FOUNDATION FACTS

This news-letter is issued monthly to member companies and trade associations affiliated with Air Hygiene Foundation. Its purpose is to report Foundation news and activities. Air Hygiene Foundation is a partnership of industry and science organized to protect the health of the 15 million workmen in heavy industry.

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FOURTH FOUNDATION MEETING HITS ATTENDANCE HIGH
Abstracted Proceedings Attached

More than 250 persons attended the fourth fall meeting of Air Hygiene Foundation held here November 14 and 15 -- a new attendance high. Exactly 101 companies, from Massachusetts to Utah, were represented. Also represented by invitation were, U. S. Public Health Service, U.S. Dept. of Labor, labor organizations, half-a-dozen state departments, universities, institutions and individuals interested in the advancement of employee health. Abstracted proceedings of the meeting are enclosed.

Virtually all aspects of industrial health were covered, from management's interest in costs, "O.D." laws and industrial and public relations, to the technician's interest in engineering precautions, absenteeism and fresh medical progress made through Foundation researches. The reports were further enlivened by discussion from the floor. The discussion of labor's viewpoint on occupational disease prevention was an innovation that proved extremely interesting.

Two rabbits, with "windows" affixed to their ears, were exhibited by research specialists from University of Pennsylvania to illustrate medical studies which the Foundation helps support at Penn. With the aid of a microscope delegates were able to look through the "window" and see the effects of toxic materials in living tissue.

"Spread the Word"

Proceedings of the meeting will be issued later. Meanwhile, in order to speed the material to member companies, comprehensive abstracts are enclosed for all reports and addresses presented. It is urged that the fullest benefit be derived from this material. Please route the reports to the various interested departments and individuals within your organization.

For instance, while all the material presented is of general interest, "The Viewpoint of an Employer Toward Industrial Hygiene," including authoritative cost and profit figures, will be of special interest to top management. The medical and engineering reports will be of special value to plant physicians and engineers. Industrial and public relations officials may be interested in discussions in the forum, "Impact of Employee Health on Industrial and Public Relations." The text of Dr. A.J. Lanza's presentation on sick absenteeism is enclosed. His paper introduced a symposium on the subject in which eight authorities participated. Their discussions will be included in the printed proceedings.

"Cookbook" on X-Ray Nearly Ready

A new Foundation bulletin will be issued soon giving practical procedures for use of x-ray in physical examinations in industry. This bulletin is the result o research which the Foundation supports at University of Pennsylvania. Dr. S. Reid Warren, Jr., summarized the new bulletin. He expressed belief that the report will aid industrial executives, physicians in industry, and roentgenologists.

Air Hygiene Foundation of America, Inc.,
4400 Fifth Avenue,
Pittsburgh, Pa.
November 22, 1939

REFERENCES TO RECENT LITERATURE ON INDUSTRIAL HYGIENE

(A) News Items

786 OCCUPATIONAL DISEASE LEGISLATION OF 1939. U.S. Dept. of Labor, Monthly Labor Review, 49, 136-139 (July 1939).
In 1939, three states (Arkansas, Idaho, and Maryland) passed new laws granting compensation for a number of specified diseases contracted in industry. Arkansas compensates for 33 diseases, Idaho for 11 groups, covering 15 or more diseases, and Maryland's law contains a list of 34 compensable conditions. Ohio amplified its law to include "any other occupational disease." Minnesota enlarged its list of compensable occupational diseases to include those due to the hazards of fire fighting. The State of Washington amended the basic law of 1937. In claims for silicosis and asbestosis, the worker must have been employed in the State for 2 years prior to the claim and if the inception of the disease occurred outside the State, the disease must have been quiescent and nondisabling for 2 years prior to the injurious exposure in the State. For other diseases, the quiescent period is 1 year. The legislature also deleted the provision that occupational disease coverage shall be borne equally by employer and employee. New York adopted an amendment providing for the extension of the 90-day period for medical treatment for dust diseases for an additional 180 days and hereafter it need not be continuous. Pennsylvania enacted a new and comprehensive occupational disease law, fixing benefits to be paid, the procedure, etc., for making claims. While the same diseases specified in the old law are covered, the amount of compensation, which previously might be unlimited, is limited to a maximum of $7500. Montana called upon the Congress of the United States to provide benefits for silicotics under the social security law and to provide grants-in-aid to States compensating for silicosis. A division of industrial hygiene in the State Board of Health was authorized, also the reporting of occupational diseases and inspection of industrial premises. New Hampshire and Oregon authorized appointment of special committees to study advisability of extending coverage to employees contracting occupational diseases. Including the new laws passed in 1939, there are now 30 jurisdictions, including District of Columbia, Hawaii, Philippine Islands and Puerto Rico, compensating for occupational disease.

787 COMPENSATED INJURIES. The Industrial Bulletin, New York State Dept. of Labor, 18, 347 (October 1939).
In 1938, compensation awards amounting to $747,791 were made in 2,366 cases where workers suffered from disabilities caused by exposure to or contact with harmful substances or by certain activities involving continuous rubbing, friction, pressure, and vibration in the course of their employment. These 2,366 disabilities consisted of 925 compensated as accidental injuries and 1,441 compensated as occupational diseases. When a disability is the result of a single exposure to an injurious substance it is compensated as an accident, usually chemical burns, skin irritations or poisoning. When disability results from exposure to a harmful substance or occupational activity over a period of time in employment it is compensated as an occupational disease. The 1,441 cases of occupational disease

are divided into 701 cases of dermatitis, 541 cases resulting from continuous rubbing, vibration, pressure or harmful position, 204 cases of systemic poisonings and a miscellaneous group of 195 cases, including silicosis, other dust diseases, contagious and infectious diseases contracted in employment, occupational hernias, etc. The average cost of compensation for occupational disease rose from $290 in 1937 to $316 in 1938. The average compensation for cases listed as accidental injuries declined from $355 to $274 a case.

788 INDUSTRIAL HYGIENE. A new book by various authors, edited by A.J. Lanza, M.D., Assistant Medical Director, Metropolitan Life Insurance Co. and Chairman of the Medical Committee, Air Hygiene Foundation of America, and Jacob A. Goldberg, M.A., Ph.D., Secretary, Industrial Hygiene Committee, New York Tuberculosis and Health Association. This forthcoming volume of approximately 700 pages, with many illustrations, was prepared by twenty-two writers, each a specialist in his field. Included among this list of contributors are: Dr. C.D. Selby, Consultant to the General Motors Corporation; Dr. Harvey Bartle, Surgical Director of the Pennsylvania Railroad; Drs. P.M. Sayers, Louis Schwartz and W.F. Von Oettingen of the U.S. Public Health Service; Dr. W.J. McConnell, Assistant Medical Director, Metropolitan Life Insurance Co.; Prof. C.E. Turner, Mass. Inst. of Technology; Dr. I. Ogden Woodruff, Professor of the College of Physicians & Surgeons; Dr. Lewis A. Conner and Dr. Foster Kennedy, Professors at Cornell University Medical College; and others equally well known in their respective fields. This volume should be of considerable help to industrial physicians, safety engineers, insurance companies, plant managers, industrial nurses and others concerned with the protection of the health of workers, and the prevention of accidents and occupational diseases. The publisher is the Oxford University Press, New York.

789 COMPENSATION FOR EXPOSURE TO MIXTURE OF SOLVENTS. Ohio Industrial Commission Monitor, 12, 153 (October 1939).
An employee of a dry cleaning plant applied for compensation for disability after two days exposure to a solution of carbon tetrachloride and naphtha. The attending physician was of the opinion that the disability was due to the vapors. Although carbon tetrachloride poisoning was not, at the time of the alleged poisoning, on the list of compensable occupational diseases, the mixture with naphtha made it possible for the claim to come within the provisions of the Occupational Disease Act. The claim was allowed.

790 COMPENSATION AWARD FOR HEART ATTACK. U.S. Dept. of Labor, Monthly Labor Review, 49, 386-387 (August 1939).
The Court of Errors and Appeals of New Jersey awarded compensation to a milk-truck driver who suffered a heart attack while making deliveries. The deceased employee had been engaged for a number of years as a driver, and on the day of the attack was forced to travel steep grades in the snow to make deliveries and reclaim empty bottles. The court held it was enough to say that an accidental strain of a heart, even though it was previously weakened, may be compensable when the accident arose out of and in the course of the employment. (Henty v. Janssen Dairy Corp., 6 Atl. (2d) 409).

791 INHALATION OF STONE DUST HELD PERSONAL INJURY. U.S. Dept. of Labor, Monthly Labor Review, 42, 679-680 (September 1939).
The Supreme Judicial Court of Massachusetts has held that the accumulation of granite dust in the lungs of a stonecutter during the course of his employment constitutes a personal injury, under the State Workmen's Compensation Act, when causing incapacity to work. In upholding the award of the industrial accident board, the court pointed out that the employee's condition "resulted not from a single incident but from years of work performed under conditions that were open and obvious and known to the employer." (Gustafson's Case, 21 N.E. (2d) 961).

792 LIST OF RESPIRATORY PROTECTIVE DEVICES APPROVED BY THE BUREAU OF MINES. H.H. Schrenk, U.S. Bureau of Mines, Information Circular No. 7030 (Fourth Supplement) (October 23, 1939). See May 1939 Abstract Bulletin No. 344 for previous approvals.

SCHEDULE 14--GAS MASKS.

Type A.-- Acid Gas Masks.

2. Acme Chlorine Gas Mask. Approval BM-1421, issued to Acme Protection Equipment Co., Inc., April 21, 1939.

3. M.S.A. Chlorine Gas Masks. Approval BM-1422, issued to Mine Safety Appliances Co., May 26, 1939.

Type B.-- Organic Vapor Masks.

5. Willson Organic Vapor Mask. Approval BM-1423, issued to Willson Products, Inc., October 6, 1939.

SCHEDULE 19A--SUPPLIED-AIR RESPIRATORS.

Type B.-- Special Hose Masks without Blowers.

2. Bullard Simplex Hose Mask. Approval BM-1916, issued to E.D. Bullard Co., October 14, 1939.

SCHEDULE 21 --MECHANICAL-FILTER RESPIRATORS.

Type A.-- Pneumoconiosis-Producing or Nuisance Dusts.

18. Dupor Skin-A-Cat Respirator No. 40. Approval BM-2129, issued to H.S. Cover, July 5, 1939.

19. M.S.A. Comfo Respirator, Approval BM-2130, issued to Mine Safety Appliances Co., August 23, 1939.

20. McDonald Dustfoe Respirator. Approval BM-2132, issued to B.F. McDonald Co., August 23, 1939.

21. Dustfoe Respirator. Extension of approval BM-2132, issued to Mine Safety Appliances Co., August 23, 1939.

Type A and Lead Dust.

7. M.S.A. Comfo Respirator. Approval BM-2133, issued to Mine Safety Appliances Co., October 13, 1939.

8. McDonald Dustfoe Respirator. Approval BM-2134, issued to B.F. McDonald Co. October 13, 1939.

9. Dustfoe Respirator. Extension of approval BM-2134, issued to Mine Safety Appliances Co., October 13, 1939.

Type B.-- Fumes.

1. Willson Respirator No. 770. Approval BM-2128, issued to Willson Products, Inc., April 15, 1939.

Type C.-- Mists.

3. M.S.A. Comfo Respirator. Approval BM-2130, issued to Mine Safety Appliances Co., August 23, 1939.*

4. McDonald Dustfoe Respirator. Approval BM-2132 issued to B.F. McDonald Co., August 23, 1939.*

5. Dustfoe Respirator. Extension of approval BM-2132 issued to Mine Safety Appliances Co., August 23, 1939.*

*For protection against chromic acid mist and mist from vitreous enamels whose liquid vehicle does not produce harmful gases or vapors. This approval does not cover the use of this respirator against lead-containing mist.

793 DISABLING MORBIDITY AMONG INDUSTRIAL WORKERS, SECOND QUARTER AND FIRST HALF OF 1939. W.M. Gafafer. U.S. Pub. Health Reports, 54, 1878-1880 (October 20, 1939). The records show a large difference in frequency rates of influenza and grippe for 1938 and 1939, the latter year being almost twice that of the former. Both the rates for non-respiratory and nervous system diseases show a very interesting downward trend.

794 CANCER HELD COMPENSABLE UNDER NEW JERSEY LAW. U.S. Dept. of Labor, Monthly Labor Review, 49, 387 (August 1939).
The New Jersey Court of Appeals and Errors held that although a cancer which developed from a mole on the instep of a worker could not be considered an occupational disease under the State Workmen's Compensation Law, nevertheless such a condition could establish an accidental injury within the meaning of the act. The employee operated a machine used in manufacturing building blocks out of ashes, sand, and cement. In the course of this work a certain amount of the ingredients got into his shoes and irritated a mole on his left foot which later developed into a malignant cancer. The referee found that the condition resulted from an occupational disease and therefore was not compensable under the Workmen's compensation law. The Court of Errors and Appeals disagreed, pointing out "it is not necessary that an accidental injury, in order to be compensable, be the result of traumatic force." (Bollinger v. Wagaraw Bldg. Supply Co., 6 Atl. (2d) 396).

795 INVESTIGATION OF ELECTRICAL EQUIPMENT, SAFETY LAMPS AND GAS DETECTORS FOR SAFETY. L.C. Ilsley. U.S. Bur. of Mines, Information Circular No. 7087, (September 1939). Obtainable from the Supt. of Documents, Washington, D. C.
This is a list of regulations governing the investigations for safety of electrically operated mine equipment, safety lamps, and gas detectors.

(B) Papers on Dust, Dust Diseases and General Industrial Hygiene.

796 INDUSTRIAL RAY PROTECTION. L.S. Taylor. Am. Soc. Test. Materials Bull. No. 99, pp. 23-31 (August 1939).
The tolerance dose recommended by the International Protective Commission is to not more than 10^{-5} roentgens per second for a 7 hour day. Designs for barriers are given.

797 TREATMENT OF INDUSTRIAL BURNS WITH REPORT OF 350 CASES. H.Poyner. Am. J. Surg., 42, 744-749 (1938).
The treatment used for industrial burns is described. The author's experience shows that a less than average economic loss resulted.

798 HEAT STROKE, ITS PATHOGENESIS. L. Derobert. Arch. des mal. prof., 2, 5-23 (1939). (French).
Animal experiments revealed heat stroke produced tissue changes similar to those of anaphylactic shock.

799 EXAMINATION OF COTTON MILL WORKERS. U. Thiry. J.Am.Med.Assoc., 113, 1047 (September 9, 1939). (Belgian).
Hypertrophy of the lymph glands and high blood pressure is common among young cotton mill workers. Hypotension is uncommon and among the older workers pulmonary sclerosis is frequent in occurrence.

800 THE HYGIENIC ASPECTS OF WELDING. F.H. deBalsac and Leroy. Arch. des mal. prof. 2, 225-246 (May 1939). (Special Number). (French).
Much of the danger involved in welding with oxy-acetylene is due to the impurities present in the commercial gases. Phosphine may be present in acetylene and the nitrogen in commercial oxygen may be oxidized at the high temperatures to nitrous oxide. Coated electrodes in electric welding are helpful in the prevention of nitrogen fixation. Other health hazards of welding and brazing are discussed.

801 IMPROVEMENT IN GENERAL HEALTH THROUGH INDUSTRIAL HYGIENE. Ohio Industrial Hygiene Bulletin, 1, No. 6 (September 1939).
Although tuberculosis as a cause of death in the general population has fallen from first place in 1910 to seventh place in 1938, it still remains among the chief causes of mortality in th industrially employed. A study by the American College of Surgeons showed that the average worker loses fifteen times as much time from work as a result of non-industrial accidents and illness as he does from injuries incurred at his work. Industrial absenteeism is responsible for economic loss to the employer and the state as well as the worker.

802 HEALTH AND SAFETY IN A MODERN FACTORY. The Foundry 67, 22-27 (November 1939).
A photographic record of the various steps in the entire employee health program and some of the features of safety work in a Muskegon, Michigan foundry.

803 HAZARDS IN THE CEMENT INDUSTRY. Occupational Hazards, 2, 10 (October 1939).
Studies in the cement industry have shown that a fibrosis can be produced after a long exposure. However, this effect is negligible compared to its irritant effect caused by chemical action. The types of disability encountered are irritation of the respiratory tract, "burning" of the skin, conjunctivitis, clogging of the ear and various rheumatic conditions. Morbidity and mortality rates for respiratory diseases, and especially pneumonia, are very high. All of these affections respond very definitely to the proper preventive measures.

804 CONTRIBUTION TO THE KNOWLEDGE OF PNEUMOCONIOSIS FROM LAMP BLACK. O. Hübner. Arch. f. Gewerbepath. 9, 426-434 (1939). (German).
This illustrates the danger of depending on the occupational history as given by the patient. This man claimed to have no other dust exposure than lamp black and hence, the diagnosis at death was "anthracosis." Autopsy revealed extensive silicosis of both lungs and further investigation into the man's history showed that he had worked in a china factory for eleven years.

805 THE PRESENT STATUS OF SILICOSIS. A.J. Lanza. Ohio State Medical Journal, 35, (September 1939).
This is a summation of the problem of silicosis. The general statistics, prevention, etiology and diagnosis of this condition are ably discussed. One of the important defects in our information on this disease is the lack of definite mortality statistics. A few states require reporting of cases of occupational disease but this procedure is not uniform. When it is considered that estimates of the number of workers exposed to silica dust vary from 500,000 to a million, it can be seen that this is a problem of no mean proportion. The physiological relationship of silica and tuberculosis is but partially understood but practically it is of the highest importance as is borne out by evidence of the high death rate from tuberculosis among those exposed to silica dust. The importance of evaluating working conditions in the diagnosis of silicosis cannot be overemphasized. It prevents both the unjustified and the missed diagnosis. Estimation of disability should not entirely be governed by examination of the x-ray. The author feels that silicosis as a cause of heart disease has been overexaggerated.

806 SILICOSIS IN THE NETHERLANDS. J.Am.Med.Assoc., 113, 154 (September 2, 1939). (Netherlands Letter).
In a group of nearly 250 sand workers, more than half of whom had worked at the occupation less than three years, 20% showed signs of pulmonary trouble. Thirty-three had definite silicosis and 8 silico-tuberculosis. In 12, silicosis was doubtful and one had pulmonary tuberculosis.

807 DYSPNEA OF SILICOSIS: WHAT CAUSES IT. L.G. Cole and W.G. Cole. J.Am.Med. Assoc., 113, 1216-1221 (September 23, 1939).
Although the outstanding symptom of silicosis, dyspnea has not hitherto been accounted for by recognized pathologic changes. It is often absent in cases of marked nodulation and is, on the other hand, often present in indefinite nodulation. It has been theoretically explained by two pathologic factors: (1) nodulation and (2) alveolar consolidation. To these, the authors add capillary obstruction and dilatation. They were led to this conclusion by consideration of the acute manifestation of the disease. Unlike most diseases, which can be recognized by morbid changes in small sections, silicosis presents a vast variety of tissue alterations in various parts of the lung.

808 ANTHRACOSIS OR PULMONARY TUBERCULOSIS OF COAL MINERS IN NEW SOUTH WALES. C. Badham. Arch. des mal. prof., 2, 1-4 (1939). (French).
Among these coal miners, incapacity was caused by emphysema in most of the cases. Tuberculosis was uncommon. The nodules were not as hard as those found in silicosis. The author raises the question whether these changes are produced by coal alone or constitute a silicosis modified by carbon.

809 SILICOSIS FROM SILICEOUS CHALK. K. Humperdinck. Dtsch. Arch. f. klin. Med., 184, 156-162 (1939). (German).
Three men worked for 10-14 years cleaning wool with "Neuberger" siliceous chalk, a hydrous form of opal containing 86% silica. X-rays showed light to medium lung changes, indistinct lung shadows but no nodules.

810 EXAMINATION OF A CHROMIUM-SILICOTIC LUNG. E. Letterer. Arch. f. Gewerbepath., 9, 498 (1939). (German).
Post-mortem examination of the lungs of a sandblaster in a ferro-chromium department revealed not only typical silicotic changes but diffuse enlargement of alveolar septa and an unknown form of interstitial and alveolar chronic penumonia. It is the author's opinion that these latter conditions are due to breathing the chromic oxide.

811 CENTRAL MINING- RAND MINES GROUP. HEALTH DEPARTMENT REPORT FOR THE YEAR 1938. A.J. Orenstein. Johannesburg, (1939). South Africa.
A decrease in the number of cases of silicosis is said to be of no significance in this report since the rates fluctuate from year to year. Experimental work showed that ozone had a deleterious effect on the general metabolism, raising the blood sugar, uric acid and non-protein nitrogen and reducing urinary output. An increase in working efficiency resulted when natives, working at depths of 6100-7000 feet, were given a phosphate sugar syrup to bring up to normal the deficiency in their blood. This aids the carbohydrate metabolism preventing ketosis.

812 HEALTH INJURY FROM INDUSTRIAL DUST. O. Schulz. Gasmaske 11, 57-66 (1939). (German).
This article describes silicosis in a carpenter using sandpaper, lung cancer in men using chromates, and changes similar to asbestosis in the lungs of a man working with glass wool.

813 TECHNIC IN EXPERIMENTAL SILICOSIS AND INVESTIGATION ON THE VALUE OF THE TRACHEAL CATHETER IN STUDYING THE EFFECT OF DUST ON THE LUNGS. C. Haeslund. Arch. f. Gewerbepath., 9, 414-425 (1939). (German).
Dust blown into the bronchi by means of a catheter produces a greater reaction than dust inhaled in a chamber.

814 ATMOSPHERIC CONTAMINATION. A.H. Pfund. Science 90, 326-27 (October 6, 1939).
A preliminary report on physical methods of determining concentrations of certain gases and vapors when admixed with atmospheric air. Only those compounds such as carbon dioxide, carbon monoxide, methane, etc., having characteristic absorption bands in the infrared can be evaluated. The apparatus showed high sensitivity and selectivity.

815 THE SAMPLING OF MINE DUSTS WITH THE THERMAL PRECIPITATOR. H.S. Patterson. Inst. Min. & Metall. Bulletin No. 417 (June 15, 1939). (British).
It has been claimed that the thermal precipitator has an efficiency of 100% against all dust particles between 0.2 and 20.0 microns in size. It has not been used to any great extent in industry in this country and its possibilities have not been fully explored. In Great Britain it seems more popular. This is a description of an improved form of portable sampler for mining, of methods of sampling and examination of dust records.

816 CERTAIN DUSTS PRODUCED BY MINING PROCESSES AND IN OTHER WAYS. H.S. Patterson. Inst. Min. & Metall., London, Bulletin No. 417 (June 1939). (British).
Drilling in hard rock tends to form more small particles than drilling in soft rock. In dry drilling many of the finer particles coagulate, but in wet drilling much fine dust may be obtained.

817 EVALUATION OF DUST STUDIES. Ohio Industrial Hygiene Bulletin 1, No. 6 (September 1939).
It is generally conceded that a concentration of dust exceeding 100,000,000 particles per cubic foot is undesirable regardless of the physiological properties of the material. Such a condition constitutes a nuisance and may be deleterious to equipment and machinery as well as the worker. According to present standards a concentration of two to three million particles per cubic foot may be considered safe regardless of the fibrosis producing character of the dust. Intermediate between these figures are numerous threshold limits for various compositions.

818 REDUCING FLY-ASH EMISSION. J.F. Barkley. Power Plant Engineering, pp.745-47 (November 1939).
A comprehensive review of the simple and proprietary devices available for combating this ever increasing nuisance. In this article the proprietary devices have been largely eliminated to form what may be called an introduction to the science of dust collection. The simple devices described are in general applicable to the smaller plant for the elimination of the heavier particles.

819 RECENT ADVANCES IN DUST SEPARATOR DESIGN. Engineering and Boiler House Review 53, 207-211 (October 1939).
A description of the Howden centrifugal dust collectors, equipment for the Velox boiler, the Modave dust arrester and a brief survey of other designs.

820 DETERMINATION OF BENZENE HYDROCARBONS IN LACQUER SOLVENTS. F.X. Mayer and A. Luszczak. Arch. f. Hyg., 122, 98-137 (1939). (German).
A useful method in two steps for the analysis of lacquer solvents. The authors show how the benzene lost in separating the water soluble portion may be evaluated. The cyclic compounds are tested by absorption-spectro analysis.

821 CONTINUOUS REGISTRATION OF CARBON MONOXIDE HEMOGLOBIN IN THE CIRCULATING BLOOD. K. Matthes and F. Gross. Arch. f. exp. Pathol. u. Pharmakol., 191, 391-406 (1939). (German).
An ingenious method utilizing the difference in the light adsorption of blood in the red and ultra-red part of the spectrum for continuous and simultaneous recording of CO-Hb, Oxy-Hb and reduced Hb by means of a photoelectric cell.

822 VALUE OF QUANTITATIVE DETERMINATION OF CARBON MONOXIDE FOR LEGAL EXPERTS AND FOR THE CLINICAL INVESTIGATION OF CARBON MONOXIDE POISONING. L. Breitenecker. Wien. klin. Wchnschr., 52, 486-489 (1939). (German).
Accurate diagnosis can be aided if the blood is examined as soon as possible since carbon monoxide disappears within 10-24 hours. Ordinary technic will not detect less than 25% CO-Hb, but the spectrophotometer will show as little as 2%. Symptoms begin in carbon monoxide poisoning when the CO-Hb is from 15-25% and unconsciousness at 50%.

823 DETERMINATION OF LEAD BY DITHIZONE, MODIFICATIONS AND IMPROVEMENTS OF THE HUBBARD-CLIFFORD-TICHMAN METHOD AS APPLIED TO BIOLOGICAL MATERIAL. K. Bambach. Indust. Eng. Chem., Anal. Ed., 11, 400-403 (July 15, 1939).
Hydroxylamine used in the initial extraction prevents oxidation of the dithizone and eliminates the second extraction step of the Hubbard method. Other improvements and eliminations have been devised with saving of time and without loss of accuracy.

824 SPECTROSCOPIC ANALYSIS OF BIOLOGICAL FLUIDS FOR HEAVY METALS. Armstrong and Brackett. J.Ind.Hyg. & Toxicol., 21, 448-460 (November 1939).
Spectroscopic analysis by sensitive line emission has very decided advantages, namely, the small sample required for an analysis, and the extremely small amount of material detectable. However, biological spectroscopy has presented considerable difficulty heretofore. This article describes in detail a satisfactory technique, together with certain observations. It was found possible to use as small a quantity as 0.1 cc. of fluid and to detect very minute amounts of lead and other heavy metals.

825 CALIBRATION AND USE OF THE GAS INTERFEROMETER. F.A. Patty. J.Ind.Hyg., & Toxicol., 21, 469-474 (November 1939).
The interferometer may be used in industrial hygiene to quantitatively determine any gas or vapor having a refractivity sufficiently different from that of air. Being more portable, more accurate and more rapid than other physical means, it has obvious advantages and, in the authors' opinion has not received the popularity it deserves. Its disadvantages -- the removal of interfering substances and the partial sorption of certain vapors -- are also inherent in most methods. A simple method of calibration and simplified data for the computation of vapor-in-air concentrations for 40 compounds are presented.

826 THE PRESENCE OF NON-OXYGEN-COMBINING (INACTIVE) HEMOGLOBIN IN THE BLOOD OF NORMAL INDIVIDUALS. Warburg. Science 90, 372-73 (October 20, 1939).
It has been found that in certain normal individuals there is a not inconsiderable amount of a kind of hemoglobin capable of binding only carbon monoxide. Out of 82 examinations, about two thirds showed less than 5% of the total hemoglobin; in only four cases did it exceed 10%. According to these findings, the so-called active oxygen fixation power must be considered a very unreliable measure for the amount of hemoglobin. The oxygen capacity is not recommended in the standardizing of colorimetric hemoglobinometers.

(C) Papers on Industrial Poisons, Cancer, Dermatitis, etc.

827 ACCIDENTS CAUSED BY COLD TARRING OF BOILERS. E. Martin. Med. du Travail, 11, 81-85 (1939). (French).
Evaporation of benzene, the solvent used in cold tarring, proves hazardous in unventilated boilers. This is a report of two non-fatal cases.

928 The following five articles on benzene are presented in the October 1939 issue of the Journal of Industrial Hygiene and Toxicology, Vol 21. They have been bound in monograph style and may be obtained for $1.00 from the Journal at 55 Chattuck St., Boston, Mass.
CHRONIC EXPOSURE TO BENZENE (BENZOL).
I. THE INDUSTRIAL ASPECTS. M. Bowditch and H.B. Elkins. pp. 321-330.
II. THE CLINICAL ASPECTS. F.T. Hunter. pp. 331-354.
III. THE PATHOLOGIC RESULTS. T.B. Mallory, E.A.Gall and W.J. Brickley. pp. 355-393.
BENZENE (BENZOL) POISONING IN THE ROTOGRAVURE PRINTING INDUSTRY IN NEW YORK CITY. L. Greenburg, M. R. Mayers, L. Goldwater and A.A. Smith. pp. 395-420.
THE HEMATOLOGICAL EFFECTS OF BENZENE (BENZOL) POISONING. Erfand Rhoads. pp. 421-435.
The importance of correlating clinical symptoms, blood examinations, and air analyses cannot be stressed too much. One should not be used to predict the extent or effects of the others. On the one hand, the potential hazard may be great while not giving evidence of physiologic effect on the workmen, while on the other, the limitations of the clinical test may not completely reflect the actual hazard. The urine sulfate test, for example, is limited in measuring excessively high exposures to benzene. Also a very low ratio, such as 10%, indicates an exposure only 1/2 as great as that of 30% and only twice as great as does a ratio of 50%. With two fatal cases exposed to less than 75 p.p.m. and reasoning that benzene may attack the bone marrow before being rendered innocuous by the liver, a reduction in the accepted safe concentration is advocated. Although the various writers disagree as to the most sensitive index of the effects of benzene, one favoring the decrease in polynuclear percentage, the others a diminution in the number and increase in the size of erythrocytes, the evidence seems to show that decreased erythrocyte counts together with leucopenia and absolute polynuclear decrease are signs of more severe poisoning. A combination of leucocyte and erythrocyte count together with a cell volume determination shows an efficiency of over 90% in detecting affected individuals. Macrocytosis should always be looked upon with suspicion. Fatal results may be expected unless diagnosis is made before anemia develops. Women do not seem to be more susceptible than men and tolerance to this exposure does not appear to develop. The fact that the signs and symptoms of chronic poisoning may not appear until long after the exposure has ceased is probably due to a compensated bone marrow breaking down with the onset of even slight infections. This probability, together with the possible causal relationship of benzene with acute leucemia, raises new problems in industrial compensation.

929 TOXIC FUMES -- IN MASSACHUSETTS INDUSTRIES. H.B. Elkins. Industrial Medicine, 8, 426-432 (October 1939).
A very useful and complete table of the maximum allowable concentrations of industrial vapors, fumes and gases has been compiled by the Massachusetts Dust and Fume Code Committee. Values have been proposed for some 40 substances present in typical industrial atmospheres. The average exposure throughout the day or week and not the momentary exposures has been primarily considered. Of more practical interest is the data on actual concentrations as found by surveys of industrial plants. A definite improvement in the extent to which hazards have been eliminated has been observed; a decrease of from 47% to 31% of unsafe concentrations being noted in one year.

930 FATAL SUBACUTE OCCUPATIONAL LEAD POISONING. W. Ehrhardt. Arch. f. Gewerbepath., 9, 407-413 (1939). (German).
Fatal case of a lead sprayer after relatively short intermittent exposures. Autopsy showed liver and kidney damage.

821 POSSIBILITIES OF CONTROL OF LEAD EXPOSURE BY EXAMINING LESS THAN 24 HOUR URINE SAMPLES. E.C. Barnes. J. Ind. Hyg. & Toxicol., 21, 464-468 (November 1939).
Difficulties involved in obtaining 24 hour samples of urine for analysis of lead stimulated an investigation into the correlation between short time or instantaneous specimens and those for the longer period. It was found that a determination of the lead excreted per hour, as found by analyzing a specimen representing 2 or 3 hours' excretion during the working day, gives a fairly reliable measure of the average excretion for that day. No widely divergent values were obtained provided urine specimens of extremely low specific gravity were not used.

822 VOLATILIZATION OF LEAD BELOW 800°C. Paul F. Rezin and Philip Drinker. J. Ind. Hyg. & Toxicol., 21, 461-463 (November 1939).
Curves are given which show the amounts evolved of lead and linotype metal with rises in temperature. Although lead boils at 1620°C., it was found that significant amounts of lead were carried off from the molten baths at temperatures below 800°C.

833 LEAD TETRAETHYL AS AN ANTI-KNOCK. Szczepanski. Arbeitsschutz, pp. 209-216 (1939). (German).
The German regulations governing the use of tetraethyl lead are very similar to those in force in America. It must be colored and used only for a motor fuel.

834 GASTROINTESTINAL TRACT, ESPECIALLY DISTURBANCE OF THE INTESTINES, IN LEAD POISONING. H. Otto and F. Kuhlmann. Klin. Wchnschr., 18, 1081-1084 (1939). (German).
Lead has an extensive effect on the gastrointestinal system from the mouth to the large intestine. It causes permanent contraction of the arterial capillaries of the skin and mucous membrane of the lips. Spasms of the small intestine can cause colic and ileus.

835 OXYGEN CONSUMPTION OF BONE MARROW IN LEAD POISONING. S. Caccuri. Folia med., 25, 534-541 (1939). (Italian).
The oxygen consumption of bone marrow in lead poisoned guinea pigs was over twice that in healthy animals. This is thought to be a change in the reaction of normoblasts.

836 FATAL ACCIDENT FROM NITROUS GAS. W. Krauland. Wien. klin. Wchnschr. 52, 493-95 (1939). (German).
A description of the gross and microscopic changes in the lungs in this fatal case of nitrous poisoning resulting from dipping brass articles into nitric acid. Nitric acid was found in the lungs but also seems to be present in normal lungs.

837 SEVENTEENTH ANNUAL REPORT OF THE SAFETY IN MINES RESEARCH BOARD, 1938. H. M. Stationery Office, London, (1939). (British).
Experimental studies of the concentration of nitrous fumes after shot-firing in underground workings led to the finding that exposures as low as 0.0013% of nitrous oxide caused inflammation in lungs of guinea pigs. Noise reduction at air-turbine engines and application of exhaust silencers to pneumatic picks is being studied. Tests of gas absorption canisters revealed that leakage of carbon monoxide was less than a liter in 4 hours, with a 1% mixture of carbon monoxide and air flowing at the rate of 32 liters per minute.

838 POISONING FROM LEAD TETRAETHYLENE BENZINE (LEAD GASOLINE) AND ITS COMBUSTION PRODUCTS. E. Starring. Dtsch. Ztschr. f. Nervenheilkund., 148, 262-281 (1939) (German).
Report of two cases of lead poisoning resulting from use of leaded gasoline in cleaning machinery and other exposures to its vapors.

839 VITAMINS IN INDUSTRY. R. T. Bisbee. Porcelain Institute Enameling Forum. Ohio State University.
Visual purple, a substance in the retina which is indispensable in vision, is regenerated by vitamin A. Light, falling on the retina which corresponds to the film, gradually changes the visual purple into another substance. On the efficiency of this change depends the sensitivity of the eyes. With these facts before them the managers of the Westinghouse plant in Mansfield, Ohio, decided over two years ago to administer vitamin A wherever there was marked eye fatigue.

840 SERIOUS CHANGES OF THE LIVER FROM ACUTE POISONING IN "METALLIZING" IN A TANK. J. Adler-Herzmark. Arch. des mal.prof., 2, 24-28 (1939). (French).
Toxic impurities in acetylene and spray coating with zinc produced this intoxication showing a light jaundice and glycemia.

841 PROGRESSIVE BULBAR PARALYSIS AND AMIOTROPHIC LATERAL SCLEROSIS AFTER CHRONIC MANGANESE POISONING. H. Voss. Arch. f. Gewerbepath., 9, 454-476 (1939). (German).
Fifteen years exposure to manganese dioxide produced a case of lateral sclerosis modified by certain aspects of manganese poisoning.

842 THE OCCURRENCE OF OCCUPATIONAL MANGANESE POISONING IN THE STEEL INDUSTRY (APROPOS OF A CASE IN A GRINDER OF FERRO-MANGANESE.) H. Voss. Arch. f. Gewerbepath., 9, 453-463 (1939). (German).
A list of all published material on manganese poisoning is given. A typical case of a grinder of ferro-manganese, exposed to the dust resulting therefrom, is described.

843 SERIOUS MANGANESE POISONING AMONG EGYPTIAN MANGANESE MINERS. E.W. Baader. Arch. f. Gewerbepath., 9, 477-486 (1939). (German).
With the introduction of mechanical drilling, manganese poisoning developed in a very short time (3 weeks to 5 months). During the period of hand drilling, the disease appeared only after several years exposure.

844 THE CONCENTRATION OF CARCINOGENIC MATERIALS IN MINERAL OILS BY DISTILLATION PROcesses. J.M. Twort and R. Lyth. J. Ind.Hyg. & Toxicol., 39, 161-169 (March 1939).
The carcinogenic properties of mineral oils can be predicted by examination of their physical characteristics. Pathological changes in the organs are produced mostly by the middle fractions of Borneo crude oil. The development of lung tumors by a fraction has no relation to its cancer-producing effect on the skin.

845 WOOD SMOKE AS A CAUSE OF ASTHMA. B... Rappaport and R. Hecht. J.Am.Med.Assoc., 113, 1024 (September 9, 1939).
Although negative to skin tests with wood smoke extract, a fireman was subject to attacks of asthma shortly after an exposure. At other work, he proved free from this condition until an emergency required his entrance into a burning building.

846 CENTRAL AZOTEMIAS: EXTRARENAL UREMIA OBSERVED IN THE COURSE OF INTOXICATION WITH ILLUMINATING GAS. R.S. Mach and M. Naville. Schweiz. med. Wchnschr. 69, 553-556 (June 17, 1939). (German).
In patients with a nervous disorder and azotemia, it should not be concluded that the brain lesion is necessarily secondary to that of the kidneys. The azotemia may be of central origin with or without nephritis. The emphasis in carbon monoxide poisoning has generally been on the cerebral effects but this article throws an interesting light on its effects on protein metabolism.

847 POISONING BY COMMERCIAL PROPANE. M. Gueffroy. Gasmaske 11, 69-72 (1939). (German).
Propane escaping through the improper fittings of burners affected five women. Their symptoms were headache, numbness, chilly feeling and vomiting.

848 OCCUPATIONAL DISEASES AFFECTING ENGRAVERS. Uytdenhoef. J.Am.Med.Assoc., 113, 1047-1048 (September 9, 1939). (Belgium.)
Hazardous exposures of the engraving and photoengravure trades are due to electric arc radiation, acid vapors, and the skin effects of numerous chemicals, mostly turpentine and the chromates.

849 CONTRIBUTION TO OUR KNOWLEDGE OF THE OCULAR CHANGES INDUCED BY HYDROGEN SULPHIDE. H. Sjögren. Acta. Opth. 17, 166 (1939). (Scandinavian).
This is a report of two cases of keratitis in paper mill workers together with a review of the literature.

850 INDUSTRIAL SKIN DISEASES. OBSERVATIONS IN CENTRAL GERMANY. T. Grüneberg. Med. Klin., 35, 808-811 (1939). (German).
In this study of industrial dermatitis, almost a third were caused by turpentine or its substitutes. In making skin tests, the actual material from the workshop should be used.

851 OCCUPATIONAL LEUKODERMA. (PRELIMINARY REPORT). E.A. Oliver, L. Schwartz and L.H. Warren. J.Am.Med.Assoc., 113, 927-928 (September 2, 1939).
This is the first report in the literature of depigmentation of the skin produced by hydroquinone. Used as an antioxidant in rubber gloves, it produced a marked effect on hand and arms of workers, especially negroes. Repigmentation has been taking place since this antioxidant was eliminated from the rubber.

852 A TOXICOLOGICAL STUDY OF THE PRINCIPAL CONSTITUENTS OF SPECIAL STEELS. R.Fabre and M.E. Kahane. Arch. des mal. prof., 2, 269-283 (Special No.) (May 1939). (French).
This is a review of the toxicology of the metals coming into more extensive use in the production of special steels. The properties and effects of nickel, chromium, manganese, silicon, tungsten, molybdenum, cobalt, vanadium and titanium need reconsideration.

853 WELDING HAZARDS. C.A. Bonner. Safety Engineering 78, 31-32 (October 1939).
There are three general classes of respiratory hazards from welding: poisonous substances which may be volatilized by heat, poisonous gases which may be generated by the arc or by faulty combustion, and exhaustion of oxygen in air. Care must also be used to protect welders against dangerous infra-red and ultra-violet rays.

Abstract of research report on "Investigations at the Saranac Laboratory," given by Dr. Leroy U. Gardner, Director, The Saranac (N.Y.) Laboratory, at fourth fall meeting of Air Hygiene Foundation held at Mellon Institute, Pittsburgh, Wednesday, Nov. 15. (Correct date, program revision).

The department of petrography established at the Saranac Laboratory under a grant from the Air Hygiene Foundation has contributed materially to its program of industrial investigation and laboratory research. The petrographer has classified some 150 samples of rock for 14 different industries and thereby contributed necessary information in the evaluation of dust hazards. He has been most helpful in the analysis of minerals recovered from the lungs of persons dying with various forms of pneumoconiosis, particularly in those where obvious silicosis exists with no record of an exposure to free silica. He has supervised the preparation of 50 different minerals that have been subjected to animal tests, verifying their composition, checking the particle size and other physical properties.

Free silica (quartz), if breathed in sufficiently high concentration over a period of years, is responsible for the lung disease silicosis. Only very fine particles can enter the lung, particles measured in terms of a few microns (a micron is 1/25,000 of an inch). While human lungs contain particles as large as 10 microns in largest dimension, evidence suggests that they and others above 3, or perhaps 4 microns can be disregarded in evaluating a silicosis hazard from quartz. Animals infected with low virulent tubercle bacilli do not develop progressive tuberculosis when injected with quartz particles larger than 5 microns in diameter.

A study has just been completed of the relative settling rates of unit sized particles of different minerals and mixtures of minerals. It is demonstrated that, with particles 5 microns and less in diameter, factors other than specific gravity govern their settling rate in air. Of many minerals investigated, quartz and

sericite remain suspended longer than any others. This differential settling emphasizes the importance of taking dust samples in the workman's breathing zone to determine the extent of the hazard to which he may be exposed.

Experiments with pneumococcus infection in rabbits having silicosis demonstrate that the pneumococcus does not find silicotic soil particularly favorable for its growth. Type III pneumococcus pneumonias, artificially produced in silicotic rabbits, run a normal course. The presence of advanced silicosis has no influence upon the well defined immune reactions to this organism which can be elicited in normal rabbits by subcutaneous injections. These observations confirm the growing clinical impression that lobar pneumococcus pneumonias are no more common in silicotic subjects than in normal ones and that their course is not unfavorably influenced. Further work is needed on the non-specific bronchopneumonias caused by other bacteria.

Another important group of experiments has been started to determine whether individual susceptibility to silica dust is acquired or whether it is due to innate peculiarities of different individuals. The desirability of detecting susceptible subjects in preemployment physical examination is obvious.

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Liberal abstract of address, "The Viewpoint of an Employer Toward Industrial Hygiene," by Andrew Fletcher of New York, Vice President, St. Joseph Lead Company, at the fourth fall meeting of Air Hygiene Foundation held at Mellon Institute, Pittsburgh, Wed., Nov. 15.

Although probably most companies and individuals will agree that improvement in industrial hygiene is advisable from an altruistic angle, there are many who have not had the opportunity of proving that a betterment will usually result in lower operating costs, and therefore an effective expenditure for improving working conditions is a good investment from the dollar and cents angle. I will briefly tell you the experience of the St. Joseph Lead Company, which is one of the oldest and largest mining and smelting companies in the United States.

Twenty years ago, before there were many laws covering industrial hygiene, the St. Joseph Lead Company realized that, in order to prevent its best men from entering possibly more attractive fields, it was necessary to have the best possible living and working conditions, so that a man could satisfactorily raise his family by sending his children to good schools and maintaining his and their health. From the following, in which the cost of labor turnover is estimated, it can readily be appreciated that we were not solely influenced by any legal, paternalistic or altruistic angle, but actually by a practical money-making viewpoint.

> In 1918 our labor turnover was 250% per year, in other words, it was necessary to employ 250 new men each year to keep 100 on the job. Therefore, to maintain our organization of some 2,500 men, we had to hire 6,250 men per year.
>
> Based on an estimated direct cost of $20 to $25 to replace one man in 1919, the direct cost of 1919 labor turnover was $125,000 to $150,000 per year, which is the minimum figure, as it is difficult to estimate the indirect costs, such as additional supervision, increased accident hazard, decreased efficiency among older employees because of the necessity of giving attention to new employees, etc., but it is probably safe to say that the indirect equaled the direct cost; therefore the total cost of the labor turnover was $250,000 per year. I might add that under present day conditions, where machinery and brain work is necessary, instead of costing about $21.00 per man, the figure is nearer $100.00
>
> By 1926 labor turnover had been reduced from 250% to 40% per year, and by 1933 to 4%. Last year it was 3.6% - just compare this figure with the condition existing 30 years ago.

The actual dollar and cents saving indicated by the above was in part due to the following:

> By asking our employees why they were quitting we learned of numerous reasons, such as: "poor living conditions", "poor schools", "no churches of their faith", "no facilities for recreation", "working conditions unhealthy and dangerous", "wages too low", "unfair treatment by foremen," etc.

Before taking any definite steps to rectify these apparent justifiable complaints, we made a study of our employment, wages, hours, working conditions, and also the training, safety, health and living, plus economic security. As a result of our investigations, we then:

Constructed an expensive water system,
Increased our taxes so that better schools could be provided, and improved company houses.

These improvements were completed over a period of a few years, and showed immediate results. But the betterment was not obtained merely through spending money. For example, a system of physical entrance examinations was instituted in order to avoid placing men on jobs for which they were physically unfit. This practice was and is most beneficial for men and company alike, as unknown physical defects have been found and also limitations, such as a weak heart, etc. I wish to emphasize definitely the mutual benefit of initial physical examinations as well as current ones made every two or three years. If a current examination shows that an employee cannot carry on with his job, he is shifted to a new position and he is paid the prevailing rate for the new job, even if it is lower than his former basis. If no job is available, or if he cannot work with safety to himself and his fellow employees, he is then pensioned. I know of no case where the employee was discharged because of his physical condition.

Our Southeast Missouri plants were and are entirely dependent upon the local labor supply. The school boys of today are our future employees. A check-up on the school children revealed 80% under-nourished, and a study showed it was due to lack of milk. This was overcome in 1920 by starting a pasteurizing plant. Milk was sold at a low cost and given free in some instances, and within five years, the 80% figure of under-nourished children was reduced to 17%. Today the company maintains a herd of approximately 300 dairy cows. In addition to operating a dairy, we have a plant where ice cream and other milk products are manufactured, and also six company stores, which endeavor to maintain the lowest possible cost of living in the district. Through selling other stores in the district at the same wholesale prices as those on which our retail sales are based, other merchants in the area have been able to show profits without increasing prices materially above those maintained by our stores. Additional mutually satisfactory improvements were:

At our smelter there were 64 lead poisoning cases in 1920 in an organization of 400 employees. A study was made on the hazard, and as a result semi-annual general physical examinations and weekly physical inspections were instituted, a modern change room and a cafeteria were provided. Arrangements were made for employees to wear work clothing supplied and laundered by the company, and all employees were advised as to the importance of personal cleanliness in combating the lead hazard. A resident doctor not only examined the men, but also made periodic plant inspections to check conditions that might adversely affect health. As the result of careful supervision, lead poisoning is no longer a problem. As a matter of fact we have not had a case of lead poisoning for the last ten years.

Our miners could not obtain life insurance coverage, except at prohibitive rates, so a group life insurance plan was inaugurated, whereby each employee was given up to a maximum of $2,000 insurance at no cost to himself, and was permitted to buy $2,000 more at a low rate. A pension plan was instituted and has been revised from time to time.

It was also soon realized that, in addition to saving money through reducing labor turnover, it would be mutually beneficial to develop an efficient and competent safety department. The "money" results secured are indicated by the following statistics:

Frequency, or number of accidents per 1000 shifts worked has been reduced from .90 to the last five year average of .18
Severity, or number of shifts lost because of accidents per 1000 shifts worked, has been reduced from 12 to 5
Cost of accidents per $100 of payroll has been reduced from $2.25 to $1.25. A saving of $1.00 per $100 on a payroll of approximately $4,000,000 means a saving of $40,000 per year.

After an injured employee recovers from the immediate effects of an injury, he becomes restless and unless he be given something to occupy his time he may, through self-pity, become discontented and consider himself ill-treated, and when he returns to his regular work he is less cooperative and trouble is likely to develop between him and his foreman. We have therefore developed Rehabilitation Departments where injured employees are given work, at prevailing wages, as soon as possible without danger of adversely affecting their recovery. They are thus permitted to earn while they are convalescing and are usually willing and anxious to resume their regular duties as soon as they are able to do so. It has made the payment of accident compensation practically a routine matter, only rarely resulting in a controversy. The cost of operating a Rehabilitation Department has proven to be very little in excess of the value of the work performed by the injured employees. So again an action that was taken purely for the benefit of the employees has proven beneficial to the employer.

Another way that we have found for making our men more contented as well as saving money is by always endeavoring to make each individual job as "interesting" as possible. We have found that the American employee does very much better and more efficient work if the job is interesting and requires some "brain" work. Along this line we have endeavored to eliminate as much hard manual work as possible.

Although I cannot subscribe to the theory that all dusts are hazardous until proven harmless, I do know that working in dust is unpleasant, even if it is not injurious, and I was and am convinced that with just a little thought and comparatively a small expenditure of money, the amount of dust can be enormously reduced. The easiest way to reduce dust is to take dust samples of representative operations at fixed intervals of time, even if only once a month, place the results on a chart and send it to the main office of the company, as this procedure, which costs practically nothing, will result in some executive giving the matter of lessening the dust a little thought.

At our Balmat Division in New York State, we reduced the dust in stoping operations, for example, from 40,000,000 to less than 10,000,000 particles per cubic foot merely by insisting on wet drilling, including collaring the hole wet, wetting down before blasting and mucking and increasing the ventilation by the use of a fan. With the exception of the fan cost, the expense was negligible, and our Division Manager estimates that he would require at the present time eight or ten additional men per day in a total force of 185 to maintain the present production if a fan had not been installed.

In the sintering operation at our Josephtown, Pa., zinc smelter, a dust prevention and recovery plant was installed at a cost of approximately $26,000. Disregard for the moment the greatly improved working conditions and employee satisfaction, the minimum saving per year is over $5,000, and therefore the installation will pay for itself in less than six years. But the following example of making money is even more satisfactory - at the same Division some $13,000 was expended in improving working conditions in the furnace basement, and as the result it is estimated that the recovery in the furnaces has been improved by over one percent. This saving seems very small, but it is one which will more than pay for the operating cost of the installation, refund the entire $13,000 investment in one year, and show a profit of about $13,000 each year thereafter.

I strongly urge that progressive companies currently obtain information as to dust, fumes, etc., under prevailing working conditions. It is even advisable to have this data prepared by a disinterested and recognized authority in the medical or engineering field of industrial health, because if the information is secured by the company's own employees, it is often disregarded by Compensation Committees or the Courts on the basis that it is prejudiced, just as is often the case when the data has been obtained by so-called "experts" after cases have been filed, and when it is necessary to prove that the conditions then found were the same as those prevailing before or at the time of the alleged "accident."

The Air Hygiene Foundation is in an excellent position to undertake the "disinterested" examinations, and if harmful conditions are found, to advise what corrective steps should be taken. The Foundation can also render industry an extremely valuable service through acting as a central clearing house for collecting, evaluating and disseminating industrial health information, and in fact has already done so. It has also been 'productive' in its research and sound and timely bulletins on medical, engineering and legal phases of the industrial disease problem.

Another way that the Foundation can be most constructive (provided it has built up a reputation for reliable research and honesty) is to aid the State legislatures in preparing workable compensation laws and codes. As many of you know, during the last few years, a number of States have set hygienic standards, which greatly vary, and some of which are so poorly defined, that they are of no great value, either to employer or employee. Codes must be based on actual proven conditions, clinical results and the mechanical ability of available equipment - not first on "impressions", hysteria, or because of political expediency.

In closing I earnestly hope that the present members will avail themselves of the valuable assistance that the Foundation can give, that they will be willing to make some contribution other than their dues for continuing and developing the research activities, and that they will try to obtain as new members other companies from their own industries, whether or not such companies are competitors in business. I use the word "business" because in industrial health there are no "competitors". All employees gain through improved work-conditions, and all employers benefit through lower operating costs.

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Abstract of address, "Labor's Viewpoint On Occupational Disease Prevention," by Robert J. Watt, International Labor Representative, American Federation of Labor, at fourth fall meeting of Air Hygiene Foundation held At Mellon Institute, Pittsburgh, Tuesday, Nov. 15.

As a representative of the American Federation of Labor I am glad to accept the invitation of your organization. In times like these when the slash of savagery and the destruction of human life is prevalent throughout the world, it is a real pleasure to join with an organization dedicated to preserving the lives of our people. I have great respect for an organization which, financed by industry is conscientiously seeking by unbiased scientific study to find and publish the truth about industrial hygiene.

Labor welcomes such an approach. We have long preached the need for industry to find and solve the hazards to which the workers in industry are exposed. We believe that it is essential for the community as a whole and for the employer in particular that every safeguard be undertaken to reduce occupational accident and illness to a minimum. Organized labor welcomes the encouraging initiative which industry has shown in its support of the Air Hygiene Foundation, and the resolution which was adopted unanimously by the delegates attending the recent convention of the American Federation of Labor will indicate the interest of our members in this problem.

> (This resolution (No. 3) pointed to the number of industrial accidents, deaths and economic losses involved, stated that "only about 40% of the workers in the U. S. have the protection intended by workmens compensation laws," and urged organization of union committees to promote safe and healthful working conditions; inclusion of safety and health clauses in union agreements; proper state regulations; extension of workmen's compensation and the reduction of compensation insurance costs.

In focussing your efforts to eliminate industrial diseases from industry, you have adopted the very realistic but too often ignored truism: "A man's health is more important than monetary compensation."

We of the American Federation of Labor who have agitated so vigorously for adequate workmen's compensation coverage for industrial accident and occupational disease do indorse your slogan without reservation. Our efforts to extend and increase insurance coverage do not represent any conflict of thought on this score. We believe that the more expensive accident and illness become to industry, the more intelligent and adequate will be the steps taken by industry to prevent those hazards.

Our firm belief is that prevention work can best be handled by impartial institutions such as the Air Hygiene Foundation, the U.S. Department of Labor and similar groups. We believe of course that some form of public health and disability insurance must supplement the work of prevention and cure but I realize that this meeting is concerned with the one issue of prevention.

Whether we approach the subject of safety and prevention from an economic or from a humane standpoint, we maintain that there is something radically wrong with the mechanics of safety and prevention programs when a state, or even an industry runs a record of fatal injuries that is two or three times greater than the standard accepted as average.

Just a short time ago, my attention was called to an anlaysis of more than five million compensable cases in seven states, and a comparison with the experience stated in the American Accident Table. It occurred to me that even if the basis for comparing the record of these states with the experience of the American Accident Table might be subject to some adjustment, nevertheless, adequate safety and prevention programs could do much to correct the wide discrepancies among these states -- the lowest of which had 923 fatal injuries per 100,000 cases, and the highest of which had 2,406 fatal injuries per 100,000 cases.

We are told by experts that occupational diseases are largely preventable, and with respect to silicosis --- which has received so much consideration the last few years that it has overshadowed the larger general problem of occupational disease --- medical experts seem to be unanimous in stating that this disease, silicosis, is about 95% preventable. The industrial states that have kept records have clearly established that not more than 2.5% to 4% of all industrial injuries are due to what may be termed occupational diseases, and that approximately one half of these are covered by the term "accidental injuries."

It would seem quite reasonable to suggest that there would be very few occupational disease problems if every possible means of prevention were investigated, and known methods put into effect through appropriate legislative standards, such standards to be supported by adequate technical and enforcement staffs and maintained by sufficient appropriations.

There will always be some employers to whom the saving of human life is a sufficient incentive. They do not wait for the enactment of a law or the promulgation of rules. But there are others who take a different view and weigh the dollar and cents gain against dollar and cents loss. Then there are others who do not care and who whine about government interference, but who are willing to sacrifice their workers in the hope of getting the jump on their competitors. So there must be power to enforce and to exercise that power efficiently and reasonably through adequately trained and enforcing staffs.

When we get the laws and the rules, and provide for the technical and enforcing staffs, we may not get results because the legislature refuses to appropriate funds enough. Labor Departments have never been burdened with excessive appropriations, and I should like to suggest that this is one instance where employer and labor groups could get together in an effort to minimize suffering and preserve human life.

Your slogan "A Man's health is more important than monetary compensation" serves as a good introduction to the subject of compensation which labor considers is one of the fundamentals. It cannot be left out of the picture when we consider safety and prevention or the problems of occupational disease.

A scientific approach will recognize this fact, and unbiased findings cannot result until it is recognized. Even if the safety and prevention programs achieved satisfactory results there would still be industrial accidents. Those accidents or injuries will result in disability, and sometimes in death. So while there should be concerted and continuous effort to prevent industrial accidents and diseases there should and must be coupled with every prevention program adequate provision for compensating those who meet with injury and suffer disability or death.

Labor will continue to insist that adequate provision doesn't mean merely passing a "good law" which protects both the employer and workers. There is only one legitimate ground for a difference of opinion between the employer and the worker, and that occurs when a law is under consideration on the question of what should be the maximum benefits.

But once a law is passed, the interests of the employer and worker should be as one. The worker is entitled to all the benefits provided in the law, not only because it is the law but because his employer pays premiums for that very purpose. The employer is entitled to get this protection at a reasonable rate. The State has the power and it should be its duty, to tell the employer that he must guarantee payment through insurance, and the State also has the power and it should be its duty to see that the premium rates are reasonable as well as adequate.

Year after year when workers petition for the adoption of more liberal workmen's compensation laws, employers have been scared by the warning often repeated "your premium rates will be confiscatory." This has been particularly true with reference to occupational disease coverage. The employers have been told over and over that general or blanket coverage would bring in mumps and measles! This has all been done despite the fact that the record speaks for itself.

Let's take the State of Wisconsin for example. That State has the broadest possible blanket coverage. The law says "Injury is mental or physical harm to an employee caused by accident or disease." Yet under that provision, only 2.9% of all the compensated cases in 1938 were occupational disease cases, and they represented about the same percentage of the cost of all cases. Under every one of the 47 State Workmen's Compensation Laws (no law in Mississippi) the injured worker faces different conditions and terms, different methods of handling funds and claims, and differences in the administration of the law, and in many of the states no preventative measures at all.

The American Federation of Labor is opposed to this system. If the conservative estimate as to the number of individuals exposed to harmful quantities of silica dust may be set at 500,000 the problem directly or indirectly affects all of them and their families, or a total of nearly 2,000,000 people in the United States. In our opinion it is sheer folly to continue this crazy system, and ignore the necessity of contructive and long range action with prevention as the first step.

If employer and workers agree that the laws were enacted to meet the cost of industrial injuries fairly, why should compensation for occupational diseases be limited to workers who are incapacitated by certain poisons like lead or silica as it is in many states? Why should workers who suffer from other occupational diseases be compelled to bring suit under the common law of employers' liability? There should be only one fair test and that test should be - did the worker receive the injury during the course of his employment? I read somewhere that Mr. Harry Guilbert of the Pullman Company was asked, "What should be the value of an eye" and his reply was "whose eye?" And that, after all, is the important question. Who met with the injury, and who were the people that the laws were enacted for?

Workers believe that the laws were enacted for the protection of workers and employers. The worker gets injured and the employer insures his loss, although we must remember there can be no compensation for the suffering. The employer ought to be in favor of an adequate schedule of benefits, and be sufficiently interested to see that his injured workers obtain what the law specifies. The workers are certainly in favor and will cooperate with the employers in keeping the costs as low as possible. But we shall oppose those who say we cannot have a reasonable standard of benefits because premium rates will be too high. We will insist that they must first determine why rates are high.

Here is one issue upon which employers and workers can agree. We can do a real job and perform a real service to ourselves and the community in the field of prevention alone. Workers will willingly and gladly cooperate with you. But we shall continue to insist that workmen's compensation laws assure the payment of benefits that have a fair relation to the loss of earnings with a minimum which we shall not go below. We shall continue to fight for adequate hospital and medical care during the whole period of incapacity; compensation for all workers through a compulsory system for all accidents or diseases with no exceptions; joint effort of employer and worker organizations to reduce industrial accidents and diseases, and the enactment and administration of a simple, fair, law in which there will be no element of private profit.

In conclusion let me again express the thanks of organized labor to the Air Hygiene Foundation and to the employers whose financial support makes this work possible.

The American Federation of Labor wants to avoid the necessity of strife but our people will more and more be seeking this method of winning relief from slow torture unless industry accepts as its responsibility and obligation the furnishing of disease-free conditions of employment.

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