Carson and J.C. Pinto.
U.S. Naval Med. Bull., 47, 650-656 (July-Aug., 1947)

The authors describe and advocate the Eve or rocking method of artificial respiration, which is in general use in the British Navy, but has been given little attention in the United States. They cite the results of Comroe and Dripps (see I-H-F Abst. 283, Feb., 1946), which indicate that the Eve method produces better exchange of tidal air than the Schafer method. Although the comparison involved only five cases, they were under conditions greatly resembling cases where resuscitation is ordinarily necessary, and hence the results were more significant than others on healthy subjects who had voluntarily suspended breathing, and which showed ample tidal air exchange in the Schafer method. One of the advantages of the Schafer method is that no apparatus is necessary; however, the only apparatus required for the Eve method is a simple form of teeter-totter. Stokes stretchers supported in the middle, have been installed on several crash boats as resuscitators. A maximum angle of 45° from the horizontal should be maintained at first, but 30° is sufficient after a few minutes of operation. The physiological advantages of tilting are fully discussed, including artificial movement of the diaphragm, energizing poor circulation by stimulating heart action, and permitting change of clothing during the process. One man can operate the machine indefinitely, and no highly trained personnel is required. Several illustrations are included.

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1144 Outline Analysis of Research Problems in Industrial Physiology.
E. Simonson. Occ. Med., 3, 109-134 (Feb., 1947)

The following outline of research problems contains some of the more pressing research needs: (1) Fatigue; (2) Recuperation and rest pauses; (3) Fitness of workers; (4) Rehabilitation; (5) Physiological aspects of industrial accidents; (6) Physical fitness and susceptibility to disease; (7) Specific factors and conditions; (a) nutrition, (b) heat, (c) high altitudes, (d) increased atmospheric pressures, (e) noise, (f) dust and fumes, (g) posture; (8) Influences of non-occupational activity and living conditions. The work done in each of these fields is outlined, as well as work which must be done for a more complete understanding of industrial physiology. Since the problems involved concern output as well as health of the industrial worker and the maintenance of his work capacity, research on the interrelationship between man and his work is of great importance. This paper is aimed at suggesting and stimulating coordinated work in this field. Bibliography includes 98 books and articles. -- From J.I.H.&T.

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