

NOVEMBER 1942
STANDARD
REVIEW
OF
LITERATURE



FOUNDATION FACTS

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

Vol. 3.

June, 1941

No. 6.

Engineering Research Report

Findings from a Foundation supported study of "Fundamental Factors in the Design of Lateral Exhaust Hoods for Industrial Tanks," will be issued to member companies in the near future. This practical study was made by Lealio Silverman, who held one of the Foundation's fellowships at Harvard University.

Brief Bulletin Coming on Skin Diseases

No. 4 in the Foundation's series of brief bulletins on Industrial Health Defense will be issued shortly. This bulletin, prepared by a noted dermatologist points out that many cases of skin diseases arise in the wash room, rather than in the production process. Strong soaps injure the skin.

Nutrition in Plain English

Instead of stressing the thirty-odd chemical or technical ingredients of an adequate protective dietary, public health workers might well emphasize simply that nutritional requirements are well met except for calories by the daily intake of the following foods: 1 quart milk for a child (1 pint for an adult) as drink or food; 1 egg; 1 serving of meat, fish or fowl; 3 servings vegetables (one of them green leafy or yellow), including potatoes; 2 servings fruit (one of them raw); 1½ patties of butter; 1 serving whole grain cereal.

---Illinois Health Messenger.

Defend the Defense Worker

Total war demands total defense. Use your Foundation membership to help defend the defense worker. Some 15 of them are necessary to maintain a soldier at the front. Today's wars are won in mines and mills.

Sabotage

"The employee is the objective in the destruction of plants! If the foreign agent can't win the employer over to his side as an agent of destruction, then he seeks to destroy that employee"....

From, "Sabotage," National Foreman's Institute.

Consoling Notes

The Census Bureau assures us that the chance of being killed by lightning is only about 1 in 338,000.

Greek Philosopher Galen said, almost 1,900 years ago: "Employment is Nature's best physician and essential to human happiness."

.....Defend the Defense Worker!.....

AIR HYGIENE FOUNDATION

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Air Hygiene Foundation,
4400 Fifth Avenue, Pittsburgh, Pa.

November 1942

INDUSTRIAL HYGIENE

DIGEST OF INDUSTRIAL HYGIENE
Literature--News--Developments

News Items

418 Malnutrition.

The National Nutrition Conference on Defense, which was recently held in Washington, D. C., included two sessions presented by the Section on Nutrition in Industry. The effects of malnutrition on working efficiency, also measures for improving the diet and nutrition of workers were discussed. Recent dietary studies among large representative samples of the people of the United States, clinical studies among smaller groups, and the examination of men called up for military service show clearly that poor diets and undernourishment are widespread in the country. While there is no ground for alarmist statements, the facts are serious enough to be a genuine cause of weakness in the present national emergency and to warrant national attention and concerted action. Undernourishment is more insidious and less obvious in its effects than a disease epidemic, but it is not less harmful. Recommendations made to the Conference by this Section included: (1) special attention should be paid to the diet of all workers and particularly to the diet of defense workers, and (2) the cooperation of each State should be enlisted by urging the governor to call a State-wide nutritional conference. The efforts should include an educational campaign, and provision for restaurant and lunch facilities in factories. Defense 2, 19, (June 3, 1941) and Industrial Hygiene, 1, 2 (May, 1941).

419 Occupational Health Exposures as Related to the Open Factory Window.

There is a tendency during the warm summer months to open windows in an attempt to obtain better ventilation. In many factories and workshops there are occupational health hazards effectively controlled by means of local exhaust system whose exact balance may be upset by stray air currents. In this way, toxic materials may be swept into the general atmosphere and endanger the health of the workers. Under normal room air conditions processes, such as acid dipping, alkali cleaning, electroplating, lacquer dipping, lead hardening, spray painting, or vapor degreasing by means of chlorinated hydrocarbons, may be operated with the health hazards fully under control, but a breeze or draft from an open window may offset, to a major extent, the mechanical means provided to guard against dissemination of toxic materials. It often happens that the discharge of a local exhaust system is relatively near a window so that when opened, toxic materials may be returned to the workroom. This is particularly true when the discharge is opposed to the prevailing summer wind. During warm weather, it is essential for comfort, unless air conditioning is provided, that many windows be opened. However, care must be taken to eliminate drafts in the vicinity of processes involving the use of toxic materials, through the erection of suitable baffles or the locking of occasional windows thereby assuring the effective operation of existing control measures. Conn. Health Bull., 55, 145 (May, 1941).

420 No More Mercury.

The nation's hat industry has agreed to eliminate poisonous mercurial compounds from the manufacture of fur felt after December 1, 1941. Thus one of the oldest and most dangerous health hazards to workers will be removed provided the State adopt the model regulations which have been drafted. Participating in the agreement were representatives of the industry: The Hatters' Fur Cutters Association and the Hat Institute, Inc., of New York; officials of the United Hatter Cap and Millinery Workers International Union (A.F. of L.); Health and Labor Commissioners of New York, Pennsylvania, New Jersey, Massachusetts and Connecticut, in which States the nation's felt-hat industry is concentrated. In 1938 the Public Health Service made a survey of chronic mercurial poisoning at the request of the Hatters' Fur Cutters Association. This study was supplemented by another last year of the control of mercurial poisoning in the felt-hat industry. The Public Health Service studies showed that workers exposed to mercury dust or vapor developed extreme irritability, digestive disturbances, insomnia, loss of appetite, tremor ("shakes"), loss of weight and sore mouth. Adequate substitutes developed by industrial chemists are less expensive than mercury and do not require engineering and medical safeguards for workers. About 60 per cent of the fur-felt industry already has eliminated mercury from manufacturing processes. New York Times, May 25, 1941.

421 Symposium on Industrial Public Health Nursing Services.

A report of the Symposium on Industrial Health Nursing Services, sponsored by the Wisconsin State Board of Health and the Industrial Nurses of Wisconsin has been published in multigraph form, including the papers presented. A few of the papers have been abstracted in this Digest and others will follow.

Legal Developments

422 Blow on Chest Causes Death of Miner Suffering from Silicosis.

While engaged in drilling coal, the deceased employee was struck on the chest by the handle of the drill when it caught in a binder or slate band, causing the drill to kick. The employee was knocked to the ground, and had difficulty getting his breath. The employee at the time of this accident was suffering from silicosis. The condition of the employee became worse. He was sent to doctors and to a sanatorium, and it was found that his lung had collapsed. Some ten months after the accident he died. The Court held that the blow was the cause or one of the causes of the death, and that the facts of the case warranted a compensation award to the widow for the death of the employee. Rudolph vs. Shamolin Coal Co. (Penn.) 18 Atl 2nd 329 (January, 1941). Occup. Hazards, 3, 22 (May, 1941).

423 Indiana Supreme Court Reverses Decision Which Denied Award for Occupational Disease Caused by Gas Poisoning.

In this case the Industrial Board found the disability not to be due to an occupational disease. The appellate Court affirmed such decision. On final appeal to the Supreme Court of Indiana the Board's and the Appellate Court's decisions were held to be incorrect. The facts were: The claimant, 33 years old, worked for 2-1/2 years as a tool hardener. The occupation consisted of treating tools, machine parts, etc., by heat in furnaces, at very high temperatures, at which they were treated in baths of chemicals. The claimant worked at 3 furnaces, one of which, a heavy duty electric furnace, was equipped with gas which burned continuously while the furnace was in operation, for the purpose of producing carbonmonoxide, which was necessary in the hardening process. One furn

NOVEMBER 1942

STANDARD A.M.S.

and a portion of another was equipped with a hood to carry away fumes and excess heat. The heavy duty furnace was without a hood. The claimant became sick, dizzy, had difficulty in breathing, and suffered a general collapse. Medical examination led to the conclusion that he was suffering from polycythemia caused by carbon monoxide poisoning. Certain tests were made to determine the amount of carbon monoxide gas given off by the furnaces, and an amount insufficient to be injurious was reported. However, the Supreme Court said such tests were not made under conditions comparable to those under which the claimant worked. It said further, in reversing the judgment, that the circumstance of being exposed to the poisonous gas, and being in a physical condition generally attributed by medical science to poisoning from that gas, and the absence of any other possible cause for the condition, seem sufficient to establish that the claimant was a victim of an occupational poisoning. Loucks vs. Diamond Chain and Mfg. Co. (Indiana) 32 N.E. 2nd 308 (March, 1941). Occup. Hazards, 3, 23, (May, 1941).

424 Additional Occupational Diseases for Delaware.

Compensable occupational diseases shall not include any other than those scheduled below and shall include those so scheduled only when exposure stated in connection therewith has occurred during the employment, and the disability has commenced within five months after the termination of such exposure:

Occupational Diseases:

Anthrax;	Caisson Disease;
Lead Poisoning;	Mesothorix or radium poisoning;
Mercury Poisoning;	Carbon disulphide;
Arsenic Poisoning;	Hydrogen Sulphide;
Phosphorous Poisoning;	Dermatitis;
Benzene, and its homologues,	Silicosis;
and all derivatives thereof;	Poison Ivy;
Wood Alcohol Poisoning;	Oak Poison.
Chromo Poisoning;	

(As amended by S. B. 230, Sec. 10, Laws 1941, Effective May 26, 1941.) (CCR).

425 Left Inguinal Hernia. Hernia Considered an Occupational Disease. Total Disability.

This is an appeal by defendant from an award by the Department of Labor and Industry awarding to plaintiff compensation for total disability. Did plaintiff suffer a hernia in the nature of an occupational disease? Plaintiff was employed by defendant as a sand mixer; his duties were to load sand on a wheelbarrow and wheel it across the plant to a mixing machine. A part of his duties was twice a week for about two hours to bail out of a wall a composition referred to as slush. After lifting about four pails from the wall he felt a pain in the right groin. The next day plaintiff told his foreman, Bulak, that he had ruptured himself. The testimony of the plaintiff together with the report of the commission of physicians fully justifies the finding of the board that plaintiff's hernia resulted from lifting the pail of solvent from the wall. Plaintiff's position in doing this work would be entirely different than that of one doing ordinary heavy lifting or carrying, and it is entirely reasonable to infer from these circumstances that plaintiff in this work was subjected to an unusual strain and that a hernia resulted therefrom. Was there competent evidence that plaintiff suffered a total disability? There was evidence upon which the department could make such a finding and this court may not review its finding as to facts. The award is affirmed. Brozozowski v. Swedish Crucible Steel Co., Mich. Supreme Ct. Decided June 2, 1941. (CCR).

2001 NOVEMBER

STANLEY

426 New Sections in Idaho Occupational Diseases Statutes.

Non-Disabling Silicosis -- Waiver

43-2121 -- Where an employee, though not actually disabled, is found to be affected by silicosis, he may, subject to the approval of the board, be permitted to waive in writing full compensation for any aggravation of his condition that may result from his continuing in his hazardous occupation. In the event of total disablement or death as a result of the disease with which the employee was so affected, after such a waiver, compensation shall nevertheless be payable as herein elsewhere provided, but in no case, whether for disability or death or both, to exceed \$2000.00 in the aggregate. A waiver so permitted shall remain effective, for the trade, occupation, process, or employment for which executed, notwithstanding a change or change of employer: Provided, that such waiver shall not inure to the benefit of any employer who fails to comply with the provisions of Section 42-2113. The industrial accident board shall make reasonable rules and regulations relative to the form, execution, filing, or registration, and public inspection of waivers or records thereof.

43-2121a -- A workman, seeking employment and having knowledge or being informed that he is affected with a non-disabling silicosis, who nevertheless voluntarily prefers to work in an occupation where his disease may become aggravated, may, with the approval of the board, enter into a contract with his prospective employer, waiving compensation under Section 43-2122, upon the possible subsequent termination of his employment from any of the causes set forth in Section 43-2 or from any other causes. (Added by Chap. 160, Laws 1941, Sec. 1, Effective March 13, 1941.)

Entering Agreement Voluntarily

43-2121b -- Before approving a waiver under Section 43-2121 or Section 43-2121a the board shall be satisfied that the workman has voluntarily entered into said agreement to waive compensation; that it is of greater advantage to the workman and his dependents, if any, for him to work in an occupation where his disease may become aggravated than to seek other employment, and that the working conditions maintained by the employer are such as to minimize the hazards of silicosis. (Added by Chap. 160, Laws 1941, Sec. 1, effective March 13, 1941.)

Non-Disabling Silicosis -- Compensation upon Severance from Employment

43-2122 -- (1) When an employee working subject to this chapter, who has not previously executed any of the waivers referred to in Sections 43-2121, 43-2121a, and 43-2121b, and who would be entitled to compensation under this law, if disabled, is, because he has a non-disabling silicosis, discharged from employment in which he is engaged, or when such an employee, after an examination as provided in Subsection (2) and a finding by the medical panel that it is inadvisable for him to continue in his employment, terminates his employment, the industrial accident board may allow such compensation on account of such discharge or termination of employment as it may deem just as support money pending his change of employment, payable as in this law elsewhere provided, but in no case to exceed \$750.00. (As amended by Chap. 160, Laws 1941, Sec. 2, effective March 13, 1941.) (CCH).

427 New Occupational Disease Statute for Washington.

Chapter 235, Laws 1941, effective June 11, 1941

Section 1. Within the contemplation of this Act "occupational disease" means such disease or infection as arises naturally and proximately out of extra-hazardous employment. Each workman who shall suffer disability from an occupational disease in the course of an extra-hazardous employment, or his family and dependents in case of death of the workman from such disease, shall

NOVEMBER 1992

STEWART AIRWAYS

STUBBINS
November 1932

receive the same compensation benefits and medical surgical and hospital care treatment as would be paid and provided for a workman injured or killed in ext hazardous employment under the industrial insurance and medical aid act of the state: Provided, however, That this Act shall not apply where the last exposure to the hazards of the disease occurred prior to January 1, 1937.

Section 2. The compensation and benefits provided for occupational diseases shall be paid from the same fund and in the same manner as compensation and benefits for injuries under the industrial insurance and medical aid acts and the contributions of employers to pay therefor, shall be determined, assessed and collected in the same manner and as a part of the premiums for extra-hazardous employment.

Sec. 7679-1, Remington's Revised Statutes, Vol. 8, 1940 Pocket Part

Section 7679-1 -- Compensation shall be payable for disabilities sustained or death incurred by an employee resulting from the following occupational diseases

- (1) Anthrax. Handling of wool, hair, bristles, hides or skins.
- (2) Lead poisoning or its sequelae. Any process involving the use of or direct contact with lead or its preparations or compounds.
- (3) Zinc poisoning or its sequelae. Any process involving the use of or direct contact with zinc or its preparations or compounds or alloys.
- (4) Mercury poisoning or its sequelae. Any process involving the use of or direct contact with mercury or its preparations or compounds.
- (5) Phosphorous poisoning or its sequelae. Any process involving the use of or direct contact with phosphorous or its preparations or compounds.
- (6) Arsenic poisoning or its sequelae. Any process involving the use of or direct contact with arsenic or its preparations or compounds.
- (7) Poisoning by benzol or nitro-, hydro-, hydroxy-, and amide- derivatives of benzene (dinitro-benzol, anilin, and others), or its sequelae. Any process involving the use of or direct contact with benzol, or nitro-, hydro-, hydroxy-, or amide- derivatives of benzene or its preparations or compounds.
- (8) Poisoning by carbon bisulphide or its sequelae, or any sulphide. Any process involving the use of or direct contact with carbon bisulphide or its preparations or compounds, or any sulphide or sulphite.
- (9) Poisoning by tetrachloromethane or any substance used as or in conjunction with a solvent for acetate of cellulose or nitro cellulose, or its sequelae. Any process involving the use of or direct contact with any substance used as or in conjunction with a solvent for acetate of cellulose or nitro cellulose.
- (10) Chrome ulceration or its sequelae or chrome poisoning. Any process involving the use of or direct contact with chromic acid or bichromate of ammonium, potassium or sodium, or their preparations.
- (11) Ulceration of the skin or of the corneal surface of the eye, due to tar, pitch, bitumen, mineral oil, or paraffin, or any compound, product or residue of any of these substances. Handling or use of tar, pitch, bitumen, mineral oil, or paraffin or any compound, product or residue of any of these substances.
- (12) Compressed air illness or its sequelae. Any process carried on in compressed air.
- (13) Miners' diseases, including cellulitis, bursitis, ankylostomiasis, tenosynovitis and nystagmus.
- (14) Cataract in glassworkers. Processes in the manufacture of glass involving exposure to the glare of molten glass.
- (15) Methyl chloride poisoning. Any process involving the use of or direct contact with methyl chloride or its preparations or compounds.
- (16) Carbon monoxide poisoning. Any process involving direct exposure to carbon monoxide in buildings, sheds or enclosed places.

(17) Poisoning by sulphuric, hydrochloric or hydrofluoric acid. Any process involving the use of or direct contact with sulphur, hydrochloric or hydrofluoric acid or their fumes.

(18) Disability arising from blisters or abrasions. Any process involving continuous friction, rubbing or vibration causing blisters or abrasions.

(19) Disability arising from bursitis or synovitis. Any process involving continuous rubbing, pressure or vibration of the parts affected.

(20) Dermatitis (venenata). Any process involving the use of or direct contact with acids, alkalies, acids or oils, or with brick, cement, lime, concrete or mortar capable of causing dermatitis (venenata).

(21) Asbestosis or silicosis (including anthracosilicosis and silico-tuberculosis) resulting from exposure to heavy concentrations of finely divided quartz or other forms of free silica (SiO_2): Provided, However, That no workman shall be entitled to compensation for asbestosis or silicosis specified herein:

a. Unless he was employed within the state of Washington for two years immediately prior to the date of claim for said occupational disease; and

b. If the inception of such disease originated outside the state of Washington unless it be determined that the said disease was continually quiescent and non-disabling for two years prior to the date of injurious exposure in the state of Washington and that such exposure during his employment in the State of Washington activated the quiescent disease to the extent of disability;

(22) Any respiratory disease other than asbestosis or silicosis contracted through the inhalation of dust in any industry where intense dust prevails. Nothing in this section shall be construed to apply to any case of occupational disease in which the last injurious exposure to the hazards of the disease occurred prior to January first, nineteen hundred thirty-seven, nor to any case in which such occupational disease was incurred in the pursuit of a prior employment to which a character of occupational diseases is incident different from those incident to the employment followed at the time the disability occurred: Provided, Further, That no workman shall be entitled to compensation for any of the occupational diseases specified herein, except asbestosis or silicosis, if the onset of such disease originated outside of the state of Washington unless it is determined that such disease was quiescent and non-disabling one year prior to the date the injurious exposure occurred while in the course of his employment in the state of Washington and that such exposure during such employment in the state of Washington activated the quiescent disease to the extent of disability: Provided Further, That no workman shall be entitled to compensation for any of the occupational diseases specified herein if the onset of such disease originated outside of the state of Washington, unless it is determined that such disease was quiescent and non-disabling one year prior to the date the injurious exposure occurred while in the course of his employment in the state of Washington and that such exposure during such employment in the State of Washington activated the quiescent disease to the extent of disability (CCH).

Notices of New Books

428 Handbook of Federal Labor Legislation. Bull. No.39, Part 1, Div. of Labor Standards. U.S.Dept. of Labor, Washington, 1941. For sale by Supt. of Documents, Washington, D.C. Price 35 cents.

This handbook attempts to go somewhat further than just to set down the bare legal rights and duties contained in the laws. It is arranged by statutes, or

NOVEMBER 1932
STANDARD
LIBRARY

November 1942

STANDARD
INDUSTRIAL
HYGIENE

gives the main provisions affecting labor contained in the law itself and in the regulations issued thereunder, together with a brief description of the agencies charged with enforcing or administering the law, and the procedures they use for obtaining compliance.

- 429 Lifting Heavy Weights in Defense Industries. Margaret T. Mottart. U.S. Dept. of Labor, Women's Bureau. Special Bull. No. 2, U.S. Govt. Printing Office. 11 pp. For sale by Supt. of Documents, Washington, D.C. Price 5 cents.
- During the World War women in industry were called on to lift heavier loads than normally, and in all probability the same condition will soon arise. The normal load which women habitually lift is not over 25 pounds, but an analysis of war-time occupations here and in Great Britain shows that much heavier loads were often carried. The following recommendations are made for the conservation of women's health and strength: (1) guard against injury to physique in the lifting of heavy weights; (2) analyze the elements in weight lifting to develop methods of saving energy; (3) overcome the dangers involved in lifting weights by introducing lifting and conveying devices, providing efficient conditions for work, and informing workers as to proper methods for lifting; (4) train workers to use the most economical methods of carrying weights; (5) protect the health of workers in heavy industries by physical examinations; and (6) state regulation of weight lifting is more effective through the general authority granted regulatory bodies than through specific laws fixing maximum weights. Each point is discussed in some detail. Six states now have laws regulating weight lifting, which are summarized.

Papers on Dust, Gases and General Industrial Hygiene

- 430 Asbestosis. A. Wolff. Nord. Hyg. Tid. 21, 1-33 (1940). (Norwegian). Zentr. Gewerbehyg. Unfallverhüt. 27, 193-4 (1940). (German).
- The author describes three cases of asbestosis which occurred in Norway in factories where asbestos was used as packing material for acid containers. In one case asbestos particles were present in the expectoration. The disease has not hitherto been observed in Scandinavia.
- 431 Some Investigations in the Slate Quarries. Observations on the Lungs of Slate Workers. A. Feil. Ber. 8 Intern. Congr. Unfallmed. u. Berufkrankh. 2, 986 (1939); Zentr. Gewerbehyg. Unfallverhüt. 27, 40 (1940). (German).
- French slate contains 84% combined silicates (alumina, lime, magnesia, potash, etc.) and only 6-7% free silicic acid. Examination of 251 slate workers who had been exposed to the dust under varying hygienic conditions revealed no signs of silicosis. The tendency to emphysema and chronic bronchitis is increased. Since the slate contains much sericite, these findings do not indicate that sericite is the chief cause of silicosis. In spite of the relative harmlessness of the dust, prophylactic measures are necessary.
- 432 Silicosis in the Steel Foundry. L.M. Merritt. Presented at Steel Founder's Society of America, Columbus, Ohio. December 17, 1940.
- Silica is brought into the steel foundry in three ways. A great volume of sand is used in the molding process and in cores. Silica flour is used in facings and in cores -- this source is more dangerous because the silica is very finely ground. Tripoli is the third source but in recent years, its use is on the decline. The best method of controlling dust from these materials is to prevent its formation or remove it at its source. Maintenance of good housekeeping is absolutely essential.

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NOVEMBER 1942

MINING ABSTRACTS

- 433 Acute Silicosis -- Occurring in Employees of Abrasive Soap Powder Industries. R. J. Ritterhoff. *Am. Rev. of Tb.*, **43**, 117-131 (January, 1941).
A report of two cases of acute silicosis due to abrasive soap powder dust with remarkably short exposure periods, being 100 days and 12 months respectively. The author summarizes and compares 15 other cases which have appeared in the literature. The duration of life after cessation of exposure is quite short averaging just a few months, although one lasted for seven years. Those exposures were prior to the inception of dust control measures. Analysis of the powders showed a free silica content of 60%.
- 434 Dust Control -- Silicosis Prevention. Verne A. Zimmer. *Brass and Aluminum Foundry* **40**, November 9, December 7, 1940; **41**, February, 1941.
Silicosis control in foundries is accomplished by two methods: prevention of dust generation; and a number of foundry practices, including good housekeeping, isolating dusty operations, and integration of dust control with production. Plans are shown for a foundry layout, showing isolation of tumblers, grinders and shakeout, also details of a duct system of local exhaust ventilation. Dust arrestors are described and the application of local exhaust to various foundry operations, such as shakeout, sandblast, tumblers, grinders, sand treating, and sand conveyors, is given in some detail. Oil is advocated instead of water for keeping dust down -- "coal-treating oil" being useful for this purpose and of moderate cost. Personal respiratory protection is discussed at length. Permissible concentrations of siliceous dusts is considered, together with two of the common methods for estimating dust in air. A list of selected references is given.
- 435 Regulations for Prevention of Silicosis from Sand Blasts in Foundries. G. Zwilling. *Glaser* **27**, 362-5 (September 20, 1940). (German).
Included in the discussion are notes on the use of steel shot, types of sand blast and safety regulations, breathing apparatus and medical examination of the sandblaster.
- 436 Air-cleaning Methods. R.E. Chase. *Paper Trade J.* **111**, No. 21, 29-33 (1940).
Types of air filters are described which are available to provide air of any degree of cleanness likely to be demanded by the industrial plant.
- 437 Predicting Dust Concentration. III. How to Figure Dust Concentration When Filtering Process is Intermittent. F.B. Rowley and R.C. Jordan. *Heating, Piping, Air Cond.*, **13**, 304-6 (April, 1941).
In the third paper of the series (See Abstracts No. 230, 231 April Digest) the authors extend the mathematical discussion to cases where the filtering process is intermittent.
- 438 Sources of Error in the Investigation of the Efficiency of Dust-collecting Equipment. K. Guthmann. *Stahl u. Eisen* **60**, 253-4 (1940). (German).
Operating efficiency depends principally on particle size and not velocity of fall.
- 439 Methods of Counting Dust Particles. John Finn. *Mining J. (Phoenix, Ariz.)* **2** No. 16, 4, (1941).
A konimeter of the Kotze type is recommended.

- 440 Practical Discussion of Dust Units Employed in Ventilation. F.F. Kravath. Saf Practice Bull. No. 63, Penna. Dept. of Labor and Industry, May, 1941.

This article reviews general types of filters, their capabilities and failings and their comparative worth as shown by the experience record of installations in the abrasive industry. Among those types discussed are the gravitational filter or settling tank, the cyclone, cloth filters, electrical precipitation air washers. The gravitational filter is recommended only as a preliminary cleaning device. Its velocities should be kept from 100 to 250 fpm. This type of installation is practically wear and maintenance free, since the dust comes in contact with practically none of the filter parts while it still has any velocity. The cyclone unlike the gravitational filter increases in efficiency with the decrease in size of, at least, the diameter. Because of its high efficiencies, it is probably the most widely used collector. These installations find their greatest application where the dust or collected material is non-abrasive in action. Cloth filters are used primarily where high efficiencies are necessary for the reclamation of valuable material, where recirculation is desired as a means of reducing heating losses, or in residential districts where it is unlawful to discharge visible solids into the atmosphere. The original cost is higher than for the cyclone but its efficiency is unquestioned, its life extremely long, and maintenance fairly simple. Electrical precipitation offers perhaps the most efficient type of separation but its initial cost is high. Therefore, its application will probably be restricted to the reclamation of valuable or extremely dangerous materials. Efficiencies of air washers are somewhat lower than cloth filters, but occasionally lack of proper application and maintenance of the latter tend to make the former the more practical unit. Its cost averages about one-third that of the cloth filter design.

- 441 A Comparison of the Weight, Particle Count and Discoloration Methods of Testing Air Filters. F.B. Rowley and R.C. Jordan. Heating, Piping, Air Cond., 13, 246-25 (April, 1941).

The relative merits of three filter test methods based on weight, particle count and discoloration are analyzed and the results of numerous tests are correlated with the theory of filtering air. In the tests by the counting method, the authors employed both an adhesive impingement type of dust counter and settling chambers. Relatively low dust concentrations were necessarily used in tests with these instruments. There is considerable evidence that arrestances based on particle count are the best measures of the degree to which dangerous dust is eliminated, but are not necessarily measures of degree of removal of nuisance dust. Moreover in its present state of perfection, this method requires too long a time to make a statistically reliable determination. The weight method has the advantage of high accuracy, and readily allows determinations of filter life, dust holding capacity as well as arrestance. However, the role of the larger dust particles is exaggerated and the method gives little information on arrestances due to smaller particles. Both the transmitted and reflected light discoloration methods have a reasonably good accuracy (3%), and the reflection method is probably the best for measuring reduction of soiling power. In the reflection method the blank is fairly constant, while it varies considerably in the transmission method. Both methods measure the reduction and discoloration only in relation to the test dust being used, and the arrestances vary greatly for the same filters with different dusts. The photo-electric cell method, which is the best measure of the reduction in discoloration, while the crucible method is the best measure of the reduction of the larger visible dust particles. The question of which is the best indicator of removal of nuisance dust is left

NOVEMBER 1942

STANDARD AIR CONDITIONING

Digest of Industrial Hygiene - 10.

442. Protection Against Poisoning in Blast Furnace Plants. F.W.E. Spies. Ingenieur 55, G.59-G.62 (August 16, 1941). (Dutch).
The various types of respirators used against furnace gases are described, including the carbon monoxide catalyzer, charcoal filter, and supplied oxygen respirators.
443. Protection Against Poisoning by Insecticides. M.F. deBruyne. Ingenieur. 55, G.55-G.58 (August 9, 1940). (Dutch).
The paper is devoted mainly to a discussion of the respirators for protection against various types of insecticides, including the supplied air filtering, oxygen generating forms of protectors.
444. In Dusty Work Places, Science Enables Men to Breathe Safely. A.C. Carruthers. Safety Eng., 81, 8-10 (April, 1941).
The author discusses dust prevention and personal protective devices briefly, beginning with the history of dust exposure and of preventive measures, especially the part played by the U.S. Bureau of Mines in establishing approval tests respirators. He lists four general methods of dust prevention and protection: wetting the dust, exhaust systems, enclosed systems, and respirators. The importance of educating beginners in competent and faithful use of protective devices is stressed.
445. The Gas Mask for the Protection of the Worker. E. Noitzel. Z.ges.Schiess- u Sprengstoffsw. 35, 133-4 (1940). (German).
Cases of fatal accidents, poisoning, etc., caused by nitrous fumes, halogens, their compounds, ammonia, carbon dioxide, lime and alkalies, benzene, dust, Carbox gas, ethylene oxide, methyl sulfate, Firinit, Proderit lacquer, Ronga solution, methyl alcohol, etc., are described. The use of proper gas masks is recommended.
446. Respiratory Protection. Anonymous. Nat. Safety News, 43, 19-20, 28 (March, 1942).
The entire March number of NATIONAL SAFETY NEWS is devoted to safety equipment of all types, with a brief article on each division of the subject. The general sections are: (1) personal protection; (2) mechanical protection; (3) fire and plant protection; (4) first aid and medical service; (5) sanitary equipment and supplies, and (6) miscellaneous products and services. The first section is divided into clothing, eye protection, head coverings, shoes, respiratory protection, hand and arm protection. While the treatment of each subject is naturally general and does not justify detailed abstracting, the issue is a good compendium of safety devices in general. An up-to-date list of Safe Practice Pamphlets comprising General Pamphlets, Pamphlets for Special Industries, Industrial Data Sheets, and Health Practices Pamphlets, issued by National Safety Council, is included. In the section on respirators, the classification used by the U. S. Bureau of Mines is followed by a list of factors to be taken into consideration as compiled by H.W. Leimberg including (1) efficiency in removing dusts; (2) minimum obstruction to breathing; (3) tight fit; (4) comfort; (5) non-interference with goggles and proper weight distribution; (6) minimum free space with positive-acting, low-resistant inhalation valves; (7) compactness and good appearance; (8) durable cover, and (9) non-injurious materials, and replaceable and sterilizable parts.
447. Artificial Lungs for the Testing of Gas Masks and Respirators. R. Sauer. Gasmaske, No. 1 (1940). (German).
The paper describes with illustrations, an artificial mechanical lung apparatus for testing gas masks and respirators.

STANDARD
REVIEW
OF
LITERATURE
November 1992

Digest of Industrial Hygiene - 11.

- 448 Avoidable Loss of Life. W. Meyer. Gasmasks 12, 42-5 (1940). (German).
A description of deaths caused by breathing fumes of lead, mercury, benzene, miscellaneous organic vapors, hydrogen sulfide, carbon monoxide and dust. These could have been avoided by the use of a gas mask.
- 449 Public Notice of the German Minister of Labor Concerning Decisions of the German Committee for Dust Protective Apparatus, January 30, 1940. Reichsgesundheitsbl 15, 283-7 (1940). (German).
The published regulations relate principally to protection for sandblasters. Each must have a positive pressure helmet which must have sufficient excess pressure and an air supply of at least 80 liters per minute. Construction must be such as to prevent decrease below that amount; the air supply must be free from dust and oil and there must be an adjustable contrivance for heating which will provide a temperature of at least 20°C. It is recommended that air be brought in by special ventilators, and direct connection with the ordinary compressed air supply is allowed only temporarily and only if the other conditions are fulfilled. Three commercial German helmets meet the specifications, (one Auor and two Draeger) and others have been rejected.
- 450 Resuscitation After Electric Shock. C. F. Dalziel. Elec. West 86, 38-42 (April, 1941).
Several first aid techniques for the electrical worker are presented. The pressure (Shaefer) method and pole top method are described, with the aid of numerous illustrations. The various organic causes of death from electric shock, the treatment of shock, and safety measures are fully discussed.
- 451 Resuscitation from Shock. G.H. Bell and J.A.C. Knox. Elec. Rev., 127, 241 (September 20, 1940).
Experiments in resuscitation using the Jellinek and Shaefer methods were performed on subjects who were trained to relax their respiratory muscles. In the Jellinek method, the subject is laid on his back and his shoulders are forcibly pushed backward toward the ground, bending the vertebral column. The authors found that this method did not bring enough air into the lungs and that the subjects were very uncomfortable. The well-known Shaefer method proved entirely satisfactory and is much preferable to the other.
- 452 Muscular Paralysis Caused by Electric Currents. C.F. Dalziel and J.B. Lagen. Electronics 14, 22-3 (March, 1941).
This is a report on tests conducted to determine the threshold of muscular non-control of a group of normal men on direct and alternating currents from 5 to 10,000 cycles per second. The results give the values of the electric current at which muscular paralysis occurs in humans and range from 10 to 20 milliamperes at ordinary frequencies. The results are independent of electrode size, moist on hands, current pathway and previous experience in the tests. The threshold increases as the frequency decreases to very low values and also increases as it increases from about 200 to 10,000 cycles per second.
- 453 Training Men in Pole-Top Resuscitation. H. Miller. Elec. Light & Power 19, 56 (February, 1941).
A new pole-top technique developed by Southern California Edison Company, eliminates some difficulties found in the former method. A series of photographs demonstrates the method of resuscitation.

NOVEMBER 1942

STIMULANTS

Digest of Industrial Hygiene - 12.

- 454 Electric Shock, Electric Burns and their Treatment. A.E. Gordin. *Ind. Med.*, **10**, 87-91 (March, 1941).

In the treatment of electric shock, immediate and continuous artificial respiration, without moving the victim, is the first requisite. After breathing is restored the patient must be kept quiet at least for an hour. As a rule no drugs should be administered. Burns should not be treated until recovery from shock appears certain. Amputation, where necessary should be delayed if possible until the shock has been overcome. Gas gangrene is a frequent complication, usually appearing 12 to 36 hours after the accident. The author has been unsuccessful with serum and drugs of the sulfanilamide type. Tetanus antitoxin should be administered. Deep and severe hemorrhage must be watched for. For this reason, very careful nursing is of major importance. Bone involvement does not show in x-rays and seldom appears before 6 to 12 weeks have elapsed. Skin grafting is usually successful if not attempted too soon. The patient's mental condition can be improved by giving him compensation early and by putting him back to work as quickly as possible.

- 455 Defects of the Cardiac Valves as a Consequence of Electric Shock. S. Koopman. *Klin. Wchnschr.* **19**, 1257-61 (1940). (German).

The author first discusses 13 cases of cardiac valve and muscular disturbances thought to have resulted from electric accidents, but finds the problem complicated by infection and other factors. From a number of animal experiments he concludes that the electric current causes disturbances of the nervous system, the heart and an increase of blood pressure, caused by the spasm of the peripheral muscles and central irritation of the brain. Also found are disturbances of the rhythm or a complete cessation of the heart with typical findings, or dilatation of the ventricle. It is impossible that a valvular defect could be caused by an electric accident.

- 456 Electric Arc Welding: the Effects of Welding Gases and Fumes. S.F. Meek, C. McCord and G.C. Harrold. *J. Am. Med. Assoc.*, **116**, 1618-21 (April 12, 1941).

The authors briefly describe spot and gas welding with their associated hazards and then electric welding in more detail. The potential hazards from electric arc welding are: (1) the arc itself (ultraviolet emanations, heat, ozone, nitrous gas); (2) electrodes (manganese, chromium, nickel, zinc, magnesium); (3) coating of electrodes (fluorides, silica, silicates, bitumens); and (4) oxygen deficiency. Finally they present an abridged version of their experimental work which was reviewed in our Abstract No. 783, November, 1940.

- 457 Infrared Spectrophotometric Studies on Hemoglobin as Affected by Cyanide, Methylene Blue and Carbon Monoxide. M.M. Brooks. *Am. J. Physiol.*, **132**, 311-3 (March 1, 1941).

By means of a spectrophotometer and infrared-sensitive photometric plates, absorption spectra of blood in the presence of methylene blue, nitrite, ferric cyanide and cyanide were studied. No changes were produced by potassium cyanide or by methylene blue, in the concentrations similar to those occurring in poisonings and their therapy. Sodium nitrite produces a shift in the transmission maximum. The author concludes that methylene blue does not produce methemoglobin; also that the mechanism of cyanide poisoning is an alteration of the oxidation-reduction potential of the ferrous-ferric system of the respiratory enzyme, such that the bivalent form is unable to revert to the trivalent. A non-toxic oxidant, such as methylene blue or sodium nitrite, may bring the potential back to a normal range, allowing recovery.

- 458 Cerebral Vascular Lesions After Carbon Monoxide Poisoning. Queries and Minor Notes. J. Am. Med. Assoc., 116, 481 (February 1, 1941).
 Poisoning by carbon monoxide in a laborer aged 37 was followed in 3 weeks by severe head pains and vomiting, after apparent recovery, and 7 days later a similar attack proving fatal, was clearly a case of cerebral hemorrhage. No clear reply can be given to the question whether the poisoning was responsible for the cerebral hemorrhage, but fatty, hyaline and other retrogressive change of vessel walls are known to follow carbon monoxide poisoning. An existing arteriosclerosis enhances the effect of carbon monoxide.
- 459 Carbon Monoxide -- A Domestic and Occupational Hazard. W.H. Schulze. Medical Clinics of N. America. 25, 437-52 (March, 1941).
 Where exposures continue over a period of several hours the carbon monoxide concentration in air should not exceed 100 parts per million parts of air. Acute poisoning is manifested by a progressive paralysis of the central nervous system ultimately resulting in unconsciousness and death. Subacute poisonings are characterized by such subjective symptoms as headaches, nausea and vomiting, weakness, dimness of vision and dizziness. Continued educational methods designed to acquaint the public with the sources, symptoms and dangers of carbon monoxide poisoning both in the home and in industry should help to reduce the large number of fatal and non-fatal poisonings caused by this gas every year.
- 460 Ozone in Ventilation and Air Conditioning. T.R. Crowder. Proc. of the 20th Annual Meeting of the Medical and Surgical Section of the Assoc. of American Railroads, New York, June 10-11, 1940. pp. 123-131.
 Insofar as the physiological effects of ozone have been measured they are preponderately harmful. Even such minute quantities as 1 part per 10 million parts of air may be definitely injurious to the respiratory membranes. Bacteria can be killed by ozone, if moist; but human beings are injured by concentrations far below those necessary to bring this about that the fact is of no practical importance in hygiene or therapeutics. The deodorizing effect of ozone is not real, only apparent; since it accomplishes its purpose by paralyzing the sense of smell. The author concludes that ozone has no proper place in ventilation air conditioning.
- 461 Carbon Monoxide Poisoning. A.H. Baggenstoss. Nat. Engr., 44, 211-2, 225 (March 1940).
 This is a general paper on sources of carbon monoxide, its mode of action, symptoms and prevention of poisoning, and treatment for persons overcome by the gas.
- 462 How Dangerous is Gas? W.B. Paton. Can. Min. J., 61, 527-9 (August, 1940).
 The author answers the question, sometimes asked in just that form, by saying "As dangerous as it is permitted to be." The term "gas" is used by mining men to denote any noxious or inflammable gas encountered in underground workings. In Canadian mines, such gases consist of carbon monoxide, carbon dioxide, hydrogen sulfide, sulfur dioxide, nitrogen peroxide and methane. Probably all fatalities are caused by carbon monoxide. The effects of each gas are discussed with special attention to carbon monoxide. Suggestions are given for reducing the hazards.
- 463 Protection Against Poisoning in Mines. A.H. Vossenaar. Ingenieur. 55, G.31 G.55 (August 9, 1940). (Dutch).
 This is a general paper on the properties of the most common mine gases, under the usual classifications of suffocating, irritating, paralyzing and truly poisonous gases, with brief consideration of protective measures.

NOVEMBER 1942

STANDARD

- 464 Guarding Against Nitrous Fumes. Anonymous. Safety Eng., 81, 47-8 (1940). From an English Accident Prevention Bulletin.
The oxides of nitrogen are among a few gases that may cause grave injury with immediate indications, and their effects may be realized when it is too late to save the victim. To avoid injury it is necessary to know where they are likely to occur, to avoid breathing them when they occur and to obtain medical advice at once when ill effects are felt, however trivial they may seem. Nitrous gas may arise wherever strong nitric acid is used. The prefix "nitro" in the name of a substance should be a warning that such fumes may be encountered in its use or manufacture. An atmosphere containing enough of the fumes to show their red color is highly dangerous, and even smaller concentrations, enough to cause coughing, choking sensation or smarting of the skin are injurious. Wherever fumes may arise the operation should be either totally enclosed or provided with strong exhausts, supplemented with general ventilation. Breathing apparatus of the canister type is suitable for repair work and any other necessary exposure only when the concentration of the fumes is low. Otherwise air-supplied or oxygen-generating respirators must be used. When molten nitrate baths are used for heat treatment, the temperature must never exceed 550°C.
- 465 Carbon Monoxide and Hydrogen Sulfide Poisoning in Industrial Processes and Protection Against Them. E. Neitzel. Z. ges. Schiess- u. Sprengstoffw. 35, 157-9 (1940). (German).
A discussion of the opportunities which exist in many industries for the accidental release of carbon monoxide and hydrogen sulfide in poisonous quantities. Symptoms of carbon monoxide poisoning and the mechanism of poisoning are described. Methods for detecting the presence of carbon monoxide in air and for post-mortem tests for the gas are given. The three kinds of protective masks described, including: (1) a mask with a canister containing a catalytic agent composed of a mixture of cupric oxide and manganese dioxide, which oxidizes carbon monoxide to carbon dioxide; (2) the oxygen breathing apparatus with a supply of oxygen, and (3) the hose mask to which air is pumped through a tube. Hydrogen sulfide is no less dangerous than carbon monoxide. In high concentrations unconsciousness occurs practically instantaneously. It also causes eye injuries. Instances of rapid poisoning are cited. Sources of hydrogen sulfide in industry and elsewhere are listed, and symptoms of poisoning are described. Suitable gas masks should be worn and stringent safety precautions should be observed.
- 466 Beware Ammonia Hazards. Anonymous. Power Plant Eng., 45, 69 (May, 1941).
A brief note on the precautions to be observed in handling and using cylinders of ammonia including proper manipulation of valves and the necessity of remaining with the cylinder during discharge.
- 467 Anhydrous Ammonia. R.J. Quinn and R.L. Carr. Water Works & Sewerage. 88, 132-6 (March, 1941).
In addition to data on the physical properties of anhydrous ammonia, the author presents information on its physiological effects, precautions in handling and first aid treatment of persons overcome or injured. The precautions include ventilation by fans near the ceiling, use of only iron and steel for piping, avoidance of mixing the gas with chlorine, and care in handling. First aid includes removal to fresh air, use of artificial respiration but not the pulmonary treatment of eyes with boric acid, nose and throat burns with boric acid and light skin burns with picric acid. More serious burns should not be treated with picric acid but should be cared for by the physician. The tannic acid treatment is advocated. Henderson and Haggard's table of limiting concentrations is given.

NOVEMBER 1942

STANDARD

- 468 Basedow's Disease from Carbon Monoxide Poisoning. I. Mahaim. Rev. med. suisse rom. 60, 588 (1940); Zentr. Gewerbehyg. Unfallverhüt. 27, 193 (1940). (German). A 37 year-old woman suffered in winter from progressive weakness, which completely disappeared in summer. Basedow's disease developed during last winter. The cause was a defective stove which gave off much carbon monoxide. The case differed from those previously described in the literature in that the symptom developed very slowly (3 winters) during an insidious poisoning. Exophthalmos was absent. The similarity between carbon monoxide poisoning and Basedow's disease is discussed and the relation of Basedow's disease to changes in the mesencephalon is pointed out.
- 469 Danger of Chlorine Gas. Freitag. Z.ges.Schiess-u. Sprengstoffsw. 35, 159 (1940). (German). Several instances of poisoning by chlorine gas are described. Methods of treatment are suggested. Venesection and oxygen inhalation are recommended. Toxic action on man is described as follows: 0.01 mg. per l. can be breathed for several hours without serious effects; 0.1 to 0.15 mg. per l. is lethal in 1 to 1.5 hours.
- 470 Chromate Method for the Determination of Sulfur Dioxide in Air. P.V. Moskalev. Lab. Prakt. (U.S.S.R.) 15, 26-8 (1940). (Russian). Chem. Abstr., 35, 1353 (March 10, 1941). The author has modified the method of Lang by making some slight changes in reagents, and presents details of the analysis. Sufficient details for practical use are given in the Chemical Abstracts reference.
- 471 Sodium Nitroprusside Test Papers for the Detection of Sulfur Dioxide and Hydrogen Sulfide. N. Sciacca and E. Solarino. Ann. chim. applicata. 30, 246-7 (1940). (Italian). Filter papers washed in a solution containing 4% of sodium nitroprusside and 2% of sodium carbonate will detect sulfur dioxide at a concentration of 1 part per million and hydrogen sulfide at 1 part in 5 million.
- 472 X-Ray Diffraction -- An Important Tool in Pneumoconiosis Research. L. H. Berkalhammer. Jour. Ind. Hyg. & Toxicol., 23, 163-173 (May, 1941). Seven representative and varied instances are described in which x-ray diffraction has been of assistance in pneumoconiosis research. Mineral specimens and dusts, the chemically extracted mineral residues of lung tissue, six-micron sections as well as thicker sections, and dried and pulverized lung tissue have been subjected to x-ray diffractions with satisfactory results. The possibility of identifying minerals present in the same section that the pathologist has studied has been demonstrated. This may not be feasible in all cases since the dust concentration is a limiting factor but it can be used in many instances as it has an advantage over methods involving dust retrieval which may alter the composition of the minerals in the process. The erroneous implication that the mineral pyrophyllite was the cause of a reported case of nodular fibrosis has been considered; and proof by x-ray diffraction analysis is offered that the case in question was one of disease due to quartz rather than pyrophyllite. X-Ray diffraction has its limitations but within them it has proven an invaluable aid in pneumoconiosis research.
- 473 The Medicolegal Aspects of Roentgenology. J.W. Pierson. Medical Clinics of America 25, 331-46 (March, 1941). The medicolegal aspects of roentgenology may be considered from three angles: (1) the presentation in court of testimony based on roentgenologic findings; (2) the preparation of the proper foundation for such testimony by accurate roent-

technic and correct interpretation of the films obtained; and (3) the legal responsibility of the individual employing x-ray apparatus for diagnostic or therapeutic purposes, or both.

- 474 The Miniature X-Ray Film of the Chest. B.H. Douglas and C.C. Birkelo. Am. Rev. of Tb., 43, 108-116 (January, 1941).
Photo-roentgenography with the 4x5 inch film is quite accurate when compared with the larger film. This type of examination can be used rapidly and economically in surveying large numbers of persons. This film size is of practical use for direct interpretation without enlargement and has decided advantages over certain other methods of X-ray examination either as to accuracy or cost or both.
- 475 Tuberculosis Case-Finding. H.K. Edwards and others. Am. Rev. of Tb., 43, 491 (April, 1941).
This is the report of a survey of 28,331 trade union members in New York City: 1939. The workers were primarily from the needle trades (dressmakers, etc.), department stores, wholesale warehouses, pocketbook makers, and food trades. The absence of important tuberculosis findings in warehouse workers was not significant because of the small number x-rayed. Workers in the needle trades and pocket book makers had lower rates of significant tuberculosis than those in department stores and food handling trades. More detailed analysis by specific union locals showed a greater problem in some, but in no instance was it possible to conclude that the job per se represented a special hazard so far as tuberculosis was concerned.
- 476 A Disorder Simulating Pulmonary Tuberculosis. Anonymous. Med. J. Australia, 1, 21 (1941).
This is an editorial comment on a paper by Finodt-Moeller and Barton (Indian M. Gaz., October, 1940), who report a "pseudotuberculosis condition associated with eosinophilia" or "eosinophilia lung." The patients have fever, cough, expectoration, loss of weight, pain in the chest, and sometimes hemoptysis. The roentgenograph resembles that of military tuberculosis or silicosis. The mottling is extensive and usually evenly distributed. The individual shadows are about 2 in diameter. The prognosis is relatively good. Some of the patients, examined years later, were found to be in an unchanged condition. The condition may be caused by constant or repeated passage of helminth larvae through the lungs. The editors consider that the evidence indicates a distinct disease, but advise awaiting proof from autopsy and histological examination.
- 477 Influence of Aircraft Performance on Selection and Care of Military Aviators. J.R. Poppen. War Med., 1, 180-7 (March, 1941).
The author discusses the problems of adequate tests for selection of aviators, adequate oxygen supply, prevention of "bends" and of a similar "decompression illness," and effects of sudden changes of directions. Progress is being made on all these problems. The problems of cold, visibility and carbon monoxide are also receiving considerable attention.
- 478 Industrial Hygiene and the Navy in National Defense. E.W. Brown, War Med., 1, 3-14 (January, 1941).
The Medical Department of the United States Navy is vitally interested in industrial hygiene, especially in navy yard practice. Industrial hygiene surveys are conducted separately by a medical officer and a line officer detailed as an engineer, and then correlated; and the engineer formulates the control program. Statistics are presented, which show a marked reduction in accident rate in a 12-year period. A list of occupational health hazards in navy yards is presented with a discussion of the most common ones. Special physical examinations of employees exposed to hazards is stressed.

NOVEMBER 1942

STRAVINSKY

expressed in ponderous medical terminology which is perfectly understandable to him and other medical witnesses but is absolutely unintelligible to the lay jury.

- 483 Health Maintenance in Small Industry. R.B. Robson. *Am.J.Pub.Health* 31, 162-6 (February, 1941).

The author relates how a practical health program is successfully conducted in small plant with 200 employees by a part-time doctor and a part-time nurse. The doctor's duties include preemployment and annual examinations, monthly trips of inspection accompanied by the plant director and visits alone at irregular intervals. The nurse devotes half her time each day to company work including presence in the first-aid room at a specified time, keeping records of all employ absences, and visits to the home of new and absent employees. First-aid equipment costs about \$300 and the rest of the service costs about \$10 per employee per year. Sick absenteeism has decreased from 2.7 to 0.85 days per employee per year under this plan. Time lost through accidents has also decreased. The cost of accident cases is not included in the above figures since it is paid direct through the Compensation Board. In these times of increasing taxes, the author points out, a medical service must be an asset, not a liability, and more than humanitarian reasons are necessary to justify the cost of a small-plant medical program.

- 484 Annual Report of the Chief Inspector of Factories and Workshops, 1939. Chapter Health. J.C. Bridge. H. M. Stationary Office, London, 1940.

The present war emergency has affected the health of the worker, not only in increased accidents, but also on account of blackouts, increase in working hours, general anxiety and retardation in applying new reforms. Among industrial diseases, lead poisoning has remained at a low level, but mercury poisoning has increased, as has also chrome ulceration. Arsenical poisoning has occurred in insecticide manufacture. Dermatitis has increased, but silicosis is at a standstill. Several fumes and gases are discussed. The first case of fluorine osteosclerosis was reported in 1939. First aid in industry has received an impetus from the intensive preparation for national defense. Industry is more aware of realizing the importance of medical supervision, and more full-time and part-time medical directors and nurses are being employed.

- 485 The Industrial Health Program in Maryland. R.H. Flinn. Maryland State Dept. Health Monthly Bull., 13, 30-35 (June, 1941).

This is an account of the intensified industrial health activities in Maryland. By the cooperative provision of U.S. Public Health Service personnel to serve until permanent appointments are made, a broad program is being carried on. Practical surveys of some forty industrial plants are done in cooperation with the county health officers and their staffs. Educational efforts of various kinds are being put into operation. It is emphasized that the successful promotion of an industrial health program can best be accomplished by the closely combined efforts of the physician, the industrial hygiene engineer, and the chemist, in collaboration with other state, local and federal agencies, the accident commission, medical societies, employer and employee groups, universities and companies interested in industrial casualty insurance.

- 486 Supplement #4, Occupation and Health. Intern. Labour Office. Geneva, 1940.

This brochure contains four additions to the Encyclopedia of Hygiene, Pathology and Social Welfare: (1) Adaptation and Rehabilitation; (2) Coracoiditis; (3) Occupational tumors; (4) Workers Nutrition. The third section is a continuation of previous articles on tumors -- this one deals with those of the digestive system.

NOVEMBER 1942

STIMULATING THE LIFE

Digest of Industrial Hygiene - 19.

- 487 Maintenance of Safe, Healthful Working Conditions During 1940, Div. of Ind. N.Y. State Dept. of Labor, Ind. Bull., 20, 114-119 (April, 1941).
The work of the Division of Industrial Hygiene during the past year has been three-fold: (1) it has made field and laboratory studies for the detection, control and prevention of occupational diseases and accidents; (2) it has embarked on a special health conservation program for the defense industries of state; and (3) it has rendered technical service (medical, chemical and engineering) to the Labor Department as a whole. These activities are described in detail.
- 488 The Medical Aspects of Occupational Diseases. J.M. McDonald. Med. Clinics of N. America, 25, 357-64 (March, 1941).
The author's discussion takes up the following topics: Historical, Causes, Channels of Entry for Industrial Poisons, Diagnosis, Treatment, Prognosis, and Prevention. The physician's part in prevention begins with the pre-employer physical examination of all persons applying for work. The health status of each employee must also be re-checked at regular intervals. If cases of occupational disease appear, the physician should immediately seek the services of industrial hygienist. After the control apparatus or methods are completed, physician must check the efficiency of its operation by making frequent observations of the physical condition of those employees for whose protection the equipment was installed.
- 489 Conservation of Manpower Through the Extension and Improvement of Industrial Medical Service. Conn. State Med. Society and Manufacturers Assoc. of Conn., Inc., April 15, 1941.
A joint committee from the Connecticut State Medical Society and the Manufacturers Association of that state have made a study over a period of many months. As a result, certain suggestions are offered for the extension and improvement of industrial medical service. The type of service deals with the following activities: (1) Control of Plant Environment, (2) Physical Examinations and Supervision of Employees, (3) Therapy, (4) Special Investigations, (5) Education. Points are each dealt with at some length in this booklet. Minimum standards are advocated and a plan suggested for assisting industries in developing their individual medical service.
- 490 Poisoning. P.A. Van Luyt. Ingenieur, 55, C.45-C.51 (August 9, 1940). (Dutch)
This is one of four papers presented at a symposium of the (Netherlands) Royal Institute of Engineers in December, 1939. It is a general discussion of industrial poisoning, including individual susceptibility, methods of entrance of poison into the system, removal of poisons, therapy and prophylaxis. Not much attention is given to any specific poison.
- 491 A Further Study of the Psychological Aspects of a Miner's Work. T.F. Muller and E.N. Neville. Trans. Instn. Min. Engrs., 100, 141-51 (February, 1941); reprinted in Colliery Guardian, 162, 311-3 (April 4, 1941).
The research described was the investigation of certain aspects of the "human machine" and its behavior during exercise, with special reference to mining operations. It included walking and loading experiments, with variation in roof height, also ergometer experiments at high temperatures. Results of the latest tests indicate strain upon vital organs at first, which decreased with adaptation to the heat.

NOVEMBER 1942

STANDARD
LIBRARY

- 492 Rehabilitation of Injured Miners. Anonymous. Iron & Coal Trades Rev., 142, 391-2 (April 2, 1941).

This paper describes the rehabilitation clinic established by colliery owners of English Midlands, for injured miners, especially those with fractures. Gradually increasing exercise especially adapted to restoring use of the injured parts is a prominent feature of the treatment. Pleasant surroundings and psychologic rehabilitation are emphasized. A very large proportion of the miners return to work.

- 493 Industrial Sanitation. N.J. Radder. Safety Eng., 81, 41-6 (April, 1941). Health of employees and good will among them is fostered by adequate sanitary facilities. Minimum requirements for sanitary facilities in industrial plants were outlined a year ago by the National Institute of Health (see Abstract No. 385, April, 1940). One drinking fountain should be provided for every 50 employees. In the approved type, now constituting less than 10% of the total, the water-flows are set at an angle from the vertical. Sufficient toilet facilities roughly one for each 30 persons, should be provided. Types of construction are discussed. Shower baths are becoming an increasingly important part of the sanitary facilities in today's places of employment. Midget shower heads and heavy brass construction with chromium finish and safety mixers are recommended. Washing facilities should be at convenient locations and preferably of the wall-hung type. Good soap from suitable dispensers, softened water and individual towels will lead employees to proper health habits and self-respect. Pure water should be assured, and dual water supply systems should be avoided.

- 494 Protecting the Employee's Health. R.C. Heard. Gas Age 86, 27 (September 26, 1940).

The common cold not only causes a large proportion of loss of hours, but also is contagious and may lead to more serious ailments. In one factory, the incidence of colds was greatly reduced by dispensing helibut liver oil tablets, with instructions on early treatment of cold and general health rules. The precautionary measures advocated by Metropolitan Life Insurance Company are quoted.

- 495 Hookworm Disease and its Prevention in the German Mining Industry. W. Heine. Gluckauf 76, 457-63 (August 24, 1940). (German).

A map is presented showing the geographical occurrence of hookworm disease over the world. In Western Europe, as the result of a highly successful campaign against the disease, it is prevalent only in France, Hungary and the southern countries. However, great precaution must still be observed on account of its increasing spread in the Soviet Union.

- 496 Recovery of Fatigued Muscle Following Intravenous Injection of Potassium Chloride. H. Hoff and others. Am. J. Physiol. 131, 615-8 (January, 1941).

In a series of experiments in which potassium chloride was introduced into a vein in close proximity to a twitching muscle, the authors found that the original height of contraction was regained and even surpassed despite several hours of muscular twitching. They conclude that since potassium is known to be liberated from the muscle cell during contraction, this loss may well be one factor in the development of fatigue, and the replenishing with potassium salt may thus allow recovery.

- 497 The Effect of Exercise in Hot Atmospheres upon the Pulse Rate. D.H.K. Lee and G.P.B. Boissard. Med. J. Australia. 2, 664-8 (December 21, 1940).

Replacement of water lost during exercise in hot atmospheres is quite effective in preventing excessive rise of pulse rate. The benefit of water replacement somewhat greater in a "hot dry" atmosphere (101° dry bulb, 38% relative humidity).

NOVEMBER 1942

STANDARD AIRWAYS

STANDARD
ABSTRACTS
November 1942

Digest of Industrial Hygiene - 21.

than in a "hot wet" one (87.5° dry bulb, 83% relative humidity) both having the same effective temperature index. Use of saline solution instead of water, is beneficial in a "hot wet" atmosphere, but appears to be disadvantageous in a hot dry one.

- 498 Cutaneous Diffusion of Helium in Relation to Peripheral Blood Flow and the Absorption of Atmospheric Nitrogen through the Skin. A. Bohnke and T. Willmon. *Am. J. Physiol.*, **131**, 627-32 (January, 1941).
The subject's body was immersed to the neck in helium and the exhaled helium was measured. After 30 to 60 minutes, when equilibrium was established, at 27-28° between 40 and 60 cc. of helium per hour diffused through the skin, passed to the lungs and was exhaled. At 35°C. the diffusion was about 170 cc. of helium per hour. This temperature effect is explained chiefly on the basis of an increase in cutaneous blood flow. In similar experiments with the body surrounded with oxygen, the nitrogen elimination decreased from 47 cc. to between 24 and 34 cc. per hour, returning to normal when the body is again surrounded by air. Therefore under similar conditions the nitrogen diffusion is less than 50% of that of helium.
- 499 Caseous Nitrogen and Helium Elimination from the Body during Rest and Exercise. A. Bohnke and T. Willmon. *Am. J. Physiol.* **131**, 619-26 (January, 1941).
After a mixture of 73 to 76% helium, 5-7% nitrogen and 20% oxygen was breathed for 3 hours, about 60% of the helium was found to leave the tissues during the first hour. Exercise on a stationary bicycle increased the helium elimination, for instance, 60% over a 15 minute period of exercise. The elimination of nitrogen is rapid during the first 2 hours and then slower until an end-point is reached somewhere between 9 and 12 hours. Exercise produces marked increase in nitrogen elimination. The addition of helium to the inhaled oxygen did not interfere with the removal of nitrogen from the body tissues. Thus a helium dive will require about one half the period of decompression necessary for an air dive.
- 500 Health Hazards in the Finishing of Metals. N.E. Promisel. *Products Finishing* **5**, 18-28 (November, 1940); **52**-61 (December, 1940).
The subject is covered briefly but comprehensively in two papers. The first considers the subjective factors in health hazards, including race, sex, age, living habits, personal characteristics, experience and familiarity with particular operations and susceptibility to particular hazards, followed by the objective factors, which include temperature, humidity, ventilation, dampness, radiation, illumination, electricity, noises, vibration, and neuroses. In the second paper the effects of particular poisons are considered, especially hydrocarbon and chlorinated hydrocarbons. Benzene, toluene, xylene, petroleum distillates turpentine, carbon tetrachloride, the chloroethylenes, tetrachlorethane, ethyle dichloride and chlorobenzenes are discussed at least briefly, with safety limit for the most important ones. General safety rules are included.
- 501 Industrial Poisoning of the Nervous System. H. Voss. *Fortschr. Geb. Nervenkr.* p. 161 (1939); *Zentr. Gewerbehyg. Unverfallhut.* **27**, 303 (1940). (German).
A review of the following industrial poisons and their effect on the nervous system: lead, mercury, arsenic, manganese, benzene and its homologs, nitro compounds of benzene, phenylhydrazine, benzine, chloroform, carbon tetrachloride, carbon disulfide, hydrogen sulfide and carbon monoxide.

- 502 Some Problems of War-Time Labor Management. K.G. Penelon. Proc. Roy. Soc. Arts 89, 21-34 (December 15, 1940).

In addition to problems of selection and training of workers and foreman, the author discusses several phases of industrial health. The lesson taught by the previous war, that production is decreased by too long hours, has had to be relearned by some industries. It has been found that suitable rest pauses increase production by 5 to 10%. Blackouts interfere with working conditions because entrance of daylight into factories is restricted. Boredom must be alleviated by varying occupation or by other means. Welfare work must not only include increased service in the plant, such as introduction of canteens, but must also extend outside the plant, on account of bombed homes, lack of gas, and lack of suitable recreation.

- 503 Industrial Lighting In War Time. H.C. Weston. Light & Lighting 33, 178-80 (November, 1940).

The use of blackouts (sometimes called black-ins when referring to covering factory windows) has emphasized problems of proper artificial lighting. The (British) Factory Lighting Commission has prescribed the extent of illumination sufficient for comfort in ordinary work, and has advocated painting fixtures less than 20 feet from the floor in light colors. Improvements in lighting are discussed, including use of fluorescent tubular lamps, and of local lighting where needed. A copy of the lighting regulations accompanies the paper.

- 504 Artificial Lighting and Eyesight. G.V. Downer. Aircraft Eng., 12, 286 (September, 1940).

Defective vision is more widespread today than at any previous period in history on account of increased night-time activity under artificial illumination, increased nervous tension and vitamin deficiency in diet. The structure of the eye and mechanism of sight are discussed. The essential requirements of really good artificial illumination are: even distribution, freedom from glare and elimination or reduction of shadows. Indirect lighting best attains these qualities, but when it is not practicable the lighting should be carried out by comparatively large areas of comparatively low surface brightness. The color of the light should approximate daylight. Eye strain can be minimized by occasional periods of looking away from the work. Proper diet is essential.

Papers on Industrial Poisons, Cancer, Dermatitis, etc.

- 505 Poisoning by Triorthocresyl Phosphate. R. Staehelin. Schweiz. med. Wchnschr. 71, 1-5 (1941). (German).

Three groups of triorthocresyl phosphate poisoning have been observed: (1) in therapeutic experiments with cresote-phosphoric; (2) in gingerliquor in the United States, contaminated with the substance; and (3) in Apicol, employed as an abortifacient, which sometimes contains the substance. The author observed 69 cases of poisoning which were caused by the erroneous use of triorthocresyl phosphate instead of edible oil. Immediate and delayed symptoms are described, the latter being those of the usual progressive paralysis. Atrophies developed accommodation of the eyes was affected, and although sensation was not disturbed there were pains and fibrillar spasms of the muscles. The brain was not affected. The height of the paresis was reached in 3 to 4 weeks, and improvement began, progressing in the opposite direction, but very slowly, requiring 2 months after the poisoning in the least affected patients. The point of attack was the medullary sheath of the motor nerves. Abnormal amounts of triorthocresyl phosphate could not be found in the excreta. Heat, massage and movement were employed in therapy. It has been shown that 0.15 g. is sufficient to produce a slight poisoning and 0.5 to 0.7 g. a serious one.

NOVEMBER 1942
STATIONARY
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Digest of Industrial Hygiene - 23.

- 506 Handling Paint Products. Anonymous. Nat. Safety News, 43, 20-1, 76 (May, 1941)
This is a brief paper presented in popular style, dealing with composition of paint and the hazards involved in its use, including lead poisoning and fire as health risks from the thinner. The precautions recommended include use of non-inflammable solvents, wearing of respirators and gloves or use of protective creams or liquids, use of raw linseed oil for removing paint from the hands, washing before eating and opening out clothes or rags saturated with oils to avoid spontaneous combustion which occurs when rags are closely stored.
- 507 Treatment of Chronic Benzene Poisoning in Low-Pressure Workers with Ascorbic Acid. J. Hagen. Arch. Gewerbepath. u. Gewerbehyg., 9, 698-704 (1939), (German). Increased lymphocytes and decreased red cells and hemoglobin were noted in benzene poisoning. The urinary level of ascorbic acid diminished. Ascorbic acid in doses of 75-105 mg. daily for 6 to 7 weeks resulted in return to normal values.
- 508 Germany. Circular of the Minister of Labor Concerning the Use of Benzene, August 20, 1940. Arbeitsschutz, pp. 236-7 (1940). (German).
The danger of benzene poisoning in Germany has increased on account of its substitution for benzine, which is difficult to obtain. The following regulations are announced: (1) avoiding the use of benzene in closed spaces; (2) replacement by toluene and xylene when possible; (3) materials containing over 8% benzene must be especially labeled; (4) hours of work for women and young men must be reduced, and pregnant women must not work with benzene, and (5) all persons using such solutions must be examined every 4 months.
- 509 The Danger of Continued Inhalation of Oxygen or Carbogen During Acute Poisoning with Chlorinated Solvents. D. Matrushot. Ber. 8 intern. Kongr. Unfallmed. u. Berufskrankh. 2, 913, (1939); Zentr. Gewerbehyg. Unfallverhüt., 27, 27 (1940). (German).
Three guinea pigs which had been kept 9 minutes in an atmosphere of 150 mg. trichloroethylene per liter were in deep narcosis, although the respiratory rate was 50-60. The animals were immediately placed in a gas chamber in which the atmosphere was brought to 80% oxygen or carbogen in the course of 3/4 hour. Up administration of these gases the excretion of trichloroethylene during the first minute was more rapid than in air, but later became slower. After trichloroethylene poisoning, therefore, the animals recover much more slowly in oxygen and carbogen.
- 510 Solvent Degreasing and Health. N.E. Promisel. Products Finishing, 5, 48-57 (February, 1941).
Trichloroethylene is the solvent most generally used in degreasing, and its properties are discussed with reference to hazards. In the proper method of manufacture it is thoroughly purified and stabilizers are added to prevent its decomposition under most of the conditions of handling. The stabilization does not prevent decomposition due to contact with flames or red hot surfaces, and should not be used within 50 feet of sources of heat. The design of several types of degreasers is next discussed, with illustrations and a diagram. The requirements of the New York Division of Industrial Hygiene for exhaust systems are included. There are no health hazards in solvent degreasing if the unit is properly designed, installed and operated.
- 511 Action of Carbon Tetrachloride on the Circulation. H.A. Oelkers and H. Fiedl. Arch. exptl. Path. Pharmacol. 195, 117-20 (1940). (German).
In rabbits and cats anesthetized with urethan the inhalation of carbon tetrachloride vapor caused an immediate drop in arterial blood pressure.

NOVEMBER 1942

STANDARD INDUSTRIAL HYGIENE

NOVEMBER 1942

STANDARD INDUSTRIAL HYGIENE

- 512 Effects of Intravenous and Intraperitoneal Introduction of Polyvinyl Alcohol Solutions on the Blood. W.C. Haepfer and others. J. Pharmacol., 70, 201-10 (1941). Polyvinyl alcohol is a long-chained polymer which forms a viscous colloidal solution in water. The immediate effects of intravenous injection in dogs and rabbits are a decrease in erythrocytes and hemoglobin and an increase in sedimentation rate due to accelerated conglutination. Repeated injections impair or suppress clotting. The general effects are much like those produced by acacia solution. Polyvinyl alcohol is retained in the blood, spleen, liver, kidneys, lymph nodes, etc., for many weeks.
- 513 Chronic Poisoning by Benzene Vapors. G. Penni and C. DeStefanis. Rass. med. ind. 11, 516-38 (1940). (Italian). In experiments on guinea pigs and albino rats at a concentration of benzene (not purified, containing benzene) of 0.015 g. per l. air, a true poisoning was not observed; at the concentration of 0.025 g. per l. the toxic action begins, but disappears if the inhalation ceases; with greater concentrations there is a serious toxic action. The histological results are shown and discussed.
- 514 Industrial Solvents as Possible Etiologic Agents in Myeloid Metaplasia. R. Pawson and others. Science 53, 541-2 (June 6, 1941). A comparison of the histologic findings in agnogenic (cause unknown) myeloid metaplasia with those found in chronic benzol poisoning together with certain clinical evidence led to an investigation into the occupational histories of the patients in this clinic with myeloid metaplasia. All of the six available for study gave a history of exposure to certain industrial solvents including benzene and carbon tetrachloride. The facts suggest that exposure in some individuals to certain fat solvents may result in the clinical picture previously described as agnogenic myeloid metaplasia.
- 515 A Portable Unit for the Determination of Halogenated Hydrocarbons. H.C. Dudley. Pub. Health Repts., 56, 1021-1027 (May 9, 1941). This is a description in detail of a portable unit for the thermal decomposition and determination of halogenated hydrocarbons in air. The principle of this sampling device is similar to that employed by others, the air stream being passed through some type of heated tube, which serves to decompose the organic halides. Chemical tests are finally employed -- the gravimetric determination of the silver halides having been found to be more advantageous with smaller amounts of halogens. Analysis of standard samples indicates that, at a sampling rate of 2.5 liters per minute, recovery of carbon tetrachloride and trichloroethylene is quantitative.
- 516 The Prophylactic Use of Sulfonated Oil in Cement Dermatitis. I. Pincus. N.Y. State J. Med., 40, 1381-3 (1940). Two cases of cement dermatitis are presented, which resisted all attempts at permanent cure until sulfonated castor oil was used instead of soap. The irritant action of soap is based on the type of fatty acids and the alkaline reaction. The mixed fatty acids in sulfonated castor oil show a minimum irritation and the pH is slightly on the acid side.
- 517 Occupational Dermatitis in Cigar Makers Due to Contact with Tobacco Leaves. F. Varo and S. Genovese. Arch. Derm. & Syphil., 43, 257-263 (February, 1941). A report of three cases of occupational dermatitis in cigar makers working in the same factory. It was due to contact with tobacco leaves and was attributed to acquired sensitivity to recently fermented tobacco leaves. The condition in all three cases proved recalcitrant to all therapeutic measures and cleared up only when working with tobacco was discontinued. In determining the cause of dermatitis in this industry, acquired sensitivity must be kept in mind.

NOVEMBER 1942

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- 518 Colliers' Stripes -- The Coal Miners' Dermatitis. F.R. Bettley. Brit. J. Dermatol., 52, 129 (April, 1940).
Colliers' stripes appear on exposed parts as numerous linear and irregularly shaped marks; the result of an accidental tattooing of coal dust into the skin. It has been claimed that these wounds rarely suppurate and that the particles of coal do not excite any reaction in the tissues. This author's observations disagree with those claims. Suppuration occurs no less than is to be expected, and histologically he has found a foreign body reaction, particularly near blood vessels.
- 519 Skin Troubles and Machine Tools. A. Duckham. Engineer (London) 169, 501-2 (May 31, 1940); Machinery (London) 56, 188-9 (May 9, 1940).
The author's experience with oil dermatitis began nearly 40 years ago, when the bacterial origin theory was considered sufficient. In the light of additional knowledge, bacterial contamination is considered a factor, but not the main factor. The author attributes the disease primarily to the stoppage of the skin pores by oil containing metal dust and other dirt, interfering with the natural discharge of perspiration. Loss of the natural grease of the skin is also a factor. Inflammation is followed by suppuration and in that stage the disease is infective. The preventive measures suggested include protection by an oil-resisting ointment (or water-resisting when emulsions are used), use of lanolin to restore grease to the skin, and general cleanliness of machine and cooling oils.
- 520 Industrial Dermatitis. D.C. Straus. Nat. Safety News, 43, 36, 82 (January, 1941).
In Illinois, during the first two years of operation of the Occupational Diseases Act of 1936, 107 claims out of a total of 474, or 22.5% were for occupational skin diseases. In 1939 the ratio had risen to 39.3%, which was a higher percentage than for any other type of occupational disease. A similar increase has occurred in 5 other states. Among dishwashers, one of the larger groups most subject to dermatitis, and among bottle sealers, sodium hexametaphosphate applied to the hands and dried before working, proved completely successful in combating dermatitis from washing compounds containing chlorine. In tanneries, sodium hyposulfite has been found very effective as a preventive. "Chemical gloves" or skin coatings insoluble in the solvents being handled are of two types, water-soluble and watertight. The first type gives good protection against paint, lacquers, varnishes, oils, greases, waxes, thinners, carbon black, lead oxides, carbon paper, etc. The second type is used for protection against cutting compounds and cooling lubricants in which the water content exceeds 10%, and with strong acid and alkaline solutions.
- 521 Prevention of Oil Dermatitis. Anonymous. N.Y. State Ind. Bull., 20, 92-93 (March, 1941).
The belief has developed, and is accepted today, that in the prevention of dermatitis the emphasis must be put not on cleansing the oil but on cleansing the worker. Experiments have shown that by regular and vigorous attention to removing the residue of oil and dirt from the skin after each exposure, long strides will have been made toward the prevention of dermatitis. A discussion of proper cleansing methods and protective coatings follows.
- 522 The Behavior of Blood Calcium in the Chronic Poisoning by Mercury Vapor. A. Gori Savellini and A. Lucacchini. Rass. med. ind. 11, 573-83 (1940). (Italian).
In the rabbits and guinea pigs which inhaled mercury vapor for 40 to 110 hours (4 hours per day) the blood calcium first increased, then decreased even to percentages under the normal.

NOVEMBER 1942

AMERICAN INDUSTRIAL HYGIENE

- 523 Watch Mercury. Anonymous. *Safety Eng.*, 81, 10-12 (February, 1941).
The easy evaporation of mercury contributes greatly to its high place among hazardous substances. For that reason good housekeeping and mechanical ventilation are necessary in all places where it is used. Workers on equipment used in connection with mercury should wear a positive air line respirator or a gas mask. The absorption of 1 mg. of mercury daily over an extended period may cause poisoning. In the absence of definite information on safe limits, 6 to 15 parts of mercury per 100 million parts of air may be considered a safe concentration of fumes, based on steady work and a forty hour week. Preventive recommendations are listed, including the usual cleanliness rules, medical examinations and the use of mercury fume detectors, indicating and recording.
- 524 Industrial Arsenic Poisoning. Freitag. *Z. ges. Schiess- u. Sprengstoffsw.* 35, 135 (1940). (German).
This article emphasizes the danger of poisoning from arsine, an intensely poisonous gas. There is always a possibility of the formation of dangerous amounts of arsine when acid is brought into contact with arsenic residues or metals containing arsenic. For instance, many deaths have been caused when water is used to wash out the sludge contained in sulfuric acid tanks. The dilute acid reacts with iron to produce nascent hydrogen, which in turn reduces the arsenic, always present in the sludge, to arsine. Similar possibilities exist in connection with the refining of lead, tin and zinc, which usually contain some arsenic. It is important to remember that aluminum arsenide produces arsine directly by reaction with water. The presence of arsenic as an impurity in zinc in electro-technique has also given rise to the formation of arsine. Possibilities of poisoning from solid forms of arsenic are also described.
- 525 The Spectrographic Analysis of Lead in the Blood. E.C. Vigliani. *Rass. med. ind.* 11, 289-306 (1940). (Italian).
Since it is now believed that the toxic effects of lead are due to the quantity in the blood, it is essential for any study of lead poisoning to have a method of analysis suited to the determination of very small quantities. For this purpose a curve comparing the known quantities of lead and molybdenum was prepared by the use of the line for lead at 2833 Å. and for molybdenum at 2815 Å. There is a good review of previous work, in which the findings of other authors on the amounts of lead in blood of normal persons not exposed to lead, and persons exposed to, and finally poisoned by, lead are discussed. There is no correlation between the amount of lead in the blood and the health of a person, some individuals being much more resistant than others. However, the method can be used successfully in the diagnosis and prognosis of lead poisoning. The values found for normal persons not exposed to lead, and for those exposed and poisoned are, respectively 57, 68 and 108 gamma %. A total of 300 determinations on 163 persons was made. Twenty-eight references are cited.
- 526 The Bone Marrow in Experimental Lead Poisoning. C. Betti. *Rass. med. ind.* 11, 584-603 (1940). (Italian).
A description of the histological characteristics of the marrow cells of rabbit in poisoning induced by injections of lead acetate solution.
- 527 Occupational Cadmium Poisoning from Electroplating with Cadmium. G. Pancheri. *Rass. med. Indust.* 11, 623-31 (1940). (Italian).
Poisoning occurring in the extraction of cadmium and fusing of alloys is described. The author presents the case history of a man engaged in electroplating with cadmium, with description of symptoms, some of which persisted over two weeks. No cadmium was found in the urine or feces, but it was revealed in the blood by spectral analysis.

NOVEMBER 1942

STANDARD

- 528 Determination of T.N.T. (2,4,6-Trinitrotoluene) in Air. K. Kay. Canadian J. Res. 19, 86-9 (March, 1941).
War conditions have necessitated a reliable method for determination of T.N.T. in air. In the author's method the T.N.T. is absorbed in acetone, and 20% sodium hydroxide is added, producing the red sodium salt. The optimum amount of alkali was found to be 0.1 cc. per cc. of T.N.T. solution. The color developed to a maximum within 10 minutes and was stable up to 30 minutes. The intensity of the color was determined by a naked eye comparison with standard solutions. An accuracy of 10% over the range of 4-40 microgram per cc. of acetone could be obtained. With the aid of a photoelectric colorimeter and the proper color filter it would perhaps be possible to obtain much greater accuracy and sensitivity.
- 529 Textile Bleaching Compounds. Industrial Data Sheet D-Tl. Nat. Safety Council. Nat. Safety News, 43, 38, 40 (January, 1941).
The bleaching compounds discussed include sodium hypochlorite, hydrogen peroxide and sodium peroxide. Sodium hypochlorite may cause a dermatitis in the form of small blisters, particularly on the backs of the hands and between the fingers. Concentrated hydrogen peroxide, or even careless exposure to the 30% solution, may cause destruction or shedding of the finger nails, and bleaching of the hair. Sodium peroxide is an irritant of the skin and mucous membranes. Burns from a hot solution are intensified by chemical action. Among the general safety suggestions are: (1) use only by thoroughly trained workmen; (2) personal protective equipment; (3) flood-type emergency showers, and bubble type fountains for washing eyes; (4) use of closed systems when possible; (5) removal of supersensitive persons from work with these materials; (6) chlorine gas masks for emergencies, and (7) care not to allow hypochlorite solutions and acid solutions to be pumped into the sewer at the same time. First aid measures include liberal flushing of the affected skin with water, and neutralization of sodium hypochlorite and sodium peroxide with mild acids.
- 530 The Action of Methylene Blue upon Cyanide Poisoning in the Turtle. J.M. Jolin. J. Pharm. Exp. Therap. 71, 280-6 (March, 1941).
The heart glycogen of turtles receiving injections of methylene blue following those of sodium cyanide does not remain depleted as it does when they receive cyanide alone. The glucose and lactate contents of the blood, however, remain at high levels long after the administration of methylene blue or of sodium nitrite. The oxygen consumption of turtles poisoned by cyanide is very considerable but is greatly increased and brought within normal levels by methylene blue. The amount of cyanide recoverable from the respiratory gases of turtles poisoned by cyanide is greatly decreased by methylene blue. These facts tend to support the theory that methylene blue converts hemoglobin into methemoglobin under the stabilizing influence of cyanides rather than that it takes the place of the respiratory enzymes of the cytochrome system of the respiratory mechanism.
- 531 A Case of Intoxication by Hydrocyanic Acid Following Disinfection by the Toxic Gas. M. Bornand and G. Bonifazi. Mitt. Lebensm. Hyg., 31, 207-10 (1940). (German).
Hydrocyanic acid has been used as a disinfectant for parasites in orchards and for rats and vermin in houses. It is more efficient than sulfur dioxide but more dangerous. Many deaths have resulted, and in Switzerland there are strict rules governing its use. The authors report a death which occurred on the 5th floor of a house when the first floor was being disinfected with hydrocyanic acid, due to an unnoticed shaft which connected all floors. The victim died within 20 hours, and at autopsy the greatest amount of hydrocyanic acid was found in the urine. Hydrocyanic acid should be allowed only in special cases and then under the supervision of an official disinfectant.

- 532 The First Clinical Observations on the Chronic Changes in Man Produced by Hydrocyanic Acid. D. Columba. Ber. 8 intern. Kongr. Unfallmed. u. Berufskrankh. 2, 1073 (1939); Zentr. Gewerbehyg. Unfallverhüt. 27, 26 (1940). (German). Chem. Absta. 35, 3320 (May 20, 1940).

In Italy, Spain and Palestine, approximately 35,000 persons use hydrocyanic acid in extermination of insects on fruit trees and rats on ships. Studies on 15 persons engaged in this work revealed 3 types of changes produced by chronic inhalation of the gas. The first is dilation of the lungs and bronchi, to compensate for air deficiency, with attempts by the heart to increase its volume, resulting in a slower rhythm followed by hypotension, also a change in the position of the diaphragm. The second includes various hematological changes with lymphocytosis accompanied by monocytosis through irritation of the lymphatic system. The third consists of changes connected with the carbohydrate metabolism, including hyperglycemia and a decrease in the basal metabolism. These changes probably result from a partial poisoning of the corresponding regulatory nerve centers. In order to avoid severe complications only perfectly healthy persons should work with hydrocyanic acid.

- 533 Cadmium Feeding. R.H. Wilson and others. Jour. of Pharm. & Exper. Therap. 71, 222-235 (March, 1941).

Bleaching of the incisor teeth of rats receiving cadmium was the most delicate criterion of poisoning thus far observed, marked bleaching occurring with concentrations of the metal too low to affect the growth or general appearance of the animals. It appears to be a direct action of the cadmium, although the possibility of stimulation of fluoride action has not been entirely ruled out. Concentrations of 0.0031% or more of cadmium in the diet resulted in decreased rates of growth. A severe anemia occurred in those rats eating diets containing as little as 0.0062% cadmium. The more severely poisoned rats had hearts which weighed nearly twice as much as normal, presumably due to the severe anemia.

NOVEMBER 1942

STANDARD

NOVEMBER 1942
 THE AIRMAN'S
 LITERATURE

INDEX
 (June, 1941)

<u>Alcohol, polyvinyl</u> pathology 512	<u>Fatigue, factor</u> 496	<u>Nutrition, workers</u> 486
<u>Ammonia</u> 466-467	<u>Filter, dust</u> 436-437-438-440-441	<u>Ozone</u> 460
<u>Anthrax, treatment</u> 479	<u>Cases,</u> mine 462-463 nitrous 464	<u>Paint</u> health hazards 506
<u>Arsenic</u> 524	<u>Hookworm,</u> occupational 495	<u>Physiology</u> gas absorption 498-499 work 497
<u>Asbestosis</u> 430	<u>Hydrocarbons, halogenated</u> 509 determination 515	<u>Rehabilitation, miners</u> 492
<u>Aviation,</u> health hazards 477	<u>Hydrocyanic acid</u> pathology 532 poisoning 531	<u>Report</u> foreign (Gr. Britain) 484 state (New York) 487
<u>Benzene</u> 513 pathology 507 regulations for 508	<u>Hydrogen sulfide</u> 463 determination 471	<u>Respiration, artificial</u> 450-451-453
<u>Bleaching compounds,</u> health hazards 529	<u>Illumination, industrial.</u> 503-504	<u>Respirators</u> 442-443-444-445-446-448 regulations 449 testing 447
<u>Blood, spectra</u> 457	<u>Industrial disease</u> diagnosis 490 general 490 nervous 501	<u>Roentgenology,</u> medicolegal 473
<u>Book notices</u> 428-429	<u>Industrial health</u> in wartime 502	<u>Sanitation, industrial</u> 493
<u>Cadmium poisoning</u> 527-533	<u>Industrial hygiene</u> general 486 naval 478	<u>Silicosis</u> abrasive powder 433 foundries 432-435
<u>Carbon monoxide</u> general 461-465 pathology 458-459-468	<u>Industrial medicine</u> general 483-488-489-494	<u>Slate</u> 431
<u>Carbon tetrachloride</u> pathology 511	<u>Jurisprudence, medical</u> 482	<u>Submarine, rescue</u> 481
<u>Chlorine</u> 469	<u>Lead</u> in blood 525 pathology 526	<u>Sulfur dioxide</u> determination 470-471
<u>Cyanide poisoning</u> 530	<u>Mercury</u> 522 general 523	<u>T.N.T. determination</u> 528
<u>Dermatitis</u> cement 516 cutting oil 519 general 520 prevention 521 tobacco 517	<u>Metal finishing</u> health hazards 500	<u>Trichlorethylene</u> degreasing 510
<u>Dermatosis</u> coal miners' 518	<u>Mining work</u> physiology 491	<u>Triorthocresyl phosphate</u> poisoning 505
<u>Diffraction, x-ray</u> 472	<u>Myeloid metaplasia</u> 514	<u>Tuberculosis</u> industrial 475 pseudo 476
<u>Dust, determination</u> 439		<u>Tumors, occupational</u> 486
<u>Dust control</u> foundries 434		<u>Welding</u> health hazards 456
<u>Electric shock</u> 452-454-455		<u>X-ray, miniature</u> 474

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STATE OF MASSACHUSETTS)
) ss.
COUNTY OF NORFOLK)

1. My name is Dr. David Egilman. I am over the age of twenty-one years old and am otherwise competent to make this affidavit. All of the statements contained in this affidavit are based upon my personal knowledge and are true and correct.
2. I am the custodian of records of the Industrial Hygiene Foundation.
3. I have personally reviewed the documents listed below, copies of which are attached to this affidavit, and can attest that the attached copies are true, complete and correct copies of Industrial Hygiene Foundation documents.

Industrial Hygiene Digest, Industrial Health News, Literature Abstracts, Medical, Engineering, Chemical, Toxicological, Legal.
August, 1960 (Vol. 24, No. 8) (SCF-ALLF-02040)

Industrial Hygiene Digest, Industrial Health News, Literature Abstracts, Medical, Engineering, Chemical, Toxicological, Legal.
March, 1961 (Vol. 25, No. 3) (SCF-ALLF-02140)

Industrial Hygiene Digest, Industrial Health News, Literature Abstracts, Medical, Engineering, Chemical, Toxicological, Legal. (SCF-ALLF-02310)

Industrial Hygiene Foundation, 1967 Annual Report. (SCF-ALLF-02836)

Industrial Hygiene Foundation, 1969 Annual Report. (SCF-ALLF-03082)

Industrial Hygiene Foundation of America, Inc., Report of Preliminary Dust Investigation for Asbestos Textile Institute with attached Memorandums on Plant of (various companies) Supplementing the General Report "Preliminary Dust Investigation for Asbestos Textile Institute" of June, 1947. (SCF-ALLF-01000)

Members of Air Hygiene Foundation / Industrial Hygiene Foundation as of November 30, 1937 through 1983. (SCF-ALLF-00470)

Air Hygiene Foundation of America, Inc., References to Recent Literature of Industrial Diseases, January 24, 1939. (SCF-ALLF-00565)

Foundation Facts, Vol. 3, No. 6 with attached Digest of Industrial Hygiene, Literature - News - Developments, dated June, 1941. (SCF-ALLF-00685)

Industrial Hygiene Digest, Industrial Health News, Literature Abstracts, Medical, Engineering, Chemical, Toxicological, Legal, Foundation Facts, August, 1957.
(SCF-ALLF-01875)

An Epidemiological Study of Lung Cancer in Asbestos Miners, Industrial Hygiene Foundation Report by Bruan & Truan; study made possible through a grant from the Quebec Asbestos Mining Association (Note: date taken from published article), June, 1958. (SCF-ALLF-01939)

Industrial Hygiene Digest, Industrial Health News, Literature Abstracts, Medical, Engineering, Chemical, Toxicological, Legal, May, 1963, Vol. 27, No. 5.
(SCF-ALLF-02375)

Preliminary Program, 28th Annual Meeting, Industrial Hygiene Foundation, October 23-24, 1963, to Mr. Wagner. (SCF-ALLF-02441)

Industrial Hygiene Foundation, 1964 Annual Report with attached membership list.
(SCF-ALLF-02468)

Industrial Hygiene Foundation of America, Inc., Asbestos Bioeffects Research for Industry, Medical Series, Bulletin No. 11, 1966. (SCF-ALLF-02683)

Further, affiant sayeth not.

David S. Egilman, MD, MPH

David S. Egilman, MD, MPH

Commonwealth of Massachusetts
Norfolk, ss

SUBSCRIBED AND SWORN TO ME, on this 8th day of May, 2006, to certify which
witness my hand and official seal of office.

NOTARY PUBLIC IN AND FOR
THE STATE OF MASSACHUSETTS

David S. Egilman

My Commission Expires June 10/2011

