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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL - decisions and trends

AUGUST 1948

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INDUSTRIAL HYGIENE FOUNDATION

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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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Annual Meeting and Conferences, Nov. 17, 18, 19

Plans are progressing for the 13th annual meeting of Members of Industrial Hygiene Foundation which will be held at Mellon Institute, Pittsburgh, on November 18. As in past years the program for this meeting is mainly for management representatives from Member firms---officers, department heads, operating men and staff specialists.

Meanwhile, arrangements and agenda are being worked out for the four professional conferences. These will be held as follows:

November 17:	Physicians	University Club
" "	Engineers	Mellon Institute
" "	Attorneys and Compensation Men	Hotel Webster Hall
NOVEMBER 18:	ANNUAL MEETING OF MEMBERS	MELLON INSTITUTE
November 19:	Chemists and Toxicologists	Mellon Institute

Meanwhile, plans are under consideration for a Ceramic Conference to be held in connection with the annual meeting this year in response to requests from Member companies in that industry. This is intended principally for companies in the glass, pottery, refractory, abrasive and related fields. It will probably be held on November 19. A number of industry representatives will meet here on September 23 to complete the arrangements. Further announcements will be made as plans for the annual meeting and the conferences develop.

Hotel Reservations

Meanwhile, members should arrange hotel reservations immediately. Hotel Webster Hall and the Hotel Schenley promise to do everything possible in providing accommodations. In communicating with them, mention the meeting. Downtown hotels have also been advised of the dates and their cooperation enlisted by the Pittsburgh Convention Bureau.

Mellon Institute Issues 35th Annual Report

"Meeting the Needs of Mankind by Scientific Research," the 35th Annual report of the Director of Mellon Institute, Dr. E.R. Weidlein, has just been issued. This impressive 44-page publication summarizes the diversified research projects, pure and applied, currently in progress at the institution--projects ranging from work in chemical physics, treatment of waste pickle liquor and silicones, to foods and nutrition, chemicals from corn and new fire fighting agents. The report includes a summary of the work of Industrial Hygiene Foundation as well as a resume of activities of the Chemical Hygiene Fellowship of which Carbide and Carbon Chemicals Corp. is the donor...." (Copies of the report will be sent to Foundation Members upon request.)

.....Annual Meeting and Conferences: Nov. 17, 18, 19.....

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INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

811 Mine Board Plans A Medical Center.

The establishment of a large medical center for injured coal miners, to be built at a cost of several million dollars, is being studied by the medical advisory board of the United Mine Workers of America Welfare and Retirement Fund, it was announced recently. The announcement came two weeks after union-management negotiations in which the bituminous coal operators agreed to double their payments to the fund, increasing it to \$100,000,000 annually. Dr. R.R. Sayers, chairman of the medical advisory board of the fund, is in charge of the program. He is a former Director of the Bureau of Mines, Department of the Interior, and also is Medical Director of the United Mine Workers of America. Preliminary studies now before the medical advisory board are based on a 200-bed hospital, and the board has estimated that the cost will range from \$13,000 to \$20,000 a bed. The institution would have a staff of eminent specialists in various fields, the announcement said.

-- N.Y. Times (July 19, 1948)

812 Eight-State Drive to Clean Up Rivers.

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After some 14 years of preparation, the eight key states in the Ohio River Basin finally signed the Ohio River Valley Water Sanitation Compact on June 30. The states involved are Ohio, Indiana, West Virginia, New York, Illinois, Kentucky, Pennsylvania, and Virginia. The compact will set in motion a \$400-million municipal and industrial sewage control program throughout the basin. It sets up a governing body of three commissioners from each state, and three from the federal government. The compact requires that virtually all "settleable" solids be done away with, and not less than 45% of the total suspended solids in municipal sewage systems. It requires further that all industrial waste discharged into streams be treated. That last provision means that industry is going to have to carry a big share of the financial burden. The investment for treating plants will not always be without return. Sometimes you get valuable salvage from treating wastes. For example: The coke industry now reclaims phenol, once a waste product, that is valuable as a base for plastics. On the same day that the compact was signed, President Truman signed the Barkley-Taft Water Pollution Act. It authorizes the U.S. Public Health Service to issue clean-up orders, provides for federal court action against offenders in pollution. It also authorizes appropriation of \$22.5-million a year for the next five years to provide loans to build sewage disposal works.

-- Business Week (July 31, 1948)

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813 Three Million Workers Covered in Health and Welfare Contracts.

Recent decisions of the National Labor Relations Board, together with widespread activity among unions to obtain for their members a greater measure of "social security," have focused attention on the extent of health and welfare plans under collective bargaining. The number of workers now covered by health and welfare and retirement plans is estimated at 3 million, or five times that of 1945. This coverage includes benefit plans negotiated as a part of labor-management agreements, those originally established by employers and later written into an agreement, as well as those agreements that simply declare that the employers will provide certain types of insurance for their employees. These programs exist to a varying degree in nearly 100 national or international unions. In some cases the benefit plans are almost union- or industry-wide, but usually they cover only members of a local. Most plans are financed entirely by the employer. The present trends are toward complete financing by the employer, increase in the number of benefits, and liberalizing existing benefits.

-- Labor Inf. Bull. (Aug., 1948)

814 Dr. Noe Named Medical Director for Group of Potteries.

Six potteries in East Liverpool and Wellsville, Ohio, and in Chester and Newell, W. Va., employing approximately 6700 persons, announce the appointment of Joseph T. Noe, M.D., as the new Medical Director for the group. While the plants are in two states, they are clustered within four miles of the center of East Liverpool and they are engaged in the same general type of chinaware manufacturing. The group plan of medical supervision was initiated three years ago under the direction of Elmer F. Herring, M.D., who resigned August 1, 1948 to specialize in chest work in San Fernando, California. Dr. Noe, who will assume his new duties in September, comes from East Chicago, Indiana, where he has been Assistant Medical Director for the Inland Steel Company. He is a graduate of the University of Louisville, Ky., Medical School and served as a major in the Army Medical Corps during World War II. He is a member of the American Medical Association and the American Association of Industrial Physicians and Surgeons. The six potteries which have joined in this group medical plan are the Homer Laughlin China Company and the Edwin M. Knowles China Company of Newell, W. Va., the Taylor, Smith and Taylor Company and the Harker Pottery of Chester, W. Va., the Hall China Company of East Liverpool, and the Sterling China Company of Wellsville.

815 Manpower Supplies Almost as Tight as During War Peak.

A recent survey by the United States Employment Service shows that the general supply of manpower is almost as tight as it was during the peak of the war effort. Most of the shortages are in the highly skilled occupations and professions centered around the construction, scientific, and some of the clerical and service groups. The recent emphasis on scientific pursuits has been phenomenal, and it is in those occupations that the shortage is most acute. Present trends include: promotion from the ranks rather than changing from one employer at the same rank; replacement of women by men in many skilled and semi-skilled jobs; and restoration of apprenticeship and seniority standards.

-- Labor Inf. Bull. (Aug., 1948)

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816 Quebec's New Industrial Hygiene Law; Medical Examinations Required.

An Order in Council adopted by Quebec April 7, 1948, contains the following rules: (1) No industrial establishment may be placed in operation unless its plans and specifications for handling certain poisons are approved; (2) Limits are established for the air contaminants whose toxicity is known, in parts per million for gases and vapors, mg. per 10 cu. m. for toxic dusts, mists and fumes, million particles per cu. ft. for harmful but not toxic dusts, and suitable units for radioactive materials; (3) For materials not included in the list, "the limit of concentration must be maintained at a level constituting no danger to health;" (4) All cases of occupational intoxication or ailment must be reported to the Division of Industrial Hygiene within 48 hours; (5) An industrial physician must be appointed to take charge of medical supervision of those members of the staff who may be exposed to dangers of intoxication from lead and its compounds. He is to make medical examinations of all exposed persons each month, and all those feeling unwell. He must notify the worker and the head of the establishment whenever he finds that the ailment is due to lead; (6) The physician must make specified blood tests of lead-exposed workmen; (7) Workmen must follow protective regulations, including the use of protective tools and clothing, washing before eating and after work, taking a weekly bath, submitting to the monthly medical visit, and not eating or using tobacco in the workshops.

-- Quebec Official Gazette (May 22, 1948)

817 Government and Industry Cooperate on Tetraethyl Pyrophosphate Report.

A report on tetraethyl pyrophosphate (exact title and other information not given) has been issued by the Bureau of Entomology and Plant Quarantine, as a result of conferences between industry and government bureaus. The discussion included methods of preparation, composition, nomenclature, methods of analysis, toxicity, handling, and labeling. Chemical methods of analysis were found superior to biological methods, and results of comparative analysis by four methods are presented. Tetraethyl pyrophosphate is extremely toxic and readily absorbed through the skin. The estimated fatal dose for a human being is approximately 600 mg. It was suggested that all skin contacts be avoided, approved respirators should be worn when spraying or dusting, and any persons developing symptoms of headache or tightness of the chest should be removed from exposure. Poison labels should be used, and the percentages of tetraethyl pyrophosphates and the other ethyl phosphates should be designated on the label.

-- Chem. and Eng. News (Aug. 9, 1948)

818 Industrial Dust and Fume Control.

A Sectional Committee, representative of 24 national governmental, technical and trade organizations, is now working on the development of a Safety Code for Exhaust Systems under the procedures of the American Standards Association. At a recent meeting of the committee it was agreed and strongly advocated that manufacturers of equipment, machinery, and apparatus which produces dust and fumes should provide housings or enclosures as an integral part of the original design. There is little more reason for such equipment being furnished without provisions for effective dust and fume control than there is for furnishing such equipment with unguarded

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gears, in the opinion of the committee. This practice may result in some increase in the purchase price of the equipment, but will prove more economical in the long run, as means of controlling fumes and dust must otherwise be provided locally, and often are improperly designed. Theodore F. Hatch, Research Director of Industrial Hygiene Foundation, is chairman of the committee. -- American Standards Assoc., release, June 10, 1948

819 Dr. W. Irving Clark Retires.

Dr. W. Irving Clark, Medical Director of Norton Company, Worcester, Mass., retired July 1, 1948, after 37 years with the company. For many years an outstanding authority in industrial medicine, Dr. Clark started his Norton career as a company physician in May, 1911. He was made Director of Personnel in 1919, from which position he retired in January, 1947, to become Medical Director. His contributions to his company and to the betterment of factory workers' health everywhere have been many and varied. Under his leadership Norton Company's medical department holds a recognized position in industrial medicine. -- Ind. Medicine (July, 1948)

820 Jet Engine Noises Found Harmless to Shopmen.

Workers in jet engine factories are unharmed by the high-pitched noises made by ordinary low-performance turbo-jets in tests carried out by U.S. Navy scientists. The study was undertaken because of fears and rumors about the harmful effects of turbo-jet engine noises to workmen in their vicinity. The men's general physical condition and state of their nervous systems were unchanged, and pulse, respiratory rate, temperature and blood pressure indicated no ill effects. Final conclusions have not yet been reached on the effects of very high frequency jet engine noises on the human body. -- All Hands (Navy publication) (July 11, 1948); through Sci. News Letter (July 17, 1948)

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Occupational Disease Statistics

821 Occupational Disease Statistics.

	Ohio ¹ Mar. 1948	Conn. ² July 1948	Ind. ² July 1948	Mich. ² July 1948	Wash. ⁴ July 1948	Wis. ² June 1948	Totals
Anthracosis					1		1
Carbon Monoxide						1	1
Carbon Tetrachloride						1	1
Chemical Poisoning (N.O.C.)	26				2	1	29
Conjunctivitis					3	3	6
Dermatitis	279	8*	17	27	41	93	465
Hernia				5			5
Infections						2	2
Inflammatory Conditions				1	6	1	8
Lead Poisoning	29					2	31
Miscellaneous	126				3		129
Nasal Septum Perforation					1		1
Pneumoconiosis	14			2			16
Pneumonitis						1	1
Pulmonary and Bronchial Affections					4		4
Silicosis	49		1	18	3		71
Silico-tuberculosis					5		5
Skin Diseases (other than dermatitis)	28						28
Tuberculosis					2		2
Tuberculosis (due to contact)	7						7
Tuberculosis and silicosis						3	3
Undulant Fever						6	6
Upper Respiratory Affections						1	1
Totals	558	8	18	53	71	115	823

(1) Occupational Disease Cases reported to the Industrial Commission.

There were 108,298 days lost, including one death reported from Chemical Poisoning (N.O.C.), 10 reported from silicosis, one reported from Tuberculosis (due to contact) and three from unspecified causes.

(2) Occupational Disease Cases reported to the Health Department.

(4) Occupational Disease Cases reported to the Department of Labor and Industries and tabulated by the Department of Health. Figures reported by Washington as anthracosis, silicosis and silico-tuberculosis represent case reports received from other sources.

*Oils caused 4. Alcohols; poisonous plants; rubber accelerators; soap solutions, glue, etc. caused one each.

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Legal Developments

822 Industry's View on Labor-Management Problems.

One section of this statement deals with health and welfare funds. The following arguments are presented against their inclusion in collective bargaining: (1) bargaining over employee benefit plans would impose an unsupportable burden on the collective bargaining procedure; (2) bargaining about benefits threatens their effectiveness; (3) forced bargaining on benefits magnifies the problems of contract administration; (4) new areas of labor-management conflict will be opened; (5) extension and development of benefit plans will be jeopardized by forced bargaining; and (6) health and welfare programs constitute a variable and indefinite addition to the wage scale. -- Statement of R.S. Smethurst, Counsel, The National Association of Manufacturers, before Joint Committee on Labor-Management Relations, May 26, 1948. National Association of Manufacturers, 14 West 49th St., New York 20, N.Y. 30 pp., mimeographed. (1948)

823 Medical Testimony of "Possibility" of Lead Poisoning as Contributing Factor in Death from Meningitis Insufficient to Sustain Award.

The most favorable evidence in support of an award for death from lead poisoning as a contributing factor in death from meningitis consisted of medical testimony that there was "possibility" of such casual connection. The award was annulled, as a reasonable probability is required to be shown. -- Travelers Insurance Co. v. Industrial Accident Commission. California District Court of Appeal, First District, Division Two. Civ. No. 13725. June 30, 1948. -- CCH

824 Allergic Dermatitis--No Proof of Negligence of Employer.

The defendant in a common law action for damages for disability resulting from dermatitis was entitled to a judgment of nonsuit, where the evidence clearly revealed that contact with lime and cement of ordinary propensities over a period of years could and probably did cause the plaintiff's illness, irrespective of the negligence of anyone, and where there was no proof that the employer had been negligent as charged by the petition. -- Jackson v. Thompson. Georgia Court of Appeals. No. 32,057. July 8, 1948. -- CCH

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825 Silicosis Established as Sole Cause of Disability Despite Presence of Arthritis--Exposure to Silica Hazard.

The evidence was sufficient to establish the claimant's exposure to a silica hazard in his work as weighmaster for a mining company, and there was medical testimony from which the commission was authorized to conclude that there was a causal connection between claimant's silicosis and his employment, and that the silicosis was the sole cause of disablement, even though there was some evidence of arthritis. -- Oskia v. Wheeling Steel Corp. Pennsylvania Superior Court. No. 122 April Term, 1948. July 23, 1948. -- CCH

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Books, Pamphlets and Notices

- 826 Fan Engineering. Fifth Edition. Edited by R.D. Madison. Buffalo Forge Co., Buffalo, N.Y. 808 pp. Price \$6.00. (1948)

The fifth edition of the Buffalo Forge Handbook "Fan Engineering" is the first since 1938. Fan Engineering is designed to meet the needs of all those who are concerned with the movement of air in ventilation, air conditioning, heating, drying or any other industrial use. It has long been known for its comprehensive discussions in theory of air flow, treatment of air, fan design and selection, heat problems and similar topics. The latest edition retains the same format, but has been revised and expanded by about 70 pages to include more up-to-date information. All the major sections have been enlarged and numerous explanatory problems aid the reader. Industrial hygienists will be attracted to the new concise discussions on air velocity measuring devices, throw of air from slots and openings, hood design, dust determination, and new data on orifice plates. Many additional codes and standards have been listed governing specific operations. This handbook remains a standard work in the field of ventilation, of valuable use to all engineers, and the latest edition renews the respect which it earned when first published in 1914.

-- H.M.C.

- 827 Health of Workers Exposed to Sodium Fluoride at Open Hearth Furnaces. Report of a survey by Industrial Hygiene Division, U.S. Public Health Service, Washington, D.C. 47 pp. (Apr. 9, 1948)

The Industrial Hygiene Division of the United States Public Health Service was requested by representatives of the Republic Steel Corporation and the United Steelworkers of America, CIO, to make a study of the potential health hazards which might be associated with the use of sodium fluoride at open hearth furnaces. The work, extending over 13 months, included detailed medical examinations of 350 male workers, mostly in plants using fluorides, collection of 150 air samples, and analyzing them for iron oxide, manganese, and total fume. The conclusions from the survey, somewhat condensed, are: (1) concentrations of iron oxide and manganese fumes were below the accepted maximum allowable concentrations and it is concluded that they would not constitute a health hazard; (2) when sodium fluoride was added to the molten steel the compound was dispersed without chemical change into the atmosphere, but its concentration was not great enough to produce toxic effects, in the light of present information; (3) no severe pharyngeal or oral damage, or any change discoverable in physical or x-ray findings, is caused by atmospheric sodium fluoride, and a slight irritation is difficult to attribute definitely to the sodium fluoride or to other causes; (4) acridine and other constituents of the fumes, dust, and smoke are irritating, especially to the upper respiratory system; (5) discomfort caused by radiant heat is excessive; and (6) repeated exposure to irritant factors may cause increased thickening on vulnerable areas of the oral mucosae. The recommendations include: (1) mold coating operations should be controlled to avoid unnecessarily thick coatings, which result in considerable discomfort to workmen pouring steel; (2) a mold coating giving less dense and irritating smoke and fume should be sought; (3) whenever possible intense exposures to radiant heat should be

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reduced by use of protective clothing, remote control, or other means; (4) the possibility of eliminating exposures of cranemen by use of a positive pressure ventilating system should be explored; (5) crane cab windows should be cleaned frequently to encourage keeping them closed; and (6) if sodium fluoride is bagged by hand, suitable measures should be enforced to minimize or to prevent inhalation, ingestion, and skin contact of the dust.

-- From Authors' abstract

- 828 The Law of Smoke Nuisances. W.R.H. Steer. 2nd Edition. The National Smoke Abatement Society, London. 72 pp. Price 3 shillings. (1948)

The original "Law Relating to Smoke and Noxious Fumes" by the late Randolph A. Glen, M.A., LL.B., was first published in 1934. This was revised after the Public Health Act, 1936, and the Public Health (London) Act, 1936, by Mr. Steer. Now, in the second edition by Steer, there is included an examination of the relevant sections of the City of London (Various Powers) Act, 1946, and the Manchester Corporation Act, 1946. Steer's very clear account of these new advances in legislation should be read by all who hope to witness a real reduction in atmospheric pollution in their time. One general comment might be made on the Law books of the National Smoke Abatement Society. In spite of the reference to Noxious Fumes in the title of Glen's original book, there has been no systematic treatment of the Alkali, etc. Works Act, 1906. This Act is now applied to a wide variety of works, and deals with virtually all emissions of pollution which are not directly caused by the combustion of fuel. It would be an advantage to the public to have the interpretation of this Act by a qualified legal practitioner.

-- From Atm. Poll. Bull.

- 829 Compensation Cases Closed in 1946. Research and Statistics Bull. No. 3, Workmen's Compensation Board, State of New York, Mary Donlon, Chairman. 76 pp. (Dec., 1947)

Extensive data are given on compensation cases closed in New York State in 1946. Causes of accidental injuries and occupational diseases are given under one heading and kinds of accidental injuries and occupational diseases under another, the term "accident" being used to include both. The 118,272 workmen's compensated cases included 3,962 occupational diseases. Compensation awarded for accidental injuries amounted to \$56,429,950 and for occupational diseases \$1,972,474. Thus the average compensation awarded per case was about the same, \$494 for accidents and \$498 for diseases. -- F.F.R.

- 830 Accident Hazards and Costs in the Construction Industry. Research and Statistics Bull. No. 2, Workmen's Compensation Board, State of New York, Mary Donlon, Chairman. (1947)

The trends in construction accidents during the past 30 years point to a single major conclusion: namely, that construction accidents are more severe and more costly than are accidents in most other industries. The data here submitted, based on actual accident experience, should help both management and labor to understand what accidents are most prevalent and serious in construction. They point out those operations in which safety precautions are most urgently needed. During 1941 the cost of workmen's

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compensation payments, exclusive of medical benefits and excess insurance costs was \$8,000,000. Interrupted civilian construction during the war caused a decline to about half that amount. Workmen's compensation claims under the government construction program of the war years were largely under Federal rather than State jurisdiction. Total economic losses of industrial accidents, including medical benefits, excess insurance costs, wage losses, costs of interrupted production, damage to equipment, and other losses are estimated by insurance statisticians to be nearly 10 times the cost of workmen's compensation benefit payments. This cost is borne ultimately by consumers. It offers a serious challenge to the construction industry, labor, and government for a cooperative program to prevent construction accidents and a challenge also to the medical profession for the kind of treatment that will enable disabled workers to return to their jobs as promptly as possible.

-- From Authors' summary

Industrial Medical Practice

- 831 Significance of Occupational History in Diagnosis of Silicosis.
T.F. Hatch. Radiology, 50, 746-750 (June, 1948) (Reprints available from the Foundation)

The dusty trades may be divided into three categories in respect to silicosis: (1) known to produce silicosis as a characteristic disease of the occupation; (2) known to be free from the silicosis hazard; and (3) intermediate industries in which silicosis occurs sporadically. The first two categories present no problem provided the hazard is properly assessed. In the third group, however, the detailed information of the occupational history is of greatest importance, and the adequacy of our present etiological criteria of greatest concern. There is danger in applying the generalized rules too far in the evaluation of dust exposures for the purpose of diagnosis of individual chest roentgenograms. Further laboratory research is needed to improve our understanding of the etiology of silicosis. It is of even greater importance, however, that the independent reading of chest roentgenograms be extended without dependence upon occupational histories. More systematic studies of the type described above are needed in a greater variety of dusty trades, involving exposure to more complex dusts and including, in particular, occupations in which silicosis is an occasional rather than a characteristic disease; others, in which non-disabling lung changes occur, such as in welders, also require systematic study. The statistical aspect of the problem must be kept in mind. A chest film which is non-specific when viewed alone takes on new meaning when it is found to be characteristic of a group of workers similarly exposed. Further confusion with respect to the silicosis hazard in industry can be avoided only by the most critical study of the findings in the borderline dusty trades. The responsibility is a joint one, shared by radiologists, clinicians, pathologists, and industrial hygienists.

-- From Author's summary

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- 832 Dyspnea of Effort in Underground Workers in Coal Mines. E. Martin and L. Roche. Arch. Mal. Prof., 7, 97 (1946) (French)

The significance of dyspnea in groups of coal-miners with and without pulmonary lesions of varying degrees of severity is discussed. The author examined 1,361 men, of whom 1090 had apparently normal lungs. Of 271 men with demonstrable abnormalities he found that 23% of those in stage I of silicosis had dyspnea of effort. Of the second-stage cases 41% suffered in this way, and in the third stage of silicosis, eight men out of 13 had dyspnea. About 30% of 57 tuberculous workers had this symptom. Of the men with apparently normal lungs 14% had dyspnea; it is difficult clinically to detect the symptom or to assess its importance. The authors therefore consider that the importance given to this symptom by the French government, in judging incapacity and compensation rights, is very doubtful, and that tests of the venous tension and the speed of circulation do not help in elucidating the problem.

-- Brit. J. Ind. Med.

- 833 Silicosis in Workmen in the Alzo Granite Quarries. E. Janetti. Med. d. Lavoro, 38, 173 ff. (1947) (Italian)

Patients from the granite quarries of Alzo were studied. The volcanic rocks are high in silica, of which 40 to 45% is quartz. As shown by a description of the quarrying process, exposure is variable. Of 37 examined, nine had reticular changes, 14 had silicotic nodules, 1, massive silicotic changes, 4, associated tuberculosis, and 5, tuberculosis without silicosis. The periods spent in the quarry varied from 20 to 52 years. The average age exceeded 60 years, and the diagnoses described were made exclusively on the radiological evidence. The figures showed that the dust hazard was greatest for those who worked with chisel and hammer. These men had generally worked for 20 to 25 years before they observed any reticulation, and nodular changes were not observed under 30 to 52 years. Polishers and others working in the final stage also experienced high dust hazards. The length of time in this heavy exposure before showing signs of silicosis lead the author to conclude that "the pessimistic views of American authors concerning the inevitability of silicosis after a few years' exposure are unreasonable." A few remedial measures are suggested.

-- From Brit. J. Ind. Med.

- 834 Apparatus for Dispensing Aluminum Dust in the Treatment of Silicotics. F.W. Church and F.R. Ingram. J. Ind. Hyg. and Tox., 30, 246-250 (July, 1948)

An apparatus is described for the control of dosage of aluminum hydroxide dust to advanced silicotics. Facilities were provided so that control silicotics were not subjected to any aluminum powder; but were subjected to all other conditions of the experiment. Good correlation of dust was obtained from the dust box over a long period of time indicating that the apparatus is operating at an acceptable efficiency.

-- Authors' summary

- 835 Skin Lesions in Persons Exposed to Beryllium Compounds. R.S. Grier, P. Nash and D.G. Freiman. J. Ind. Hyg. and Tox., 30, 228-237 (July, 1948)

Three cases of subcutaneous granuloma arising in persons who have cut themselves on broken fluorescent lamps coated with beryllium-containing phosphor are described. The pathology of these lesions is similar to that

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seen in the skin lesions of two beryllium workers who had pulmonary granulomatosis, and essentially similar to the lung lesions seen in this disease. Because of the danger of recurrence, treatment should involve complete excision. If other cases of subcutaneous granuloma arising in this way are to be avoided, caution must be exercised in the disposal and salvage of burnt out fluorescent lamps.

-- Authors' summary

- 836 Porphyrin in the Urine as a First Symptom of Lead Poisoning. C.D. de Langen and J.A.G. ten Berg. Acta med. Scandinav., 130, 37-44 (1948)

Before other signs of metal poisoning appear, lead in the body increases urinary excretion of porphyrin to the point of fluorescence. An ultraviolet screening test which is simple, rapid, and requires no expensive apparatus is recommended by the authors, for mass examination of workers handling lead. A few drops of glacial acetic acid and 2 cc. of ether are added to 20 cc. of urine. The specimen is well shaken and exposed to ultraviolet rays through a Wood's filter. If the concentration of porphyrin is normal, the layer of ether has a pale blue or green light. Red, barely perceptible with a slight excess of porphyrin, becomes more intense with larger amounts. Although slight degrees of porphyrinuria may be unnoticed, a false positive reaction never occurs. When results are in doubt the porphyrin may be estimated quantitatively. Pernicious anemia, hemolytic icterus, barbiturate poisoning, and other possible causes of porphyrinuria must be differentiated. In a district where the water was contaminated with lead, the ultraviolet test proved far more reliable in mass surveys than occurrence of basophilic granulation of erythrocytes.

-- Modern Med.

- 837 The Penetration of Lead Through the Skin. E.P. Laug and Frieda M. Kunze. J. Ind. Hyg. and Tox., 30, 256-259 (July, 1948)

(1) As measured by the storage of lead in the kidneys, the cutaneous penetration of lead oleate, acetate and arsenate through the skin of the rat is extremely small. (2) Mechanical injury to the skin increases the penetration of lead. (3) Lead tetraethyl penetrates the skin with relative ease.

-- Authors' summary and conclusions

Healthy Teeth Found Among Hydrofluoric Acid Workers.

Making hydrofluoric acid for the Manhattan atomic bomb project seems to have resulted in unusually healthy teeth for workers. Men on the project who worked in an atmosphere laden with acid fumes had less than half as many dental fillings as did the office workers in the same plant who were not exposed to the fumes, Drs. Peter P. Dale and H.B. McCauley of the University of Rochester report in the J. of the American Dental Assn. "This finding was made in spite of the fact that most of the men neglected their mouths," the doctors wrote. It is known that fluorine in small amounts is very important to healthy teeth and recently dentists have begun to paint children's teeth with a solution of a fluorine compound to prevent cavities.

-- Science News Letter (August 7, 1948)

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- 838 Medical Control of Lead Workers. J.E. Silson.
Monthly Rev., N.Y. Dept. Labor, 27, 17-19 (May, 1948)

Some recommendations are presented as minimum controls that should be maintained where there is a lead hazard, with the aim of assisting the physician in detecting early cases of increased lead absorption or intoxication by frequent screening of the workers. Workers in a lead industry should be divided into two groups, having high and low exposure to lead. For the first group, screening examinations should be given monthly; urinary lead examinations should be made at least every three months; red and white blood cell counts and hemoglobin determinations should be done every three months, and blood smears should be taken monthly and studied for stippling, polychromatophilia and abnormal cells. With the second group, the same examinations should be given at intervals twice the length of those for the first group. A complete physical examination should be given each worker at the beginning of the program and all those hired subsequently. The complete examination should be repeated annually and at other times whenever the screening test indicates abnormalities. Values of 0.1 mg. of lead per liter of urine, and 0.07 mg. of lead per 100 cc. of blood are considered the upper limit of normal for lead workers, but variations from normal can be interpreted only in conjunction with all other findings. Trends should be given considerable weight in interpretation of each case. Workers in the first group who show laboratory evidence of increased lead absorption should be transferred to the second group at least temporarily. Primary attention should be focused on the control of the lead hazard at its source; atmospheric concentrations should be kept below 1.5 mg. per 10 cubic meters of air. Respirators should be used for unavoidable temporary high concentrations, but should never be substituted for proper hygiene and engineering controls.

- 839 Poisoning With Gasoline Containing Tetraethyl Lead. J.C. Piguet and G. Hemmeler. *Arztl. Monatsh.*, 4, 181-190 (1948) (German)

Poisoning by the products of combustion would resemble a chronic intoxication with inorganic lead. Absorption of tetraethyl lead through the skin produces a different syndrome resembling neuro-vegetative dystonia. The characteristics are low arterial tension, brady-cardia, and gastro-intestinal disturbances. The central nervous system is affected as manifested by headaches and variegated psychotic symptoms. Two cases are reported.

-- Chem. Absts.

- 840 Medical Problems Encountered in the Manufacture of American-Made Rubber. R.H. Wilson, G.V. Hough and W.E. McCormick. *Ind. Med.*, 17, 199-207 (June, 1948).

The principal basic chemicals used in the manufacture of butadiene-type American-made rubber are acrylonitrile, styrene and butadiene. The hazardous properties of these materials are described, as are also those of the more familiar solvents, benzene, toluene, xylene, chlorinated hydrocarbons, petroleum distillates, ketones, acetates, alcohols, and carbon disulfide. All three of the first group are hazardous in high concentrations, roughly 90 to 600 p.p.m. for acrylonitrile, 800 p.p.m. for styrene, and 6,000 p.p.m. for butadiene, showing at least irritating effects. Mode of action, symptomatology, treatment, methods, determination, and prophylaxis are discussed for each of the materials treated.

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- 841 Arsine Gas Poisoning. Report of a Case.
R.A. Wills. *Ind. Med.*, 17, 208 (June, 1948)

A fatal case is described in which a workman unknowingly had a three-hour exposure to arsine gas while cleaning an experimental furnace. Details of blood and urine tests are given for the last two of the five days elapsing between exposure and death. Diagnosis was not definitely established until after death. Several forms of treatment were used, but it is obvious from the failure to recover arsenic in any body structure except the lungs, that all the treatment was in vain.

- 842 Thallium Poisoning. M. Mordeglija and M.P. Francone.
Semana Med., I, 619-625 (1948) (Spanish)

A description of thallium toxicology is given and three cases of poisoning are reported. The immediate treatment consists in gastric lavage, activated carbon, and 0.3% sodium-thiosulfate solution, followed by castor oil, but never sulfates. During the period of fixation 10 cc. of a 20% sodium-thiosulfate solution is given intravenously every day. Later treatment, after the symptoms are well developed, consists in calcium gluconate, coramine, caffeine, potassium iodide, liver extract and vitamins.

-- Chem. Absts.

- 843 Rational Treatment of Formaldehyde Poisoning. A. Lund.
Acta. Pharmacol. Toxicol., 3, 323-329 (1947) (English)

Activated charcoal and urea are of no value as antidotes for formaldehyde. Ammonium salts are useful only in alkaline solutions (pH 8-9). Dilute ammonium carbonate is fairly effective but a buffer solution 0.1 M in both ammonium hydroxide and ammonium chloride is better. -- Chem. Absts.

- 844 Aerobacter Cloacae Endotoxin as a Possible Factor in the Etiology of Bagassosis. R. Schneider, W.H. Reinhart and Barbara H. Caminita. *J. Ind. Hyg. and Tox.*, 30, 238-245 (July, 1948)

The purpose of these studies was to determine whether the organism, *Aerobacter cloacae* and its endotoxin, which is the cause of a disease occurring among cotton workers, could explain the etiology of bagassosis. Samples of various forms of bagasse were examined by the serial dilution method and cultures from 11 samples were purified and studied by biochemical and serological methods. About 60% were identified as *A. cloacae*. Numerous species of fungi were present in several samples, but their number and type were not considered significant. The endotoxin was found in three samples. From these results it is concluded that the toxigenic types of *A. cloacae* should be considered as a possible etiologic factor in bagassosis. The results obtained warrant further investigations on this problem.

-- From Authors' summary

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- 845 Weil's Disease. Analysis of 195 Cases in England. J.C. Broom and J.M. Alston. *Lancet*, 255, 96-97 (July 17, 1948)

Details of sex, age, method of infection, presence of jaundice, and final outcome are analyzed for 195 cases of leptospirosis (Weil's disease)

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diagnosed by serological tests. Attention is drawn to the diversity of the occupations and avocations in which infection may take place. Among the cases studied were farm-workers, sewer workers, fish workers, coal miners, army and air force personnel. The jaundice-rate and mortality were unusually high. Evidence is adduced which suggests that many cases of leptospirosis are missed in this country. -- Authors' summary

A New Development in Antihistaminic Therapy. E.F. Roberts.
Ind. Med., 17, 263-265 (July, 1948)

The control of allergic disorders, whether of industrial origin or not, is of growing concern to industry. Histamine has been found to be a large factor in developing sensitivity, and efforts have been directed toward finding antihistaminics that are effective but not toxic. Nephtramine was given extensive clinical trial on 874 patients suffering from various types of allergy, including some of contact dermatitis and drug sensitivity. Improvement was shown in 644 cases, and nephtramine was found least toxic of all antihistaminics now in general use. Animal experimentation confirmed the toxicity findings. "Antihistaminics are not a substitute for, but a supplement to, thorough immunologic investigation and management of the hypersensitive patient."

Allergens of Mill Dust: Asthma in Millers, Farmers and Others. C. Jimenez-Diaz, C. Lahoz and G. Canto. Ann. Allergy, 5, 519 ff. (Nov.-Dec., 1947)

Jimenez-Diaz and his associates show that there exists in cereal dust different elements that can produce sensitization. In order of importance they are fungi, insects, acarina and substances in dust and flour itself. The fungi of greatest importance are rust, smut and Tilletia. They can be found in great quantities in granary dust and in that of milling establishments, owing to their fineness and the ease with which they spread once the covering of the invaded grain has broken. The infected grain, equally with Ustilago and Puccinia, can spread in the air at the time of seed falling, thus acting as causative agents in the sensitization of the population at large. Other fungi, such as Aspergillus and Penicillium, can invade damp flour, but this is a much rarer occurrence. Although little attention has been given to insects as causes of asthma, the authors mention observers who have described sensitization by trichoptera (Caddis fly), ephemera, Musca domestica and Cimex lectularius. In farmers, in persons who live near granaries or in mill workers investigations carried out by the authors have shown that the sensitizing agent can be coleoptera. Sensitization to flour itself is of most importance among bakers. -- J. Am. Med. Assoc.

How Medicine Can Help the Industrial Worker. C.E. Hodges.
Am. Mutual Mag. of Loss Control for Ind., 25, 16-19 (July, 1948)

The author presents this statement as the answer to the title question: "By developing general recognition on the part of the medical profession that industrial medicine and surgery is a specialty in the same way that internal medicine and pediatrics are recognized as specialties and that such being the case, the treatment of industrial injuries and diseases must be rendered by men who are fully trained and qualified in this field." From this the factors determining the success of plant medical service, the qualifications of the industrial physician, and the planning of the medical

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program are developed. In the physician's qualification, knowing the types of people and the working environment is emphasized. The selection of the doctor should precede the planning of the program, as he is responsible for its functioning.

- 849 The Relationship of Neuralgia and Referred Pain to Hernia Compensability--Concerning a Frequent Cause of Diagnostic Error. F.W. Slobe. Ind. Med., 17, 259-262 (July, 1948)

(1) Segmental neuralgia secondary to an irritation of the roots or trunks of the twelfth dorsal and first lumbar nerves and reflex phenomena secondary to soft tissue involvement of the paravertebral area in the dorsolumbar region, are frequent causes of pain and tenderness in the inguinal region and scrotum. (2) Failure to recognize the neuralgic or reflex origin of such symptoms and signs is a frequent source of diagnostic error in evaluating the relationship of a hernia to such symptoms and signs. (3) The concept of the compensability of hernia is altered by the demonstration of the existence of a neuralgic or referred pain syndrome. A pre-existing asymptomatic hernia with coincidental neuralgic or reflex symptoms from a distant source may falsely appear to have criteria of compensability unless the origin of such symptoms is recognized. -- Author's summary

Physiological Action

(Temperature--Pressure--Fatigue--Noise, etc.)

- 850 Effects of Physical Characteristics of Fabrics Upon Physiological Heat Load and Subjective Reactions. W.R. Christensen. J. Ind. Hyg. and Tox., 30, 251-255 (July, 1948)

In the course of investigations pursued under the direction of the Quartermaster Corps of the U.S. Army, the relative physiological heat loads and subjective acceptability of garments made from nine fabrics were determined under typical jungle conditions. Under conditions of 1.5 m.p.h. wind, the heat loads imposed by the test fabrics were found to be influenced mainly by their weight, thickness, and possibly by per cent of wetting during use. However, when wind velocity was increased to 5.8 m.p.h., the heat load ratings were at variance with those previously obtained. Those fabrics showing improvement in their relative standing were characterized by greater wetted area and high air permeability. Coolness, skin sensation and drag were established as the most important criteria in determining the subjective acceptability of a uniform. Of these criteria, coolness and type of tactile sensation imparted by the fabric were of major importance. Subjective appraisal of heat load, however, was found to be quite inconsistent when compared with objective results. It appears that the test subjects were unable to segregate clearly the sensation of coolness and other subjective stimuli. -- From Author's summary

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- 851 The Effect of Amphetamine Sulfate on Performance of Normal and Fatigued Subjects. H.W. Newman. J. Pharmacol., 89, 106 (1947)

Tests were carried out on a group of 10 subjects who, by the handling of conventional aircraft controls, were required to maintain a model plane in level flight. A watt-hour meter recorded the time during which this was maintained. Amphetamine sulfate in a dose of 10 mg. by mouth, improved the performance only when it had been previously lowered by fatigue.

-- Brit. J. Ind. Med.

- 852 Important Uses of Industrial Vision Tests and the Medical Director. W.G. Morgan and N.F. Stump. Ind. Med., 17, 252-258 (July, 1948)

The importance of visual tests for employees is stressed and their value in greater efficiency and reduced absenteeism is shown by the experience of the Owensboro Tube Works of the General Electric Company. Compensation laws stimulated vision tests in the first place, but additional benefits have been shown to result. The Snellen tests, once considered standard for all purposes, have been partly replaced by others in which determination of vision at the distance of the job is substituted for the old standard of 20 feet. Stereoscopic performance tests are rapidly becoming a part of the eye examination in industrial organizations. As the result of the research on eye testing: (1) the true minimum standards for specific jobs were determined and are being used on applicants for employment; (2) employees with inadequate vision were referred for professional eye care, with benefit to the workers and to the company; (3) there is a definite advantage to the company for employees to meet visual standards, and (4) supplementary study should be continued with other factors, such as absenteeism, age of worker, quality of production, etc.

- 853 Compressed Air Work in Bridge Caissons. E.P. Jung. Am. Ind. Hyg. Assoc. Quart., 8, 83-88 (Dec., 1947)

The experience in the construction of four piers in the Mississippi River has been presented. During the pressure work from May, 1946, through January, 1947, there were 9,649 decompressions at pressure ranges from 22-45 pounds. Ninety-nine cases of air illnesses were recorded of which seven were considered serious. A summary of similar data collected in the construction of seven other bridges was presented. It was suggested that data for each shift and for each illness be recorded systematically in order that the experience of workers under pressure could be evaluated statistically. Tabular forms were presented for the collection of such data.

-- Author's summary

In about 20 years, if all goes according to schedule, nuclear fuel might replace a "considerable portion of the present power supply of the world," according to the Atomic Energy Commission.

-- Business Week (Aug. 7, 1948)

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Industrial Health Hazards and Their Effects

- 854 Silica Bearing Dust. L.E. Hamlin. Ind. Med., 17, 216-220 (June, 1948)

A list of naturally occurring forms of free silica and a few of the principal siliceous minerals is followed by a table in which siliceous materials are classified according to the industries in which they are employed, with the particular occupations offering possible hazards and explanatory remarks.

- 855 Dusty Lung Conditions in the Manufacture of Pyrotechnic Aluminum Bronze Powder. F.C. Frary. FIAT Final Report No. 991, Office of Military Government for Germany (U.S.). 8 pp. (Mar. 6, 1947). Obtainable from Office of Publication Board, U.S. Dept. of Commerce, Washington 25, D.C.

There were numerous cases of lung injuries, sometimes fatal among workers in aluminum bronze powder plants in Germany during the war, and the object of this study was to determine the relationship of plant conditions and practices in two plants to the occurrence of those injuries. There was some conflict of opinion among the persons interviewed, but the following are probable, or at least possible, factors in the incidence of the disease: (1) the injuries occurred only in the manufacture of pyrotechnic powder, which is very fine and contains only a small percentage of stearic acid or other lubricating material; (2) when and where the injuries were most numerous, ventilation was often poor on account of blackouts, and ceilings were low; (3) most of those affected were new workmen, more careless and in a generally inferior state of health and nutrition; (4) a war-time substitute for stearic acid, an "artificial vaseline," may have contributed, but there is no proof of this factor. The processes are described and compared with American procedure. In Germany a stamping process was used almost altogether, a coarse stamping for pigment aluminum and the early stages of the pyrotechnic powder, and a finer stamping to finish the "pyro" material. In American practice an atomizing process was used for the finer powder, and the dust produced was much less than in Germany. Another report by a member of the British FIAT will deal with the medical aspects of the disease.

- 856 Perchloroethylene. Chemical Safety Data Sheet SD-24. Manufacturing Chemists' Assoc., Inc., 246 Woodward Bldg., Washington 5, D.C. 14 pp. Price 20 cents from Association. (1948)

Perchloroethylene, or tetrachloroethylene is non-inflammable, but is toxic by inhalation, by prolonged or repeated contact with the skin, or mucous membrane, or when taken by mouth. The liquid can cause eye injuries. The material can be handled safely when the precautions set forth are constantly observed. They include methods of storage and handling, ventilation, eye, skin and respiratory protection. First aid methods are outlined.

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- 857 Hazards of Tableting Phenothiazine. E.A. Lum.
Manufacturing Chemist 19, 253-254 (June, 1948)

Phenothiazine is the parent substance of the thiazine dyes and has also limited medical use, being toxic in larger quantities. The dust may cause dermatitis and dyeing of the hair, and it was established that the vapor produced by oven drying produces severe skin irritation. All persons exposed to phenothiazine dusts for a number of short periods gave positive patch tests, and some who had not been exposed reacted similarly. Therefore, phenothiazine is a sensitizing agent and also a primary irritant to some persons. Protective measures included: isolation of the tablet machine, drying oven, etc.; enclosing the mixing bench and the mixing and granulating being carried out by working through sleeves inserted in the box front; a dust extraction fan; and wearing special clothing.

- 858 Health Hazards of Metal Cleaning Compounds. P.M. Van Arsdell.
Org. Finishing, 2, 20-25 (May, 1948)

In this concluding number of the series (see I-H-F Absts. 301, Mar., 1948; and 540, May, 1948), the toxic effects of some of the individual constituents of cleaning compounds are discussed. They include methyl, ethyl, isopropyl, normal butyl, and octyl alcohols, cresols, aniline, sulfonates, and miscellaneous groups.

- 859 Potential Mercury Vapor Hazard in a Gyro Laboratory. C.P. Jeffers,
G.J. Rosati and F.A. Jackson. U.S. Naval Med. Bull., 48, 139-146
(Jan.-Feb., 1948)

Metallic mercury is used as a ballistic or flotation medium in gyro-compasses, and the gradual accumulation of small deposits due to spillage was revealed during routine inspections of the gyro laboratory in the Mare Island Naval Shipyard. Much of this mercury was imbedded in small cracks and crevices of the porous concrete deck under the linoleum flooring because the latter had not been properly cemented down. With normal ventilation, all concentrations of mercury vapor were not higher than the accepted maximum allowable concentration of 0.1 mgm. per cu. m. of air, except at floor level where they were nearly three times as high as the accepted maximum level. Closure of the windows for two days resulted in a concentration in all parts of the room reaching twice the safety limit. The measures taken to combat this hazard consisted of removal of the old linoleum and the inactivation and sealing off of countless small reservoirs of liquid mercury imbedded in the concrete surface. A hard-surface linoleum was cemented firmly to the deck and was treated frequently with a floor wax containing 5% of sulphur to keep down vapor concentrations from unavoidable spillage. Measures were taken to avoid spillage as much as possible and a system of floor level exhaust ventilation was introduced. These measures were found to be effective when mercury vapor concentrations were measured three months later. No evidence of mercurialism had been discovered in any of the workers, but it was evident that a real hazard existed.

-- From Bull. Hyg.

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- 860 The Nature of the Acclimatization Occurring During Repeated Exposures of the Human Subject to Atmospheres Containing Low Concentrations of Carbon Monoxide. Esther M. Killick. *J. Physiol.*, 107, 27-44 (Jan. 1, 1948)

The author discusses several hypotheses regarding acclimatization to carbon monoxide at low concentrations, and comes to the conclusion on experimental evidence that in the acclimatized "some factor prevents the free diffusion of carbon monoxide between air and blood." Although there are no suggestions of any practical application of the results, the article should be of interest to those concerned with chronic exposure to carbon monoxide.

-- From Bull. Hyg.

Hygiene Conference Sponsored by Metallic Lead Products Division, Lead Industries Association, March 16, 1948. Lead Industries Assoc., 420 Lexington Ave., New York, N.Y. 21 pp. Price 20 cents. (1948)

The booklet reporting this conference includes the following three papers:

- 861 A Medical View of the Lead Problem. W.C. Wilentz. pp. 1-5.

The author does not believe that it is possible to eliminate all the toxic effects of lead dusts, but believes that it is entirely possible to handle all materials safely and to reduce the hazard until it is almost negligible. To reach that goal, ample funds must be provided willingly, available knowledge must be used, supervision must be extended to every employee, with medical orders relating to exposure taking place over all others, and the best medical talent must be employed. Lead absorption and intoxication should then recover with no resulting disability.

- 862 Medical and Hygiene Aspects of Plant Lead Control. L.E. Hamlin. pp. 6-11.

The scientific material in this paper and the following corresponds largely with that in an earlier paper by the two authors (see I-H-F Abst. 57, Jan., 1948), but here practical plant control is emphasized. Methods of entry into the body, types of poisoning, difference between absorption and intoxication, elimination, and the general course of examination and treatment are discussed, with samples of medical control forms.

- 863 Lead Hygiene in the Plant. The Industrial Hygiene Aspect. H.J. Weber. pp. 12-21.

This paper deals with the engineering aspects of prevention of lead poisoning. The subjects discussed include sources of exposure, use of respirators, exhaust ventilation, wet drilling, sampling of air and urine, and safety limits. As in the author's earlier paper, he advocates the use of spot samples of urine as sufficient in many cases, and considers the standard of 1.5 mg. of lead per 10 cu. m. of air too low and sometimes impractical. Complacency about the hazard and excessive concern over very slight contamination are extremes to be avoided. When a lead hazard is known to exist, the recommended steps to be taken include good housekeeping, systematic urinalysis, detection of the points of dangerous concentration in the air, and installation of exhausts at those points. The cost of a thoroughly conducted program will be repaid by the reduction in lead poisoning. Half-way measures will not justify their expense.

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Skin Diseases and Burns

- 864 Skin. The Fragile Element in Industrial Production.
G.E. Morris. Ind. Med., 17, 213-215 (June, 1948)

The first important element in the prevention of skin diseases is the selection of employees. Persons with a history of dermatitis from one cause will be especially susceptible to similar materials. Difficult problems are raised in cases of pre-existing adolescent pimples or of athlete's foot, as the question is whether additional affections are of industrial origin. Multiple irritants must also be considered; for instance, sensitivity to naphtha and to wool has been found in several cases. Causes of dermatoses are next considered. About 38% of all industrial cases are caused by four groups of agents: industrial solvents, oil, trauma and its management, and rubber and its compounds. If to these four, we add three more--resins, soaps, and chrome compounds, 50% of all cases are accounted for. The remaining 50% have very diverse causes. The first four are discussed. Remedies are necessarily various according to cause and individual susceptibility, but two are recommended as worthy of more extended trial: quaternary ammonium compounds, and G-11. "Looking to the future, I believe that industrial eruptions will be in large part prevented just as metabolic poisonings have been prevented. One must realize that the skin was meant to be surrounded by air--anything else, probably even clothing, is foreign to it. As the working area approaches this norm, industrial eruptions will largely disappear."

- 865 Formaldehyde Causes Dermatitis on Workers' Hands in Printing Plant.
Anon. Ind. Hyg. News Letter, 8, 4 (Aug., 1948)

The Division of Industrial Hygiene of New Hampshire investigated an outbreak of dermatitis in the mailing room of a magazine publishing plant. The paper contained formaldehyde, and the ink had previously contained a wax, but in order to print three colors instead of two, the wax had been eliminated at the time the dermatitis appeared. The ink came off on the operators' hands, carrying formaldehyde which caused the dermatitis. When the wax was present the ink and formaldehyde were retained in the paper. The only persons affected were girls under 22.

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Control Methods

- 866 Los Angeles Studies Lead and Silica Hazards in Pottery.
Anon. Ind. Hyg. News Letter, 8, 16 (Aug., 1948)

In a survey of a large pottery, the following hazards were located: (1) an automatic sandblast machine near other workers caused extensive noise and dust; (2) an automatic rotary glaze spray machine, supposedly provided with sufficient exhaust ventilation, allowed dangerous quantities of

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lead glaze to escape from the hood; and (3) exhausted spray, passed through a separator and the supposedly pure air recirculated from an opening 15 feet above the floor was found to contain excessive quantities of lead. The obvious remedies were applied.

- 867 Dust Control in a New York Foundry. Anon.
Ind. Hyg. News Letter, 8, 16 (Aug., 1948)

In a foundry making very large castings (50 feet long, weighing 50 to 60 tons), a study indicated the need for extensive dust-control equipment. The company received bids of \$300,000 to almost \$1 million. On request, two engineers of the New York Division of Industrial Hygiene and Safety Standards re-surveyed the environment, watching every detail. A plan for adequate dust control was evolved, costing about \$30,000.

- 868 Estimates of Moisture Increases Due to Water-Spraying Coal for Dust Control.
T.W. Guy. Coal Tech., 3, Tp-2386. 5 pp. (May, 1948)

Wet coal causes a serious increase in the normal wear and deterioration of equipment used in handling it. If water is used to spray or otherwise treat coal in order to reduce dust, it should not be applied to the extent that the coal is wet. Data are given here on the effect of spraying on moisture content and dust content of bituminous coal, from experience in several mines. Dust, defined by the Bureau of Mines as that passing a 20-mesh sieve, has been reduced at critical points in several mines by as much as 70 to 90%, with an increase of moisture in the run-of-mine coal of from 0.08 to 0.8%. A moisture content of 3% causes trouble in freezing weather, and 5% in the small sizes causes serious difficulty in screening, dedusting, pneumatic cleaning, etc. There is a critical moisture content, varying with the size of the coal, above which coal wets dry surfaces. Evidently careful application of spraying and other wetting processes does not cause the coal to become too wet, but more information on several points will be helpful. They include sources of dust, wetability of different coals, use and efficiency of wetting agents, and critical surface moisture in the 3/8 and smaller sizes.

- 869 Mercury. Ind. Health Bull., 2, No. 9, New Jersey Dept. of Health,
Div. of Ind. Health. 12 pp. (1948)

The use of mercury has been eliminated in the industries in which the hazard was greatest, but it still constitutes an industrial health problem of some magnitude. This booklet deals with the toxicology of mercury, methods of intoxication, symptomology and clinical findings, criteria of diagnosis, control methods, and detection and determination of mercury.

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- 870 An Ounce of Prevention Minimizes Lead Hazards. J.E. Hatfield.
Chem. Inds., 62, 401 (Mar., 1948)

Grilled floors, which safely carry heavy weights passing over them, with fresh flowing water underneath to catch lead dust are used at the Willard Storage Battery Company. Exhaust systems, sometimes combining both up- and downdraft, are also used on most working operations. Several methods, including the electrostatic collector, the impinger, and the slide

count, are used to determine the amount of lead dust in the air. A bag-type dust collector frees exhausted air of dust. -- Ind. Hyg. Absta.

- 871 Diesel Power for Underground Haulage. J.H. East, Jr. and E.R. Maize. Mining Tech., 12, Tech. Pub. No. 2384, 1-8 (July, 1948)

Diesel engines of suitable construction can be used safely in underground mines if adequate ventilation is provided and the Diesel equipment is kept in reasonably good repair. The Diesel mine locomotive is less hazardous in underground operation than one of the electric-trolley type. Statistics reveal that 783 fatalities were caused by electric trolley systems in underground mines in America in the period 1930-1944, while in Europe there were no fatalities caused by the use of Diesel locomotives in underground mines. -- From Authors' summary

- 872 Carbon Tetrachloride. Ind. Health Bull., 2, No. 7, New Jersey Dept. of Health, Div. of Ind. Health. 6 pp. (1948)

The properties and toxicology of carbon tetrachloride and engineering and medical control of the hazards are considered briefly.

- 873 Fluorine Disposal. Continuous Process. R. Landau and R. Rosen. Ind. and Eng. Chem., 40, 1389-1393 (Aug., 1948)

Increasing industrial use of fluorine and hydrogen fluoride has caused concern regarding the disposal of gases containing even small amounts of these materials, which are toxic and unpleasant as well as destructive to crops as far away as 10 miles from the source. The present paper describes a disposal plant of industrial size designed to handle large quantities of fluorine or hydrogen fluoride in varying concentrations and to remove them completely. The equipment is simpler than that used in previous methods. It operates continuously and while the excellent absorption characteristics of caustic soda are employed in the absorber, it is continuously regenerated with lime so that the cheaper lime is consumed. Operating data on the plant are presented. The same type of plant can be employed also in handling other acidic types of gases, such as carbon dioxide, and has potential applications in many other directions. -- Editors' summary

- 874 Evaluates Health Hazards in New Industrial Hygiene Laboratory. Anon. Steel, 122, 113, 128, 130 (June 14, 1948)

The features of the industrial hygiene program in effect at Bethlehem Steel Company, and the facilities and activities of the Company's new laboratory at Bethlehem, Pa., are described. The necessity of an industrial hygiene program is set forth, and its general features are described.

- 875 Taking Odors Out of Air. G.A. Van Brunt. Factory Man. and Maint., 106, 105-107 (Aug., 1948)

Bad odors in exhaust air made a serious problem for a manufacturer of vitamins or hormones, as they do in the perfume industry and others. The problem was solved by passing the air through activated carbon in specially

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constructed canisters. First it is necessary to remove dust which would clog the pores of the carbon. A fairly large percentage of the air can be recirculated. In the installation described, it was necessary to enlarge the operation requiring odor removal. It was found that the 25% outdoor supply could be decreased, rather than bring in additional air requiring heating or cooling. Details of placing of canisters, rate of air flow, and data for recirculation are given.

- 876 Fan Selection by Use of Constants. A.C. Stern and L.D. Horowitz.
Heat. Pip. and Air Cond., 20, 109-113 (June, 1948)

Starting with the information in McElroy's "Charts for Determining the Performance of Centrifugal Fans" (U.S. Bur. Mines, Rept. Invest. No. 3298), the authors have investigated a number of methods of simplifying fan rating and selection, and they present one believed to be the simplest and most useful. The method makes use of fan constants for the selection of rating of fans without reference to the conventional manufacturers' fan rating tables. One table of constants replaces many pounds of rating tables, but the method is intended to supplement their use, not to replace them. The treatment is mathematical.

- 877 Shielding Fan Systems from Corrosion. W.E. Langlois.
Heat. and Vent., 45, 70-72 (July, 1948)

In general, fan systems are protected by use of one of the following: special metals in the equipment, special paints, metal coatings, resin based and plastic coatings and rubber coatings, both natural and synthetic. The metals highly resistant to acids and other corrosive materials are expensive and difficultly workable, and metal linings add to the weight. The use of plastic or rubber coatings is the most general solution of the problem. No one coating is suitable against all corrosive agents. Tables are given showing concentrations of various corrosive materials with which various plastics can be used.

- 878 Maintenance of Foundry Ventilation Equipment. K.M. Smith.
Heat. and Vent., 45, 67-73 (June, 1948)

The author makes a number of suggestions for the maintenance of ventilation equipment used in foundries to prolong the life of the units and to increase operating efficiency, with attention directed especially to the troublesome parts of the equipment. First he emphasizes that "good maintenance begins on the drawing board," and that an excess of 5% more air than is exhausted should be supplied. Air heaters, fans, and dust collectors of the various types--cloth, dry cyclone, wet cyclone, rotary, centrifugal, and turbulent water bath, are discussed in turn. In conclusion, "a well-planned and operated preventive maintenance program for foundry ventilation equipment will not only prevent most equipment breakdowns, but it will provide cleaner and more comfortable working conditions in the foundry. It will result in more efficient production with a reduction in costs due to mechanical troubles."

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IN RE: ABRAMS November 1992

Physical Measurements

(Particle Size--Illumination--Air Pollution, etc.)

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- 879 Studies on Aerosols, III. Production of Liquid Aerosols with an Average Mean Micellary Diameter Under One-Half Micron. Study of the Agglutination of Liquid Micellae. L. Dautrebande, B. Highman, W.C. Alford and F.L. Weaver. Arch. Int. Pharmacodyn., 76, 247-273 (May 1, 1948) (In English)

The use of aerosols as dust particle carriers in animal experiments has been described in earlier papers (I-H-F Absts. 448, 452, April, 1948). Methods of preparation of the aerosols are described, especially the elimination of the larger particles and aggregates by passing through liquid barriers. By combining several methods of selection the authors obtained with an average mean micellary diameter under 0.5 micron. The micellae tend to aggregate, but do not coalesce in so doing, and retain their spherical shape for many hours, even after sedimentation. Figures on volume per cent and number of particles are given. It is believed that the aerosols generated according to the method given will prove much more effective, particularly in conveying therapeutic agents to the lungs and in controlling suspensions of very fine dust particles. For the latter purpose concentrated solutions should be used, since micellae dispersed from such solutions produce the largest aggregates.

- 880 Smoke Abatement and Smoke Ordinances. F.D. Mosher. Mill and Factory, 43, 119-122 (Aug., 1948)

The very desirable goal of reduction of atmospheric pollution in cities is sometimes confused by the entrance of the local politician who is hungry for the votes of groups of citizens urging improvement but almost totally ignorant of scientific means of smoke abatement. The usual result of a condition of this kind is to make the problem more difficult. The reduction of atmospheric pollution is a long range program that must be tied in with city planning. To conduct a program properly, industry either must take the initiative or competent civic-minded engineers must cooperate with municipal authorities in setting up the program. Once set up, the program must be guided constantly by citizens who are qualified by experience to cope with the problems that arise. The Coal Producers Committee for Smoke Abatement has surveyed a number of cities and presented their findings to citizen boards. Their findings of many defects in industrial plants and their recommendations for improvement are reviewed at some length. The development of a smoke ordinance in Erie, Pa. and establishment of an Industry Board along the lines recommended in this paper are described.

- 881 Stability of the Atmosphere and Its Influence of Air Pollution. H.F. Hebley. Mech. Eng., 70, 407-413 (May, 1948); Coal Tech., 3, No. 2395. 16 pp. (May, 1948)

The complicated subject of air physics is thoroughly discussed in its relation to air pollution in Pittsburgh, which is typical of a number of industrial cities. The main factors considered are wind and air motion,

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including movement through the valleys, turbulence, adiabatic lapse rates, inversion, and conditional instability. In conclusion: "From the foregoing statements it will be realized that there can exist a daily cycle of air conditions over a highly industrialized area, in which topography, location, and seasons combine to create polluted atmospheric conditions provided general large-scale weather phenomena favor it. No suggestions or methods are advanced as a palliative or cure for pollution that becomes concentrated in the atmosphere when stable air conditions as described are experienced. The problem is one that requires deep study."

- 882 Performance of a Diesel Mine Locomotive. L.B. Berger and R.T. Artz. U.S. Bur. Mines, Rept. Invest. No. 4287, 15 pp. (May, 1948)

Tests were made on a Diesel engine under practical working conditions, primarily to determine the composition of the exhaust gas produced under various haulage conditions and the quality of the mine atmosphere, and secondarily to illustrate certain performance characteristics of the engine. Under the observed operating conditions, the maximum concentration of carbon monoxide found in the exhaust gases was 0.11%, and that of oxides of nitrogen 295 p.p.m. No significant contamination of the mine atmosphere resulted from use of the Diesel locomotive, showing that ventilation on the haulageway was adequate. Test results indicate that when the locomotive is operated on downgrades, with the engine acting as a dynamic brake, a definite increase is caused in the concentration of aldehydes in the exhaust--a condition undesirable in underground operations on account of the odor and irritating effects of aldehydes. This increase in aldehyde production results from operation of the engine at extremely low fuel:air ratio under the conditions of dynamic braking. The information on the composition of the exhaust gas may be used to provide estimates of engine performance. The estimate of average power output of the engine on upgrade hauls was approximately 90 horsepower, or well below the rated maximum. It is pointed out that overcapacity in potential power output is desirable in selection of a Diesel for underground haulage, as it permits operation at a relatively low maximum fuel:air ratio, thus decreasing the possibility of producing excessive carbon monoxide in the exhaust gas. -- From Authors' summary

Analytical Methods

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- 883 Quantitative Analysis With the X-ray Spectrometer. H.P. Klug, L. Alexander and Elizabeth Kummer. Anal. Chem., 20, 607-609 (July, 1948)

Preliminary performance tests are reported for the Norelco Geiger-counter x-ray spectrometer with respect to reproducibility of measurements and accuracy in quantitative analysis of powder mixtures. Specimen preparation is discussed, and the necessity for avoiding large crystallites in the powder is indicated. The reproducibility with the automatic recorder appears not to be good enough for precise quantitative work. Manual counting in a single scanning usually permits the determination of quartz, in mixtures containing more than 10% quartz, with an average accuracy of about $\pm 5\%$ of the absolute amount present. Higher accuracy can be attained by several scannings. -- Authors' summary

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- 884 Determination of Lead in Air. Rapid Micromethod for Field Use. L.J. Snyder, W.R. Barnes and J.V. Tokos. Anal. Chem., 20, 772-776 (Aug., 1948)

To aid in the rapid determination of tetraethyl lead in air, a field micromethod was developed, consisting of an air sample through a special scrubber containing an iodine-potassium iodide solution. The solution containing the lead is drained from the scrubber into a comparator tube containing an alkaline reducing solution. The aqueous mixture is shaken with a dithizone solution and the resulting color is compared with permanent glass standards in a Hellige comparator. All the equipment is contained in two portable cases, so that an air sample may be collected and analyzed on the spot. The test requires approximately 10 minutes and is accurate to less than one microgram of lead per cubic foot of air.

- 885 Microdetermination of Lead in Biological Material With Dithizone Extraction at High pH. J. Cholak, D.M. Hubbard and R.E. Burkey. Anal. Chem., 20, 671-672 (July, 1948)

The use of a procedure for the quantitative extraction of lead with dithizone at high pH has facilitated the determination of lead in biological material. The high pH extraction step has been incorporated in the final estimation step of the Bambach-Burkey method. The difficulties and advantages of the revised procedure are discussed and analytical data are given to prove the adequate nature of the revised procedure. -- Authors' summary

- 886 Determination of Gamma Benzene Hexachloride by Partition Chromatography. O.T. Aeppli, P.A. Munter and J.F. Gall. Anal. Chem., 20, 610-613 (July, 1948)

Commercial benzene hexachloride contains at least five space isomers of hexachlorocyclohexane with other closely related materials. It is known that the insecticidal activity of benzene hexachloride resides principally in the gamma isomer. (Editor's note: Human toxicity is not mentioned in this paper but has been discussed by others.) In this paper a partition chromatographic method for determining the gamma isomer is described. The method is sufficiently convenient and rapid for routine tests.

- 887 Analysis of 1,2,3,4,5,6-Hexachlorocyclohexane for Gamma Isomer. A Polarographic Method. G. Dragt. Anal. Chem., 20, 737-740 (Aug., 1948)

A polarographic method is described for the determination of gamma isomer in hexachlorocyclohexane. The accuracy and precision of the results are $\pm 0.5\%$ on 13% gamma isomer samples and the method is believed to be more reliable and specific than the bioassay technique. -- Author's summary

The 118,272 workmen's compensated cases closed in New York State in 1946 included 114,310 accidental injuries and 3,962 occupational diseases. Compensation awarded for the accidental injuries amounted to \$56,429,950, and for occupational diseases \$1,972,474. --- "Compensated Cases Closed in 1946," Workmen's Compensation Board, N.Y., Res. and Statistics, Bull. No. 3 (1947).

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Laboratory Toxicological Studies

- 888 Asbestosis and Pulmonary Tuberculosis. R. Desmeules, L. Rousseau, M. Giroux and A. Soiris. Sem. Hop. Paris, 23, 1820 ff. (1947) (French)

The authors report from Quebec on asbestosis in the Canadian mines and on animal experiments. They disagree with Gardner's statements that pneumoconiosis due to asbestos is not an important factor in the production and progress of pulmonary tuberculosis, and that the presence of asbestos bodies in the sputum has no value in the diagnosis of asbestosis. Several cases of asbestosis are described; in one, death was due to tuberculosis and asbestosis, giving support although not proof for the authors' theory. Two cases of asbestosis with lung cancer are also described briefly. In animal experiments by Giroux, lung lesions and asbestos bodies were produced in guinea pigs but not in rabbits or dogs. In these animals the author traces the formation of asbestos bodies: fibers reaching the alveoli are rapidly covered by phagocytic cells, movement of the fibers results in microscopic bleeding from damaged alveolar walls; the hemoglobin from the liberated red cells is taken up by the phagocytes which already enclose the asbestos fibers. Subcutaneous or intratesticular injections into guinea pigs of suspensions of asbestos in olive oil resulted in the production of granulomatous lesions but no asbestos bodies. When, however, the suspension was injected into an area into which 1 ml. of blood had been injected immediately before, asbestos bodies were found after a month. He considers that the presence of asbestos bodies in sputum has significance, since it implies tissue damage in the lungs.

-- From Brit. J. Ind. Med.

- 889 The Efficacy of BAL (2,3-Dimercaptopropanol) in the Treatment of Experimental Lead Poisoning in Rabbits. F.G. Germuth, Jr. and H. Eagle. J. Pharm. and Exper. Therap., 92, 397-410 (Apr., 1948)

Under given sets of conditions treatment with BAL was not effective in preventing death from lead poisoning in rabbits. Urinary lead excretion was markedly increased after the first doses of BAL, but the magnitude of the excretion response diminished with additional treatments. Apparently only a small portion of the stored lead can be removed by this treatment. The implications with respect to the possible use of BAL in the treatment of lead poisoning in man are discussed.

- 890 Acute Toxicity of Arsenate of Lead in Animals. J.L. Voigt, L.D. Edwards and C.H. Johnson. J. Am. Pharm. Assoc., Sci. Ed., 37, 122-123 (1948)

The acute toxicity of arsenate of lead in chickens, white rats, and rabbits was studied. The oral LD₅₀ for a single dose was found to be approximately 450 mg. per kg. for chickens, 825 mg. per kg. for white rats, and 125 mg. per kg. for rabbits. The data included the red cell count and change in weight in chickens after feeding 500 mg. per kg. of arsenate of lead.

-- Chem. Absts.

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- 891 Hemoglobin and Cytochrome C Metabolism During Experimental Lead Poisoning.
A. Prader. Schweiz. med. Wochschr., 78, 273-276 (1948)

Lead acts as an inhibitor in the formation of hemoglobin by interfering with the incorporation of iron in the porphyrin portion of the hemoglobin molecule. In experimental lead poisoning in rabbits, an increase in serum iron and in the excretion of porphyrin was noticed. The synthesis of cytochrome C occurs independent of the synthesis of hemin by the bone marrow. It is not inhibited by lead poisoning and may occasionally be increased.

-- Chem. Absts.

- 892 The Problem of the Combined Action of Carbon Monoxide and Benzine Vapor.
V.M. Chernov and S.S. Liberman. Farmakol i Toksikol., 10, 22 (1947)
(Russian)

Experiments were performed with mice to determine the combined toxic action of carbon monoxide and benzine, such as might develop in those working in motor transport. The concentration, period of exposure, and temperature of air in the vapor chambers were noted. It was found that neither carbon monoxide alone nor benzine alone caused a very marked mortality at certain temperatures. But when animals were exposed to the two together the cumulative toxic effect was notable. A rise in temperature considerably increases the toxic action of benzine. The practical importance of these observations is great in view of the many cases of poisoning among those exposed to the two hazards.

-- Brit. J. Ind. Med.

- 893 Histopathology in Experimental Chronic Toluene Poisoning.
T. Sessa. Folia Med., 31, 91-105 (1948) (Italian)

Guinea pigs were treated with daily subcutaneous injection of 0.25 cc. toluene. Only in the last days of the period of survival, which lasted between 30 and 70 days, did systemic reactions like polypnea and convulsions appear. Local necrosis at the site of injection developed. The investigation of the organs showed hemorrhagic and hyperemic changes, in some organs degenerative and necrotic processes and medullary hyperplasia. Most affected were the lungs and kidneys, secondarily adrenals, liver and spleen.

-- Chem. Absts.

- 894 Lipotropic Activity and Toxicity of Methoxinine (Oxymethionine).
C.B. Shaffer and F.H. Critchfield. J. Biol. Chem., 174, 489-493 (June, 1948)

(1) With rats fed a diet containing 5 per cent casein and 40 per cent lard, a supplement of 50 mg. of methionine plus 50 mg. of methoxinine per rat per day effected a significantly greater reduction in the lipide content of the liver than did 50 mg. of methionine alone. (2) Addition of either 0.5 per cent methoxinine or 0.5 per cent methionine to the basal diet lowered the lipide content of the liver to the same degree. (3) The administration of 50 mg. per rat per day of methoxinine to animals fed the basal diet produced complete mortality of the group in 12 to 20 days, with significant kidney pathology evident microscopically. Addition of 50 mg. of methionine to this dose raised the level of food consumption, permitted survival over the experimental period, and reduced the severity of kidney damage, but did not prevent a significantly greater depletion of body weight

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as compared to the controls or to the group receiving methionine alone. This accelerated rate of weight loss was also observed in those animals fed the basal diet containing 0.5 per cent methoxinine (22 mg. per rat per day), although no mortalities occurred in this group over the period indicated.

-- Authors' summary

- 895 Methionine Therapy in Experimental Liver Injury Produced by Carbon Tetrachloride. V.A. Drill and T.A. Loomis. J. Pharm. and Exper. Therap., 90, 138-149 (June, 1947)

The effect of methionine on the liver injury produced by carbon tetrachloride was studied in dogs, which received both normal and low casein diets and different doses of carbon tetrachloride. The amount of fat in the diet was constant in all of the studies. In no case was there evidence for a beneficial effect of methionine on liver injury produced by carbon tetrachloride.

-- Bull. Hyg.

- 896 The Cutaneous Absorption of Acetone. A.N. Cesaro and A. Pinerolo. Med. d. Lavoro, 38, 384-387 (Dec., 1947) (Italian with English summary)

Experiments to determine the possibilities of cutaneous absorption of acetone by healthy skin are described. In conclusion, it is stated that in the experimental conditions, no percutaneous absorption can be demonstrated when the skin is healthy.

-- From Bull. Hyg.

- 897 Two Chlorinated Tertiary Amines (Diethyl-Beta-Chloroethyl Amine and Dimethyl-Beta-Chloroethyl Amine): Toxicity in Industrial Use. R.M. Watrous, J.K. Martins and H.N. Schulz. Ind. Med., 17, 237-241 (July, 1948)

(1) Industrial exposure to diethyl-beta-chloroethyl amine vapor caused severe irritation of the mucous membranes of the eyes, nose and throat. Mild pulmonary edema occurred. (2) Industrial exposure to dimethyl-beta-chloroethyl amine vapor at levels estimated to be between 50 and 500 micrograms per liter caused immediate nausea followed after some hours by vomiting and very prolonged dilation of the pupils. There was no effect on the circulatory system, and no detectable destruction of leukocytes. Levels estimated at 5 mg. per liter had an irritant and necrotizing effect on intact skin. Four case reports are presented. (3) We tentatively suggest that levels of dimethyl-beta-chloroethyl amine above 25 micrograms per liter (5.7 p.p.m.) would cause toxic symptoms if breathed for eight hours. (4) Similarities and differences with respect to the nitrogen mustards are discussed. (5) A color-reaction with 0.1% picric acid in chloroform is described, by means of which air levels as low as 1-2 micrograms per liter can be determined on 10-liter samples.

-- Authors' summary

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Radioactivity and X-Radiation

- 898 Radioactive Measuring Instruments. Their Selection and Use. D.A. Holaday. Am. Ind. Hyg. Assoc. Quart., 8, 78-82 (Dec., 1947)

Selection of radioactive measuring instruments depends upon the nature of the radioactive material and the purpose of the measurement; whether the radiation is continuous or intermittent, and whether the levels at the lowest point detectable or whether high. The use of several instruments for various purposes is discussed, and sources of error are considered. The concluding paragraph is worth repeating: "In conducting a survey, it is desirable to start out with two recently calibrated instruments and to take along a source of radiation, such as a luminous button, to check their operation. These precautions may guard against the operation of the fourth law of thermodynamics, which may be stated as, 'If anything can possibly go wrong with an instrument, at an inconvenient time, be assured it will go wrong.'"

- 899 Measurement of Alpha-Active Dust in the Atmosphere. H. Carmichael and P.R. Tunnicliffe. J. Ind. Hyg. and Tox., 30, 211-227 (July, 1948)

Apparatus of two kinds for rapidly extracting the dust from large volumes of atmospheric air so that the alpha particle activity of the dust can readily be measured in a methane proportional counter is described. The performance of the apparatus has been studied using the natural alpha activity in the atmosphere due mainly to radon and thoron and their disintegration products. Suction provided by a commercial vacuum cleaner, is at the rate of 2.0 cu.m. per min. in the electrostatic precipitation apparatus, but only 0.8 cu. m. per min. in the filter apparatus. Extraction of dust at these rates of flow is 40 per cent for the precipitator and 100 per cent for the filter. Counting efficiency is 49 per cent for the precipitator but only 14 per cent for the filter due to penetration of the dust into the paper. The over-all counting yield of the precipitator, for a given time of extraction of dust, is nearly four times that of the filter. It is necessary to have both types of apparatus in order that experimental determinations of the counting yield of either can be made from time to time. At least six hours must usually elapse after collection of a dust sample before uranium or plutonium of about the present health toleration concentration can be measured, because the natural alpha particle activity of atmospheric dust must first be allowed time to decay. -- Authors' summary

- 900 Toxicity of Inhaled or Ingested Radioactive Products. W.E. Cohn. Nucleonics, 3, 21-26 (July, 1948)

A general formulation is given and demonstrated which permits calculation of radiation dosage consequent upon inhalation or ingestion of radioactive material in terms of physiological behavior of the materials, nature of source and emitter.

-- Author's summary

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- 901 Program of the Atomic Energy Commission for the Use of Radioactive Materials. S. Warren. Ind. Med., 17, 221-224 (June, 1948)

The author reports that the distribution of radio-isotopes is growing at a fairly rapid rate, as more and more individuals are becoming interested in them. He describes the procedure for their distribution, including safe packaging and restriction of the quantity sent at one time. Disposal problems are also discussed. In a brief discussion following the paper the principal subjects are proper care on the part of the recipient, and the success obtained by radioactive isotopes in actual medical treatment.

Industrial Relations, Personnel

- 902 A Pit for Posterity. W.R. Gordon. Coll. Guard., 177, 137-141 (July 30, 1948)

The Douglas pit in South Africa, under construction since 1943 and probably to be completed in three years, is being designed as a model working community. The general layout consists of native quarters near the plant itself and housing for white workers at a greater distance. With plenty of space at their disposal, the company has provided desirable housing and other facilities, including many forms of recreation for both whites and natives. The whole presents a country club atmosphere, but that is regarded as good psychology and sound management. "Coal mining is a strenuous physical task fraught with danger. To keep those engaged at the new Douglas pit, as well as their families, fit in body and mind, is sound business common sense. Both mental and physical recreation and relaxation are essential to health and morale, especially in a community of different races working alongside one another but living some considerable distance from the main centers of population." This paper gives a number of details of the plan.

- 903 Making the Most of Morale Surveys. F.F. Bradshaw and H.E. Krugman. Personnel, 25, 18-22 (July, 1948)

In too many cases, the benefits derivable from attitude surveys are never fully realized because management is psychologically unprepared to translate the survey findings into action. Higher management too often is inclined to take action only on incidental or secondary findings, ignoring the more important revelations; or it may be merely content to learn that its staff morale is no worse than in other organizations. To counteract these tendencies and obtain the greatest benefit from morale studies, the authors advocate a special conference technique which has proved effective in enlisting management interest and participation. -- Editor's summary

- 904 Patterns in Fringe Benefits. A.C. Croft. Personnel, 25, 11-17 (July, 1948)

Marginal benefits are already costing industry a vast sum. One recent survey, for instance, indicates that voluntary social service plans and vacations alone average almost nine per cent of total payroll; another study

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shows that employer contributions to private pension and welfare funds more than tripled between 1942 and 1946. In this significant survey report, Mr. Croft describes the patterns that are gradually developing with respect to the 10 major types of fringe benefits. He also discusses the new types of demands which are emerging and may assume increasing importance.

-- Editor's summary

- 905 Bargaining on Employee Benefits. E.S. Hewitt and C.L. Kluss. Personnel, 25, 23-30 (July, 1948)

The NLRB's recent ruling that an employer must bargain with his employees on pension and retirement plans if they so request is fraught with serious implications. Should the courts uphold this ruling, and it is not modified at top policy levels or by legislative action, it may have a profound effect on the thousands of such plans now in existence and on the nature of those to be established in the future. This article discusses the decisions which management must make in view of this ruling, and the alternatives it faces.

-- Editor's summary

Building Quality into Manpower. Production Series No. 179, American Management Assoc., 330 W. 42nd St., New York 18, N.Y. 35 pp. (1948)

This number includes three papers.

- 906 Use and Results of Attitude Surveys. G.S. Case, Jr. pp. 3-14.

The story of an attitude survey conducted by The Lamson and Sessions Company is presented. The plan adopted was the use of personal interviews by an outside organization on representative personnel in two plants, but including men who would be most outspoken in their criticisms. Many items of management-labor relations were covered in the questions. Over all, about 75% of the employees were generally satisfied with conditions. A number of unfavorable conditions were brought to light which were admitted by management and steps were taken to remedy them. Among these were: lack of information about the company and its products; not enough attention given to employee's suggestions; failure to notify union representatives of contemplated changes; faulty administration of the wage system; and failure to sell good programs like the incentive system. One result was attention to problem employees and raising their efficiency. The incentive problem has not been solved, but the survey has enabled progress to be made.

- 907 The Selection of Executives and the Supervisory Staff. M.M. Mandell. pp.26-35.

Scientific selection of executives is advocated and described. A variety of techniques are employed. They include written tests, investigation of the candidate's background, and personality evaluation methods. If the three types are used with a full technical appreciation of their special attributes, the selection of administrators can be improved substantially. The formal program for the selection of five levels of supervisors, which has been in existence in the Federal Government for 25 years, is discussed.

A third paper, not abstracted, is "A Case Story in Committee Management" by W.M. Passano.

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Rehabilitation

- 908 The Placement of Disabled Workers. Anon.
Internat. Labour Rev., 56, 533-542 (Nov.-Dec., 1947)

This article does not add anything new to the present knowledge of rehabilitation, but it presents in a concise manner what is at present being done in many countries. Factors in successful rehabilitation are: (1) treatment of each disabled person as an individual problem; (2) use of psychological testing; (3) analysis of previous work history. The use of job analyses in several countries is reviewed. The abstract states that the footnote references should be useful to those particularly interested in this subject.

-- From Bull. Hyg.

Absenteeism, Hours of Labor, Etc.

- 909 Absenteeism and Injury Experience of Older Workers.
M.D. Kossoris. Monthly Labor Rev., 67, 16-19 (July, 1948)

The study included 16,500 men and 1,300 women workers, the men varying in age from under 20 to 74 years and the women from under 20 to 59 years. The average rate for women (6.5 per 100 days) is higher than for men (3.2), and the rates for women are stable through the age groups, while there is a decline in the case of men, from 20 to 60 years. About one-third of each was ascribed to sickness. For both men and women, the injury frequency rate decreases with increasing age, and the number of welfare medical visits per person likewise decreases. However, older persons require longer healing periods after injuries.

- 910 Studies on the Duration of Disabling Sickness, VII. W.M. Gafafer, Elizabeth S. Frasier and Rosedith Sitgreaves. Pub. Health Repts., 63, 901-923 (July 9, 1948)

The first six papers in this series were published from 1940 to 1944, and cover absences from groups of causes. This paper gives data on duration of sickness from a number of specific causes, from 1940 to 1946, as reported by 17 organizations, 11 throughout the period and the remainder for parts of the period. Out of about 140 specific causes considered, the 99 which account for 12 eight-day absences or more, are given in tables, with a summary column for "all causes." Most of the causes are quite specific, such as mycoses, cancer of particular organs, acute rheumatism, chronic rheumatism, gout, etc., but in a few cases partly specified causes are necessarily lumped together, as "other diseases of bones," "diseases of other and unspecified organs of movement," "non-industrial injuries," and "ill-defined and unknown causes." For each cause, the figures give, for age groups over

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and under 50 and total, the percentage of eight-day or longer absences which lasted more than one week, two weeks, etc. up to nine weeks, 13 weeks, and 26 weeks. The tables do not lend themselves to further abstraction. The diseases not included in the table are listed in order of the number of total absences.

Insurance and Medical Economics

- 911 Advances in Insurance Coverage--Accident Prevention and Control. Insurance Series No. 78, American Management Assoc., 330 West 42nd St., New York 18, N.Y. 39 pp. (1948)

Of the four papers contained in this number, the following is of special interest:

An Adequate Program of Group Insurance as Related to Workmen's Compensation. C.C. Clarke. pp. 18-26. When a group of employees is insured for non-occupational accident and sickness benefits at a certain rate, say \$35 a week, but the benefits arising out of workmen's compensation are only \$18 weekly, it seems reasonable to augment the benefits to a total of \$35 per week, whether the disability be occupational or non-occupational. The author's company (Zurich) has experimented with such a plan, the balance being covered by the carrier of the group insurance plan. It may not be too difficult to deal with a group where all employees work in the same state, but otherwise difference in state laws cause complications. Moreover, there are types of accidents that make adjustment difficult. In the case under experimentation, the group insurance was discontinued. A workable plan is still needed; there are several difficulties in carrying both kinds of insurance with the same company. The author advocates a rider to the regular group insurance policy to provide for occupational disability benefits supplementing those provided by workmen's compensation laws and giving benefits for disabilities occurring at work but not covered by compensation laws. The same general philosophy may be applied in providing supplementary hospital, medical, and surgical care under similar circumstances. The remainder of the paper is given to discussion of non-occupational group insurance.

In this number is also a report on the Monsanto Chemical Company disaster at Texas City, by F.A. Ulmer. A previous paper has presented the material from the same standpoint, but the speedy recovery of the city and plant is also described.

- 912 Industrial Injuries Fund (British). Anon. Chem. Age., 58, 807 (June 12, 1948)

The National Insurance Act of 1946 came into operation July 5, 1948, making important changes affecting employers liability for compensation in cases of accidental injuries and industrial diseases. Now all compensation payments will be derived from the fund formed under the Act. Contributory insurance is compulsory for all firms and is payable into the Industrial Injuries Fund. Both manual and non-manual employees are included in the

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scheme, irrespective of earnings, except that married women workers may be insured for injury only. Employee and employer share equally in premium payment. Provision is made for partial disability as well as temporary and permanent total disability. Compensation amounts are based on the degree of disability and the same rates apply to all persons, irrespective of their usual earnings. Otherwise many provisions of the old scheme will continue with modifications.

Public Health

- 913 Professional Growth in Industrial Hygiene. T.F. Hatch.
Am. Ind. Hyg. Assoc. Quart., 8, 93-94 (July, 1948)

The two unique features of industrial hygiene as a specialty are (1) teamwork between members of several basic professions; and (2) dealing with quantitative relationships between man and his environment. The second point implies a most critical attitude toward proposed relationships, standards and techniques of appraisal and diagnosis. Practical standards are essential, but unquestioned acceptance must be avoided.

Nutrition

- 914 Bacterial Food Poisoning. Anon.
Nutritional Observatory, 2, 52-57 (July, 1948)

Although many cases of gastro-intestinal disturbance have been wrongly attributed to "food poisoning" or "ptomaine poisoning," there is still a very real problem of food poisoning which has definite causal agents. Food may be an agent in poisoning, but usually only as a carrier of metals, pathogens, and toxins produced by spoilage organisms. Botulism, caused by the ingestion of the toxin produced by the bacteria, *Clostridia botulinum* is among the most deadly of the last named group. Most cases of botulism have resulted from insufficient cooking of home processed foods. Foods not processed under pressure should be boiled for five minutes to avoid ill effects. Other bacteria concerned in food poisoning are the *Staphylococci*. The white *staphylococcus* is found in milk and the yellow hemolytic *staphylococcus*, most frequently originates in cream fillings, milk, ham and tongue products. Proper refrigeration or reheating render these products safe for use. *Enterococci* have been implicated as possible causative organisms in food poisoning of a milk-type. Organisms of the genus *Salmonella* are found in animal flesh, fowl and foods contaminated by the droppings of rats and mice. Dangers of the toxin producing and infection groups causing food poisoning in the frozen food industry have been recognized and adequate bacteriological controls have been instituted. In conclusion, measures for the control and eventual elimination of food poisoning are summarized.

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Accident Prevention

- 915 Calcium Carbide. Chemical Safety Data Sheet SD-23, Manufacturing Chemists' Assoc., Inc., 246 Woodward Bldg., Washington 5, D.C. 8 pp. 20 cents. (1948)

Calcium carbide as such is inert, but in the presence of water reacts forming calcium hydroxide and acetylene. Production of acetylene is the main purpose of the chemical, but also constitutes the principal hazard, as reaction with a small amount of water in a closed space can develop sufficiently high temperatures to explode the acetylene formed. Therefore, precautions must be taken in shipping and use to keep it dry until ready for its proper use. Regulations with that purpose are given in detail. A minor hazard is irritant action on the skin from the lime that is formed. Lists of grades, strength, and physical and chemical properties are included.

- 916 Method of Sterilization of Protective Equipment. W.F. Scholtz. Am. Ind. Hyg. Assoc. Quart., 8, 92 (July, 1948)

Use of a solution of Rocal after soap washing is recommended for sterilizing protective equipment including large pieces like sand-blast helmets, welding helmets and rubber boots. The sterilizing solution retains its effectiveness for a considerable period and there is no adverse effect on hands.

- 917 German Techniques for Handling Acetylene in Chemical Operations. N.A. Copeland and M.A. Youker. FIAT Final Report 720. From condensation, Chem. Inds., 62, 399-400 (Mar., 1948)

Acetylene played a large part in Germany's chemical industry during the war. It was often used at pressures that would be deemed unsafe according to accepted practice. This paper summarizes the results of investigations by the I.G. Farben Industry with notes on German experience with the application of acetylene. Briefly summarized, these results are: (1) the decomposition pressure for pure dry acetylene increases with increasing vessel diameter up to a diameter of 20 mm., with increasing igniter temperature, and with increasing gas temperature; (2) water vapor raises the decomposition pressure, and liquid water is a desirable component in the system, on account of its large heat absorption potential; (3) mixing with other gases has a varying effect, depending upon the composition of the other gas; (4) in long pipes there is no pressure region in which a decomposition progresses slowly; a slow decomposition will usually turn into a detonation in a pipe 30 meters or longer, and elbows do not prevent spread of decomposition; (5) admixture of nitrogen raises the pressure limits, for detonation, but 50% is necessary before a real increase can be obtained; (6) explosion arresters were generally unsuccessful; (7) large open spaces must be avoided, and pipelines and elbows must be filled with small tubes or steel raschig rings. With these precautions, decomposition occurred sometimes, but there were no detonations. It was determined that compression to 15-20 atmospheres could take place in slow-moving reciprocating condensers by stages with intercooling.

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- 918 Integrating Safety Engineering in Engineering College Curricula.
H.W. Heinrich. 1947 ASME Annual Meeting Paper No. 47-A-30.

It is pointed out that the over-all objective of engineering education must include safety. Integration of safety with other educational material does not require additional courses, subjects, or time. It only requires amending or revising the course and subject outlines of existing curricula so as to include appropriate references to safety engineering, providing data and examples for the instructor, and also providing him with a manual descriptive of the general subject of integrated safety.

-- From Mech. Eng.

- 919 Personal Factors for Developing Safety Consciousness,
W.A. Cutter. 1947 ASME Annual Meeting Paper No. 47-A-31.

The foundation of a significant safety consciousness is laid deeper than simple adherence to a code of safe practices. It comes about, in its best sense, when all who are concerned in an undertaking--management, supervision, and the working force--understand all the conditions requisite to efficient production and are willing, by necessary training and standards of practice, to avoid those inefficiencies which lead to accidents and other losses. The personal factors for developing safety consciousness are fully discussed.

-- From Mech. Eng.

- 920 Accident Prevention Using Operations-Analysis Procedures.
J.V. Grimaldi. Mech. Eng., 70, 528-530 (June, 1948)

Operations analysis is the first step in methods analysis and is the first step toward obtaining all the possible facts pertaining to a job. When it has been made it should be the principal tool of the safety engineer. His next step is termed "methods safety analysis," which is primarily concerned with investigating the mechanical hazards of a method of an operation, rather than determining its hazardousness, due to various personal factors of the workers. Admitting the importance of the latter, the author presents the argument that it is necessary to know how much of the mechanical or chemical hazard is inherent in the process itself. The fundamentals of methods safety analysis are: (1) breaking down the job into its elementary steps; (2) listing them in proper order; and (3) examining them critically. Examples are given.

- 921 Plastics on Guard. Anon. Safety Eng., 22, 24-27, 42, 43, 46 (July, 1948)

The growing use of plastic materials in industrial goggles and eye shields and their advantages over glass for many types of optical protection are set forth.

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