

INDUSTRIAL HYGIENE DIGEST

Literature Abstracts

- MEDICAL
- ENGINEERING
- LEGAL --- decisions and trends

Industrial Health News



Issued Monthly By

INDUSTRIAL HYGIENE FOUNDATION

4400 FIFTH AVENUE
PITTSBURGH, PA.



004185



FOUNDATION FACTS

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a combined research and service institution to protect the health of workers in industry.

Vol. 5.

July, 1945

No. 7.

H. B. Meller

Dr. H. B. Meller, formerly managing director of Industrial Hygiene Foundation and a world authority on air pollution and smoke prevention, died in a Pittsburgh hospital on Sunday evening, June 27. He was 65 years old. Burial was made at Altoona, Pa., on July 1.

Formerly Dean of the School of Mines at the University of Pittsburgh, Dr. Meller had headed Mellon Institute's air pollution investigation since 1923. He became managing director of Industrial Hygiene Foundation when the organization was formed in 1935 and directed the Foundation until last September when failing health forced him to relinquish active management. He had continued as a Consultant. His direction accounted in a large measure to the upbuilding of the Foundation during its formative years.

Through his work at Mellon Institute for two decades, Dr. Meller became known internationally as a specialist on air pollution. Also, through these efforts, Pittsburgh adopted an anti-smoke ordinance which became a model for other cities throughout the country. He headed Pittsburgh's Bureau of Smoke Regulation from 1920 to 1938.

As an indication of his contribution to air hygiene, and at a time when the field was little known, Dr. Meller published some 30 articles and was senior author of a dozen other articles written with associates. These were exclusive of the scores of papers which he presented before distinguished groups through the years, including such organizations as the New York Academy of Medicine, the Franklin Institute, the American Chemical Society, the American Public Health Association and the National Safety Council.

Born in Altoona, Dr. Meller first went to work for the Pennsylvania Railroad Company as a clerk. In 1900 he became clerk and later secretary of the faculty of the Department of Medicine at the University of Pennsylvania. After attending the University and the Michigan College of Mines he joined the University of Pittsburgh faculty as an instructor in 1910. He became Dean of the School of Mines in 1914 and held that position until 1923 when he came to Mellon Institute.

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July, 1943.
Vol. VII.
No. 7.

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

INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

642 Hydrogen From Water At Fires.

Bulletin 166 by the Committee on Fire Prevention and Engineering Standards of the National Board of Fire Underwriters discusses the formation of hydrogen from water decomposition by fires. The danger of hydrogen accumulating is theoretical. The gas burns as fast as it is formed. The almost instantaneous liberation of a large volume of steam has often been mistaken for a hydrogen gas explosion.

643 Safety Equipment.

The March issue of National Safety News is devoted entirely to safety equipment. Several signed articles of a general nature are followed by brief anonymous discussions of various mechanical and hygienic safety features, classified in the following general sections: (1) personal protection; (2) mechanical equipment; (3) fire and plant protection; (4) first aid and medical service; (5) sanitary equipment and supplies, and (6) miscellaneous services and problems. The subsections on "Respiratory Protective Equipment" under the first heading, and "Industrial Ventilation" under the second, were given brief notices in the June Digest, and Sections 4 and 5 are briefly abstracted in this number. The entire issue, however, is worth reading for a summary of a complete safety plan.

644 Flammable or Inflammable?

There has always been a certain amount of confusion when gasoline or other solvents are referred to as inflammable materials. When we refer to a substance as being incombustible, we mean that it will not easily burn, whereas, custom has established the use of the word "inflammable" to mean something that could easily be ignited. In Webster's Dictionary, the words "inflammable" and "flammable" are defined as follows: Inflammable - capable of being easily set on fire; easily unkindled; combustible. Flammable - capable of being easily ignited; inflammable. In order to clarify this terminology, the National Fire Protection Association has recommended that we eliminate the use of the word "inflammable." They recommend that the word FLAMMABLE be used to indicate ready combustibility and NON-FLAMMABLE for materials which are not easily ignited or set on fire. It is rather difficult to change our habits, but in the future we should refer to materials as being either FLAMMABLE or NON-FLAMMABLE to assist in establishing a proper understanding of the characteristics of certain materials. -- E.C. Barnes, Safety News, Westinghouse Electric & Manufacturing Company.

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645 What's Wrong With Safety Training.

In the "help wanted" columns of a daily paper the following jobs were advertized recently: Production engineer - \$450; Mechanical engineer - \$400; Safety engineer - \$175. Alfred M. Cooper in the February issue of "Engineering For Safety" asks if there is a direct correlation between the discrepancy in salary and the new all time high accident rate experienced by industry? As a rule, we get what we pay for, in merchandise or manpower. In today's labor market one cannot obtain a good safety engineer for \$175 per month, nor for any figure within double that amount. - Ohio Ind. Comm. Monitor, 16, 51 (April, 1943).

646 Ceramic Tubes in Dust Collectors.

To save steel, the Prat-Daniel Corp., Port Chester, N. Y., is constructing tubes of special fire clay in Thermix ceramic tubular dust collectors. These tubes are sufficiently thick and rugged to be proof against fracture and breakage from normal handling or from changes in temperature, yet they weigh no more than steel. The ceramic tubes are mounted in a concrete or brick casing above concrete bins, entirely eliminating the use of steel. - Chem. & Eng. News, 21, (March 25, 1943).

647 Federal Government Safeguards Working Youth.

Safeguards for the health, welfare, and education of American youth whose services are being demanded by the war program have been advanced by a statement of policy just approved by the War Manpower Commission. This policy, formulated in cooperation with the Children's Bureau of the U. S. Department of Labor covers matters relating to the enforcement of school attendance and child-labor laws, the employment of youth under 18 years of age, provision for the educational program of those who take employment, transportation of young people to and from work and assurance that suitable living conditions are available if the work requires that young people live away from home. The policy also states that any youth interested in work in another area should first register for employment at the nearest local office of the U. S. Employment Service or such other agency as may be designated by the War Manpower Commission. After presenting evidence of parental consent, he will be referred to a specific job opening where he can be lawfully employed, and where there are suitable arrangements for housing. -- Labor Inf. Bull., March, 1943.

648 Safety and Health Efforts Aid in Greater Production.

Some examples of the activities of agents of the National Committee for the Conservation of Manpower in War Industries are the uncovering of hazards to health and safety of workers. New England industrial landmarks, now centers of renewed activity, were badly in need of repair. A high labor turnover in a plant manufacturing army tents was found to be due to illness caused by the solvent used on the cloth. The formula was discontinued. Provisions for a noon meal were made in a shoe factory, whose employees had become ill from eating hot dogs at the only available eating place. Two illustrations of the work of the Committee in promoting safety programs are given. -- Labor Inf. Bull., March, 1943.

649 War Industries Urged to Save Workers' Eyesight.

Industrial concerns should give much more attention to workers' eyesight, "not only for humane reasons, but to increase production, to reduce spoilage, and to add manpower," C.P. Tolman, consulting engineer for the National Society for the Prevention of Blindness, declares. At least one fourth of industrial workers, he estimates, have defective, but correctible, vision. More than three fourths of 50 typical plants studied make no effort to determine what visual requirements are necessary or acceptable to qualify a worker for any particular job. These plants do not know how many men with defective vision can be utilized, while, on

the other hand, they may be employing men whose vision is a hazard on the particular job. For example, a crane operator who could not judge the height and placement of a crane load would be a menace to life and property, whereas on a job to which his eyesight is suited, he could carry on safely and effectively. -- Science News Letter, (March 13, 1943).

650 Reducing Blackout Hazards.

Now developments plus experience gained during the past year are helping reduce the hazards of blackouts and dim-outs and are making these protective measures more effective, according to S.G. Hibben, noted lighting authority. Mr. Hibben, who is director of applied lighting at the Westinghouse Lamp Division, Bloomfield, N. J., predicted a greater reduction in the accident toll during blackouts and dim-outs once full advantage is taken of modern lighting and safety devices. "We have learned much about blackout technique during the past year," he declared. "...It is quite possible to have a complete exterior blackout without sacrificing adequate interior illumination in home or factory." "...In case of air raids -- people should be prepared to carry on vital work without interruption..." Present day industrial architecture represents the ideal in industrial protection. It provides such important features as windowless construction, shatterproof glass, minimum of sky lights, neutral exterior coloring, and light interior painting. "Even in older industrial plants not so equipped, it is possible to have such protection by making full use of the most modern lighting and safety devices..." One of the most interesting developments in blackout technique has been that of phosphorescent and fluorescent materials. Mr. Hibben recommends the use of luminous markers and signs to denote exits, doors and factory aisles. He also described its use on clothing and automobile exteriors, and added that phosphorescent coatings may be used to outline door knobs, switches, stairs, railings, paths to air raid shelters and in many other locations. -- Buildings and Building Man., April, 1943.

651 Protein Allergy Attacks Workers in Castor Plants.

A new danger to the health of workers in an important war industry was disclosed before the Detroit meeting of the American Chemical Society by two U.S. Department of Agriculture research men, J.R. Spies and E.J. Coulson. This industry is the extraction of castor oil, now needed in huge quantities for filling the recoil cylinders of heavy guns, and other important uses. Workers handling the pomace or pulp left after the oil has been extracted sometimes develop asthma and other allergic symptoms. Even when ricin, a deadly protein poison has been removed, the pomace is still capable of causing allergic reactions. The newly discovered allergy-producing protein is, as yet, known only by a set of initials; CB.-1A. Something closely resembling it in chemical and physiological properties has also been isolated from cotton seed. -- Science News Letter, April 24, 1943.

652 Health Hazard.

It is essential that all persons engaged in the business of plating, selling, manufacturing or distributing utensils and equipment which may come directly or indirectly in contact with food or drink be again warned concerning the hazard to public health involved in the use of deleterious metals in this connection. The Sanitary Code of the City of New York definitely prohibits the use of cadmium, lead or other deleterious metals in the construction of food equipment or utensils. A simple field test for the rapid detection of cadmium is available upon request at the office of the Bureau of Food and Drugs, Department of Health of the City of New York. -- Products Finishing, 7, 55 (May, 1943).

Legal Developments

653 Tuberculosis Reactivated. Whether Accidental Injury Accelerated Disease.

This is an appeal in a compensation from a judgment sustaining a demurrer to the petition and dismissing the suit. Petitioner, a man twenty-nine years of age, was suffering from tuberculosis contracted some time before his employment by the Procter & Gamble Company, insured by the Travelers, but which it was alleged had been arrested prior to his employment and that, as the result of inhaling gaseous fumes and fine particles of dust thrown out in the operation of the department in which he worked, the old scars or lesions left on his lungs had been disturbed and broken and the disease re-activated. The trial Judge was of opinion that petitioner was suffering from a disease, not the result of accident. To be within the Compensation Act the injury must be "unforeseen, unexpected and fortuitous. An element of unexpected casualty must be present." In the instant case the resultant condition of which petitioner complains could not, it would seem, have been unexpected. On the contrary, it was a natural and foreseeable result. The court is constrained to agree with the trial Judge that the declaration failed to state a case of liability in that no accidental injury is shown to have resulted in either causing or accelerating the disease from which it is alleged petitioner is suffering. The judgment is affirmed. Johnson v. Travelers Insurance Co. Tenn. Supreme Ct. Decided May 8, 1943. (CCH).

654 Death of Sand-Blaster Resulting From Inhaling Silica Sand Dust. Prejudicial Error in Instruction to Jury.

The death of plaintiff's decedent was allegedly due to the negligence of defendant in failing to provide decedent with a safe place in which to perform his work, and failing to provide him with proper equipment to protect him from inhaling silica sand dust and particles, while employed by defendant as a sandblaster, whereby he contracted the disease of silicosis, which culminated in his death. Defendant in his answer affirmatively alleged that it complied with its duty to the deceased by furnishing him with the properly equipped respirator; but it was further alleged that decedent refused to wear the respirator, by reason of which he contracted the disease resulting in his death. The court rendered judgment for plaintiff. The grounds urged for a reversal are: (1) Erroneous instruction No. 1 given to the jury, and (2), that the defendant's motion for a peremptory instruction should have been sustained, on the ground that the evidence showed conclusively that deceased refused to wear the respirator while he was engaged in his work. Instruction No. 1 still contained grounds upon which the jury could return a verdict against defendant, although it did furnish an efficient respirator and defendant wore it while at work. Such submissions to the jury constituted false and immaterial issues, which instruction No. 2, did not eliminate. The testimony on the issues of defendant's failure to furnish an efficient respirator or on the issue of defendant's failure to appropriate it when performing his work did not create such a failure of proof as to render a finding by the jury either way as being flagrantly against the evidence so as to require the giving of a peremptory instruction. The error in instruction No. 1, as above pointed out, was prejudicially erroneous, requiring a reversal of the judgment, and it is so ordered, with directions to set it aside and for proceedings consistent with this opinion. Peerless Manufacturing Corporation v. Mackey. Ky. Ct. of App. Decided May 7, 1943. (CCH).

Scissors Buffer Breathes Mineral Dust. Aggravation of Pre-Existing Bronchiectasis. Disability. Sufficient Evidence for Award.

Appellant's appeal is from the judgment of the circuit court affirming an award by the Commission in favor of appellee. Appellee, who suffered from a cough, considerable expectoration, soreness of his lungs, dryness and heat sensations in the bronchial tubes, loss of weight, and pain in his shoulder and back, worked in the buffing department where minute particles of the lime and nickel make a cloud of dust which fills the room and he became disabled by aggravating a pre-existing condition of bronchiectasis. Appellant contends that there was not sufficient competent evidence in the record to sustain the finding of facts made by the commission. Medical testimony has shown that the air which appellee was forced to breathe while doing his work was strongly impregnated with mineral dust which aggravated a diseased condition of his bronchial tubes, and resulted in disability. Judgment affirmed. Solid Steel Scissors Company v. Kennedy. Ark. Supreme Ct. Decided May 31, 1943. (CCH).

556 Death From Tuberculosis Following Contraction of Silicosis. Liability of Employer. Propriety of Instructions. Admissibility and Exclusion of Evidence. Officials' Non-Liability.

Coburn was employed by defendant as a "grinder" in the manufacture of refractory brick. Coburn developed silicosis, and he died from tuberculosis. Coburn's administratrix brought suit for his death, alleging that it had been directly and proximately caused by the negligence of the defendants. The court below overruled the Company's motion for a directed verdict, but sustained a similar motion on behalf of the individual defendants, officials in the plant. The jury, however, found for the Company, and this appeal is from the judgment dismissing the petition. As grounds for a reversal, appellant contends, inter alia, that the Court erred in its sixth instruction to the jury; in rejecting material competent evidence offered by the appellant, and in admitting incompetent evidence offered by the Company; and in directing a verdict for the individual defendants, Leighow and Cartroll. Instruction No. 6, stated that death was directly caused by tuberculosis. But the jury was told not to find for plaintiff unless it found that silicosis was the proximate cause of the tuberculosis which caused his death, and that "Proof that silicosis predisposes to tuberculosis and that the decedent might not have had tuberculosis if he had not contracted silicosis, is not sufficient of itself to establish that the silicosis was the proximate cause of the tuberculosis." The court holds that there was no error in the instruction. Appellants insisting that the quoted sentence was tantamount to an instruction to find for appellees. Since most of the medical testimony went no further than to establish that silicosis predisposes to tuberculosis, appellees were entitled to have the jury cautioned that such testimony "of itself," which phrase is equivalent to "standing alone," was not sufficient to supply the necessary link in the chain of causation. The preponderance of testimony was to the effect that Coburn's silicosis was in the first, or, at most, the second of the three or four stages into which the authorities usually attempt to divide it, and was, of itself, not sufficient in intensity to seriously disable him, much less, cause his death. As for the excluded testimony, its exclusion was not prejudicial to appellant, since he obtained the full benefit of the testimony that the great majority of persons who contracted silicosis subsequently developed tuberculosis. With respect to the medical testimony admitted over the objection of appellant, and relating to dust conditions at the plant, in cases of this magnitude, especially where the conditions giving rise to the claimed injuries and the nature of these injuries are obscure, the testimony, if the truth is to be ascertained, must be allowed to take a wide range. This court cannot say that the testimony excluded was incompetent, or its admission prejudicial to appellant's substantial rights. The proof for appellant does not show acts or omissions on

the part of the individual appellees which would render them personally liable. There was much evidence indicating that at least good faith efforts had been made by the Company to comply with the Statutes requiring the installation of draft and suction apparatus to remove the dust. Judgment affirmed. Coburn v. North American Refractories Co., et al. Ky. Ct. of Appeals. Decided June 25, 1943. (CCH).

657 Partial Disability from Silicosis Not Compensable. Total Disability Resulting After One-Year Statutory Period Also Not Compensable.

This is an appeal by an employer and its insurance carrier from an award of the State Industrial Board in favor of claimant for total disability compensation covering the period from May 24, 1941 to December 25, of the same year. Claimant, an iron chipper, employed by the appellant, filed a claim in June, 1938, for compensation in which he stated that he terminated his employment on December 16, 1937. He was examined on July 26, 1938, and found to be partially disabled due to silicosis. The referee disallowed the claim on the ground that partial disability as a result of silicosis is not compensable and the Industrial Board subsequently affirmed the referee's decision. On claimant's application the case was later reopened, and on October 10, 1941, claimant was found to be totally disabled. The referee made the award under review which was subsequently affirmed by the Industrial Board. It is undisputed that claimant ceased work on December 16, 1937 and in its decision the Industrial Board found that the last injurious exposure occurred on that date. The Board also found that claimant became disabled as a result of silicosis on or about December 16, 1937 and on or about July 26, 1938. The record contains no evidence whatsoever to support the finding of total disability as a result of silicosis on December 16, 1937. Claimant is not entitled to benefits for the reason that the alleged total disability did not result until approximately three years and five months after the date of the last exposure. Claimant is in a very unfortunate situation. There can be no doubt that he is now permanently disabled as a result of silicosis. The record discloses that he has not been employed in any gainful occupation since he ceased to work for this employer. In view of the findings of the Board, however, this court is powerless to aid him. It may be that if given the opportunity he may be able to submit proof as to the permanency of his disability within the statutory period of one year from the date of the last exposure. Award reversed. Matter of Rankiewicz. N.Y. Supreme Ct., App. Div., 3rd Dept. Decided at April Term, 1943 (CCH).

658 Silicosis From Breathing Limestone Dust Over Long Period of Time not a Compensable Injury.

Appellee, Phillips, filed his application for compensation against appellant, Kentucky Stone Company, with the Workmen's Compensation Board, claiming that he "suffered permanent impairment of his lungs and body by reason of breathing limestone dust." The application was apparently based on the contraction of silicosis. The Board overruled the referee's ruling that there was a compensable injury and dismissed the claim. The court trial held that the case should be remanded to the Board. This appeal follows. Appellee, while employed for 15 years in appellant's quarries, inhaled limestone dust and dust from emery wheels. On a day in 1938, he got very hot, and went up on top of the crusher where he breathed limestone dust and cooled off quickly, started choking up, caught cold and could hardly breathe. He was off from work for several days, and lost over 50 pounds. Even if the court assumes that breathing of dust causes physical injury to the lungs of some people, and that the breathing of the dust over a period of years by the appellee resulted in traumatic injury to him, there yet remains the question whether such injury was accidental within the meaning of the statute. It seems incongruous to say that an injury caused by breathing dust over a period of years is an accidental injury. To hold such an injury accidental

would practically nullify the statute in this regard and open the door to compensation of occupational diseases, a result clearly not contemplated by the statute. The Board correctly denied compensation and dismissed the claim even though the evidence may be said to have established that the claimant was suffering with a disease which was in fact attributable to his employment, since such disease was not compensable. Reversed with directions to set aside the order remanding the case to the Board and to enter judgment affirming the Board's finding. Kentucky Stone Co. v. Phillips et al. Ky. Ct. of Appeals. Decided June 4, 1943. (CCH).

659 Blacksmith Injured by Breathing Fumes Caused by Acids Used in Course of Employment. Inhalation of Vapors as Constituting Accidental Injury Within Act. Statutory Requirement of Written Notice Excusable by Commission.

Respondent was employed by petitioner as a blacksmith helper. On the date of the alleged injury, he was in the blacksmith shop using cyanized gas and acids. The mixture reached boiling point and strong fumes and flame came from and around the mixture. The fumes, flame and smoke shot up in his face. Respondent alleged that by breathing them, he sustained his injury. The Workmen's Compensation Law is not confined to cases of traumatic injury; inhalation of vapors, gas or dust may constitute an accidental injury. The medical testimony sustained the finding of the Commission that there was an accidental injury and resulting disability. It was next argued that there was a failure to comply with the statute as to giving the statutory written notice. The statutory written notice may be excused by the Commission. The Commission entered its finding that the petitioner was not prejudiced by a failure to give the statutory written notice and there is competent evidence to sustain such finding. Award sustained. The Eagle-Picher Mining & Smelting Company v. Loyd, et al. Okla. Supreme Ct. Decided June 1, 1943). (CCH).

Book Reviews

660 National Fire Codes for the Prevention of Dust Explosions. National Fire Protection Assoc., 60 Batterymarch St., Boston, Mass. 160 pp. (1943). \$1.00. This is the latest contribution of the Committee on Dust Explosion Hazards of the National Fire Protection Association. The committee was formed in 1922 in cooperation with the U. S. Department of Agriculture, and has functioned continuously to date. In 1926, the Committee became a sectional committee of the American Standards Association. The Codes include a section on fundamental principles for the prevention of dust explosions and separate sections on the following dusts: aluminum bronze powder, coal, flour and feeds, pulverized fuels, spices, starch, sugar and cocoa, sulfur, grain (elevators and storage), and wood. The use of inert gas for preventing explosions is also described. The records of dust explosions in the United States up to September 1, 1942 are also presented.

661 Physiology in Aviation. C.L. Gonnall. C.C. Thomas, Publisher, 220 E. Monroe St., Springfield, Ill. 124 pp. (1943). \$2.00.

An elementary treatment of physiology prepared primarily for aviators, covering mechanics of respiration, oxygenation of the blood, normally and at high altitudes, acceleration effects, etc. For industrial hygienists interested in the subject it would serve only as an easily read introduction to the subject. There is no bibliography.

Industrial Health Hazards and Their Effects

- 662 Epidemiologic Aspects of Anthrax in Massachusetts. I.R. Tabershaw and G.E. Morris. New England J. Med., 228, 92-93 (January 21, 1943.)

It appears to be impossible to destroy anthrax at its source. Sporadic cases of native origin will always occur. It is extremely difficult to disinfect hides and skins. The anthrax spore undoubtedly survives the first two or three processes in tanning -- that is, washing, fleshing and liming -- but probably can not survive the entire process. No significant improvement in the method of killing anthrax spores has been evolved in the last twenty years; and even if it were possible to disinfect hides and skins, it is doubtful whether this would be warranted, especially at the present time. Therefore the method of control must be chiefly one of education and sanitary precaution until the hides have passed through the tanning process. The more severe cases and the most frequent deaths have occurred in truckmen and longshoremen, who are not aware of the possibilities of this infection, and who neglect to report for treatment early. The prompt diagnosis and treatment in tannery workers seem in large measure responsible for the lessened mortality and morbidity among them. Physicians treating any cutaneous infection in a tannery worker or truckman should bear in mind the possibility of anthrax and should culture material from the lesion. In order to keep this disease in check effectively, an educational program must be directed toward truckmen, tannery workers, longshoremen and all others who handle imported hides, from their arrival in this country to their conversion into finished leather. -- Authors' summary.

- 663 Tripoli and Silicosis. C.P. McCord and S.F. Meek and G.C. Harrold. Ind. Med., 12, 373-377 (June, 1943).

The mineral tripoli contains approximately 98% free silica, and is usually in a finely divided state. Proliferative reactions may be produced by all varieties of true tripoli. However, cases of human silicosis from tripoli are rare. The authors have sought the causes of this behavior and have come to the following conclusions: (1) the high porosity of tripoli gives a large surface area per unit of mass; (2) this high specific surface favors adsorption phenomena, including presence of hygroscopic films; (3) tripoli has an unusual degree of dipolar electric attraction, causing many particles to cohere; and (4) an additional artificial factor is that tripoli must be waterproofed before use as a foundry parting to prevent the hygroscopic films. The waterproofing compounds are physiologically inert as their melting points are well above body temperature and they are not easily removed. The extent of physiologic inertness appears to depend on the efficacy of the coating process. Not all particles below 5 microns are coated.

- 664 The Dust Hazard in Tremolite Talc Mining, Including Roentgenological Findings in Talc Workers. W. Siegal, A.R. Smith and L. Greenburg. Am. J. Roentgenol., 49, 11-29 (February, 1943).

This is a report on a study of atmospheric contamination in the mining and milling of tremolite talc in Northern New York State. It is notable that although the free silica content in all cases was found to be less than one per cent, an incidence of 14.5 per cent of advanced fibrosis was found (32 out of 221 exposed). All cases occurred among men exposed to tremolite talc for 10 years or longer. The authors report that the pathology associated with this exposure suggests a

special etiology, and in addition there is evidence that there is an increased susceptibility to tuberculosis. The fibrosis found was a "fine diffuse type with a roentgenographic appearance of granulation or nodulation on a hazy background. It tended to be disabling in character and was frequently accompanied by dyspnea, cough and fatigue." The study includes a review of the literature on both experimental studies and clinical reports on the effects of talc dust. There is a complete discussion of the mineralogy and mining and milling operations in the Northern New York mines. Twelve X-rays and eleven case histories are given together with a detailed discussion of roentgen findings.

- 665 Minimum Standards for the Health of Workers in the Brick Manufacturing Industry. Educational Health Circular, Industrial Health Series, No. 3. State of Illinois, Dept. of Public Health. Pamphlet, 14 pp. No date.
Part I of the circular is devoted to a discussion of Material and Processes and of Health Hazards. Exposure to silica is the greatest hazard found in brick making plants; therefore dust prevention is of paramount importance. Factors to be considered in determining a dust hazard are given. The necessity of frequent air sampling by competent personnel is indicated. The minimum permissible dust content is stated, and measures for controlling a dust hazard are considered. Other health hazards discussed, with health measures and precautions to be observed are: Dampness - temperature variations; weather exposure - extreme dry heat; extreme light glare; gases and fumes. Part II presents minimum standards for the health of workers in the Brick Manufacturing Industry, as suggested by the Division of Industrial Hygiene of the State (Mass.) Department of Public Health. Subjects covered are: Lighting; ventilation, temperature and humidity; sanitation; dust, fumes and gases; personal protective equipment; housekeeping; building equipment; notices and instruction; inspection; medical aid; physical examinations; reporting diseases.
- 666 Chemical Pneumonia in Workers Extracting Beryllium Oxide. H.S. Van Ostrand, R. Hughes and M.G. Carnody. Cleveland Clinic Quarterly, 10, 10-18 (Jan., 1943). Three cases of chemical pneumonia occurring in a war industry manufacturing beryllium oxide are presented. The chemical formula or agents used in this process have not been made known by the manufacturer. The 3 cases reported had identical symptoms and roentgen findings. The characteristic symptoms consisted of dyspnea, a relatively non-productive cough with occasionally blood-tinged expectoration, and a low grade fever. The roentgen changes in the chest which appeared about 3 weeks after the onset of symptoms revealed a diffuse haziness of both lungs, prominence of the peribronchial markings, soft irregular areas of infiltration, and discrete small nodules. These changes were dependent on the stage of the disease. The 3 patients recovered with a complete return of the lungs to normal on chest X-ray. Additional studies are being made to determine the specific inhaled etiologic agent in this industrial disease attendant to the war effort. The loss of time from work in these 3 cases averaged 3-3/4 months. - Authors' summary.
- 667 Dust Free Grinding. F. Schoeffler. Nat. Safety News, 47, 18, 19, 84 (May, 1943). A description, with illustrations, is given of the modern grinding room equipment installed by the Lodge and Shipley Machine Tool Company of Cincinnati to provide healthful, dust-free surroundings for employees. Increased production with lower labor costs has resulted from the installation.
- 668 Toxic Hazards in Munitions Plants. C.E. Gault. Calif. Safety News, 27, 5 (March, 1943).
This short article describes the symptoms of TNT and tetryl poisoning. The most important precautions to be observed to prevent poisoning are listed briefly.

- 669 Hazards of the Printing Industry. Travelers Standard, 30, 81-88 (May, 1942). The dangers from lead poisoning in printing establishments are considered, with methods for their prevention. Cases, from which type is set by hand, should be cleaned by vacuum equipment to prevent the dust from being inhaled by the workers. Exhaust hoods should be placed over linotype and monotype machines to carry off the lead fumes that are given off from the melting pots. Personal cleanliness is highly important, and adequate toilet facilities should be provided. Vacuum systems should be installed wherever practicable. If floors must be swept, precautions should be taken to avoid raising dust.
- 670 Health Aspects of Welding. A.G. Cranch and B.L. Vosburgh. 31st National Safety Congress Transactions (1942). Health hazards in welding may be divided into "real" and "unreal." If precautions are taken to guard against the real hazards, the unreal will disappear entirely. The real hazards are usually easy to recognize and effective preventive measures are available. No reliable evidence has been presented to show that welding operators have any poorer health and accident records than other tradesmen working in the same environment, or that they show any characteristic type of illness which could be associated with their work. That health hazards due to welding exposures are not great and can be well controlled is evident from the enormous increase in welding and its applications without a corresponding increase in illness.
- 671 Spray Painting Creates Health Hazards. Illinois Labor Bull., 3, 14-15 (March 31, 1943). Spray painting adds new health hazards besides magnifying the dangers of brush and dip painting. These hazards are discussed and it is pointed out that solvents which show no immediate toxicity have a narcotic action which makes the worker more prone to accidents. Health safety limits for solvent vapors are usually at least a ten times lower concentration than the explosive limits (which range in whole per cents). The remainder of the article discusses control measures: (1) In general, if the sprayer must enter the spray area he must have in addition to exhaust ventilation an air-supplied respirator and additional protective clothing. (2) The booth must be large, deep (to prevent excessive backlash) and fireproof. (3) Exhaust and spray disposal. An air velocity of 150 linear feet per minute into all openings is recommended, as well as a water wash system or collector plates. (4) Spraying practice. The spray must not be under unnecessary pressure and should be directed toward the exhaust. Vertical articles should be placed at an angle. (5) All drying methods should have good exhaust ventilation. (6) Dermatitis can be prevented by adequate clothing and the use of skin creams. (7) Fire protection. Most important here are good housekeeping and safe storage of materials.
- 672 The Toxicity of Lead Azide. L.T. Fairhall and others. U. S. Public Health Repts., 58, 607-617 (April 9, 1943). An investigation of lead azide as an industrial hazard has indicated that the storage and distribution of lead in the tissues following the ingestion of this compound are in general similar to that of other lead salts. The acute toxic effect of this substance, however, is associated with the azoimide radical rather than with the lead. Further evidence confirming this was obtained from observations of the effect of administering sodium azide intraperitoneally, subcutaneously, and orally in comparison with similar experiments with lead azide. The minimum lethal dose of sodium azide following injection lies between 35 and 68 mg. per kg. of body weight, while up to 150 mg. per kg. of body weight of lead azide could be injected intraperitoneally without causing death. This is equivalent in amount to 66 mg. of sodium azide. The effect of exposure to hydrazoic acid

gas by inhalation was determined at various concentrations and it has been shown to be invariably fatal to rats in amounts beyond 1160 p.p.m. when breathed for 1 hour. The results of this investigation indicate clearly that hydrazoic acid should be considered a dangerous gas. -- Authors' summary.

- 673 Occupational Disease Considerations. E.R. Hayhurst. Ohio State Bar Assoc. Rept., 18, 87-93 (May 10, 1943).
The author compares various definitions of occupational disease, including Sappington's, Goldberg's, his own and those established in the courts of New York and Illinois, and Ohio. The methods and sources of reports and complaints are next discussed. The sources include the examining physician, the plant physician, labor union officials, fellow employees, and industrial hygiene surveys. The principal occupational diseases in Ohio in 1931-40 and in 1942 are then tabulated. The hazards of industrially new substances are discussed and some essentials in the handling of medicolegal cases are presented. The latter subject includes careful investigation of physical condition, personal and family history, examination of the work place. Finally the cost of establishment of claims and the question of who shall pay that cost is discussed, concluding with a suggestion that a State Occupational Disease Institute be founded, with the immediate function of investigating all occupational diseases reported under the law. This institute should also have the broader function of investigating all new manufacturing procedures before they are put into operation. The institution should be in a strictly impartial research center, should work in cooperation with state officials, and should be well supplied with funds and personnel.
- 674 The Iron Metabolism In Lead Poisoning. A. Tomaselli. Z. ges. exptl. Med., 109, 594-603 (1941). (German).
In lead poisoning in dogs the blood iron and hematocrit values decreased more or less rapidly in all cases. The serum iron decreased in the milder, more chronic poisonings, but increased in severe acute poisonings. The iron values of the liver, bone marrow and lungs increased in lead poisoning. The movement of the total iron in the organism is discussed on the basis of these and other findings.
- 675 Blood Changes in Experimental Lead Poisoning As Studied by the Fluorescent Microscope. K.L. Pesch and E. Lenke. Arch. Gewerbepath. Gewerbehyg., 10, 674-81 (1941)
The stippled erythrocytes were not exhibited by the fluorescence microscope in the blood of guinea pigs, rabbits or man in lead poisoning. The basophilic granules of stippled erythrocytes are apparently not nuclear remnants, because the nuclei of nucleated red blood cells (as in the blood of birds or in human red bone marrow) absorb definite fluorochrome light. In simple and clear manner stippled red blood cells were demonstrated by the Morin-Manson dye. The staining technique is presented.
- 676 Industrial Manganese Poisoning. L.T. Fairhall and P.A. Neal. Nat. Institute of Health Bull., No. 182. 24 pp. Federal Security Agency. U.S. Pub. Health Service.
Chronic manganese poisoning has been known for over a hundred years, and some 353 cases of manganism have been reported since 1837. Its relative rarity considering the manifold technical applications is explained by the following circumstances: (1) Relatively few people have the constitution for the development of chronic manganism; (2) apparently not all compounds of manganese can produce chronic poisoning; (3) the chronic condition can only arise where manganese or its compounds are inhaled or swallowed in sufficient amounts for a sufficiently long time. The maximum permissible concentration of manganese has not been determined, but as a result of investigation and environmental studies, it has been tentatively placed at 60 mg. per 10 cu. m. of air. A brief treatment is given of The Uses and Occurrence, The Physico-Chemical Properties, and The Analytical

Evaluation of manganese. Under Toxicology, industrial, experimental and chronic industrial manganese poisoning are discussed. Changes in the central nervous system with the development of the parkinsonian syndrome are the most important pathological changes due to manganese, but manganese pneumonia frequently occurs, also. Symptoms, differential diagnosis, pathology and treatment of chronic manganese poisoning are considered. The importance of early diagnosis is stressed as these cases recover spontaneously if placed in a dust free environment. For more advanced cases there seems to be no effective treatment. Periodic medical inspection of workers and engineering control methods are measures for the control of industrial manganese poisoning. A ten page bibliography is included in the bulletin.

- 677 Bone Marrow and Peripheral Nervous System in Chronic Manganese Poisoning. H. Voss. Arch. Gewerbepath. Gewerbehyg., 10, 550-568 (1941). (German).
In two cases of chronic manganese poisoning changes in the bone marrow and in the peripheral nervous system were found. In one case the atypical course of the poisoning was manifested clinically as amyotrophic lateral sclerosis with bulbar symptoms. Anatomical findings existed corresponding to the malfunctioning observed. In another case there were certain pyramidal tract symptoms. Anatomical study showed mainly extensive degeneration of the right pyramidal tract and of both sciatic nerves with pronounced vessel changes in the affected areas.
- 678 Dangers From Carbon Monoxide in the Home. L.B. Berger and H.H. Schrenk. U. S. Bur. of Mines Inf. Circ., No. 7238 8 pp. Mimeographed. (April, 1943).
The purpose of this publication, as stated by the authors, is to emphasize the dangers of carbon monoxide and to suggest safeguards against this hazard of every day life. The properties of carbon monoxide and its action on the body are discussed. Suggestions for the safe use of the various types of household heating appliances are given. Some precautions against unsafe practices are listed. First aid measures are indicated.
- 679 Carbon Monoxide Asphyxia. A.G. Kammer and E.H. Carleton. Rocky Mt. Med. J., 40, 234-240 (April, 1943).
The authors present the essential facts about carbon monoxide asphyxia, including cause, location, symptoms, pathologic changes and treatment.
- 680 The Carbohydrate Metabolism During Carbon Monoxide Poisoning. J. Varady. Unien. Med. Wchs., 92, 121-2 (1942). (German).
Studies on 15 patients revealed a hyperglycemia in severe carbon monoxide poisoning. After administration of 50 g. glucose, the blood sugar curve remained high for 30-60 minutes, and even after 2 hours it did not drop below the initial hyperglycemic value. The insulin secretion was not affected in carbon monoxide poisoning.
- 681 Effects on Man of Severe Oxygen Lack. S.M. Horvath and others. Am.J.Physiol., 138, 659-68 (1943).
Schizophrenic patients were subjected to severe anoxia over a period of several minutes either up to the point of unconsciousness or in some cases extending into unconsciousness. Anoxia of severe degree produces no beneficial effects on the mental condition of these patients. Anoxia severe enough to produce brief periods of unconsciousness has no lasting harmful effects on the central nervous system. Respiratory stimulation by anoxia is strong and sustained even during unconsciousness. There is a rapid return to normal when either air or 14% oxygen is supplied. A mixture of 4.2% oxygen with nitrogen is equivalent physiologically to an altitude of about 31,000 feet. It should be possible to descend with an opened parachute from 31,000 feet altitude without oxygen equipment with no ill effects from anoxia.

- 682 Diagnosis of Carbon Disulfide Poisoning. Rodenacker. Med. Klin., 38, 828-831, (August, 1942).

The comparative rarity of carbon disulfide poisoning since industrial processes have succeeded in keeping the air concentrations within the danger limit, has rendered its diagnosis more difficult. Acute mental disturbance with delirium, may be caused by three months' exposure to a concentration of 0.5 to 2 mg. per liter of air. The mental effect disappears after 3 weeks' removal from exposure. Pathologically the result of poisoning is disturbance of the lipid metabolism, which in turn affects the cells of the mid-brain. Another effect is carbon disulfide neuritis, especially of the peroneus nerve, and affection not only of the medullary sheath of the nerves but also of the corresponding ganglion cells of the central nervous system. Complete recovery on removal from exposure is of diagnostic importance. A measure of the extent of carbon disulfide poisoning is the xanthogenate content of the blood, which can be determined by simple tests which are described. The xanthogenate content is not related to the total carbon disulfide in the blood but shows a decided increase whenever mental disturbance is present. Figures are presented in support of that view.

- 683 Leukemic Myelopathy Caused by Benzene Poisoning. N.T. Rosso. Minerva med., 32, 600-2 (1941). (Italian).

A few cases of hematologically proven myelopathic leukemia following benzene poisoning are reported.

- 684 Fatalities in Trichlorethylene Degreasing. N.Y. State Ind. Bull., 22, 125 (March, 1943).

Two fatalities of persons employed at degreasing operations in which trichlorethylene was the degreasing agent, have been reported to the New York Division of Industrial Hygiene. These fatalities have not been common, and complete details of the cases will be published later. The deaths occurred suddenly about 1 hour after the end of the 8-hour work period. The Division of Industrial Hygiene wishes to remind persons interested in these operations, that if trichlorethylene degreasing is not properly controlled, serious consequences may result.

- 685 Poisoning by Chlorinated Naphthalene. E. Collier. Lancet No. 6229, 72-74 (January 6, 1943.)

Poisoning by chlorinated naphthalene may result in chloracne of the face, particularly of the sides of the face; 12 such cases arising among workers who were exposed to the fumes or dust of chlorinated naphthalene are reported. It may also produce acute yellow atrophy or necrosis of the liver. In a typical case with systemic effects, the liver is usually the only organ showing damage. One fatal case is described fully. If cases of poisoning are to be prevented, the wax must not be overheated, and the fumes and dust must be properly carried away by exhaust ventilation. Workers must be instructed in the importance of personal cleanliness, and must be medically examined every week for signs of acne or jaundice. -- Author's summary.

- 686 Chemical Casualties. H.W. Haggard. Conn. State Med. J., 6, 864-871 (1942).

The following topics are considered: nature of chemical agents, lung irritants (ammonia, phosgene, "nitrous fumes," chloropierin, chlorine, sulfur dioxide), artificial respiration after irritant gases, lacrimators and sternutators (chloroacetophenone (usually with some chloropierin), bromobenzyl cyanide, diphenylchloroarsine, diphenylaminochloroarsine), systemic poisons (carbon monoxide, hydrogen cyanide), incendiary agents (white phosphorus, thermite, magnesium), vesicant agents (mustard, Lewisite) and the problem of decontamination.

- 687 Psychic Symptoms in Poisoning by Modern Industrial Solvents. P.J. Knabenhans. Schweiz. Arch. f. Neurol. u. Psychiat., 48, 252-271 (1941); 49, 129-164 (1942). There are six essential factors determining the neurotropic action of a solvent vapor: (1) fat solvent action, (2) chemical composition and metabolism in the body, (3) rate of absorption and excretion, (4) air concentration (volatility), (5) time factor (acute or chronic symptoms) and (6) variability of individual reaction (susceptibility). Acute poisoning for most solvent vapors is characterized by symptoms of narcosis terminating in death or recovery. In case of the latter there usually appear symptoms of epileptiform seizures, emotional instability, intellectual deterioration, loss of initiative, disturbances of sleep and amnesia. Chronic poisoning is usually characterized by a gradual appearance of excitability, emotionalism, epileptiform and schizophrenic symptoms; sometimes there is apathy, exhaustion and drowsiness; often there is a disturbance of sleep rhythm, diminution of sexual potency, alcohol intolerance, and addiction. Toxic symptoms are given for chronic and acute poisoning with various aliphatic, aromatic and chlorinated hydrocarbons, also alcohols, esters, aldehydes, ketones, ethers, special solvents and chemically related organic substances.
- 688 Industrial Dermatitis - 481 Cases. H.J. Davis. Ind. Med., 12, 381-383 (June, 1943). The author introduces a report giving the experience of the company with which he is associated to help substantiate the statement that dermatitis can be lessened by proper control, prevention and treatment. With no new buildings, new machinery nor new methods for combating dermatitis they have been able to keep their period of time lost for a compensable dermatitis case at 8.3 days, whereas the average is 70 days. The average compensation paid is \$100 for each case, their figure is \$18.10; the average medical cost for each compensable case is \$90, their figure is \$23.75. Sterilization of oil and the institution of an original, complete method of studying, recording and treating dermatitis caused a marked reduction in the number of cases. The factor of cleanliness of the worker is also of importance. The author considers the present an opportune time to study the many million new war workers from a dermatitis standpoint. The number of man hours that can be saved by proper protection, control, and treatment is of great importance.
- 689 Dermatitis Due to the Formaldehyde Resins - Prevention and Methods of Control. K.E. Markuson and others. Ind. Med., 12, 383-386 (June, 1943). A study was made of a severe dermatitis outbreak due to formaldehyde resins. It involved four plants employing 2,370 workers, 355 of whom had developed dermatitis. Information is limited to the most critical field, the toxic nature of phenol and urea formaldehyde. The use and composition of these resins is given. Mention is made of the frequent substitution of cresol for phenol, which may, in some degree, be responsible for the recent outbreak in phenol formaldehyde dermatitis. The action of the resins is explained and predisposing factors are discussed, briefly. Description of the skin rash, complications, body distribution, immunity, duration, medication, sensitiveness to formaldehyde fumes are subjects of short paragraphs. Preventive measures are listed under two headings: I. Medical, which includes personal hygiene, protective clothing, protective creams and ointment, operative technique, and education; and II. Engineering. The principal control measures are: (1) enclosure of mixing operations; (2) ventilation in grinding and sanding operations; (3) enclosure of operations which require the heating of the material containing the resin, and the provision of exhaust systems; (4) segregation of operations requiring the heating or drying of the material; (5) mechanical installations, wherever possible; (6) regular periodic removal of dust accumulation.

- 090 Trinitrotoluene (TNT): Its Effective Removal from the Skin by a Special Liquid Soap. W.D. Norwood. Ind. Med., 12, 206-208 (April, 1943).

Under the present conditions of handling TNT in munitions works, it tends to accumulate on the skin of exposed workers, because it cannot be removed by washing with ordinary toilet soaps and water. TNT left on the skin is absorbed throughout the 24-hour period and adversely affects the health of workers. Profitting by the previous work of others, and aided by soap manufacturers, we have developed an effective remover for TNT. It is composed of liquid soap to which is added 5 to 10% of potassium sulphate and 5 to 10% of an appropriate wetting agent. I believe that the use of such a soap will materially reduce the incidence of toxic effects among exposed TNT workers. Information relative to companies from whom the special liquid soap may be secured may be obtained from the office of Col. W. J. McConnell, Medical Corps, Office of the Chief of Ordnance, 333 North Michigan Ave., Chicago. The soap has also proved effective in removing tetryl from the skin. A much more general use of Webster skin reagent is recommended. It is hoped that this article will stimulate others to work actively on this problem, as its effective solution is most important in maintaining the good health of our munition workers. -- Author's summary.

- 091 "Dural Poisoning" and Wound Infections in Workers in Airplane Factories. W. Anton. Muench. Med. Wochschr., 88, 886-8 (1941). (German).

Eczema caused by working with light-metal alloys (Duralumin, Electron) is rare. Superficial skin fistulas after injuries and surface suppurations which were slow to heal were relatively frequently observed in those who worked with light metals. The treatment is described.

- 092 Dermatitis in Industrial Occupations. G. Hopf. Gesundh.-Ing., 65, 44-48 (1942). (German).

Various harmful materials are exhaustively described according to the type of their reaction mechanism, the physical, chemical viewpoint of their penetration into the skin as well as their occurrence in different trades and the skin reactions that they produce. The proper precautions for the prevention of industrial diseases are discussed; in particular, the problem of cleansing the skin, and the protection of the skin by industrial protective ointments is detailed.

- 093 Skin Injuries Through Chemical War Materials. Jonquieres. Parfumerie modern. 34, 41-47 (1940). (French).

Description of the physical and chemical properties of dichlorodiethyl sulfide and of its effects on the eyes and skin, nervous system, respiratory organs and digestive apparatus. After penetration of the horny layer of the skin, dichlorodiethyl sulfide is localized in the malpighian layer and is hydrolyzed with formation of thiodiglycol and hydrochloric acid. The products of hydrolysis form toxic complex compounds with the skin proteins and convert the amino acids into toxic substances as histamine, tyramine and putrescine. Therapy and prophylaxis of injuries from war materials must be adapted to the properties of the war materials and to the chemistry of their effects. Emulsions of oxidizing oils in water (prepared according to Gottefosse) which penetrate into the deeper cutaneous layers and there form harmless complex compounds with the poisons have proved useful.

- 094 Elimination of Skin Rashes - Practical Solution of the "Cutting-Oil" Problem. J.H. Birn. Ind. Med., 12, 978-910 (April, 1943).

Rashes due to dermatophytid infection were cut down remarkably in several Connecticut arms manufacturing plants by changing the "cutting-oil" used on the machines every month. Possibly use of the machine in some way changes the heavy "cutting-oil" and encourages growth of the rash-causing organisms in the oil.

- 695 First Studies of the Action of 1,2-Benzopyrene on the Human Skin. G.B. Cottini and G.B. Mazzoni. *Gazz. int. med. Chir.*, 49, 8-18 (1940). (Italian).
When normal human skin was rubbed daily with a 1% solution of 1,2-benzopyrene, for periods up to 120 days, erythema, pigmentation, scale formation, wart formation, and infiltration were successively observed. All these disappeared rather quickly after cessation of treatment. Whether the treatment can lead to neoplasms could not be stated. Histological examination of the attacked skin sites confirmed the macroscopically observed changes. A similar treatment was also carried out on luetic patients and those with ulcerative tumors. In the latter case, a certain favorable influence was observed after a short time of treatment in that the ulceration and pain abated, and the development of the non-ulcerated portion of the tumor was inhibited. The sensitivity of the skin depends on the age of the person; uncovered skin sites are more sensitive than covered portions. The skin of luetic persons behaves like that of old persons. The human skin seems to be more resistant to the carcinogenic action of benzopyrene than that of experimental animals.
- 696 Contact Dermatitis. H.L. Claassen. *Ohio State Med. J.*, 39, 40-41 (January, 1943).
The allergic contact type, eczematous form of dermatitis is most common form of cutaneous sensitization encountered in industry. These are all morphologically similar but differ etiologically. Workers with a dry skin are usually sensitive to such conditions. The author lists conditions which might be confused with contact dermatitis and points out that clinical diagnosis is made possible only by a complete history. Correctly used patch tests are confirmatory. The industrial physician should not only treat these lesions, but by the preemployment examination should help in the placement of sensitive workers and should instruct the workers as to precautions against the hazards of their jobs. Treatment of contact dermatitis is similar no matter what the etiological factor.
- 697 A Film of Protection. C.A. Weslager. *Nat. Safety News*, 47, 22, 46-48 (June, 1943).
Since Pearl Harbor there has been an unprecedented increase in the use of branded protective creams by American workers. A protective cream gives physical protection by coating the skin; it has no medicinal function. Three of the best known types of creams are discussed and their constituents and applications are given. The most widely used is the water-soluble type, which is not permeated by non-aqueous solutions. These creams protect the skin, make cleansing of the skin easier and quicker and abolish the need for abrasive soaps. The second cream in wide use is the water-resisting type, which covers the skin and fills the pores with a bland fat. It prevents the entrance of water-mixed cutting oils and similar irritants. Acid-resisting creams protect the skin from acid burns by virtue of physical protection. They are generally used in conjunction with gloves to protect the wrists and forearms. If used without gloves, such creams should be tested. The use of creams has been demonstrated to be a factor in reducing skin troubles. They also give a feeling of security and are willingly accepted by workers. Safety engineers must exercise vigilance over the kinds of cream supplied to workers. They should either be well established by past performance or be made by reliable manufacturers. Four requirements for protective creams are listed. The caution is given that these creams should not be used against such highly toxic substances as chlorinated naphthalenes, diphenyls, TNT, DNT, dynamite, mercury, lead compounds, and other chemicals known to cause systemic poisoning.
69. Similimum Interpretation of Certain Toxicological Phenomena Found in Industry. W. Dreyfuss and others. *J. Am. Inst. Homeopathy*, 36, 77-84 (1943).
A summary of the toxicological action of mercury, arsenic, benzene and carbon tetrachloride, in both chronic and acute poisoning. 14 references.

- 699 Conserving America's Industrial Hands. C.A. Weslager. *Occup. Haz.*, 5, 16, 17, 46-48 (April, 1943).

In claims for compensation, hand and finger injuries lead all others, comprising 30% of all claims. One in five compensable hand or finger injuries involves infection, according to reports from 4 state compensation commissions. Preventive measures which can be used by safety executives and hygienists are considered. The wearing of wrist watches and hand ornaments should be prohibited. Gloves and hand pads are indispensable in handling hot or heavy materials. Gloves made of asbestos, leather, canvas, metal mesh, and rubber all have their specific applications. Gloves should not be worn to operate revolving machinery, where there is danger of the glove tangling in the machine parts. Obviously, all moving parts should be equipped with guards. Education in the proper use of tools will eliminate injuries resulting from using wrenches as hammers, screw drivers as chisels, etc. Tools should be kept in good repair, with handles free from splinters. All workers are susceptible to dermatoses, therefore, reputable hand soaps and cleaners, lotions, individual towels and industrial wash fountains are important in a safety program. Cleanliness of the worker, of his clothing and machine continue to be the chief methods of control against many dermatoses causatives. The use of protective creams is compulsory in many plants, where the worker is furnished a supply free of charge.

- 700 Epidemic Keratoconjunctivitis. A Joint Report of the U. S. Public Health Service and the Committee on Industrial Ophthalmology of the Section of Ophthalmology of the A.M.A. *J.A.M.A.*, 121, 1153 (April 3, 1943).

The incubation period of epidemic keratoconjunctivitis ranges from 5 to 10 days. Clinical symptoms are listed and are mainly those of a foreign body irritation. Both eyes are usually involved, one 5 to 8 days after the first. Corneal involvement occurs in the majority of the cases and the amount of visual damage varies. Treatment is non-specific, including cleansing with boric acid, 5 per cent sulfathiazole ointment, and X-rays for persistent corneal infiltrates. Preventive measures consist of complete isolation and scrupulous cleanliness of all objects and people (medical personnel) that come in contact with the infected persons. The period of infectivity is as yet unknown.

- 701 Effect of Experimentally Altered Air Pressure in the Middle Ear on Hearing Acuity in Man. W.E. Loch. *Ann. Otol. Rhin. & Laryng.*, 51, 995-1006 (December, 1942).

The influence on the hearing of positive and negative pressure in the middle ear, created by Valsalva's procedure, was investigated in normal subjects by means of audiometric examination for the frequencies of from 32 to 16,384 cycles per second. Both positive and negative pressure impairs the threshold for frequencies below 2900 by from 10 to 30 decibels, more in the lower frequencies. For the higher frequencies, slight positive pressure improves the thresholds, but negative pressure impairs the thresholds. When pressure differences were decreased, the sequence of return of hearing acuity occurs in the reverse order of its loss.

- 702 Atmospheric Pollution in Dublin During the Year 1941. A.G.G. Leonard and others. *Proc. Roy. Dublin Soc.*, 23, 10-17 (1942).

The results of an atmospheric pollution survey at several locations in Dublin during 1941 are presented. Soluble solids deposited during the year varied from 45 to 74 tons per square mile, and insoluble solids, from 34 to 126 tons per square mile. The deposition does not differ much from that of 1940 but is lower by half than the average of the preceding 3 years, on account of shortage of coal. The number of deaths from respiratory diseases is also the lowest recorded in the years of the investigation. A graphical method for correlation of wind direction and velocity with suspended matter pollution is presented with results. The St. Louis smoke abatement ordinance is cited.

- 703 Trends in Occupational Disease. I. Gray. *Ind. Med.*, 12, 202-206 (April, 1943). This article surveys the field of occupational disease. Cases attributed to occupational disease have become more frequent in New York, since laws were passed there, making any disease which could be charged to occupation compensable. The occupational diseases are listed and discussed briefly under the five headings: (1) Dermatitis - the most frequent of occupational diseases; (2) Poisons - lead, benzene, and its derivatives, petroleum and its derivatives, arsenical compounds, mercurial compounds, carbon monoxide, and other chemical gases and vapors are mentioned, and the symptoms of the diseases that they cause described; (3) Abnormalities in air pressure - caisson disease of tunnel workers and "altitude sickness" of fliers are mentioned; (4) Infections - not common. Anthrax in wool sorters, undulant disease in milk handlers; (5) Dust - silicosis, asbestosis, complicated by tuberculosis in late stages.

Methods of Detection and Determination

- 704 Microdetermination of Arsenic in Biological Material. J.A. Sultzaberger. *Ind. Eng. Chem., (Anal. Ed.)*, 15, 408-410 (June 15, 1943). The authors have developed a method by which digestion of the sample with concentrated nitric acid and sulfuric acid is followed by distillation of the arsenic as trichloride into dilute nitric acid solution in a Fresenius flask. The characteristic molybdenum blue color is developed from the evaporated residue and read in a photoelectric colorimeter. The range is 0 to 100 micrograms of arsenic, and the accuracy is 0.2 microgram.
- 705 Determination of Benzene. Detection and Estimation of Benzene in the Presence of Toluene, Xylene, and other Substances. B.H. Dolin. *Ind. & Eng. Chem.*, 15, 242-247 (April 15, 1943). This article describes a colorimetric procedure for the determination of benzene in the presence of other aromatic and aliphatic solvents. The procedure consists of nitration, extraction with ether, development of color with butanone and alkali in alcoholic solution, elimination of the interfering colors by acetic acid addition and color comparison. Nitration is performed with a mixture of equal volumes of fuming nitric and concentrated sulfuric acids. A detailed procedure is given in the article. The analysis requires about 30 minutes for a sample. The method is sensitive to 8.8×10^{-7} mgs. and can be used for small air samples as well as solvent analysis. By decreasing the ether dilution the author believes that as small a concentration as 0.27 p.p.m. can be detected on a 10 ml. sample of air.
- 706 Determination of Small Amount of Benzene and Toluene in the Air. M.K. Alekseeva. *Khim. Referat. Zhur.* 4, 86 (1941). (Russian). The method of Schrenk, Yant and Pierce is the most effective of all methods studied for determining benzene and toluene. Up to 0.002 cc. of benzene and 0.01 cc. of toluene can be detected in 10 cc. of air. Owing to the different conditions for the nitration of benzene and toluene the method is also suitable for mixtures of benzene and toluene. The results are within about 10 per cent of the truth.

- 700 Photometric Determination of Benzene, Toluene, and Their Nitro Derivatives. H.B. Boernstein. Ind. & Eng. Chem., 15, 251-253 (April 15, 1943).

This article describes modifications to the colorimetric method for aromatics using nitration and reaction with methyl ethyl ketone and potassium hydroxide. The author believes that the colored compounds resulting are probably quinoids formed by condensation of the aci-nitro and enol forms with the elimination of water. Spectral absorption curves of butanone-nitro compounds are given as well as certain modifications for the quantitative procedures used for the determination of benzene and toluene. The use of 70 instead of 50 per cent alkali increases the rate and amount of color production. Mixtures of benzene and toluene can be analyzed by oxidation of dinitrotoluene to what the author believes is dinitrobenzoic acid which gives no color.

- 701 A Simple Device for Detecting Small Concentrations of Organic Halide Gases in the Atmosphere. G.W. Jones and K.E. Kennedy. U.S. Bur. Mines, Rept. of Invest., No. 3697. 10 pp. Mimeographed. (April, 1943). Obtainable on request from Div. of Information, U. S. Bureau of Mines, Washington, D. C.

A simple tester for detecting low concentrations of halide gases in atmosphere is described. The tester, based upon the principle of the well-known halide lamp, employs absorbent charcoal to adsorb and concentrate the halide-containing gases and thus greatly increases the sensitivity of the test. The tester is so constructed that tests may be made (1) by aspirating the suspected atmosphere through it, (2) by suspending it in the atmosphere, or (3) by swinging it in the atmosphere to be tested. Experiments were conducted on 25 different halide gases; results have proved that concentrations of less than 1 part per million of any of these gases in air can be detected by swinging the tester in the atmosphere for 30 seconds or longer, depending on the particular halide gas involved.

- 702 Automatic Apparatus for Determination of Small Concentrations of Sulfur Dioxide in Air. M.D. Thomas and others. Ind. & Eng. Chem., Anal. Ed., 15, 287-290 (April 15, 1943).

The application of the automatic sulfur dioxide apparatus of Thomas to carbon disulfide, hydrogen sulfide, ethyl mercaptan, thiophenol and thiophene is described. The apparatus has been modified by the substitution of a simple multiple port valve (stopcock type) for the poppet valves of the previously described apparatus. A quartz tube furnace is used to convert sulfur compounds

to sulfur dioxide and the desired temperatures for conversion were determined by experiment. The method can also be used for chlorinated compounds which are converted to hydrochloric acid. No successful results could be obtained with oxidation of nitrogen compounds to nitric acid. Some observations on the olfactory limits of sulfur dioxide, hydrogen sulfide and ethyl mercaptan are given.

- 703 Chemical Warfare. C.E. Beland. Can. Chem. Process Ind., 26, 272 (1942).

Five reagents for the detection of: (1) Chlorine and bromine, (2) phosgene, (3) hydrogen cyanide, (4) mustard gas and (5) lewisite are, respectively: (1) Eaubigny or fluorescein reagent, (2) Harrison reagent, (3) cupric-benzidine acetate reagent (Solution I, cupric acetate, Solution II, saturated aqueous solution of benzidine acetate), (4) Schroter reagent and (5) Peronnet reagent. Tests (1), (2) and (5) are specific; (3) is specific in the absence of chlorine, and (4) specific in the absence of carbon monoxide and hydrogen sulfide.

- 704 The Number of Particles in the Atmosphere of the City of Buenos Aires. R.A. Izco and A.D. Maronzi. Pubc. centro invest. fisiol., (Buenos Aires), 5, 303-313 (1941). (Published 1942).

An analysis of samples of organic and inorganic particles in the atmosphere of Buenos Aires included the determination of their number, their size and chemical nature. The samples were collected at 180 cm. above the ground, on clear and

... days, and placed on a plaque of quartz covered with a thin film of gelatin. The air was first filtered through a copper screen which allowed only the passage through of particles smaller than 100 microns. The air current was maintained uniformly in all cases, and at a velocity of 86 m. per second. In the center of the city the particles of organic origin predominated; this fact was attributed to motor traffic, heating systems and factories. In the outlying districts with less traffic and poor pavements, the particles of mineral origin predominated.

Control Methods

- 712 Ventilation for Control of Solvent Exposures in Fabricating Rubber Military Equipment. T.R. Thomas and B.D. Tebbens. *Heat., Pip., & Air Cond.*, 15, 122-126 (March, 1943). Also under the heading Control of Solvent Exposures in the Rubber Industry. *Ind. Med.*, 12, 255-259 (April, 1943).

The hygienic problems connected with the use of solvents in the fabrication of rubber military equipment were studied. Effective control measures were observed not only where toxic solvents such as benzol, toluol and chlorinated hydrocarbons were used, but also where the less toxic solvents were used. Petroleum naphtha was the chief solvent encountered in the coating of fabrics with natural rubber. Synthetic rubber coating involved the use of toluene or toluene containing petroleum products. Little benzol or chlorinated hydrocarbons were used. Enclosure and ventilation of the drier is the obvious control measure in this case. Benzol, carbon tetrachloride, toluol and carbon bisulfide are among the solvents used in cementing sections of military balloons. Small sections are joined on benches and the larger sub-assemblies joined on the floor to make the whole balloon. The balloon is then inflated and cementing operations are carried out inside. Ventilation of the table operations and those inside the balloon is necessary. Lateral and downdraft ventilated tables are described. Ventilation inside the balloon is easily obtained by running the inflating blower and letting air escape through a port. The floor operations are carried out in large open areas and do not require mechanical exhaust. Ethylene dichloride, ketones and petroleum naphthas are used in the fabrication of self-sealing fuel tanks. Air samples taken in the summer during low production periods were not indicative of concentrations that may be encountered. Two untried ventilation arrangements are described.

- 713 Electric Air Cleaning Controls Oil Mist From Machine Tools. E.H.R. Regg. *Heat., Pip., & Air Cond.*, 15, 242 (May, 1943).

Oil smoke and mist caused by high operating speeds of modern machine tools, such as automatic thread grinders and gear grinders result in a nuisance and accident hazard of major magnitude. An effective solution is described consisting in applying a local exhaust system connected to an electric air cleaner which is so efficient in removal of smoke as well as oil mist that complete recirculation is practiced. (Editor's Note: The Foundation's technical staff have studied similar installations and have found them highly effective.)

- 714 Investigation of Dust Suppression in the Pittsburgh Seam. D.H. Davis and J. J. Warner. *Am. Inst. Mining Met. Engrs.*, Contrib. No. 125. 13 pp. (1942). The use of water on coal-cutting machines reduced dust 26%. Addition of wetting agents reduced dust as much as 77%. Emulsion-forming oil was most effective and cheapest.

- 715 Disinfection with Moving Hot Air. H. Kliewe. Ztschr. f. Hyg. u. Infektionskr., 123, 727-733 (May, 1942). (German).
Cultures of five species of non-sporing and two of sporogenous bacteria were dried on filter-paper, and these were placed in linen bags which were distributed among packages of clothing in a hot air sterilizer. Cultivation of these test objects after the maintenance of different temperatures for various periods showed that in order to be sure of destroying non-sporing bacteria it is advisable to use a temperature of 100°-110°C. for 1½ hours; the temperature necessary for destroying spores (130°C. sufficed for those tested) is such as would damage fabrics. Hot air sterilization is therefore unsuitable for clothing if total disinfection is required, but the usual object is to destroy the agents of infectious diseases, which are non-sporing bacteria and viruses. As might be expected discontinuous heating for short periods on successive days was no more effective than continuous heating for the same total period.
- 716 Heat and Ventilation in Air Raid Shelters. W.J. McGuinness. Heat., Pip., & Air Cond., 15, 193-196 (April, 1943).
This article gives the requirements for heating and ventilating air raid shelters. The various types of bombproof and splinterproof shelters are shown. The bombproof type is too expensive to construct, hence the most common type is the splinterproof. Shelter size is fixed by number of occupants. No more than 50 people should be placed in the same room. Space and volume requirements for overground and underground shelters are given in a table. Heat requirements are low because of the number of occupants, however, heat losses in England are different from ours because of climatic conditions. On this basis an underground shelter is preferable for American climatic conditions because of the lower ground temperatures which aid in heat loss maintenance. Ventilation requirements are given and the various types of systems employed are illustrated. Mechanical systems with filtration are recommended.
- 717 Wartime Operations Emphasize Industrial Hygiene Problems of Asbestos Industry. Illinois Labor Bull., 3, 10, 11, 22 (February 28, 1943).
The control of asbestosis must be an engineering control because there are no medical means to detect the disease until much harm has been done. Engineering control consists of two important principles: (1) Adequate exhaust, (2) Good housekeeping. By experiment it has been estimated that if the air contains less than 5,000,000 particles of asbestos per cubic foot there is small chance of the workers developing asbestosis. The article lists the procedures in the manufacture of rigid and of textile asbestos products and shows that further protective measures are still needed in most plants.

Industrial Medical Practice

- 718 Industrial Health - Its War and Postwar Significance. C.O. Sappington. Ind. Med., 12, 361-364 (June, 1943).
The paper considers war and post war problems of industrial health, which are classified into those of medical administration, those of public health in industry and in the community and those relating to industrial hygiene and sanitation in the plant. Brief but rather comprehensive discussions of the following problems are presented: Venereal disease control; Nutrition; Immunization; Preplacement and periodic examinations; Women in Industry; Dermatoses; Absenteeism;

Fatigue; Tuberculosis; Rehabilitation; Health Education; Processes and materials. Postwar problems may be anticipated by postwar planning. There will be some new problems and some old ones which will reach greater proportions. The author paraphrases the old adage by saying "In time of war prepare for peace."

- 719 How the Small Plant Can Conduct a Health Program. M.H. Kronenberg. Illinois M. J. 83, 247-251 (April, 1943).

This article is intended to help the owner of small industrial plants which now have little or no proper medical protection for their employees. It contains specific recommendations from the Division of Industrial Hygiene of the Illinois Department of Public Health, which acts as a clearing house of information for the industrialist. Suggestions include group health programs (with several plants cooperating), part-time services of a competent doctor and nurse. Any competent health program for industrial safety must be preceded by an adequately furnished first aid room in the plant. Other considerations in the program are (1) Medical examinations, (2) Knowledge of environmental conditions in the factory and (3) The nature and adequate control of all toxic materials used in the plants. The value of a competent nurse is stressed. Her duties are outlined. Adequate records of sickness and accidents should be kept. Above all managers of small plants whose medical services are limited to the care of emergencies only are urged to take a greater interest in developing health programs for their plants.

- 720 Industrial Medical Facilities in Pennsylvania - Results of a County by County Survey. J. Shilen. Ind. Med., 12, 379-381 (June, 1943).

A total of 3,086 plants, in 24 counties, with 806,456 employees has been surveyed, and data are given concerning the following points: number of physicians employed, nursing service, preemployment and periodic examinations, inspection for hazards, cases handled by the medical department, sick benefit and insurance plans, health talks, interest in industrial hygiene surveys, venereal disease control, dispensaries, and cafeterias. Only 7.9% of the plants, but 46.4% of the employees are covered by a medical industrial health program. The author concludes that the facts set forth in the survey prove conclusively the necessity for inaugurating a program of industrial health in all industries. He advises that the medical profession, together with the State Department of Health through its Bureau of Industrial Hygiene assume the leadership in organizing such a program.

- 721 The Growth of Industrial Medicine as a Force in Public Health. H.F. Poyner. Texas State J. Med., 38, 563-565 (January, 1943).

A brief history of the growth of industrial medicine is given. Compensation laws have made necessary the existence of the safety engineer and the industrial physician, and other protective measures now in common use. Employers have gradually realized that it is profitable to keep a trained employee in good health for as long as possible, and consequently industrial health now often has a purpose similar to that of public health, i.e., to detect diseases in the early stages and then to turn the employee over to treatment by his family physician. Texas compensation laws are now interpreted so that a pre-existing condition of any type, if aggravated by employment, is compensable. This has caused more careful and frequent examinations, but has the disadvantage that many people are refused employment because of the insurance burden they might become to the employer. Dr. Poyner recommends that the law be changed so that the employer is no longer penalized for hiring these people.

- 722 Industrial Medical Service. Anonymous. Nat. Safety News, 47, 154, 161 (Mar., 1943). A brief general discussion of medical and nursing service for plants of various sizes is presented.

- 723 Public Health and Industry. N. Millman. Ind. Med., 12, 378-379 (June, 1943). Public health doctors are interested in industrial health for several reasons: (1) The industrial population is so large and forms such an integral part of the community; (2) The industrial population is so tied in with the war effort. The effect of sick absenteeism on production is important; (3) Because the industrial population is grouped it lends itself to public health methods of prevention. The tremendous loss due to absenteeism caused by general illness is emphasized, together with the need for a program of prevention. Plants surveyed by the National Association of Manufacturers in which an adequate health program is followed show substantial reductions in accident frequency, occupational disease, labor turnover, absenteeism and compensation insurance. Duties of the industrial physician and medical department are outlined. The use of the resources of modern medicine and public health offers a challenge to industry.
- 724 The Urgent Need for Better Local Industrial Health Organization. C.M. Peterson. Illinois M. J., 83, 234-236 (April, 1943). Competent industrial medical service pays good dividends. Such service should include a competent physician, nurses, industrial hygiene service and a health program. Employers, employees and the medical profession each has a direct responsibility in industrial health organization. The author is establishing industrial health committees in state and county medical societies. These committees determine names of available physicians, hold conferences, advise and consult with executives and labor organizations as to necessary health measures. Following preliminary organization the industrial health committee will (1) Investigate local causes of lost time in industry, (2) Coordinate community industrial health facilities, (3) Educate the public in regard to the value of an industrial health program, (4) Educate the medical profession. It is hoped that these measures will aid in solving industrial health problems through sound community organization.
- 725 Industrial Housekeeping. Washrooms and Lockers. Drinking Water. Anonymous. Nat. Safety News. 47, 168-170, 178-182 (March, 1943). These three important items in industrial safety are discussed briefly. Dust removal and vacuum cleaning are given special attention in the first section. The fourth subject under the head of "Sanitary Equipment and Supplies," is that on "Occupational Dermatitis," which is a condensation of one of the papers by Dr. Schwartz, abstracted in an earlier issue of this Digest.
- 726 Burns. J.J. Brownlee. New Zealand Med. J., 61, 192-197 (October, 1942). The author first describes the different degrees of burns. The factors involved in the pathology and physiology of burns are considered briefly. The treatment of burns is outlined. Early treatment - morphia for pain, and application of painless dressings. Dressings are described - especially those impregnated with sulfonamide. For plasma loss, in severe shock due to burns, the transfusion of plasma or serum by the drip method is necessary. The saline bath for surgical cleansing is advocated and outlined for later treatment. The results of such treatment as compared with treatment with other methods, including tannic acid, and continuous irrigation with sodium hypochlorite, are compared, and the method advocated by this article seems more advantageous.
- 727 Thermal Burns. S.D. Gordon and R.A. Gordon. Canad. M.A.J., 48, 302-309 (April, 1943). The authors stress that local treatment of the burned area must be modified by the physiological condition of the patient. They then discuss the detection and treatment of primary and secondary shock and the decrease in plasma proteins and chloride. The authors do not start general treatment until an hematocrit

reading is known, and then recommend 200 cc. to 400 cc. of twice concentrated human serum to relieve hemoconcentration. This is more successful than the usual saline, serum or plasma. The concentrated plasma is followed by oral or intravenous glucose solution. The authors also deny a burn toxemia, saying it never appears if adequate fluid is given early enough. Various local treatments were used, consisting mainly of tannic acid for first aid, and sulfonamide, tulle gras, and saline for medical treatment. Saline baths were found useful to cleanse extensive burns. Complications are also discussed, including pneumonia, jaundice, renal failure, granulocytopenia, and infections.

- 729 Treatment of Burns. J.S. Houck. N.Y. State J. Med., 43, 226-228 (Feb., 1, 1943). The article is a discussion of the routine treatment in Rochester, N.Y., of a large number of burns received at the same time. Fire houses are the casualty units and first aid only is administered there. This consists merely of dressing minor burns and giving adequate morphine to severe burns. At the hospital all severe burns must be treated with strict asepsis, and shock and infection must be combated. Morphine should be used, and inhalation anesthesia avoided. Plasma should be given as soon as possible (no laboratory tests necessary) to all severe burns to combat initial shock. Later use of plasma and fluids depends on clinical judgment. Clothes should be removed with sterile instruments and debridement done gently with soap and water. Tannic acid and silver nitrate are used except on the hands, face and genitalia. The patient is placed in a tent kept at 90°F. and treated until a thin light brown eschar forms. Oxygen inhalation should be used for all lung involvements, large or small. Later treatment is routine, including removal of the eschar in seven to ten days and grafting of third degree burns.

- 729 Treatment of Phosphorus Burns: (With a Note on Acute Phosphorus Poisoning.) I.M. Rabinowitch. Canad. M. A. J., 48, 291-296 (April, 1943). The author first reviews the types, occurrence, chemical and physical properties, and the pathology of phosphorus. The article deals only with the active, poisonous, white phosphorus, which is soluble in organic solvents and which combines with the oxygen of the air with the production of light. Phosphorus flames can be put out with water, but reignite on drying; therefore burns must be kept moist until all the phosphorus is removed. Phosphorus burns are very severe, worse than those caused by sulfuric acid, and the phosphoric acids released, tend to imbed in the tissues causing suppuration. First aid treatment of phosphorus burns consist of immediate removal of burned clothing, removal of all visible phosphorus particles, and soaking of the affected area in warm water. At the first aid station the burned area is washed with warm baking soda, then with a 1 per cent solution of copper sulfate, which changes any phosphorus into black copper phosphide, which is then removed with forceps. Finally, the area is washed with antiseptic solution and a dressing applied. The medical treatment of the burns is similar to the first aid treatment unless the phosphorus is mixed with an organic solvent, oil, or with rubber. In these cases a special solvent containing copper oleate and trichlorethylene is used which dissolves both the phosphorus and the organic substance. Directions for making this preparation are given. Details of medical treatment are outlined, and the procedure used depends on the type of inactivating agents available. These agents in order of preference are: (a) sodium carbonate or bicarbonate; (b) alkaline powder mixture (directions given); (c) copper sulfate; and (d) oil-soluble copper preparation (directions given). Use is made throughout of examining the burn in the dark for the presence of luminous particles. After the skin has been thoroughly cleaned and alkalinized, subsequent treatment is the same as for chemical burns in general. The article also contains "A Note on Acute Phosphorus Poisoning." The lethal dose, signs, symptoms, pathology, and post-mortem appearances are described. Treatment consists of prompt gastric lavage with warm potassium

permanganate solution until the color of the returning liquid is unchanged. Diuresis is encouraged and acidosis combatted. Copper sulfate should not be used as an emetic, and under no circumstances should oil or fatty materials, as milk, be administered to alleviate the gastric irritation, as these aid in the absorption of phosphorus.

- 720 Phosphorus Burns. The Lancet No. 6236, 312 (March 6, 1943).
 "Once the phosphorus has been completely removed, a phosphorus burn may be treated like any other burn. But until it is certain that no phosphorus remains in the tissues it is unwise to use oily or greasy applications, which may dissolve phosphorus and thus aid its absorption. Recently Dr. Obermer proposed the use of amyl salicylate for the dressing of such burns; and it should perhaps be pointed out that amyl salicylate is a solvent and therefore ought not to be applied until one is certain that all phosphorus has been removed. The advantages which have been claimed for amyl salicylate in burns are that it relieves pain, promotes granulation, and lessens exudate; and its use has been advised for large mustard-gas burns which pour out fluid. Whether it is suitable for phosphorus burns at any stage is doubtful, for the secretary of the burns subcommittee of the Medical Research Council informs us that experimental phosphorus burns treated with amyl salicylate healed more slowly than those treated by other methods."

- 731 Experimental Chemotherapy of Burns and Shock. III. Effects of Systemic Therapy on Early Mortality. S.M. Rosenthal. Pub. Health Repts., 58, 513-522 (March 26, 1943).

Employing a standardized procedure for the production of burns fatal to mice within 48 hours, the effects of systemic therapy have been studied. No benefit was observed from epinephrine, posterior pituitary extract, adrenal cortical extract, or desoxycorticosterone acetate injected subcutaneously following the burns. Sodium chloride by mouth or intraperitoneally caused a significant reduction in the mortality. Intravenous administration was less effective. Isotonic sodium chloride by mouth was superior to hypertonic solutions. Potassium chloride caused an acceleration in the time of death, and when administered with sodium chloride it antagonized the effects of the latter. Calcium gluconate orally was without action. Isotonic glucose solutions orally showed slight therapeutic action. The administration of hypertonic glucose or water by mouth caused the animals to die faster than the controls. Sodium acetate, succinate, bicarbonate, and lactate were as effective as sodium chloride. Mouse serum intravenously was slightly less active than equivalent volumes of 0.9 per cent sodium chloride orally. Little effect was observed from the intravenous administration of a hypertonic solution of human serum albumin. - Author's summary.

- 732 Shock, Exhaustion and Restoration in War. G. Crile and others. Cleveland Clinic Quarterly, 10, 3-9 (January, 1943).

The paper is largely a theoretical discussion of shock, based on the idea of the body as a bipolar mechanism. It has been demonstrated by numerous animal experiments that the brain is electrically positive as compared with the rest of the body and that the same exciting or depressing factors that caused a change in the potential gradient also caused destructive changes in the cells of the brain, the liver and the adrenal cortex, and changes in the temperature and electrical properties of the same cells. The author therefore suggests that the potential gradient between the brain and other organs is an accurate indication of the degree of shock. Depression or failure of organs is likened to polarization. The authors consider these conceptions to be in harmony with modern methods of prevention and treatment of shock.

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