INDUSTRIAL HYGIENE FOUNDATION

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.

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The Vipers Strike at the Eagle

The vipers have struck at the American Eagle. Now let them hear the Eagle scream and feel the Eagle's claws! For two years the Foundation has warned that this is a battle of production, demanding maximum manpower. But, with zooming production tending to increase health hazards, maximum manpower is impossible without 100% safeguards for employee health. Members are urged to check on:

Sick absences....Materials, including chemicals, of questionable hygienic qualities, especially the introduction of materials not previously used....Efficiency of control measures, including respirators and exhaust ventilation....Health protection measures for new plants and new additions (it is easier to change plans than plants)....Fatigue, which may make for illness and accidents, especially if the work day or required output is unduly increased....Medical services and facilities must keep step with expansion.

USE YOUR FOUNDATION MEMBERSHIP AS NEVER BEFORE! Ask questions and utilize the Foundation's services which include plant checkups on possible health hazards, analyses of doubtful substances, advice on exhaust systems, and practical recommendations. Companies must use all possible services and facilities now for the conservation of manpower. The warriors of our mines and mills must not be on "sick leave" from the battle of production.

General Motors Joins Foundation

Four more companies have joined the Foundation, including General Motors Corporation. Other new members are the Dresser Manufacturing Company, Neville Company and Toledo Edison Company. It is gratifying to welcome these progressive concerns to this organization of more than 200 companies which make up the Foundation and make its mutual advantages possible.

Dr. Sappington's Book Available

Dr. C.O. Sappington's excellent book, "Industrial Health, Asset or Liability," is now available to Foundation members at a 50% discount ($1.88) through the National Foreman's Institute, Deep River, Conn. Here is a meaty, comprehensive presentation, in lay language, of a subject which now becomes of top importance to top management.

Horses! Horses! A new inmate of the insane asylum loudly insisted he had swallowed a horse. A resourceful doctor put the patient under ether, then led a white steed into the operating room. When the man came to he looked then screamed, "Doc, Doc, you got the wrong horse. I swallowed a black one!"

....The Foundation wishes you all,
A Healthful, Happy New Year!....

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

DIGEST OF INDUSTRIAL HYGIENE
Literature--News--Developments

News Items

884 Industrial Ventilation in Cold Weather.
With the coming of cold weather and the closing of outside doors and windows it becomes increasingly important to provide adequate ventilation for many industrial processes. In the warm seasons the natural ventilation of open windows and doors not only affords relief from heat and stuffiness but also often tends to dilute the toxic fumes and vapors evolved from factory operations and minimize their harmful effects. Conversely the closing of windows and other openings in cold weather means that the adequate removal of such toxic substances is totally dependent upon the efficient and proper operation of suitable exhaust equipment. Constant removal of contaminated air by the exhaust system implies replacement of this air with a steady supply of clean air coming in directly from the outside through window cracks and wall openings or through cold, adjacent plant areas. In winter such air may create cold drafts as an added health hazard unless common sense industrial hygiene rules are followed.
Those doors and openings tending to produce cold drafts should be kept closed but sufficient fresh air should enter the working area to permit full replacement of the exhausted air. Adequate heating should be afforded to bring this air up to healthful working conditions. While there must necessarily be some loss of heat in the process of exhausting contaminated air, this loss can be reduced to its minimum if the entire exhausting system is properly designed, installed and operated. Conn. Health Bull. 55, 289 (October, 1941).

885 Fourth Annual Congress on Industrial Health.
Arrangements have been largely completed for the fourth annual Congress on Industrial Health sponsored by the American Medical Association, which will be held Monday and Tuesday, January 12-13, 1942, at the Palmer House in Chicago. These meetings are open to physicians and others interested in industrial health. There is no registration fee. A copy of the program can be obtained by addressing Dr. C. M. Peterson, 535 North Dearborn Street, Chicago, Ill.

886 Occupational Disease Regulation to Prevent Mercurial Poisoning.
On September 25 the Maryland State Board of Health and the Commissioner of Health of Baltimore adopted concurrently a new regulation for the purpose of preventing mercurial poisoning in the manufacture of hats. The regulation for which a hearing was allowed on October 23 as required by law will become effective on December 1, 1941. It is understood that the use of mercurial carroting is no longer necessary in the manufacture of hats as there are alternative industrial methods that are nonpoisonous. The text of the new regulation, adopted pursuant to Section 43 of Article 101 of the Annotated Code of Public General Laws of Maryland of 1939, is as follows:

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Regulation 3. Mercurial carroting. For the purpose of carrying out the provisions of this regulation the following terms are defined:

Hatters' Fur is any animal fiber or other substance used in the manufacture of hats, which is treated or otherwise prepared by the process of, or in a manner similar to that of, carroting.

Carroting is the process of treating hatters' fur with mercury nitrate or any other solution or material for the purpose of rendering the hatters' fur suitable in the manufacture of hats.

Mercurial Carrot is any solution or material containing mercury or its compounds in combination with nitric acid or other materials and used in the carroting or preparation of hatters' fur.

The use of mercurial carrot in the preparation of hatters' fur or the use of mercurial carroted hatters' fur in the manufacture of hats is prohibited. Baltimore Health News, 18, 182 (November, 1941).

887 Standard Protects Workers in Electroplating Operations.

Another American Standard in the industrial hygiene field became available for use by industry through the recent approval by the ASA of the American Standard for Safety in Electroplating Operations. This new standard outlines requirements for the protection of workers in those electroplating operations which may injure the health of operators through contact with gases, mists, or liquids. It applies to electroplating and deplating operations and to the anodizing of metals, and describes standard exhaust systems and methods for personal protection of the operator. Other requirements for electroplating and deplating processes, and uniform practices for the conduct of the work in order to reduce possible hazards to health are also given. Electroplating systems are classified in the standard according to the degree of hazard associated with them. Chromium plating and arsenic plating, for instance, are placed under the severe hazard classification. Cyanide solutions for plating copper, brass, bronze, zinc and cadmium, tin plating from alkaline baths, anodizing aluminum and deplating operations that evolve gases are placed under the moderate hazard classification. The slight hazard classification includes cyanide solutions for plating silver and gold and acid or neutral solutions for plating copper, zinc, nickel, and lead. The degree of protection required for each of the classifications is specified. Three sections of the standard contain the basic recommendations, covering specifications for exhaust systems, personal protection, and inspection and maintenance.

One of the most interesting and valuable sections of the standard is the Appendix. It has been written with the aim of presenting constructive suggestions for putting into effect the basic principles set forth in the body of the standard. The appendix points out that while threshold limits have not been accurately defined for all of the toxic materials used in industry it is believed that if the degree of exhaust ventilation maintained is sufficient to keep the concentration of such substances in the atmosphere below one milligram in ten cubic meters of air (a figure which has tentatively been set for chromic acid), a safe working atmosphere will be obtained. Important details in the design of plating tanks and of the exhaust system for such tanks are given. It is recommended that for Class I electroplating processes each exhaust manifold should exhaust at least 120 cubic feet per minute per square foot of tank area. An equation for computing the air to be exhausted is provided. While the standard has been limited to actual electroplating operations, the appendix points out that tanks for pickling, cleaning, bright dipping, and galvanizing may produce hazardous atmospheric pollution and that it will frequently be necessary to ventilate tanks containing acids, alkalies, or organic solvents. Ind. Standardization, 12, 229-230, (September, 1941). For sale by American Standards Association, 29 West 29th Street, New York City. 30 cents.

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838 Limestone Formations in the Lungs and Tuberculosis.
A common but not yet recognized disease has been shown by investigators of the U. S. Public Health Service to be the cause of tiny limestone formations in the lungs previously thought due to tuberculosis. Because physicians have taken these tiny spots shown upon x-ray plates to be due to tuberculosis lesions that have been cured, the new findings will probably cause a change in medical diagnosis of many cases. Curiously, the new disease is highest in areas where there are extensive limestone and chert formations, that is, in areas adjacent to the Appalachian Plateau. These observations aroused the Public Health Service to make an independent study. It selected Ross County, Ohio, an area adjacent to the Plateau, where lung calcification is common, but tuberculosis fatalities not above ordinary. Rural families were selected in order to rule out as far as possible contacts with tuberculosis outside the household. More than 200 persons in 44 farm households were x-rayed and tuberculin tested. Of 253 persons effectively x-rayed, 125 showed the limestone formation in the lungs -- but none had significant tuberculous lesions. Of 235 who were tuberculin tested, 194 were negative. Fifty-six persons with negative tuberculin tests showed lung calcification. The studies were made by Dr. B. J. Olson, passed assistant surgeon; Dr. W. H. Wright, chief of the division of zoology, and M.O. Nolan, associate zoologist, all of the Public Health Service. The existence of an unrecognized disease of very common occurrence is suggested by these investigators. It appears to produce the lung lesions closely resembling the x-ray picture of primary tuberculosis. They believe therefore, that the finding of lung calcification particularly in tuberculin-negative persons should not be assumed to be evidence of tuberculosis infection. With tuberculosis apparently ruled out, the ascaris as a possible cause of the lung calcifications was next considered. Ascaris is a tiny, parasitic worm, which in the larval stage may damage the human lung. Careful study, however, failed to prove or disprove that ascaris was guilty. The studies are being continued. Science Supplement, 94, 12 (November 28, 1941).

889 Mercury Vapor Lamp.
A new 3,000-watt mercury vapor lamp, the largest of its type in the world, has been announced by both the Westinghouse and General Electric Companies. It is believed that the new lamp will be a boon for the lighting of steel mills, foundries and other shops where large areas require a lofty mounting of the lights. The lamp is a tubular light source 55 inches in length and a little over an inch in diameter. It is rated at 120,000 lumens, giving twice as much light per watt as an incandescent lamp.

Notices of New Books

890 The Essentials of Occupational Diseases. By J.V. Reed, B.S.,M.D.,F.A.C.S., and A.K. Harcourt, B.S.,M.D., of Indianapolis. 225 pages. Springfield, Ill: Charles C. Thomas, 1941. Price $4.50 postpaid.
This is essentially a book form of the authors' working notes on the important features of the occupational diseases. Its value lies primarily in its brevity, presenting the symptoms, diagnosis, and treatment for each listed health hazard. Prevention is not considered -- so that the book is intended largely for the industrial physician. The major portion of the book is devoted to consideration of the Chemical Poisons. Next are the Physical Agents, Skin Lesions of Occupational Origin, Occupational Diseases of the Lungs, Malignant Disease Associated

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with Occupation, Occupational Diseases Due to Infections, and Functional Disturbances Associated with Occupation. There is a good index and an extensive bibliography covering 288 references.

891 Occupational Diseases. Rutherford T. Johnstone, A.B.,M.D., Director of the Department of Occupational Diseases, Golden State Hospital, Los Angeles, California. 558 pages with 132 illustrations. Philadelphia and London: W.B. Saunders Company, 1941. Price $7.50.
This is an excellent book. While it is intended primarily for the industrial physician, all who are interested in the field of industrial hygiene will find it interesting and valuable. Too many books on this subject are merely rehashes of excerpts from the literature, but Dr. Johnstone has tempered his references by his own good judgment and experience. The first three chapters present a succinct summary of the legal aspects of industrial medicine -- a very useful condensation of scattered and voluminous material. Succeeding chapters deal with Gases, Solvents, and Fumes; the Metals; the Dusts; and miscellaneous topics. It is well printed on good paper, has an extensive index and many well-chosen illustrations.

892 An X-Ray Atlas of Silicosis. A.J. Amor, M.D.,M.Sc., 204 pages, many plates. Baltimore: Williams & Wilkins Company, $8.00. 1941.
Much can be learned from this book about the dust diseases by anyone, though it is intended primarily for the industrial physician. The plates are numerous and have been beautifully reproduced. The author is well fitted for the presentation of this short but very practical book. He has had many years of experience among the industrial population of South Wales and has kept records on thousands of workers. Many of the plates will be of particular interest to those in coal-mining districts, since they have frequently to express opinions on the condition of workers apparently in perfect health but with definite radiological abnormalities. There is appended a short but useful bibliography.

893 Fatigue of Workers and Its Relation to Industrial Production. Committee on Work in Industry of the National Research Council. pages 165. New York: Reinhold Publishing Company, $2.50. 1941.
This book will be useful to business executives, personnel workers, and all who have an interest in the increase of production at this important time. The aim of this investigation was to determine the physical and mental reactions of industrial workers to the conditions they are exposed to in their daily work. It reveals not only the direct causes of fatigue, but also the psychological origin of strikes, slowdowns and voluntary limitation of output by workers. In addition to the working conditions in factories, several other types are considered -- the effects of working at high altitudes, the influence of heat, etc. The Committee was under the guidance of L. J. Henderson, of the Fatigue Laboratory of Harvard University.

Legal Developments

894 Petition for Rehearing. Bronchiectasis as an Occupational Disease.
This court finds no reason for changing the conclusion arrived at in its original opinion. (See Abstract No. 339 This Digest.) However, it should be said that the original opinion is not to be accepted as holding that Bronchiectasis is an occupational disease. This question was not presented and upon this point the court expresses no opinion. Petition for rehearing denied. Hirst v. Chevrolet Muncie Division of General Motors Corp. Ind. App. Ct. Decided October 23, 1941. (CCH).

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895 Silicosis. Interpretation of the Words "In the Same Employment" as Used in the West Virginia Code, 23-6-5.

The Compensation Commissioner awarded compensation upon the claim of Hodges filed in 1937, and accompanied at that time by the written report of claimant's attending physician stating that claimant was suffering from silicosis in the second stage. The Appeal Board reversed the finding because claimant had not been employed by the employer, the New River Company, for a period of not less than two years in this state during which he had been exposed to silicon dioxide dust, and from that order of the Appeal Board, this appeal was granted upon the application of the claimant. The employer now assigns as error in the Appeal Board's order the fact that its finding should have been based upon the application of the claimant not having been filed within the time nor in the manner required, and that no knowledge or notice was given to the employer within the time prescribed. This proceeding was before this Court upon an order of the Compensation Appeal Board based upon the non-medical findings of the Compensation Commissioner, and the court concluded that the non-medical findings of the Compensation Commissioner do not constitute a final action within the meaning of Code, 23-5-3, and for that reason, are not appealable. The order of the Appeal Board was therefore reversed. The manner in which this claim was presented constitutes substantial compliance with the requirements of the article dealing primarily with silicosis. The contention of the employer seems to be based upon the fact that the application and doctor's certificate filed December 23, 1937, did not clearly state that compensation was claimed for an incapacity due to silicosis. Each form as filed contained questions and answers germane to no other class of compensation claim. The other cross-assignment based upon the claim not having been made within one year from the date the employee was subjected to injurious exposure to silicon dioxide as required by section ten of the act is also not well taken. The employee's last injurious exposure to silicon dioxide did not occur when he ceased working as a rock driller within three or four months of the beginning of his employment by The New River Company, but it occurred September 16, 1937, when his regular employment as a coal loader for that company ceased. The remaining question is whether the claimant at the time he became disabled had been exposed to silicon dioxide dust in harmful quantity over a period of not less than two years in the same employment in this state as required by Code, 23-6-5, the Commissioner evidently having construed that provision of the section cited as meaning exposed in the same kind of occupation or manner, and the Appeal Board differing with his construction and construing the words "in the same employment" as meaning by the same employer. The expression "in the same employment" was not intended to mean employed by the same person, for, in that case, any sort of reorganization or transfer of title by the employer might destroy the employee's right to compensation for silicosis. The ruling of the Compensation Appeal Board is reversed. Hodges v. Workmen's Compensation Commissioner et al. W. Va. Supreme Ct. of App. Decided October 14, 1941. (CCH).

896 Loss of Eye from Gonococcic Infection. Necessity to Prove that Coal Dust was the Cause of the Injury.

Shashura, claimant-appellant herein, lost the vision of his left eye through the acute development therein of a gonococcic infection. Contending that the infection was attributable to an "injury by an accident" sustained in the course of his employment as a loader in one of the coal mines of the defendant employer, within the meaning of Section 301 of the Workmen's Compensation Act, claimant filed his claim petition in which he thus described the alleged accident: "While shoveling coal, dust flew into my face and some entered my left eye." The employer defended upon the ground that the loss of claimant's eye resulted from the progress of a general gonorrheal infection. Assuming that the entrance

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of the coal dust into claimant's eye was a fortuitous and unexpected happening, outside of the usual course of events in his employment, he still had the burden of showing by expert medical testimony, and beyond mere conjecture, that the presence of the coal dust either caused the gonococcic infection, or, at least, so aggravated a preexisting gonorrheal condition as to bring about the almost immediate destruction of his eye. The referee made an award to claimant. The Board set aside the referee's finding. The court below entered judgment for the defendant employer. The only question of law for disposition is whether the claimant met the burden of proof resting upon him by the introduction of competent and substantial medical evidence. He relies upon the testimony of Dr. Stahlman. However, Dr. Stahlman would not say that the coal dust was the exciting cause of the injury. Such testimony is not sufficient. Judgment affirmed. Shashura v. Vesta Coal Co. Penna. Superior Ct., West. Dist. Decided October 29, 1941. (CCH).

897 Alleged Injury from Noxious Gases. Constitutionality of Sections 66 and 72 of the Compensation Act. Lack of Jurisdiction.

The suit is against an employer by a workman who alleges that while working in the employer's plant, plaintiff "sustained injuries to his health and aggravation thereof," that these injuries were not accidental in character, and that they were caused by the employer's negligence and by his violation of various statutes in failing to keep the plant free of smoke, noxious gases and other impurities. The complaint further alleges that section 3, subdivision 2, of the Workmen's Compensation Law as amended is unconstitutional and void, as leaving without any remedy workmen who suffer injuries from impure air conditions through an employer's fault, unless permanent and total disability results therefrom. The courts below have granted defendant's motion for a dismissal of the complaint on the ground that the court has not jurisdiction of the subject of the action because the alleged cause of action comes exclusively within the coverage of the Workmen's Compensation Law. Nowhere in the complaint or affidavits is there any allegation that plaintiff has been disabled, partially or totally. In the absence of such an allegation, the court cannot pass on the validity of provisions of article 4-A of the Workmen's Compensation Law that there shall be no compensation for partial disability due to dust diseases (Section 66), and that the liability of an employer prescribed by that article shall be exclusive and in place of any other liability whatsoever (Section 72). However, plaintiff cannot bring an action at law to recover for such a disability. Even if Sections 66 and 72 were held to be invalid, plaintiff's sole remedy would still be in proceedings under the Workmen's Compensation Law and his rights to compensation would be governed by the provisions of that statute, as it stood before sections 66 and 72 were enacted, as to compensation for disability from occupational diseases. The judgment is affirmed. Scherini v. Titanium Alloy Co. N.Y. Ct. of App. Decided October 23, 1941. (CCH).

898 Chronic Hernia as an Occupational Disease. Ordinary Disease of Life to Which the General Public is Exposed.

Valentine Kniat filed her application for adjustment of claim for compensation under the Occupational Diseases act to which she claims she was entitled as a result of the death of her husband. The arbitrator found the Kniat had slowly and insidiously developed a hernia due to periodic strains while lifting various articles of varying weights in the course of his employment with the respondent over a period of years, and that such hernia constituted an occupational disease as contemplated by section 6 of the Workmen's Occupational Diseases act. The question is, was the hernia which led to deceased's death an occupational disease? Dr. Lewnik, in answer to a hypothetical question stated there was a causal connection between the work and the hernia, "because chronic hernia is a

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chronic disease where certain tissues gradually lose their function and become defective in their physical and physiological average normal requirements to the whole body." In order to be compensable as an occupational disease, paragraph one of section 6 requires the presence of three elements: (1) The disease must arise out of the employment; (2) it must arise in the course of the employment; and (3) it must not be an ordinary disease of life to which the general public is exposed outside of the employment, unless it follows as an incident of an occupational disease. All three elements must be present, and it is of no avail to a claimant to show that the requirements of paragraph 2 have been met -- that is, that the disease was caused by the employment -- if either of the other elements is lacking. There is no doubt that hernia is an ordinary disease of life to which the general public is exposed. People in all walks of life have hernias, and the causes of them are so numerous that it can not be said they are peculiar to any employment. Hernia is as much an ordinary disease of life to which the general public is exposed as is tuberculosis.

The judgment is reversed and the cause remanded, with directions to set aside the award. Kniat v. Industrial Commission et al. Ill. Supreme Ct. Decided November 18, 1941. (CCH).

899 Silicosis Complicated with Tuberculosis. Conflicting Medical Testimony. Girardi filed an application for the adjustment of compensation with the Industrial Commission, charging that on or about November 18, 1938, he became permanently disabled from the occupational disease of silicosis, complicated with tuberculosis, and that at the time of his disablement he was engaged in work where silica sand and metal dust were constantly in the air. The arbitrator found that the employee had suffered a disablement causing complete disability, rendering him wholly and permanently incapable of work, and awarded compensation and a pension for life conformably to section 8 (f) of the Workmen's Occupational Diseases act. The circuit court set aside the decision as being manifestly against the weight of the evidence, and found, instead that Girardi was temporarily totally disabled from November 18, 1939, to December 15, 1939, and rendered judgment awarding compensation for temporary total incapacity for work for the period described. Girardi was employed as a miller and sand blaster. During the course of his employment he was frequently, if not regularly, exposed to silica dust. The medical testimony is conflicting. In determining whether an employee has silicosis causing disablement compensable under the Workmen's Occupational Diseases act, the Industrial Commission should consider the occupational history of the patient, his physical condition, the X-ray readings, the opinions of the medical experts and other competent evidence which tends to prove or disprove a disablement caused by silicosis. Where expert witnesses disagree, the court cannot undertake to determine with technical accuracy where the preponderance of the evidence lies. It is the province of the Industrial Commission, qualified by experience and special study, to draw reasonable conclusions and inferences from evidentiary facts. The court's attention has been directed to testimony disclosing an improvement in Girardi's condition during the period of nearly fourteen months of his confinement in the sanitarium. The inescapable fact remains that he was still a patient at the sanitarium on December 15, 1939, when the commission heard the additional testimony proferred by the defendant in error. It was then a matter of sheer speculation as to whether Girardi would be able to leave the hospital and perform work of any kind, much less the character of employment previously pursued. If, at some future day, he should recover his health sufficiently to permit the pursuit of a gainful occupation a remedy is available to the employer. The judgment of the circuit court is reversed and the award of the Industrial Commission is confirmed. J.I. Case Co. v. Industrial Commission et al. Ill. Supreme Ct. Decided November 18, 1941. (CCH).

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900 Silicosis. Constitutionality of Section 1465-68A, General Code. Arbitrary Classification.

Relatrix seeks through this action in mandamus to compel the Industrial Commission to award her compensation for the death of her husband from silicosis, in accordance with the general schedule of compensation for all other occupational diseases and for accidental injuries provided in Section 1465-82, General Code, rather than in accordance with the latter part of Section 1465-68a, General Code, setting forth special provisions relating to compensation for silicosis. Relatrix contends that this latter part of Section 1465-68a is void on the ground that it sets up an arbitrary and unreasonable scheme of classification in contravention of Section 26, Article II of the Ohio Constitution, and in contravention of Section 1 of the Fourteenth Amendment to the United States Constitution. Neither the state nor federal constitutional provision guaranteeing uniformity and equal protection of the laws deprives the Ohio General Assembly of a broad power of classification and differentiation of persons and subject-matter in legislative enactments. It is only when such attempted classification is arbitrary and unreasonable that the court can declare it beyond legislative authority. Relatrix contends the classifications are arbitrary in two respects: First, the classifications differentiate compensation in the case of silicosis from that provided for all other occupational diseases and for injuries; and, second, the classifications differentiate silicosis claimants as among themselves into subclasses according to the number of months which have elapsed between July 31, 1937, the effective date of this part of Section 1465-68a, General Code, and the date the employee's disability began. There is a strong presumption that classifications in state legislation are based upon adequate grounds. These differentiations are clearly matters of policy for the Legislature to determine. The court finds nothing arbitrary or in excess of the proper scope of legislative judgment in establishing these markers, in the case of silicosis, in such a way as to make the burden upon the state insurance fund proportionate to the length of time during which the employee, while working in this state, has been exposed to the injurious silica dust, after the effective date of the act which first made silicosis compensable. Whether such a basis for computing the award was wise is not for this court to decide.

The judgment of the Court of Appeals sustaining the defendant's demurrer and dismissing the petition should be affirmed. State ex rel. Lourin v. Industrial Commission of Ohio. Ohio Supreme Ct. Decided November 12, 1941. (CCH).

901 Silicosis. Sufficiency of Evidence to Support the Finding of the Lower Court.

This is a proceeding before the Industrial Commission against the employer, the Tennessee Mineral Products Corporation, and insurance carriers, for an award because of the contraction of an occupational disease -- silicosis -- while in the employment of the defendant corporation and engaged in the mining of feldspar. Among other things, it involves questions of timely notice and independent contract. There was evidence to support the findings of fact by the Commission, upon which the liability of the defendants is declared. This court finds no error in the conclusions of law, or in the judgment of the court below in affirming the award. The judgment is affirmed. Blalock v. Tennessee Mineral Products Corp. et al. N.C. Supreme Ct. Decided October 15, 1941. (CCH).

902 Teacher's Measles.

A grade school teacher applied for compensation for disability due to an attack of measles contracted, she alleged, as the result of exposure to pupils in her classes who were afflicted with the disease. The record in the case indicated that the claimant had been exposed to measles for several months, there having been an epidemic of it in the school where she was teaching. The claim was disapproved by a medical investigator on the ground that measles is not an

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occupational disease. The reviewer was of the opinion that "directly speaking, this disability is not an occupational disease, however, it is fairly well established that measles is a child's disease and is not generally contracted by an adult." The reviewer went on to say that the claimant had had measles when she was a child and it is rather common knowledge that a person who has once had measles generally does not contract them again, although they can be had a second time. In his opinion the situation of the claimant in this case is much the same as that of a nurse who contracts tuberculosis while caring for tubercular patients. He considered the claimant's condition was the result of a hazard of her employment and that the claim was therefore compensable. The Commission could not agree with this conclusion and ordered that the claim be denied. Ohio Ind. Comm. Monitor, 14, 170 (November, 1941).

Papers on Dust, Gases and General Industrial Hygiene

903 National Defense and Occupational Disease. W.B. Fulton. Ind. Med., 10, 398-400 (September, 1941).

In the period from July 1, 1940, to May 15, 1941, 1,850 Pennsylvania plants having Walsh-Healy contracts were visited by personnel of the Bureau of Industrial Hygiene of the Pennsylvania Department of Health, for the purposes of acquainting them with the facilities of the Bureau, providing assistance in specific health problems and appraising the health facilities in the plant and in the community. The data from 827 plants, employing over 400,000 persons, are now available. Of these employees, about 85,000 represent an increase over normal conditions, and 90,000 more will be needed at the peak of production. The need of housing facilities may become acute, but water supply and sewage systems are usually adequate. Four per cent of the plants with 32% of the workers have the services of a full-time plant physician, while 19% of the plants with 35% of the employees, have a part-time physician. Full-time safety engineers are employed in 17% of the plants, and 18% have part-time service. Full-time nursing service is available in 15% of the plants, part-time in 4%, with the percentages of employees higher in each case. A venereal disease program is conducted in 7% of the plants. During the plant inspections many recommendations were made, and requests are being received for revisits to assist in the control of additional hazards and to study specific problems.

904 Report of the Medical Officer of Industrial Hygiene for the Year ended December 31, 1939. C. Badham. New South Wales, Report of Director-General of Public Health for Year 1939. 68-89 (1941).

This report comprises "Studies in Industrial Hygiene No. 20" which deals with the chemical analysis and pathology of the lungs in coal miners in New South Wales. Thirty lungs of coal miners who had worked on the different coal fields are concerned, of each of which details are presented. The coal-dust type of pneumoconiosis was found in 23 cases; 6 with mining experience entailing exposure to silica dust, as well as to coal dust, showed the silicosis type; and one with short mining life was normal. Only one, a silicotic, was tuberculous; the amount of free silica found was greatest in this instance. Generally, less free silica was found in the coal-dust type than in the silicotic. A future monograph is promised in which the material here given will contribute to an attempt to correlate the mineral content of the lungs of coal-miners with their industrial history. At present the only note made is that, while active free silica originates the typical silicotic response, others so-called inert dusts, if mixed with the free silica, may so modify its action that the type of response which appears is not of the silicotic type. How far this type of reaction is due to the inert dusts, and how far to the minimal amount of free silica formed with the inert dusts, cannot yet be determined.

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905 Industrial Hygiene Progress During the Past Year. W.A. Cook. Ind. Med., Ind. Hyg. Sect., 2, 48-53 (October, 1941).
The author presents a comprehensive summary of the literature on industrial hygiene published during the year, 1940.

906 It's Up to You. R.C. Stratton. Safety Eng., 82, 67-8 (October, 1941).
This brief article emphasizes the duty of the individual worker to cooperate with health and safety programs by making use of the medical facilities afforded, using personal protective equipment and reporting minor injuries and exposures.

907 Industrial Hygiene and Defense. G.C. Harrold. Safety Eng., 82, 75-6, (October, 1941),38 (November, 1941).
The author briefly describes the sampling of air and instruments used for air analysis. The present trend is to consider sound as great an evil as polluted air, and the audiometer for testing deafness and noise tester are described. Lighting tests are mentioned. When a new plant is built, there is an opportunity for installation of well-designed equipment for controlling occupational hazards. In cases where previous installations have been properly made, their capacity is often sufficient to handle the increased load made necessary by defense work.

908 Report of Industrial Hygiene Committee, State and Provincial Health Authorities of North America. S.H. Osborn, Chairman. 23 pp. 1940.
Following a brief account of progress of industrial hygiene during the past 5 years, the accomplishments of 25 states, the provinces of Ontario and Quebec, and the U.S. Public Health Service, are listed. Certain data are summarized in a table.

909 Outline of Lectures on Industrial Hygiene. Delivered by Sanitary Engineer J. J. Bloomfield, U.S. Public Health Service at the University of Michigan, January 11-13, 1940. Mimeographed, 44 pp.
Outlines of this series of lectures, probably repeated on other occasions, are given. Lecture 1, given rather fully, deals with "Health Problem of Workers and their Social-Economic Implications." Lectures 2 to 6, summarized, are entitled "Studies of Health Hazards in Industry" and include the common poisons and dust hazards. Preventive measures are treated briefly. In Lecture 7, on "Control of Industrial Dust Hazards," medical and engineering control are discussed, and Lecture 8 deals with "Industrial Hygiene Administration."

910 Industrial Hygiene Activities in State and Local Health Departments, 1939-40. J.J. Bloomfield and V.M. Trasko. 20 pp. mimeographed. Div. of Ind. Hyg., National Institute of Health, Bethesda, Md. May, 1941.
In 1939 a plan was proposed for uniform reporting of State and local industrial hygiene activities. This report presents the first summary of material so obtained, covering the year July 1, 1939 to June 30, 1940. At present there are 32 States and 4 Cities with industrial hygiene units in various stages of development. The reports include 19 States and 2 Cities. A total of 1,504 field studies was made, including nearly 100,000 workers, but the number of studies is not a good means of comparison between states, as the scope of the "studies" vary widely. The number and percentage of workers involved in the study of specific exposures are presented in a table, organic solvents leading with 24.2% and silica dust second with 23.4% of the total. Three industry groups accounted for more than 10% each; iron and steel, 15.8%; lumber and furniture 14.5%, and food and allied industries, 12.4%. The number of persons affected by improvements accomplished as a result of the surveys was 38,515 or 38.9% of the total. The

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types of improvements are classified, protective clothing coming first and exhaust ventilation second. Much of the work of the health departments, and also of the cooperation on the part of industries, does not fall into the regular tabulation. Practically all States indicated their intention to concentrate their efforts on the control of health hazards in defense industries, and a Nation-wide program of industrial hygiene in defense industries is now in progress.

911 Trends in Occupational Disease and Industrial Hygiene. F.S. Mallette and H.B. Meller. Ind. Med., 10, 466-8 (November, 1941).
The trends in the literature on various phases of industrial hygiene were studied by comparing the number of abstracts on the 14 principal subjects in this Bulletin and in the Journal of Industrial Hygiene appearing in each of the years 1935 to 1940, covering material fr. 385 journals here and abroad. The material is presented graphically. In the total literature there was an increase from 595 papers in 1935 to 913 in 1938, followed by a leveling to a fairly constant output. "Dust" is the subject of the most extensive literature, followed closely by "lead" and "silicosis." On dust there is an increase from 1935 to a peak in 1937 and a definite decrease to 1940. Possible causes of the decrease are discussed. It is suggested that the development of the electron microscope will lead to a greater interest in this field. On lead, rising interest was shown in 1936, followed by a decrease to 1938 and a considerable increase (45 to 77 papers) in 1939, and a slight diminution (66) in 1940. The interest in silicosis remains fairly constant. In general the literature on skin disease is increasing. The papers on carbon monoxide show peaks in 1936 and 1940, and on gases a peak in 1937 which has not again been reached. On "Mines" and "Ventilation" there are no definite trends. The subject of "Industrial Hygiene" has shown a steady increase. The study will be continued and expanded, with attention to the cause of the variations.

912 Vignettes of the Future. Health and Safety. Daniel Harrington. Eng. Min. J., 142, 127 (August, 1941).
The author briefly reviews the progress of health and safety in the mining industry, particularly during the past 10 years and he points out that the present emergency, with probable recourse to poorer deposits, will afford an excellent opportunity for a further reduction in the occurrence of both ill health and accidents in the mining industries.

913 The Modern Petroleum Industry. G.E. Egloff. Montevideo Facultad de Ingenieria Bull., 2, 50-6 (June, 1941). (Spanish).
Primarily a discussion of the important role of engineers in the petroleum industry, the article discusses, among other things, general considerations for the health of workers in the petroleum and natural gas industries.

914 Factors Affecting Industrial Health. C. H. Watson. Ind. Med., 10, 403-10 (September, 1941).
This paper comprises the first of a series of lectures on industrial hygiene and occupational disease, given at New York University Center for Safety Education early in 1941. The author first discusses preemployment examinations and the history obtained at the examinations -- previous occupation, injuries and illnesses, early environment, etc. -- with their bearing on the health efficiency of the employee. Social and family environment is discussed, and brief attention is given to each of the factors of working conditions, including lighting, air conditioning, floor coverings, noxious gases, noise, rest periods, recreation, cafeterias, fatigue, dust hazards, dermatoses, sanitary facilities, and contagion. The cost of medical and nursing facilities is discussed.

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915 Industrial Hygiene Control on Tunnel Construction in Hydro-Electric Projects in Western North Carolina. M.F. Trico. Presented at Second Annual Meeting of the American Industrial Hygiene Association, May 8, 1941, Pittsburgh, Pa.
A description of industrial hygiene activities during the construction of tunnels on hydro-electric projects in North Carolina. In accordance with State law, preemployment physical examinations of workers exposed to the hazards of silicosis were made by means of a mobile X-ray laboratory. These results will be discussed in a subsequent paper. The present article presents the results of the study of the occupational environment in the tunnels, to the exclusion of all surface work. All drills were equipped with the New York State type heads through which flow about two gallons of water per minute. Before mucking, the blasted rock was wet down to reduce dust. Each tunnel was provided with a ventilation duct; in one case furhished with a blower; in the others by both exhaust and forced drafts produced by reversible compressors. Despite the use of these safeguards, both silicosis and carbon monoxide hazards existed; particle counts as high as 342 million, and gas concentrations as high as 0.1% were found. Ventilation ducts were found to end too far from the heading, thus rendering the volume of air delivered inadequate.

916 The Los Angeles Industrial Health Program. A.V. Nasatir. Ind. Med., 10, 236-9 (June, 1941).
The procedure and accomplishments of the industrial hygiene program in Los Angeles are reported. Following a preliminary survey by the U. S. Public Health Service, the program was initiated by the City Health Department, to which an Industrial Hygiene Division was added, with the cooperation of State authorities. The preliminary work disclosed the most frequent potential hazards and the industries in which the greater number of hazards could be expected. It was also disclosed that not even the larger plants had full-time medical service, and that only a small proportion of the workers had physical examinations. This situation is being improved through the educational activities of the Division, and requests for surveys often come from the industries. The need of medical men who can direct health programs is stressed. Attention is given to non-occupational diseases, and defense industries are receiving special consideration.

917 Industrial Health Practices. National Association of Manufacturers, Committee on Healthful Working Conditions. Ind. Med., 10, 388-98 (September, 1941).
In 1937 the National Association of Manufacturers established a Committee on Healthful Working Conditions, whose function is the collection and dissemination of information on health and working conditions in industry in an effort to reduce the tremendous toll of time and money taken by illness and accidents. As a part of the Committee's activities in 1940, it undertook to survey the extent and development of factory health programs among the Association's membership. A total of 2,064 industrial establishments was included in the survey. The material of the report is extensive, including the percentages of plants having various health and welfare facilities, how long the facilities have been established, extent of reduction of illness and accidents, cost of hygiene and safety programs, and other features. Some of the most important results are as follows: (1) out of 1625 replies to the question whether the company considered its health program a paying proposition, only 5 were not positive, and only one unqualifiedly negative; (2) average reductions of 45% in accident frequency, 63% in occupational disease, 27% in labor turnover, 30% in absenteeism and 29% in compensation insurance premiums were reported; (3) over 85% reported reductions in all the above factors; (4) only 4.4% of applicants for jobs were rejected on the basis of physical examinations; (5) eighty per cent have a rating system for fitness for jobs; (6) physical examination records are kept confidential in 41%

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of the plants reporting, including all the large organizations; (7) the average cost of a health program for a 500-man company is $6,370 yearly; the average saving computed from the reduction of accidents, occupational disease and absenteeism is $12,341, leaving a net saving of $5,611 per year, with a saving to employees amounting to $6,300; (8) the independent companies revealed a gradual decrease in the annual per capita cost of medical programs as the number of employees increased.

918 The Doctor in Court. B.L. Shiesstag. Bull. N.Y. State Acad. Med., 17, 692-696 (September, 1941).
The author deplores the lack of knowledge of court procedure on the part of physicians and of the practice of medicine on the part of lawyers. The author classifies doctors into five groups according to their manner of giving testimony in court. The ideal has "unassuming professional dignity...is prepared for accuracy in his testimony....answers questions directly, without long and learned dissertations....uses a minimum of technical terms....explains them in plain, simple language....does not allow himself to become a victim of the capacity for self-deception." This paper is prinicpally an introduction for other speakers on the subject.

919 The Doctor in Court. C.G. Heyd. Bull. N.Y. State Acad. Med., 17, 706-714 (September, 1941).
There are four ways in which the physician as a doctor appears in court: (1) as a plaintiff, as when he sues for non-payment for his professional services; (2) as a defendant in a malpractice action; (3) as a witness of fact; (4) as a medical expert witness. The expert is permitted to express his opinion with respect to questions of science for it is held that the opinion of such persons who are especially skilled in such matters is a relative fact in the action. The author reviews the various solutions which have been offered for the difficulties set up by expert testimony. He makes the point that the approach to the problem is not that the institution of the medical expert is fundamentally noxious or bad but at the present time there is no adequate mechanism for determining the competency of the expert as an expert. There are so many limitations to the expert in that his knowledge becomes so refined and his approach so circumscribed that he is very apt to have lost common touch with actual conditions.

920 Medical Testimony in Personal Injury Action. W.J. Kernan. Bull. N.Y. Acad. Med., 17, 864-870 (November, 1941).
A discussion of the manner in which medical testimony in the so-called personal injury action affects the administration of justice. Three important factors are generally found to be present, each of which is a contributing factor, namely, the opportunity for the doctor to predicate his opinion on subjective symptoms; the very natural tendency to become a partisan; and the contingent fee contract of the lawyer. Solutions for the cure of this difficulty are discussed at length.

921 The Doctor in Court. G. Z. Medalie. Bull. N.Y. State Acad. Med., 17, 697-705, (September, 1941).
A discussion of the relations between lawyers and doctors in the courts. The author urges "....an interest in increasing numbers in the problems in the field of legal medicine which conern both, and a cooperation for improvement in the administration of justice in which the medical interest is at least as welcome and as useful as (the legal profession's)."

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922 Industrial Health and the General Practitioner. L.D. Bristol. N.Y. State Jour. Med., 41, 2026-2029 (October 15, 1941).
Extremely rapid and significant developments have taken place recently in the field of industrial health. A broader concept of the problem is held today, even the extension of the term to include community health. The author emphasizes the changing characteristics of organized industrial health promotion through four periods of development and points out the relationship of the practitioner of medicine. His obligations and opportunities are outlined.

923 The Medical Technologist in Industry. A.B. West. Amer. Jour. Med. Tech., 7, 76-81 (1941).
A discussion of the work of the medical technologist in large industrial plants, primarily as to blood counts, X-rays of industrial diseases and injuries, and venereal disease programs.

924 Regulation of Work Hours in War Time. W. Drager. Zent. f. Gewerbehyg., 27, 161-5 (1940). (German).
At the beginning of the present war, September, 1939, a German regulation was published which abolished legal restrictions of working hours of adult males. The authorities were given the right to make exceptions in other orders concerning work hours in single plants. Regulations published later tend to restrict the need for licenses and to allow more liberty to the manager. The present paper was written to clarify the numerous regulations. An exact summary is impossible but one can mention some of the most important regulations. Without license, male adults may work up to 10 hours daily, females and youths only in urgent cases and only up to 56 hours a week. In extraordinary cases a license may permit work beyond this period; in an emergency a license is not necessary. Employment of women at night is allowed only in exceptional cases, and by license. Regulations for overtime pay change; first such pay was forbidden, then the employer paid it to the Government, then the regulation was cancelled for holiday and night work and later, for work of more than 10 hours. In December, 1940 payment for all overtime was reintroduced.

925 Some Practical Results of Physical Examinations. A.J. Kammer. Ind. Med., 10, 230-3 (June, 1941).
The paper is a report of the practical results of physical examinations at the Examination Clinic of the Indiana Harbor Works of the Inland Steel Company. The author reports that the routine does fairly well at discovering most cases of chronic illness among workmen. The exceptions in the present procedure are diagnoses of chronic gastro-intestinal diseases and of asymptomatic coronary artery diseases. The routine physical examination forms the starting point for several worthwhile programs, including: (1) replacement of men in jobs where they do not present a safety hazard and where they may work with a minimum aggravation to their own chronic illnesses; (2) insistence on corrective measures; and (3) supervision and early treatment of a significant percentage of workers discovered to have syphilis, tuberculosis and cardiovascular disease. The information gained from routine examinations provides a good base line from which to form accurate opinions of the health hazards associated with certain jobs. When hazards are borderline, final opinions rest on findings at repeated examinations of men exposed over prolonged periods.

926 The Industrial Nurse in the National Defense Program. W. Hardiman. Ind. Med., 10, 502-4 (November, 1941).
The various duties and opportunities of the industrial nurse inside and outside the plant are discussed. In connection with defense industry, the nurse must be familiar with new materials that are being introduced and with their hazards.

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927 Medical Service in Small Industrial Plants. F.T. McCormick. Ind. Med., 10, 508-10 (November, 1941).
The industrial surgeon who is not employed full-time in the plant must overcome this handicap by an endeavor to keep in close touch with the industry he serves, either by visits to the factory or by frequent communications with the management, or both. His office, which may be used for first aid in absence of a first-aid department, should be conveniently located, and should be arranged so as to involve minimum waiting. More small plants should employ a nurse, at least on part-time. The Visiting Nurses Association has a plan by which a nurse spends one or two hours daily in a work place. Often results of the nurse's work will lead to employment of a full-time nurse. The responsibilities of the nurse and doctor are discussed.

928 What the Nurse Should Know About Industrial Health Hazards. E.A. Wanner. Summarized in Ohio Nurses Rev., 16, 12-3 (January, 1941).
Besides actual duties in the plant the nurse can be of great assistance to employer and employees through contact with the families of employees. Preventable home conditions that influence the worker's efficiency can thus be discovered. The company's welfare work can be called to the attention of wives. The nurse must also lose no opportunity to emphasize the importance of receiving prompt treatment for injuries.

929 The Industrial Nursing Field. Victoria C. Stralko. Ohio Nurses Rev., 14-5, 58-9, (January, 1941).
The subject is discussed from the standpoint of the nurse in the small plant. Her duties are at first rather vague, and include some non-professional tasks such as clerical work. There should be no objection to this situation so long as it leads to expansion of her department to the point where she will not have time for clerical work. The nurse must abide by the company policy, but must prove to the employer that a health service is necessary both for industrial and other sickness, and can make herself and her department indispensable. Further education of nurses by extension courses is very desirable, and the nurse should be allowed time to attend such courses.

930 Serology and Syphilis Control in Industry. G.H. Gehrmann. Ind. Med., 10, 385 (September, 1941).
In the chemical industry there are many exposures which make diagnosis difficult and aggravation allegedly common. Among these are lead encephalitis and carbon monoxide poisoning. It is desirable to segregate syphilitics from exposure to carbon disulfide, nitrates and nitrites, lead and also from cellophane operations since this material is used for wrapping foods. Prior to 1938, 73,735 persons were examined, showing a positive result in 4.4%. From June, 1940 to June, 1941 there were 65,783 examinations, with 2.9% positive. The company has its own serological laboratory -- its efficiency being shown by the fact that the personnel (two technicians, a clerk and helper) handle 900 tests a day at a cost of about 10 cents each.

931 Syphilis Control as Viewed by the Syphilologist. U.J. Wile. Ind. Med., 10., 385, (September, 1941).
Syphilis is not comparable to any other communicable disease. Quarantine is more difficult because of the absence of acute illness. The disease is known for its occultism (absence of tangible physical evidence.) Problems are presented in treatment because of the state of flux and the toxic reactions. Too many instances of treatment are based on serological results alone -- there should also be a competent physical examination. Even in asymptomatic cases, there is evidence which proves the avoidance of late sequelae. If all patients could be treated early, there would be less aftermath.

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932 Serology and Syphilis in Industry. H.A. Vonachen. Ind. Med., 10, 385, (September, 1941).
Experience in this organization has shown a decreased incidence, after the institution of a syphilis control program, of from 2% in 1936 to 1.5% in 1937, 1.8% in 1938, and 1.05% in 1939. No negroes are included in these figures. The author deplores the lack of knowledge concerning adequate treatment on the part of private physicians. This plant benefits both employee and employer and should also help insurance companies.

933 A Workable Plan for Syphilis Control in Industry. E.A. Irwin. Abstracted in Ind. Med., 10, 386 (September, 1941).
The industrial physician should act as the case-finding agent. In the company reported, blood specimens are taken in all examinations. Code number is used on the examining card and extreme care is taken in maintaining the confidential relationship as in private practice. The patient is referred to the family physician for confirmatory tests. The employee is continued at work unless the case is contagious. The most discouraging aspect is the follow-up with the family physician because there is no direct control over the treatment.

934 A Syphilis Control Program in an Industrial Center. M.C. Hanson. Abstracted in Ind. Med., 10, 386 (September, 1941).
The report deals with the progress of a program developed in the health department of Pittsburgh. The first task is the education of the public, relative to case-finding and consultation work. Standard laboratory work has been arranged, and the industries use the health department for their serology tests. A central diagnostic clinic has been created where the positives go for a special examination, additional serology and final diagnosis. Educational surveys help to promote follow-up through physicians and industrial groups.

935 Social Hygiene and the Defense Industries. W. Clarke. Abstracted in Ind. Med., 10, 387 (September, 1941).
The author discusses the previous papers, emphasizing that the blood test is not the sole criterion of pathology. Education relating to prophylaxis is most important, and industry has the right to expect assistance from the health authorities in the district, both in education and clearing up places of prostitution. The government would do well to conduct as good programs in the service groups as are now carried on by industries.

936 The Importance of Syphilis Control in Industry. C. Selby. Abstracted in Ind. Med., 10, 387 (September, 1941).
The author is not convinced that lues as a disease is industrially significant. In a group of 187,000 employees, taking into account disabilities of 7 days or over, 2.5 per 1000 were due to infections and parasitic diseases, including lues. The incidence of positive serology was found to be 30 per 1000 in the same group, so it does constitute a public health problem. The program should be built as a permanent project and not merely for national defense.

937 Syphilis Control In Industry and the National Defense. R.A. Vonderlehr. Abstracted in Ind. Med., 10, 387 (September, 1941).
Serological data have been made on all selectees, totaling 10,700,000. The rate for the entire country was 230 per 1000 negroes and 40 per 1000 whites. The prevalence of clinical lues has decreased to about one-tenth of that in 1918, and of Neisser infections about one-third. Venereal disease is much less prevalent above the Mason and Dixon line than below. The progress in the larger industries has been excellent, and the greatest gain can now be made in the smaller groups. Cooperative advisory groups have assisted greatly in the work over the entire country, and advisory groups for smaller industries are being considered.

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938 A Survey of Non-Occupational Injuries and Illnesses in a Major Carpet Mill for 1940. B.S. Dignam. Ind. Med., 10, 242-4 (June, 1941).
An analysis from insurance claims is presented with actual days lost being charged to each systemic classification. Approximately one in every 10 insured males and one in every 5 females submitted a compensation claim. The males who held 71% of the policies sustained 62% of the time lost by non-occupational injuries and infections. The study confirmed the fact that non-occupational injuries and sicknesses account for more absenteeism in this industry than occupational injuries and diseases. It also shows that non-occupational injuries and diseases of gastro-intestinal, respiratory, genito-urinary and circulatory systems are the main causes of such absenteeism. Fuller details are given in tabular form.

939 Absenteeism in British Plants. J. Somerville. Monthly Labor Rev., 53, 1164 (November, 1941).
The 17th Report of the Select Committee on National Expenditure deals with the problem as it exists in two munitions plants. Reasons cited for the high percentage of absenteeism include difficulties in obtaining transportation, inadequate housing accomodations, conditions of work in the factories, especially unsatisfactory canteen facilities, and the 7-day week. The committee recommends dealing with avoidable causes effectively, especially improvements in working conditions. In coal mines, rationing of staple foods such as bacon, cheese and beef, is one of the chief causes of absenteeism. Miners bring their lunch from home, in contrast to factory workers who usually obtain a meal a day at the canteen. Another factor is the 6-day week, causing the miner to work 25 to 50 additional days a year on a reduced food supply. For these reasons the suggestion is made that an extra ration be granted the miner.

940 Progress in Prevention of Silicosis. H.C. Clare. Min. Jour. (Phoenix, Ariz.) 25, 5-7 (July 30, 1941).
In recent years workers and employers have demonstrated a genuine interest in the improvement of industrial health conditions. The major effects in the mining industry have been toward elimination of the dust hazard and prevention of silicosis. Dust conditions in Idaho mines have been studied by the Division of Public Health.

941 Experimental Study of Inhibitory Effects of Aluminum Compounds in Silicosis. L.U. Gardner and others. Bull. Amer. Cer. Soc., 20, 281,284 (August, 1941).
Experimental tests are described, in which vitrified sagger clay containing 50% of free silica was used. No silicotic reaction occurred in guinea pigs within twelve months. Previous experiments on animals, in which a hydroxide of aluminum was used, demonstrated that it, like the metal itself, afforded good protection against the action of silica. Whether the protection in the case of the sagger clay was due to the aluminum in the mullite or to other mechanisms could not be established. The free silica content of a dust is not necessarily a reliable index of its capacity to cause silicosis, and there is need to investigate the physiological effects of many mixtures of aluminum and free silica-containing minerals in use in the ceramic industry.

942 Some Preliminary Data on Methods for Controlling the Dust Hazards in Mechanical Mining. C.W. Owings. U.S.Bur. of Mines Inf. Circ., 7151, (March, 1941).
This paper deals specifically with dust control in mechanical mining in the bituminous coal mines of the United States. The hazard of coal dust; dust in conveyor mining; dust during loading with mobile units; haulage; rubber-tired buggies; watering methods; and wetting agents, as a means of overcoming the use of excessive quantities of water are all discussed.

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943 Dust in Rock and Earth Industries. H. Lehman. Deutsch Keramischen Gesellshaft 21, 412-6 (October, 1940). (German).
The problem of dust and dust control in the non-metallic industries is discussed.

944 Acute Silicosis. W.D. McNally. Jour. Ind. Hyg., 23, 45-49 (January, 1941).
This is a report of a case of rapidly developing silicosis in a sandblaster in the short period of 11 months and becoming an advanced case in 39 months. No figures as to the extent of the exposure are given but it must have been tremendous. The patient should not have been permitted to work in dust after the first x-ray was taken as it already (12 months) showed a definite silicosis. The prognosis in this case is poor.

945 Dust Hazards in Industry. W.E. McCormick. Bull. Virg. Polytech. Inst., 34, 31-36 (January, 1941).
A summary of apparatus and technic for estimating dust hazards. Proper interpretation is essential in evaluating industrial dust hazards. In a discussion of the effect of particle size, there is a misinterpretation of certain experimental work by Gardner, namely, that the lower limit of particle size for producing silicosis is as low as .002 micron. Finally there is a detailed discussion of the protective measures used in the prevention of occupational disease from industrial dust.

946 The Value of the Roentgen Ray in the Diagnosis and Prognosis of Silicosis. W.M. Doughty. Am.J.Roentgenol. & Radium Therapy 46, 605-9 (November, 1941).
One of the indications of silicosis according to its accepted definition is "characteristic x-ray findings." The author discusses what these findings are and how they are best shown. Discrete nodulation is the one essential finding that must be shown to establish the presence of silicosis. Coalescent nodulation and conglomerate masses, emphysema, and fibrous bands are seen in the later stages. The roentgen examination is of little help in the diagnosis of acute silicosis because of the absence of morphological changes. The x-ray picture when silicosis is complicated with tuberculosis is discussed briefly, and other diseases are mentioned which may make reading the film more difficult. Although roentgenological examination is necessary in the diagnosis of silicosis, a positive diagnosis should never be made on the strength of the roentgenograms alone, but accurate employment history, dust counts, percentage of free silica in the air breathed, and the report of a careful medical history and physical examination should all be considered.

947 Incidence of Silicosis in Foundries. L.M. Merritt. Ohio Ind. Comm. Monitor. 14, 83-6 (June, 1941).
Foundries have been responsible for approximately half of all the silicosis claims allowed by the Ohio Industrial Commission since silicosis was made compensable in 1937. Foundry workers are classified into core makers, molders, molding room laborers and cleaning room laborers. Although silicosis awards were made to men in all these categories, about 75% of the claims awarded in the cast and malleable iron and the non-ferrous industries were to molders especially those who worked at benches. The cause of this situation is evidently the silica flour and tripoli used in parting compounds. In the steel industry where wet parting is used, 53% of the awards were to cleaning room laborers.

948 Soft Coal Miners -- Health and Working Environment. R.H. Flinn and others. Public Health Bull. #270, U.S. Pub. Health Service. 118 pp. 1941. For sale by Supt. of Documents, Washington, D.C., 25 cents.
Anthraco-silicosis, a modified form of silicosis due to breathing siliceous dust intermixed with large amounts of carbon dust, was the principal occupational disease found by medical and x-ray examination of 507 workers whose only

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experience in dusty trades had been in bituminous coal mines; 16 workers were so diagnosed, one with moderate disability and 15 with but slight disability, and most of these workers had spent a large proportion of their working time at the face. The incidence of anthraco-silicosis increased regularly with the severity and duration of exposure. No cases were found among workers with less than 10 years of employment in bituminous coal mines and only 2 cases among workers with an average weighted dust exposure of less than 20 million particles per cubic foot of air. This concentration can be readily attained by the application of engineering control methods which are suggested in the report, involving the use of water at the point of dust generation, and adequate ventilation at all working places. Carbon dioxide, oxygen, and nitrogen were present only in the concentrations found in outside air. Carbon monoxide was found only immediately after blasting, and in only one sample did the concentration of methane exceed the recommended maximum of the Bureau of Mines. Thirteen cases of reinfection or adult type tuberculosis were found among the 507 bituminous coal workers. All but 3 of these cases were classified as minimal and apparently healed. Only 1 case, apparently healed, was found in the 16 workers with anthraco-silicosis.

949 Silicosis. G. Clement. Radiol. 37, 407-12 (October, 1941).
The author discusses silicosis from the standpoint of his personal observations in the mining industries in the north central part of the United States for a period of about 10 years. "It should be understood that silicosis is not a disease, that it is not disabling and that it is not a cause of death. Simple silicosis does not directly participate in the production of any disease and does not increase the incidence of any disease. Only in its advanced stage and when it is accompanied by the infirmities of age does it show any tendency to limit one's activities." He disagrees with two general assumptions: (1) that all rock drillers in underground mines have silicosis; (2) that an atmosphere laden with silica dust predisposes to tuberculosis and that most silicotics eventually have tuberculosis. On the first point, he cites the case of a mine when the walls are always wet, the rock is low in silica, and the ventilation is good and there is no silicosis, while in another with the opposite conditions, silicosis does exist. On the second point he finds the percentage of pulmonary tuberculosis less in the silicotics in several mines than in the other inhabitants of the surrounding country. The author discusses jury trials in silicosis compensation cases, giving 10 reasons for the diversity of opinion on the part of medical witnesses: (1) an inadequate understanding of what simple silicosis really is; (2) an inadequate understanding of the influence of infection on silicosis; (3) failure to realize that simple silicosis is not a disabling condition; (4) sympathy on the part of the witness for the plaintiff without due consideration of the disability, if one exists; (5) failure to realize that the incidence of infection is no greater in silicotics than in others; (6) lack of realization that more than 90% of silicotics are at work in the occupation in which the silicosis was acquired; (7) failure to realize that simple silicosis is rarely seen in the hospital or clinic; (8) failure of the witnessing physician to know silicosis from direct survey experience where it is actually present; (9) lack of knowledge of the size, number, and silica content of the dust particles inhaled, and length of exposure in the particular industry; and (10) a woeful lack of knowledge of what a chest film of simple silicosis looks like. Each of the points is discussed.

950 Factors Involved in the Production and Development of Silicotic Lesions. W.S. Lemon. Radiol., 37, 413-20 (October, 1941).
Experimentally produced silicosis, like silicosis found among human beings, results from the interaction of particulate silica and the tissue-cell system of the lungs. The nature and degree of the defense reactions depend upon the size, number and mass of the particles of silica. The exact cause of the reaction is

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unknown, but it is probably brought about by electrochemical effects induced by contact of the particle and the cytoplasm of phagocytic cells. It probably proceeds because the laden cells are not killed but are preserved, and may be concentrated into aggregations of cells situated along the course of the lymphatic system of the lungs. Arrest occurs as a result of phagocytosis and failure on the part of the eliminating mechanism of the lung. The pathognomonic criterion of experimentally produced silicosis is the discrete pseudotubercle, pearly white in color, glandular, subpleural or perivascular and peribronchial in situation, and visible and palpable on cut section. The morbid changes in lungs of experimental animals are controlled by encapsulation, calcification and obliteration by collagenous and reticular fibers. Superimposed infection increases fibrosis in the perinodular parenchyma, causes ulceration and necrosis of bronchi and blood vessels, and brings about death of the animal by bronchitis, bronchopneumonia and emphysema. Simple uninfected silicosis affects the function of the lungs in proportion to the amount of fibrous tissue that develops, the consequent reduction of vital capacity, and the secondary loss of cardiac compensation.

951 Tuberculosis in Industry. Proceedings of a Symposium on Tuberculosis in Industry, Sponsored by the Trudeau School of Tuberculosis, Saranac Laboratory, Saranac Lake, N. Y., June 9-14, 1941. Reported by C.O. Sappington. Ind.Med., 10, 433-41 (October, 1941). To be published by the National Tuberculosis Association in January at $3.00.

This report includes abstracts of all the 29 papers presented at this important conference. They are all interesting and valuable, but only those of greatest interest to our members are briefly re-abstracted here.

Tuberculous Infection, Sources and Modes of Transmission, and Pathology. L. U. Gardner.

An important fact in transmission is that the tubercle bacillus does not live long except in the body of the host. Sunlight kills it in 10 minutes, ultraviolet light in a few minutes, drying in 10 days, pasteurization in one-half hour. The best germicides are soap and water, and sunshine. Numerous sources of infection, almost always from human beings, are mentioned. To produce the disease, the bacilli must enter the body and grow. Natural resistance is rather general in civilized races. Primary lesions are localized foci occurring anywhere and are accompanied by fairly prompt healing. Reinfection lesions are apical, more often acute rather than chronic, accompanied by symptoms and often healing with residual foci. Dissemination by bronchial aspiration produces an active pneumonia lesion and also chronic proliferation. Cavities represent sources of spread and causes of hemorrhage.

Diagnosis. F.B. Trudeau.

The important cardinal points in diagnosis are: (1) history of blood spitting; (2) history of idiopathic pleurisy with effusion; (3) persistent moderately coarse rales in the upper two-thirds of the chest; (4) definite parenchymal involvement as shown in the x-ray film of the chest; and (5) tubercle bacilli in the sputum.

Treatment and Rehabilitation. F.H. Heise.

The discussion was limited to those of industrial age. Most persons recover but about 10% constitute problem cases. Education is the most important factor in treatment. Others are mental and physical rest, collapse therapy, and mineral salts, vitamins and proteins in food. The disease is very chronic and subject to relapses; provision must be made against relapses through rehabilitation and educational measures.

Epidemiology. A.J. Vorwald.

The mortality has been reduced from 30% in the 17th century to 7% in 1937, and from 200 to 50 per 100,000 population since 1900. Relations of cases to age, race and sex were shown in graphs. The high death rate for urban negroes is probably due to economic status and late hospitalization.

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Comparative Mortality Statistics on Tuberculosis in Various Industries. L. I. Dublin.

In 1911, pulmonary tuberculosis was responsible for 20% of all deaths; now, 6 1/2%. The mortality in male wage earners has been reduced to one-sixth of the 1911 ratio. If the death rate declines at the same rate, tuberculosis will be only a minor cause of death in several decades. However, the decline is smaller in industrial workers. In the age group 25 to 34, the reduction has been only 9%. In the 1935-39 experience, the rate for males is twice that for females. The reliable figures from England and Wales show that low economic status has a much greater effect on mortality than direct occupational factors. However, occupations with silica dust exposure still produce an excessive number of cases and deaths. Industrial hygiene has an active program of concentration on reducing these higher rates.

Disabling Morbidity from Tuberculosis. W. M. Gafafer.

The extensive report of the National Tuberculosis Association was discussed. In some chronic diseases the mortality rate has been increasing on account of aging of the population but in tuberculosis the trend has been downward, not so rapidly from 1934 to 1939 as from 1925 to 1933 but still downward.

Specific Occupational Factor. Respiratory Irritations -- Dust, Fumes and Gases. L. U. Gardner.

Extensive experiments have disclosed no connection between tuberculosis and exposure to irritating gases. There are only two specific reactions known, those of free silica dust and tuberculosis. Asbestosis does not predispose to tuberculosis.

Specific Occupational Factors. Lead Absorption and Lead Intoxication. E. L. Belknap.

Other investigators have found tuberculosis more prevalent among hand and machine compositors in the printing trade than in the general population, and more so than among employees of smelters and storage battery plants. In the author's experience, there has been no predisposition to tuberculosis among workers who have shown evidence of lead absorption in a group of storage battery employees under medical supervision.

Specific Occupational Factors. Influence of Fatigue as Observed in the Automobile Industry. F.B. Wishard. Influence of Temperature and Humidity. A. M. Baetjer. Influence of Posture and Trauma. E.N. Packard.

The conclusions of these three authors may be summarized briefly by saying that no relationship of any of the factors to tuberculosis has been found, except in the case of trauma, and that very rarely. Possible connections between trauma and tuberculosis are discussed.

Incidence and Causation of Tuberculosis in Various Industries. Tobacco and Cigar Makers. C.-F. Long.

The tuberculosis rate among tobacco and cigar makers in Philadelphia was found to be 151, as compared with 251, per 100,000 in the general population. Tobacco dust exposure does not change the fluoroscopic appearance of the chest.

Garment and Laundry Workers. H.R. Edwards.

There is little evidence that under present improved working conditions there is any occupational influence. Methods and results of the survey are discussed.

Cement and Gypsum Workers. D.M. Brumfiel.

Continued study confirms earlier findings that gypsum and cement dusts do not predispose to tuberculosis or other respiratory diseases.

Grain Handlers. A.R. Smith.

Clinical examination shows increased rates for fibrosis, non-specific infection and clinically significant tuberculosis. Wheat is the grain most often blamed. Workers are exposed to grain dust, rust, smut, hairs, fungus, and vapors of insecticides. The greatest incidence of tuberculosis was among scoopers, who work long hours, are unemployed in winter and are addicted to alcohol.

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Iron and Steel Workers. A.G. Kammer.
The factors considered were hard physical labor and hot atmospheres. The discussion is concerned with treatment of tubercular employees rather than with direct evidence of these factors. There is an increasing incidence with advanced age, and those showing evidence of tuberculosis are taken off hot and heavy jobs. Out of the 644 cases, 80% remained at the same work.
Foundrymen. L. Greenburg.
There is a normal amount of tuberculosis without silicosis. Tuberculosis does not increase with silicosis, except as the latter becomes far advanced. Only late silicosis activates tuberculosis, even in the face of healed primary and adult lesions. Tuberculosis does not lay the groundwork for silicosis.
Hard-Rock Miners. D.E. Cummings.
Free silica is the active factor in the production of silicosis, which predisposes to tuberculosis, which increases as the silicosis does. Dust exposure tends to stabilize the tuberculosis lesion, as long as silicosis does not develop. A tuberculous individual upon acquiring silicosis runs a very chronic course.
Granite vs. Marble Cutters. L. Benson.
In granite and sandstone cutters there is 26 times the expected death rate from tuberculosis. In granite, the silicates mixed with the free silica have some inhibiting action on the action of free silica on the body. In marble workers the incidence and course of tuberculosis are normal, and tuberculosis does not exist as an occupational factor.
Case-Finding Procedures. W.A. Sawyer.
Satisfactory methods of case-finding involve an x-ray of the chest and examination of all contacts at least once, and the same procedures for all non-contacts who have chest symptoms. Photographs (4 x 5) of the fluoroscopic image were found superior to 14 x 17 paper rolls and to 35 mm. films. In New York State an incidence rate of 1.25% was found in a group of 8,833 employees. The incidence rate was the same in siliceous and non-siliceous dust exposures.
Viewpoint of the Insurance Carrier on Tuberculosis in Industry. H.D. Sayer.
The problem is of concern to insurance carriers on account of its broad economic aspects and the imposition of legal liability in certain jurisdictions. Various inconsistencies in legal provisions and decisions were described and illustrated, emphasizing the importance of thorough preparation and also the high cost of legislation and litigation. The speaker suggested that tuberculosis might be considered as an occupational disease through changes in present laws, but that compensation should be limited to cases in which there was definite liability.

952 The Control of Tuberculosis. III. Management of the Employee with Pulmonary Tuberculosis. A.C. Reid. J.Ind.Hyg. & Toxicol., 23, 35-44 (January, 1941).
By the case-finding program described in the previous articles of this series (Abstracts No. 782, November, 1940 and 119, February, 1941) 469 cases of pulmonary tuberculosis were detected over the ten-year period 1930 to 1939. Early diagnosis and prompt institution of Sanatorium treatment yield the most favorable results in the arrest of the disease. By means of these methods of control, the incidence of clinically significant cases of pulmonary tuberculosis among the employees of this company have been reduced from 40 per 10,000 in 1930 to 10 per 10,000 in 1939, while the incidence of clinically significant cases among applicants for employment were 80 per 10,000 in 1939 with no decrease in rate similar to that which occurred in the employee group. Three-fourths of the cases in the employee group are now being diagnosed in the minimal stage; only one-fourth are advanced -- a complete reversal of the situation before 1930. By methods which are simple and economical, pulmonary tuberculosis can be profitably controlled.

953 Tuberculosis and its Allied Conditions, as Commonly Seen in our Industrial Population. C.H. Marcy. Ind. Med., 10, 441-4 (October, 1941).
Although the death rate from tuberculosis has been reduced from 200 to 45 per

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100,000 population in the last 35 years, tuberculosis continued to be a major health problem. The death rate is 2.5 times as heavy in industrial workers as in the population as a whole, but industry is not altogether responsible for this excess, as industrial workers are largely recruited from districts where overcrowding, bad living conditions, and restricted diets are prevalent. Studies in Pittsburgh show that the chances for tuberculosis are 3.5 times as great in the poor man's family as in the well-to-do family. The acceptance of the tubercular for employment tends to spread the disease among workers. The author discusses the difficult question of the effect of exposure to silica dust and poisonous gases and vapors, and trauma on tuberculosis. The sole cause of tuberculosis is infection, but it is aggravated by the causes mentioned, both in increasing susceptibility and in reactivating previous infection. The question of tuberculosis as the result of trauma could often be answered by x-ray examination, and in general periodic x-ray examinations of employees show whether tuberculosis in early stages is present. Tuberculosis control measures, to be successful in industry, must include programs to provide proper living conditions, adequate medical and hospital care, satisfactory diets, recreation and health education. A more liberal attitude of employers is needed to provide selected work for those who have arrested disease and are physically fit for limited gainful occupations. Compensation laws should protect the employee, but at the same time should not make the employer liable for conditions beyond his control.

954 Control of Tuberculosis. Opportunities in the Industrial Health Program. T. Hatch. Ind. Med., Ind. Hyg. Sect., 2, 53-57 (October, 1941).
The higher tuberculosis mortality among certain groups of industrial workers, as compared with the general population has been accounted for, in the silica industries, by the essential relation between tuberculosis and silicosis. No similar relationship, however, with other substances encountered in industry has been demonstrated. Moreover, except for workers in the silica industries, tuberculosis mortality among wives of industrial workers is slightly higher than for the males. This would indicate that economic conditions are responsible, rather than industrial exposure. At present the rate for males is highest at age 55, but this does not mean that the relative risk of contracting the disease is highest at that age. The work of Frost has shown that the relative risk of contracting tuberculosis has remained constant, despite the tremendous drop in the mortality rate since 1870. The greatest progress in mass case finding has been in the schools, but it is more important to institute mass examination among adults, and that can be done best by increasing efforts in industrial establishments. The information thus secured will throw more light on the relation of tuberculosis to industry.

955 Occupation, Tuberculosis and Compensation Laws. L. Brahdy. Am.Rev.Tuberc. 44, 509-19 (November, 1941).
There is no law that tuberculosis is an occupational disease. The testimony of a few physicians has caused tuberculosis to be classified as an occupational disease in hospital employees regardless of known infection or disease existing prior to employment. Such erroneous testimony hampers prevention, hospital administration, rehabilitation and progress in other fields. This testimony deprives some nurses of the benefits which compensation laws should give them. The responsibility belongs to the medical profession and no one else can solve the problem.

956 The Compensation of Occupational Diseases. L. Teleky. J.Ind.Hyg. & Toxicol., 23, 353-73 (October, 1941).
The author reviews the subject of compensation laws for occupational diseases, including principles, history, types of law, and a classification of the laws

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of the various states, with reference to diseases and disabilities covered and details of administration. The diseases recognized are presented in tabular form for England, Germany, 13 states, Puerto Rico and the International Labor Office.

957 Progress in Air Conditioning for the Ventilation of Butte Mines. A.S Richardson. Mining Tech., 5, Tech. Pub. 1348, pp. 20. (July, 1941).
The last previous description of the ventilating system of the Butte mines was given in our Abstract No. 812 (1938). This paper is a record of progress to date, with a repetition of the general description of the system. One feature of the system is the use of circulated water for cooling, with the system so operated that an efficient interchange of heat between air and water is maintained. Dust elimination as determined with impingers has been found to be 40 to 80%. Many details of construction and operation are included. In certain locations low-pressure plants are provided, i.e., plants in which naturally occurring water is used instead of the circulating system. The description of equipment for using a stream of very corrosive water is interesting. It is difficult to evaluate results in terms of comfort or efficiency. Air conditioning or air cooling is a supplementary measure for low-level places where ordinary ventilation methods are inadequate. It is also difficult to compare costs, but the author makes a rough estimate, taking-all factors into account, that the cost of air conditioning should be about 75% of that of ordinary ventilation designed for the same cooling effect.

958 Profits in Air. Wright Aeronautical Corporation's Lockland Plant. The Designer's Views. G.S. Whitaker. The Owner's Views. H.E. Linsley. Heat. and Vent., 38, 30-7 (November, 1941).
The air conditioning system of the new plant, which is the largest single story factory, is fully described. Of especial interest is the automatic regulation of the entrance of outside air and its heating or cooling as the outside temperature varies. In the heat treating section the air is not cooled but washed and delivered at high humidity and high velocity into just the areas where the men are working. Individual air conditioning units are used in small enclosed areas such as the first aid room.

959 Profits in Air. Electrostatic Air Filters. H.W. Pound. Heat. & Vent., 38, 34-7 (July, 1941).
Electrostatic filters remove dust particles that pass through mechanical filters, including those under 10 microns. An efficiency of 85% is reported for electrostatic filters at the normal air velocity of 500 ft. per min. against 20% for the best felt filter, using the U.S. Bureau of Standards discoloration test method. The efficiency rises to 95% at 300 ft. per min. Cases are cited in which improved products result from electrostatic air cleaning, and in welding operations recirculation of air without the expense of heating large quantities of outside air has been made possible. The Electro-Matic filter, combining electrostatic and mechanical filtration, is described briefly.

560 Profits in Air. Griffin Wheel Company. W.A. Murdoch. Heat. & Vent., 38, 30-2 (September, 1941).
The author describes the ventilating system used in removing dust during the shake-out operation in the plants of the above company. The operation is conducted on an elevated platform. Fresh air is blown down from above the platform, and powerful exhaust fans remove dust and sand which do not fall into the hopper below. The fresh air also makes working conditions more comfortable, the castings being at a temperature of 1500°F. Some details are described.

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961 Nomograph for Exhaust System Design. B. Kagan. Heat. & Vent., 38, 39-43 (August, 1941).
Nomographs are presented for calculation of the resistance and air volume in an exhaust or blower system. The diagram facilitates especially the calculation of the air flow in a multiple branch system where the resistance in the intersecting points has to be balanced.

962 Profits in Air. Dust Control. F.F. Kravath. Heat. & Vent., 38, 28-31 (June, 1941).
The author discusses the fundamentals of dust control. He says in his opening paragraph: "We must fix it firmly in our minds that dust control is not something which we can buy quickly, easily and painlessly from our favorite sheet metal contractor. Dust control is not merely an exhaust system which can be purchased, run until it is completely worn out, outmoded or inadequate and then replaced with another exhaust system bought just as painlessly. Dust control is a living thing. It is a policy and a procedure devised and carefully checked by the plant's operating personnel, and instituted and enforced by the plant's management whereby clean, healthful, dust-and fume-free atmospheric conditions are provided and maintained at all times within the plant." The same principle is applied to respirators and to medical examinations. Proper design of exhaust systems, by the plant engineers if possible, or by competent manufacturers, is necessary before purchase and installation. The system must be designed to operate at all times when dust removal is necessary, not merely 75% or 90% of the time and operations. Visibile dust, though often not as injurious as the finer dust, must be eliminated, as workmen and courts are often impressed by the extent of visible dust more than by the technicalities of dust counting. Strict regularity in frequency of dust counting should be observed and dust counts at a distance from the plant give a comparison often clearer to courts and juries than the mere figures. The procedure following physical examinations of employees should be courageously conducted; that is, men unfit for active work should be transferred to easier work and tuberculous employees should be isolated. Objections to this procedure on the part of either management or labor are shortsighted.

963 Health vs. Comfort vs. Efficiency. F.W. Hutchinson. Heat. & Vent., 38, 28-9 (November, 1941).
In designing air conditioning systems, if temporary maximum efficiency were to be considered without regard to health and comfort, the environment would be uncomfortably warm, the pressure in the working place would be four atmospheres and the workroom equipped with mildly irritating noise-making devices. Moreover, comfort and health are not synonymous. When indoor summer temperatures are held down to give optimum comfort, the transition to and from workrooms gives unhealthful shock effects leading to head colds and other disturbances. The author presents the problem in this striking manner in order to emphasize that the three aims of air conditioning; -- efficiency, comfort and health are independent and that any one may be attained at the expense of the others. Much of the data on effect of environment are of little value in the broad problem of maintaining health because they apply to restricted conditions. It may under certain conditions be more conducive to health to remain in an atmosphere which is not ideal from the health standpoint than to be required to enter for short periods such an atmosphere from one which is ideally suited to the maintenance of health. The engineer designing a comfort air conditioning installation is restricted in his selection of conditions of operation to an extent far greater than would be true in most other branches of mechanical engineering. He must have sufficient background to be able to (1) estimate the probable effect of such engineering methods as may be available, on health of the occupants, and (2) estimate the extent to

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which extreme atmospheric conditions may constitute a health hazard and thus be able to deduce when and to what extent air conditioning may be essential to avoidance of an industrial health hazard. The author will follow this introduction with a series of articles on various phases of the problem.

964 Heating, Ventilation and Lighting for Industry in War Time. W.D. Seymour. Occup. Psychology 14, 56-64 (January, 1941). (Great Britain).
The introduction of the "black-out" has made both heating, ventilation and lighting more difficult. Various solutions for these difficulties are discussed in some detail.

965 Infection, Disinfection and Air Conditioning. W.F. Wells. Ind. Med., 10, 281-2 (July, 1941).
Much progress has been made in ventilation since the old ideas of miasma and of the evil effects of carbon dioxide were discarded, but more recent scientific studies make us wonder whether an essence of truth did not hide in the erroneous explanations of phenomena recognized by keen observers. Although excessive carbon dioxide in itself is not harmful, its presence may indicate an excess of air-borne bacteria exhaled at the same time. Modern air-conditioning with emphasis on comfort and mechanical features has tended to spread bacterial contagion. The author presents two methods of determining whether the ventilation of a given space is sufficient to remove bacteria. One is based on the carbon dioxide content of the air and in the other E. Coli are sprayed in the air and their disappearance rate is noted. A modification of the latter method may be used for measuring disinfection by lethal radiation.

966 Ventilation and Exhaust Equipment. G.C. Harrold. Abstracted in Ind. Med., 10, 512 (November, 1941).
One important aspect of practical exhaust ventilation is the consideration of the specific gravity of gases. This will determine whether a down-draught or up-draught is advisable. However, sometimes there may be deceptive factors; for instance, carbon monoxide is lighter than air, but when mixed with exhaust becomes heavier than air. Various types of exhaust systems are illustrated, particularly with reference to welding of large objects. Exhaust systems for magnesium and aluminum dusts must include provisions for wetting the particulate matter, which must finally be carried off as a sludge, on account of the possibility of fire. Magnesium fires are difficult to handle and the use of water on such fires produces explosions.

967 Cooling Workers in Hot Industry. F.C. Houghten, M.B. Federber and C. Gutberlet. Ind. Med., 10, 460-3 (November, 1941).
Cool air at high velocity was directed over a worker performing standardized tasks in a hot room, while another worker performed the same work without cooling. In some cases a stationary blast was used, and in others air at a lower velocity was circulated through a loose-fitting garment worn by the worker. With both methods the worker's endurance was greatly increased and the rise in body temperature was greatly reduced. The worker did not object to the cooling air blown through his suit if its temperature was above 75°F. Below that temperature a pad over the portion of the body where the blast was directed prevented chilling.

968 Dust. A.H. Goodman. Safety Eng., 82, 38-42 (October, 1941).
The author describes dust control measures at the Southwest Sewage Treatment Works of the Sanitary District of Chicago, at which 300 tons of a very dusty material is a by-product. The plant is cleaned satisfactorily by a commercial vacuum system with over 80 inlet valves and special attachments for cleaning particular equipment.

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969 Variation of Bacterial Population in Certain Ventilating Systems. A. Hollaender. Ind. Med., Ind. Hyg. Sect., 2, 60-3 (October, 1941).
An investigation was conducted in the Industrial Hygiene Building of the National Institute of Health at Bethesda, Md., to determine: (1) whether bacteria which are released in certain rooms with recirculation are distributed readily over the building; (2) how the bacterial population varies in a building with artificial ventilation in the course of a year; and (3) what are some of the factors which influence the size of the bacterial population. On the first point, the bacteria increased many-fold in the various rooms a few minutes after spraying into the recirculation intake, remained high for a half hour and the slowly returned to the original level. With regard to seasonal variation, the bacterial count was highest in October and November, when it is highest in the outside atmosphere, although it was lower than outside. Opening windows made little difference. The principal other factor in this particular investigation was the keeping of experiment animals outside the intake, which raised the bacterial content markedly.

970 Design of Industrial Exhaust Systems. L.P. Hatch. Ind. Eng. Chem., 33, 111-3 (January, 1941).
In the design of industrial exhaust systems certain basic principles of air flow are often overlooked, and not infrequently rule-of-thumb methods are employed. If resistance to air flow is measured in terms of water gauge, its low value leads to significant differences between design and performance values, which are often given only minor consideration. Resistances in various parts of exhaust systems, including pipe friction, can be predicted in terms of velocity head, and the design of an entire system, therefore, can be completed without introducing resistances in terms of pressure gauge. The author presents practical and mathematical data on calculations based on velocity head, use of dampers or adjustable gates, design of exhaust system without gates, high resistances in certain branch sections, and hood suction.

971 Hoods and Piping In Exhaust Systems. C.A. Snyder. Occup. Hazards. 3, 8,9,24 (September, 1941).
The author briefly discusses exhaust hood and piping design, with 12 important points listed, some of which are: use of forces created by motion of tool on work to produce air currents into hoods; use of downdraft for heavy gases or dust, and updraft for fumes, with cross or lateral draft permitted for either; a ratio of 16 or less between the area of an exhaust hood and its exhaust pipe; double-walled hoods around shakeouts, etc; and simple adjusting devices and ample access doors. The author makes the following statement at the beginning and end of the paper: "The most efficient dust collector is but half of a dust control installation, and improper hood and piping designs can render the entire installation useless from an efficiency standpoint."

972 Principles of Factory Ventilation and Heating. Their Application in War Time. T. Bedford. Occup. Psychol., 15, 77-89 (April, 1941).
After considering the probable impurities in an ordinary workshop, the author recommends: (1) adequate air movement, generally between 20 and 40 feet per minute; (2) the air movement should be variable; (3) the room should be as cool as is compatible with comfort, and the humidity should probably not exceed 70%; (4) the average temperature of the walls should not be appreciably lower than that of the air, and should preferably be higher; (5) the air at head level should not be distinctly warmer than at the floor. Some practical measures are suggested, for instance warming tools the first hour or two of work when the room cannot be heated sufficiently. The effect of blackouts on ventilation is also considered. Natural ventilation is often seriously restricted by closing windows during blackouts, and remedies should be considered.

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973 Ventilation in Arc Welding with Coated Electrodes. B.D. Tebbens and Philip Drinker. J.Ind.Hyg. & Toxicol., 23, 322-42 (September, 1941).
Experiments designed to simulate electric welding under industrial conditions were conducted with several representative types and sizes of coated electrodes, including mild steel, ferrous alloys and non-ferrous metals. The apparatus was so arranged that all fumes and gases from the arc were drawn into an exhaust hood from the ducts of which gas samples were taken for analyses. Airflow through the hoods was controlled and measured. It was found that the amount of nitrogen peroxide produced by welding is small in comparison with the quantity of fume particles of metallic oxides and salts. It is possible, therefore, to judge the adequacy of ventilation in terms of the visible fume in the welding zone and to write ventilation specifications with the concentration of visible fumes as a criterion. When welding with coated electrodes is done in confined spaces, ventilation rates recommended per welder varies from 250 to 1500 c.f.m. for 5/32 in. to 3/8 in. electrodes, corresponding to a minimum air velocity of 75 to 125 f.p.m. for local exhaust hoods. For 5/32 in. galvanized plate, 1000 to 1500 c.f.m. is recommended. In many cases, suitable suction devices connected to local exhaust hoods on flexible hose placed within 8 to 9 in. of the arc suffice for producing these necessary velocities. Ventilation of large shops used in part for welding is seldom necessary because of natural air movement, but where visibility is seriously reduced, twice the given rates will relieve the condition. A bibliography is included.

974 Respiratory Protective Equipment. J.H. Sterner. Abstracted in Ind. Med., 10, 512 (November, 1941).
The author discusses the choice of respiratory equipment, using classification developed by the Bureau of Mines, and emphasizes the superiority of the approved respirators. However, there are unapproved varieties that are useful in certain industries. Choice depends upon the contaminants, their concentration and their duration. Illustrations include the new airline type equipped with a cartridge for protection in case the airline becomes detached. Cleaning of respirators is also discussed.

975 Compressed Air Diseases. E. Schnitter. Schweizerische Banzeitung. 116, 297-8 (December 28, 1940). (German).
This article comprises excerpts condensed from a recently published book by H. Gerbis and R. Koenig on diseases caused by compressed air. Protective measures are outlined for laborers working under pressure.

976 The Action of Light Metals and Their Alloys in the Tissues. F.P. Tinozzi. Med. Sper. Arch. Ital., 8, 129-150 (1941). (Italian). Abstracted from Biol. Abstr., 15, 2019 (November, 1941).
The reaction which several types of light alloys used by the airplane industry produce in guinea pigs, when injected subcutaneously, intramuscularly, or into the peritoneal cavity, is more intense than the reaction produced by the individual components of the same alloys. The damage may be due to electromotive phenomena between metals and tissues, and the fact of the greater intensity in the case of alloys is explained by the notion that these forces are more intense in alloys.

977 Cover your Welders. Anonymous. Safety Eng., 82, 11 (September, 1941).
The Reliance Electric & Engineering Company of Cleveland, has added some safety devices for welding operations. Welding canvas, 5 ft. high, is hung from stanchions to provide an enclosure usually 10-foot square around the welding operation. Exhaust hoods are suspended by 15-foot lengths of flexible tubing 5 in. in diameter and counterweighted. No tube is long enough to reach the floor but extensions are provided when a greater length is necessary. A low volume of air at a high velocity - 545 cu.ft.of air at 4 in. static pressure - is provided.

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978. Studies on the Mechanism of Carbon Monoxide Poisoning as Observed in Dogs Anesthetized with Sodium Amytal. W.F. von Oettingen and others. Pub. Health Bull. #274. 50 pp. (1941). Obtainable from Supt. of Documents, Washington, D.C. at 10¢. Following exposure to carbon monoxide for 1 hour, resulting in about 60 per cent saturation of hemoglobin with the gas, the spinal pressure of anesthetized dogs continues to increase after discontinuation of the exposure, and circulation failure is also continued. As recovery proceeds the circulation improves, and after 3 or 4 hours the spinal pressure decreases, but soon the heart and circulation begin to fail and the spinal pressure again increases, to fall again especially if the cardiac failure is associated with loss of vascular tone. Respiratory stimulation persists after discontinuation of exposure, until the carbon monoxide hemoglobin has been reduced to 45%. After that time the respiration is slowed but persists above normal until the secondary use of spinal pressure occurs. The body temperature also rises abruptly at this time. These phenomena cannot be attributed to the small quantity of carbon monoxide remaining in the blood, but must be caused by some slowly developing injury to the circulatory apparatus.

979 Fighting Magnesium Fires. Anonymous. Safety Eng., 82, 34 (September, 1941). Fires in magnesium and its alloys are best extinguished by smothering with an excess of dry graphite. Other materials that are somewhat less effective or must be used with certain precautions are cast-iron borings, talc and sand. The last should not be used around machinery. Extinguishers employing water, foam, carbon tetrachloride, carbon dioxide or soda should never be used; they will accelerate the burning of magnesium and may cause an explosion. Water may be used on other material that is endangered so long as it does not come in contact with the magnesium. Water may also be used on other material when magnesium is present but not burning, provided the magnesium is in the form of fine powder. General precautions against magnesium fires are outlined.

980 Butane Explosion -- Cause and Remedy. Anonymous. Safety Eng., 82, 27 (September, 1941).
Recently a so-called plumber's butane pot, such as is frequently used to heat lead, exploded, seriously burning 2 men and causing property damage. The explosion appears to have resulted from overfilling the pot with butane and leaving it in sunlight. In filling such containers extreme care must be taken to fill only through small orifices, to have quick closing shut-offs and to stop filling instantly when the outage valve shows liquid. Each pot or container must be provided with a safety relief valve.

981 An Inexpensive Animal Compression Chamber. E. End. J.Lab.Clin.Med., 27, 237-9 (November, 1941).
A simple and efficient experimental compression chamber for studying the effects of pressure on small animals is described. It can be made at a cost of about $15, and pressures over 100 lbs. per sq. in. as well as reduced pressures, can be used. It consists essentially of a 1-foot section of 6 inch standard steel pipe, with a steel plate covering one end and another plate with a glass window on the other end. A gauge and tube for delivery and removal of gases are included.

982 A Constant Mercury Level for the Dropping Mercury Electrode. A. Langer. Ind. & Eng. Chem., (Anal. Ed.) 13, 794 (November 15, 1941).
A description of a floating bulb device for maintaining a constant mercury pressure, which has been used satisfactorily for over a year. An illustration and details of construction are given.

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983 Organic Halogen Compounds. Great Britain. Dept. of Sci. & Ind. Res., Methods for Detection of Toxic Gases in Industry, Leaflet #12. London H.M. Stationery Office, 1940. Obtainable from Brit. Lib. of Inf., N.Y. 5 cents.
The poisonous effects of the more important organic halogen compounds are indicated and precise directions are given for simple methods of detection. The object is a rapid indication of the relative safety of the atmosphere rather than an extreme degree of accuracy. Among the compounds discussed are di-, tri-, and perchlorethylene, di-, tri-, tetra-, and pentachlorethane, carbon tetrachloride, monochlorbenzene and methyl bromide.

984 Chemicals In Industry. E.W. Thompson. American Mutual Mag., 20, 2-7 (October, 1941).
Hundreds of industrial plants are today being forced by the war-time economy to introduce new chemical substances into their manufacturing processes. This situation, the author warns, exposes men, as well as machinery and materials, to a wide range of hazards with which they are not familiar and demands the serious consideration of management if accidents from these causes are to be held in check. In addition to a tabular presentation of seventy-five common chemicals and their inherent hazards, the author recommends a five-point program for preventing accidents from chemicals.

985 Hydrofluosilicic Acid Method for Determination of Quartz. F.H. Goldman. Ind. & Eng. Chem. (Anal. Ed.), 13, 789-791 (November 15, 1941).
A method for the analysis of the quartz content of granular material using hydrofluosilicic acid has been extended to include "settled dusts." Mechanical losses and losses due to the solution of quartz by the reagent have been greatly reduced. There is a substantial saving in time in an analysis which may take as long as 2 weeks to complete.

986 Carbon Monoxide and Hydrogen Sulfide. E. Neitzel. Zeitfuer das Gesamte Schiess-u. Sprengstoffursen 35, 205-7, 230-2, 256-7 (September, October and November, 1940). (German).
A discussion of the toxicity of carbon monoxide and hydrogen sulfide in industrial processes and the prevention of poisoning. The concluding articles in a series started in July and August 1940 issues.

987 Comparison of Rapid Methods for Quantitation of Impinger Samples of Granite Dust. C.L. Pool, J. Wuraftic and R.J. Kelly, Ind. Med., Ind. Hyg. Sect., 2, 39-46 (July, 1941).
A series of impinger samples collected at granite plants were examined simultaneously by (1) the standard lightfield count, (2) Spencer hemacytometer cell count, (3) darkfield count, and (4) photoelectric measurement of light intercepted vertically by a column of the liquid. Attempts were made to correlate the four series of results. In three series of 18 to 35 samples each, a fair agreement was found between the lightfield and hemacytometer counts when the latter were divided by 1.18, 1.23 and 1.27 respectively. No such agreement was found between the darkfield and lightfield counts, even when elaborate corrections for particle size variations were made with the assistance of the method of light intercepted. In comparing the light interception method with the lightfield method, there were indications that definite relations existed, but the attempt to state them mathematically for practical use did not succeed. Size-distribution determination and the examination of fractions after settling gave some assistance, but not enough work has been done to establish a good correlation. The authors conclude that the hemacytometer and light interception methods can be used with judgment under limitations to reduce materially the time required for routine investigations. Suggestions are made for a possible method of

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approach for development of rapid photoelectric determinations to give approximate estimates of count and size of particles, to explain discrepancies encountered with present methods, and to extend the scope of use to which the more rapid methods may be put. Much research must be expended on that point before it is established. Descriptions of the method and full experimental data are included.

988 Measuring Concentrations of Toxic Substances. S.W. Gurney. Abstracted in Ind. Med., 10, 512 (November, 1941).
The author discusses the problem of determining the presence of toxic materials in the air when only untrained personnel is available. There is no substitute for precise and scientific information, but where that cannot be provided without considerable expense and difficulty, much can be learned without it, by the following methods: (1) some types of precision instruments can be used by untrained persons; (2) visual inspection; (3) identification of odors by the nose; (4) considering the complaints of the workers themselves; and (5) exposing one's self as the worker does.

989 A Portable Sampling Unit. L. Silverman and T.R. Thomas. J.Ind.Hyg. & Toxicol., 23, 252-5 (June, 1941).
A simple, inexpensive, self-operated sampling unit made from a new type of tire pump, used in connection with a plenum chamber and adapted to both midget impinger and absorber sampling, is described, with drawings and illustrations. It is easily constructed and can be used wherever power is unobtainable or dangerous to use.

990 A Microprojection Screen. C.R. Williams and L. Silverman. J.Ind.Hyg. & Toxicol., 23, 452-3 (November, 1941).
The screen of dental rubber dam material, recommended by the Bureau of Mines (Abstract No.197,1938) can be replaced by one of celluloid foil, copied from a master cloth or paper tracing by the "Ozalid Process." Since it is a dry method, the dimensions of the paper and rulings do not change. An unlimited number of copies can be made, on clear or ground foil stock as desired. Such screens, 18 inches square, cost about $1.00 each, which is much lower than the cost of the rubber screens. A series of solid dots can be placed around the outside edge of the screen for the purpose of estimating particle size.

991 Separation and Determination of Lead with Salicylaldoxime. W.B. Ligett and L.P. Biefeld. Ind. & Eng. Chem., (Anal. Ed.), 13, 813-815 (November 15, 1941).
Lead can be determined by precipitation as lead salicylaldoximate. From nitrate solutions, precipitation begins just above pH 4.8 and is complete at 6.9. Precipitation must be carried out at pH 8.9 or above in order to obtain a compound to which the theoretical factor of 0.6053 for lead in lead salicylaldoximate. Lead can be separated from silver, cadmium and zinc in strongly ammoniacal solutions. The reagent cannot be used in conjunction with high ammonia concentrations to separate lead from one or more of the following metals in solution: copper, nickel, cobalt, bismuth, iron, magnesium, manganese and mercury.

992 A Proposed Plan for the Control of Venereal Diseases in Industry. O. L. Anderson. Ind. Med., 10, 284-6 (July, 1941).
The preliminary program of the Division of Industrial Hygiene of the National Institute in collaboration with industrial groups is presented. Prominent features are an educational program, routine diagnostic tests on all applicants and all periodic examinations, confidential information except as to numbers involved, referring those with positive tests to private physicians or clinics, exclusion of contagious and degenerate types, mandatory treatment in order to continue work, and cooperation of the state and local health departments with industrial medical services.

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Papers on Industrial Poisons, Cancer, Dermatitis, etc.

993 Occupational Dermatoses -- Diagnosis, Prevention and Treatment. L. Schwartz. Ind. Med., 10, 379-384 (September, 1941).
The compensation laws in many states are so worded that the physician's fee is assured, either by the compensation commission or by the insurance carrier, in cases where the disease is of industrial origin. This has, the author believes, a tendency to make the physician lean toward a diagnosis of industrial dermatitis. In order to discover the actual cause of a dermatitis, all of the following factors must be considered: (1) history; (2) site of eruption; (3) morphology; and (4) the results of patch test. There is a detailed discussion of differential diagnosis, prevention and treatment.

994 Parallel Ecogenotypical Color Variation in Butterflies. W. Hovanitz. Ecology. 22, 259-284 (1941).
There is a similarity between natural melanism in color variation and industrial melanism in regard to the climatic conditions and the suggestion is made that the mechanism of both is the same.

995 Prevention of Eczema. E. Wassmuth. Farben-Ztg. 45, 767-8, 783-5, (November 23, 30, 1940). (German).
A discussion of the methods used for the prevention of eczema caused by solvents in the manufacture and preparation of lacquers and paints. A list of paints and lacquers is presented, grouped according to raw materials, solvents and fields of application. The possibilities of avoiding the use of eczema-producing solvents in the lacquer industry, is discussed; also new hygienic measures and use of new preparations for the protection of the skin.

996 Skin Diseases Common to Railroad Employees. E.H. Decker. Ind.Med., 10, 421-2 (October, 1941).
The principal skin diseases among patients in the skin department of the Santa Fe Hospital in Topeka, a group probably representative of all railroad employees in the Southwest, are listed in their order of incidence; (1) fungous diseases; (2) malignant and pre-malignant conditions about the face; (3) dermatitis venenata, especially that from poison ivy; (4) bacterial dermatoses, especially impetigo contagiosa; (5) sycosis of the beard; and (6) pruritis ani. Each disease is discussed with recommendations for treatment. Creosote dermatitis, frequent 15 to 20 years ago, has become a rarity, on account of new methods of impregnating ties with creosote.

997 The Etiology of Acne with Special Reference to Acne of Occupational Origin. A.T. Jones. J.Ind.Hyg. & Toxicol., 10, 290-312 (September, 1941).
"Acne rises from exposure to the fumes and fine particles of chlorinated naphthalenes in a very high percentage of workers exposed. The latent period, the effect of cleanliness, the absence of systemic effects and the distribution of the eruption indicate that the occurrence of acne is due to a local effect on the skin. Experience has indicated that provided simple precautionary measures are adopted, products known to give rise to acne may be manufactured and used with safety." This summary by the author does not indicate the thorough teatment he has given every phase of the subject-history in general and in industry, list and photographs of cases, course of the disturbances, causes, systemic effects associated with it, and prevention, with bibliography.

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998 Controlled Radium Hazards. F.B. Flinn. Ind. Med., Ind. Hyg. Sect., 2, 57-60 (October, 1941).
The author reports the great progress that has been made in protecting workers in the luminous dial painting industry since 1924. At that time there was no knowledge of the hazards until a number of cases of radium poisoning developed. The greatest hazard is in ingestion, which was general from the habit of wetting the paint brushes in the mouth. Ingested radium causes bone destruction if the radium enters the bone cortex, but recovery follows treatment before that stage. The other hazards are inhalation of the emanation, resulting in lung cancer and exposure to gamma rays, causing changes in the blood picture, especially decrease in white cells. Elaborate precautions are taken against all forms of entrance into the body. Physical examinations are conducted on entering employment and at least yearly, including blood tests and radioactive measurements of radon in expired air. The hands, hair and working costumes are examined daily for traces of luminous material. Inspections are made of work benches and lunch and rest rooms. The finished work is quickly removed from the tables. Each employee is instructed in the rules and regulations, and carelessness is followed by dismissal. Floors and benches are constructed of materials that can be thoroughly cleaned. When noticeable quantities of radon are found in the workroom air a search is made for its source. Hoods over the work benches are provided and respirators are worn. With these precautions, no case of radium poisoning has developed.

999 The Effects of Some Terpenes on the Skin. H. Riedel. Klin. Woch., 19, 1034-6 (October 5, 1940). (German).
Turpentine and thinners contain varying amounts of a number of terpenes. Various pure terpene derivatives were studied. For acute effects the material was applied to the skin of the forearm of a human subject, in a glass basin 1 cm. in diameter for 1 hour. For chronic effects rats were used. The abdominal skin was painted 3 times daily with the solution under trial. Inhalation of vapors was avoided. In the acute tests, a reddening occurred at first but soon disappeared, and was of little value in assessing the result of the test. A positive test consisted of a red or reddish-brown tint within 24 hours, reaching a maximum in 3 or 4 days, and leaving a pigment that may last for weeks, possibly with vesiculation, peeling and scarring. In the chronic experiments with rats, usually an inflammatory reaction was obtained after about 10 paintings. Scabs were formed on further treatment, with great dilation of the subcutaneous vessels and ulceration. Cessation of the painting was followed in 8 days by considerable return to normal. The results, presented in a table, show that in the acute test, only a-pinene, limonene, phellandrene and p-cymene gave positive results. However, the great majority of the 16 terpenes yielded positive results in the chronic tests.

1000 Acneiform Lesions Caused by Fats and Oils Used in Industry. II. Perna Disease. Y. Nakauchi. Jap. J. Dermatol. & Urol., 48, 87 (October 20, 1940).
Perna disease, a cutaneous affection caused by perchlornaphthalin, often occurred in the World War of 1914-18. Its symptoms are milia or acneiform folliculitis, pustules and small subcutaneous abscesses, especially common on exposed parts. Similar affections have been caused by tri- or tetra- chlornaphthalin, used as substitute for wax in electric manufactories. Application of trichlornaphthalin to the ears of rabbits produced results similar to those seen in workers in those plants. The subcutaneous abscesses are not bacterial in origin though secondary infection may occur later.

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1001 Cutaneous Anthrax. A.E. Hodgson. Lancet. pp. 811-3 (June 28, 1941).
Of 93 cases of anthrax which arose from exposure to infection from imported hides, hair or wool coming to Liverpool, all were treated with serum without excision of the lesion. In the 52 cases where serum onlywas given there were 6 deaths; there were no deaths in the 41 cases in which neokharsivan was also given. The conclusion is that an arsenical should always be administered with the serum in cases of anthrax. Early recognition and treatment are essential to recovery. Danger from septic absorption may call for sulfonamides; toxemia develops most often in infections above the shoulder level. Response to treatment is generally prompt. When death occurs it is usually by unheralded syncope. Serum in large doses with neokharsivan may be given intravenously by gravity; rigors almost invariably follow within a half hour, when adrenalin may be injected. A serum rash is the rule. The pustule heals without a noticeable scar.

1002 Inheritance in Guinea Pigs of the Susceptibility to Skin Sensitization with Simple Chemical Compounds. M.W. Chase. J. Exptl. Med., 73, 711-26 (June,1941).
It has proved possible to set up lines of guinea pigs of significantly different susceptibilities towards a compound of simple structure, namely 2:4 dinitrochlorobenzene. This provides direct evidence that the type of sensitization under discussion is influenced by heredity.

1003 A Review of Cosmetic Dermatitis. F.W. Mittelstadt. Am. Perfumer & Essential Oil Rev., 43, 29-31 (October, 1941).
Cosmetic dermatitis (or more correctly, dermatoses) may be classified into two groups: chemical and allergic. In the former case an ingredient actually damages skin tissue by reason of its chemical nature, and a progressive reaction begins at once. In this category are bleach creams, freckle removers, depilatories, hair dyes and nail polish removers containing injurious materials. Cosmetic allergy or sensitivity is a result of, or is hastened by, numerous predisposing factors, and usually develops slowly. Diagnosis may be made easily if the subject is carefully questioned and the results of patch tests are correctly interpreted. Perfumes and dyestuffs are the most common of the many offending substances reported. Dermatitis will occur as long as the complexity of the human body and the multiplicity of ingredients used in cosmetics exist. There is no completely non-allergic cosmetic.

1004 Nail Polish Dermatitis. J.F. Burgess. Can. Med. Assoc. J., 45, 336-9 (October, 1941).
Further clinical observations are recorded in 34 cases of nail-polish dermatitis. Patch tests to various ingredients of nail polish in 19 cases are compared with similar tests carried out in a series of 25 cases chosen at random in a clinic. The basic lacquer (nitrocellulose solution) appears to be a highly important and consistent factor in the sensitizing process and the resinous ingredients may also be important in a lesser number of cases. Dyestuffs may be a factor in a very small percentage. The presence of benzol in the nitrocellulose solution and in many nail polishes, with the marked reactions in a few cases, suggest that the sensitizing qualities of this substance may be the decisive factor in the nitrocellulose solution.

1005 The Cancer Producing Properties of Azo Compounds in Mice. L.W. Law. Cancer Res., 1, 397-401 (May, 1941).
Thirty-five fibrosarcomas have been induced in 109 mice of the inbred C57 (especially susceptible) black strain following subcutaneous injection of 10 mg. of four related simple azo compounds, namely 4'-amino-2,3'-azotoluene, p-dimethylaminoazobenzene, 4'-hydroxy-2, 3'-azotoluene and 2-3'-azotoluene. The first was the most potent. Only one sarcoma appeared in 106 mice of a highly resistant strain. The chief liver reaction was the form of trabecular hepatoma

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with only a slight adenomatosis of bile ducts and little or no proliferation of connective tissue.

1006 Flour Allergy and Epithelial Supersensitiveness to Ammonium Persulfate in Bakers and Millers. H.A.E. van Dishoeck and D.J. Roux. J. Allergy. 12, 431-4 (July, 1941).
Bakers and millers are often hypersensitive to ammonium persulfate, used in treating flour, as well as to flour itself, and some authors have concluded that ammonium persulfate is the active sensitizer. The authors have on the other hand, often found hypersensitiveness to flour without a persulfate hypersensitiveness, but never found the opposite. The condition of flour hypersensitivity, with no reaction to persulfate, may be called an allergic flour eczema. When persulfate hypersensitivity is also present, the clinical aspect of the eczema is somewhat different.

1007 Effects of Inhalation of Benzene Vapors on the Red Blood Cells of Rabbits. E.J. Robinson and D.R. Climenko. J.Ind.Hyg. & Toxicol., 23, 232-8 (June,1941).
Exposure of rabbits to air containing benzene vapor in high concentrations usually results in a rapid fall (2 hours) in the red cell count, and the gradual return to normal (21 days) is accompanied by a reticulocytosis. The rapidity and extent of the fall in count and the reticulocytosis indicate that benzene accelerates the destruction of red cells in vivo. In half of the experiments the red cells of the animals were more resistant to saponin hemolysis after exposure to benzene than they were before. The meaning of this observation is obscure, but it may be the result of an in vivo destruction of the least resistant cells.

1008 The Single Dose Toxicity of Some Glycols and Derivatives. H.F. Smyth, Jr., J. Seaton and L. Fischer. J.Ind.Hyg. & Toxicol., 23, 259-68 (June, 1941).
The dosage-mortality curves of 60 glycols and glycol derivatives were determined for albino rats, and also of most of the same compounds for guinea pigs. Over 5400 animals were used in obtaining the data, and the same method, which is described, was followed throughout. The paper is presented as preliminary information obtained on small animals, and bears only on single-dose toxicity. The results are presented in extensive tables. As a few illustrations to give the order of magnitude, the LD 50 in gm. kg. for rats is; ethylene glycol, 8.5; diethylene glycol, 21; triethylene glycol, 22; propylene glycol, 26; and dioxane, 7. In the ethylene glycol series, as molecular weight increases, acute toxicity by mouth decreases. Esters of glycol may be more or less toxic than the glycol, depending on the acid radical, but some at least have an action of their own different from that of the glycol.

1009 Recovery Following Exposure to Benzene (Benzol). L.J. Goldwater and M.P. Tewksbury. J.Ind.Hyg. & Toxicol., 23, 217-31 (June, 1941).
Three sets of follow-up studies were made on rotogravure printers who had been exposed to benzene. The studies made on 56 men at the end of 2 months indicated that the toxic effects of benzene may continue to act for a period of at least 2 months following the termination of contact. Studies on 49 men at the end of 14 months showed that while a large majority of the affected workers had apparently recovered, a small number had failed to regain a normal hematologic status. At the end of 24 months 4 individuals out of 108 still had distinctly abnormal blood pictures. Recovery is manifested primarily by increase in erythrocyte numbers, decrease in erythrocyte size and increase in blood platelets. The total leucocyte count and the differential formula is an unreliable index of benzene poisoning or of recovery. The usual forms of anti-anemic therapy seem to have no effect in hastening recovery.

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1010 Acute and Chronic Intoxications with Sodium Pentachlorophenate in Rabbits. T.H. McGavack and others. J.Ind.Hyg. & Toxicol., 23, 239-51 (June, 1941).
Pentachlorphenol is used as a preservative of wood products, and it has been suggested that it and its sodium salt be applied in the preservation of glues, leather, rubber latex and its other textiles. Therefore an investigation of their toxicity is in order. The present study was confined to the sodium salt. The effects of acute intoxications were studied in 61 rabbits and 4 dogs, of chronic poisonings in 21 rabbits, using oral, intraperitoneal, subcutaneous, intravenous and percutaneous methods of administration. The acute minimum lethal dose by the cutaneous method averaged 512.5 mg. per kg. body weight; subcutaneous, 275 (135 for dogs); intraperitoneal, 135.5, and oral, 550. Systemic reactions and post-mortem findings are described, both for acute and chronic poisoning. The total lethal dose was so near the minimum lethal dose in acute poisoning as to indicate a cumulative effect. Variations in blood sugar indicate that intoxication with sodium pentachlorophenate are attended by rather profound metabolic disturbances. The cerebral changes are similar to those observed in longstanding cases of hypoglycemia. Although the studies leave many phases of the problem untouched, for instance, contact dermatitis, they suggest that toxic effects can be produced by contact with low concentrations of sodium pentachlorophenate for prolonged periods of time.

1011 Experimental Chronic Carbon Disulfide Poisoning in Dogs. F.H. Lewey and others. J.Ind.Hyg. & Toxicol., 23, 415-36 (November, 1941).
The investigation of carbon disulfide hazards in the rayon industry, on the part of the Pennsylvania Department of Labor and Industry (their Bulletin 46, 1938, our Abstract No. 826, 1938) left several questions unanswered; concerning: (1) the onset and development of particular symptoms; (2) the role of carbon disulfide in the development of signs and symptoms observed in the older workers; and (3) the mechanism involved in the preferential damage to the nervous system of these patients. Ten departments of the University of Pennsylvania and allied institutions cooperated in animal experimentation in order to answer these questions. Eight dogs were subjected to air containing 400 p.p.m. of carbon disulfide, 8 hours a day, 5 days a week for 10 to 15 weeks. They developed numerous clinical and pathological signs, of which many were analogous to those in human beings working daily for extended periods in an atmosphere containing a fairly constant concentration of carbon disulfide. The symptoms that occurred in all or nearly all of the dogs included marked behavior changes and toxic disease of the cortical nerve cells, motor weakness, flaccid paralysis and nerve tenderness, and a number of others indicating injury to the nervous system. Pathological changes other than of the nervous system were conspicuously absent. Examination of the blood yielded inconclusive results. Changes in the lymphocyte count and of the monocytes were not observed and no abnormal blood pigments were found. Irregularities in cholesterol content, and in fatty acids and protein fractions were no greater than those attributable to a high fat diet. Deranged liver function is indicated. Biochemical examinations in viscose rayon workers, the nutritional experiment and biochemical analyses in the dogs strengthen the author's belief that interference with certain enzyme systems of respiration of the nervous system plays an essential part in the neuropathy and encephalopathy during chronic carbon disulfide poisoning.

1012 Industrial Benzene Poisoning in Factories Where Artificial Silk is Sized. Etienne-Martin. Méd. du Trav. 12, 77-81 (1940). (French).
Three fatal cases, all women, are reported caused by exposure to benzene fumes during the process of drying artificial silk which had been steeped in a bath containing linseed oil and benzene. Ventilation was defective. Such factories should be under medical supervision; the fumes should be removed and recovered; and women and persons under 18 should not be employed at this process.

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1013 Industrial Benzene Poisoning. Etienne-Martin. Med. du Trav. 12, 49-76 (1940). (French).
The author attributes lack of tolerance toward benzene fumes on the part of some individuals, to vitamin C deficiency. A group of persons with known avitaminosis C and a group of men exposed to benzene industrially gave the same retardation in decolorizing dichlorophenol indophenol injected under the skin. The suggestion is made that this test might be used when workers are examined before employment and while at work involving any exposure to benzene fumes. Ventilation and other precautions are recommended for industries using benzene.

1014 The Effect of Carbon Disulfide on the Blood Corpuscles. H.Brieger. J.Ind.Hyg. & Toxicol., 23, 388-95 (October, 1941).
In contrast to statements in standard textbooks on the symptomatology of carbon disulfide intoxication, the author's investigation suggests the following facts: (1) carbon disulfide does not produce hemolysis or change the hemoglobin spectroscopically; (2) severe alteration of erythrocytes is not confirmed, at least not for doses that do not kill immediately; (3) marked hemosiderosis was found, but no other pathological pigment was present; (4) anemia does not occur frequently; (5) the first effect of carbon disulfide on the blood was a slight increase of polymorphonuclear count and appearance of a few immature cells of this type. A bibliography is included.

1015 Observations on the Effect of Paint on the Kidneys with Particular Reference to the Role of Turpentine. E.M. Chapman. J.Ind.Hyg. & Toxicol., 23, 277-89 (September, 1941).
The effect of paint on the kidneys has been little known and its role in the production of Brights' disease has been controversial. It seems clear that acute renal injury may follow the inhalation, absorption or ingestion of turpentine but so far there is no evidence that such an injury may induce a form of Bright's disease. Patients with such exposures may be acutely ill, even fatally, and complain of lumbar pain, headache, strangury and the presence of blood in the urine. Examination of their urine may then show albuminuria, hematuria, casts and a large number of white blood cells. Recovery from such exposures usually occurs in a few days or weeks. In an attempt to produce a chronic renal injury, 36 rats were exposed to the fumes of turpentine over a prolonged period of time. These exposures fairly simulated the chronic exposure that is possible among painters or others exposed in the industry. In these rats no histologic evidence of a chronic renal injury simulating Bright's disease could be found. From a review of 375 cases of acute Bright's disease it appears that none could be attributed to turpentine or paint. Of 3,705 persons with chronic Bright's disease only 1.8% were known to have been exposed to turpentine or paint. Glomerular nephritis was present in only one painter. These facts suggest that neither turpentine nor paint acts as a renal irritant predisposing the human kidney to a glomerular nephritis. Of 385 persons with lead poisoning 22% had albuminaria and 5.4% had definite evidence of a chronic Bright's disease. This coincidence of two diseases seems higher than usual. It is evident that the effects of lead on human tissues, particularly the vascular system and the kidney, deserve study. An extensive bibliography is included.

1016 Investigations on the Possible Carcinogenic Effect of Anthracene and Chrysene and Some of their Compounds. II. The Effect of Subcutaneous Injection in Rats. J.A.Follis. J.Ind.Hyg. & Toxicol., 23, 449-51 (November, 1941).
Three paints, green anthracene water-color, blue chrysene oil-color, and their bases, anthracene and chrysene, showed no carcinogenic activity when compared with 1:2:5:6-dibenzanthracene, a standard carcinogenic agent. This parallels the results obtained with skin painting on mice. The mortality in the chrysene oil-color and anthracene water-color groups, however, suggests that these materials may exert toxic influence when introduced subcutaneously.

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1017 Study of Hazards in Spray Painting with Gasoline as a Diluent. J.H. Sterner. J. Ind. Hyg. & Toxicol., 23, 437-48 (November, 1941).
Gasoline, the chief diluent of paints used in the spray painting of building interiors, has a variable composition, and specimens analyzed were found to vary in toluene and xylene content from 1 to 30%, averaging 5 to 10%. Representative concentrations of aromatic hydrocarbons in the air, in brush and spray painting operations are given, with value of 300 to 800 p.p.m. in spray painting. Workmen exposed to these concentrations, even though protected with cartridge type respirators showed evidence of toxic effects. The chief symptoms were headache, nausea, weakness, mental depression, anorexia, and inability for sustained attention and activity. Laboratory studies of these spray painters revealed a significant decrease of hemoglobin, erythrocyte, and cell volume values, with an increase in mean corpuscular hemoglobin and volume, and reticulocyte count. Wearing of an air-supplied respirator is required of all employees on inside maintenance spray painting. To overcome some of the objections to the air-supplied respirator, it is equipped with a charcoal cartridge absorber, which is automatically connected when the air-supply is broken and disconnected when the air-line connection is resumed. Since the adoption of this respirator the operators have been free of symptoms suggestive of toxic effect.

1018 Toxicity of Methyl, Ethyl and n-Butyl Methacrylate. W. Deichmann. J.Ind.Hyg. & Toxicol., 23, 343-51 (September, 1941).
Methyl, ethyl and n-butyl methacrylates, when absorbed into the tissues of experimental animals in toxic or lethal quantities, cause accelerated respiration followed by a slowly developing motor weakness, decreased respiration, dyspnea, loss of reflex activity and increased defecation and urination. The animals die in coma, as the result of respiratory failure. Inhalation of these compounds also produces irritations of the mucous membranes. Application to the skin results in temporary local irritation and malaise. The urine of rats usually contains hemoglobin, while the blood prophyrin content is elevated in rabbits. Gross pathological changes are confined primarily to the respiratory system. Oral administration results also in corrosion of the stomach walls. A concentration of 19 mg. of methyl methacrylate per liter of air killed all exposed animals (1 rabbit, 1 guinea pig and 2 rats) in 2.5 to 5 hours. The highest concentration of ethyl methacrylate produced was 17.7 mg. per l. of air; this dose killed 2 rats but the rabbit and the guinea pig survived. The still lower volatility of n-butyl methacrylate made it impossible to obtain concentrations above 5 mg. per l. of air. Oral administration of 7 cc. per kg. body weight of methyl, 4 to 6 cc. of ethyl, and 7 to 10 cc. of n-butyl methacrylate are the minimal doses for rabbits; for rats these doses are 7, 12 and 20 cc. respectively. The LD50 for rats (calculated by the Bliss method) is produced by 8.4 cc. per kg. of body weight of the methyl ester and 14.8 cc. of the ethyl ester. The dosages required to cause fatal poisoning by subcutaneous injection are somewhat higher. A subject for future studies may well be the question of whether or not prolonged absorption of small concentrations of these methacrylates will lead to an elevation of those prophyrins that produce photosensitivity.

1019 Industrial Manganese Poisoning. R.H. Flinn, P.A. Neal and W.B. Fulton. Jour. Ind. Hyg., 23, 374-387 (October, 1941).
A discussion of the clinical findings in a recent investigation of chronic manganese poisoning, to focus attention on the serious and crippling disabilities that may result from uncontrolled exposure to manganese compounds and to encourage the initiation of suitable control measures before such unnecessary industrial casualties result. The 50 men examined fall into three groups -- affected, exposed but non-affected, and the non-exposed. The physical signs are described in some detail. The prognosis appears to be good if the man is removed from the manganese exposure but well-advanced poisoning is a crippling disease with permanent disability, particularly with regard to the use of the legs. Even the mild cases may have some residual disturbances in gait and speech.

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1020 Chemical Changes of Methyl Bromide in the Animal Body in Relation to its Physiological Effects. D.D. Irish and others. J.Ind.Hyg. & Toxicol., 23, 408-11 (October, 1941).
This paper supplements that reported in Abstract No. 542, July, 1940 with additional information. Since methyl bromide is finding widespread use as a fumigant, it is necessary to understand the physiological activity of the material and to formulate proper precautions for handling it. While it is less toxic than some other fumigants, it is toxic and should be handled with an intelligent understanding of its properties. Animals exposed to the vapors of this compound in high concentrations (given in the earlier paper) show lung irritation. In threshold concentrations functional nervous responses are observed from which the animals recover if the exposure is stopped. Careful metabolic and toxicological studies on animals indicate that the threshold responses are due to the alkyl halide molecule and not to the hydrolysis products. Proper precautions have been devised using the available information on the physical properties of methyl bromide and on the physiological responses attending exposure to the vapor. With the intelligent use of such precautions, methyl bromide may be handled without intoxication or injury.

1021 Health Hazards in the Paint, Varnish and Lacquer Industry. Kansas City Paint and Varnish Production Club. Paint, Oil and Chem. Rev., 103, 40-4 (November 6, 1941).
The health hazards of the various materials used in paint and varnish making are discussed, on the basis of experience of members of the Club, the technical staffs of various plants and the reports of Government Organizations. Among the pigments, iron oxides, chrome oxide, ultramarine, barium sulfate, titanium dioxide, zinc oxide, and the aniline lakes are non-toxic, although compounds of some are toxic and all are more or less irritating, and excessive dust should be avoided. Lead, arsenic, antimony and cadmium compounds are hazardous, and protective measures are briefly discussed. The numerous solvents vary greatly in toxicity, but there is no health hazard from any such solvent if proper precautions are taken. In the paint industry, and in the manufacture of solvents, closed systems, exhausts and respirators are the rule, but in the varnish industry, which has made great progress in other directions, companies have made very little effort to modernize the plant and remove health hazards due to solvent vapors. Precautions to be observed in varnish making and spray painting are recommended.

1022 Lead-Bismuth and Bismuth Line in Indonesians and their Histo-Chemical Identification. H.B.G. Breijer. Nederland. Tijdschr. Geneesk., 83, 5041-5048 (1939). (Dutch).
The lead line and the bismuth line can be differentiated in the tissues by well known chemical methods and by the reaction of Feigl. These lead lines proved to contain both metals.

1023 The Engineering Control of Lead Contaminated Environments. G.C. Harrold. Ind. Med., Ind. Hyg. Sect., 2, 34-9 (July, 1941).
The first essential when complete engineering control is desired is to know when new compounds are to be used or when a previously used lead compound is to be introduced into some new use. The second is to know how the new use will affect the employee. This involves knowledge of the hazards of the particular compound, taking of numerous air samples, and examination of employees by means of lead in urine and B.A. tests. Control measures are discussed under the headings of: (1) substitution; (2) change of operation; (3) ventilation; (4) general housekeeping; (5) individual protection. Under each heading examples of actual experience in which improvement was obtained are cited.

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1024 Chromium Poisoning. L. Vaccaro. Ind. Med., 10, 246-7 (June, 1941).
The use of chromium is increasing on account of its application in armor plate and artillery manufacture as well as in high speed tools. Chromates are used widely in paints, tanning, bleaching, automobile finishing, etc. Chromium does not produce any systemic poisoning, but contact with the skin, especially when abrasions are present, produces inflammation followed by blisters. Ulceration of the septum of the nose is also frequent. Contact of chromium with the skin must be reduced or eliminated, and atmospheric contamination with dust or vapor should not exceed 1 mg. of chromium in 10 cubic meters of air. Workmen should undergo periodic inspections for chromic ulceration or dermatitis and when found affected should be transferred to other employment. Exhaust ventilation at the source, designed with the best engineering judgment, is essential. Education in personal-hygiene is necessary, and every scratch or skin infection should be reported for prompt treatment.

1025 Metallic Poisons. J.M. McDonald. Ind. Med., 10, 447-52 (October, 1941).
This is the second in the series of lectures on Industrial Hygiene at New York University, and includes information on occurrence, uses, nature of exposure, pathology, susceptibility and permissible concentration. Considerable attention is given to lead, with briefer discussion of mercury, cadmium, zinc, manganese, arsenic, antimony, thallium, selenium, phosphorus, chromium, and radium.

1026 Evaluation of the Lead Hazard. Urinary vs. Atmospheric Lead. H.B. Elkins, J.F. Ege, Jr., and B.P. Ruotolo. J.Ind.Hyg. & Toxicol., 23, 256-8 (June, 1941).
In a recent paper by Ruf and Belknap (Abstract No. 158, February, 1941) no correlation was found between data on atmospheric and urinary lead for a group of printers. In the authors' experiments, the lead concentrations in the air of 19 plants are compared with the lead contents of 119 urine samples from workers in the same establishments. With few exceptions the two methods of measuring lead exposure give comparable results. It is therefore concluded that measurement of either atmospheric or urinary lead will give a true picture of the lead hazard in the majority of industrial processes.

1027 Renal Excretion of Industrial Chemicals. I. Urinary-Lead Concentration and Blood-Lead Clearance. S.S. Pinto, H.B. Elkins and J.F. Ege. J.Ind.Hyg. & Toxicol., 23, 313-21 (September, 1941).
In spite of the doubts raised by lack of knowledge of the exact form which lead takes when present in the blood stream, the authors feel that blood lead values are of greater significance than are the values for lead concentration in excreta. Since the latter are more easily obtained, a urinary test should be advised which will show a definite relationship between blood lead and urinary lead. By means of experiments and mathematical treatment, the authors develop a formula for clearance of blood-lead through the kidneys, and obtain for its value 0.284 ± 0.103.

1028 The Selenium Content of "Normal" Urine. J.H. Sterner and V.Lidfeldt. J. Pharmacol. & Exptl. Therap. 73, 205-11 (October, 1941).
Selenium was found in a high percentage of the urine specimens obtained from normal, healthy male adults who had no industrial or otherwise obvious selenium exposure. This finding is in contrast to recent references on the subject. The concentrations of selenium averaged from 4 to 5 gamma per 100 cc. of urine, with a range of 0 to 15 gamma. The rate of urinary selenium excretion is relatively constant and is quite independent of the urinary volume, suggesting that selenium is treated by the kidney as a "non-threshold" substance similar to sulfates and creatinine. The mean rate was 2.2 gamma per hour with relatively slight variability. A dietary source of selenium was found in wheat products,

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with selenium values ranging from 26 to 39 gamma per 100 grams dry weight or 0.26 to 0.39 parts per million. No harmful effects were observed which could be correlated with the absorption and excretion of such small amounts of selenium as were demonstrated in the investigation.

1029 The Toxicity and Potential Dangers of Nitrous Fumes. W.F. von Oettingen. Pub. Health Bull. #272, 34 pp. (1941). Obtainable from Supt. of Documents, Washington, D.C. for 10 cents.
This publication is a review of the literature, contained in 125 papers, on the toxicity and potential dangers of nitrous oxide, nitrogen oxide and nitrogen dioxide, the latter being the most important of the three. The discussion covers its determination in the air, the sources of exposure, the concentrations encountered under different conditions, the toxicity for animals with regard to acute and late effects, its effect on the blood pigment, the incidence of fatalities, the clinical picture, and pathologic changes observed with nitrogen dioxide in man. This resume is followed by a discussion of measures for the prevention of poisoning from nitrous fumes and the treatment of such poisonings. In regard to treatment, the importance of absolute rest and the necessity for medical care, even in cases which do not appear to be seriously affected, are emphasized. For alleviation of the irritation of the upper respiratory tract the inhalation of a mist of 5% solution of sodium bicarbonate is recommended, and the treatment of incipient pulmonary edema is outlined. The use of atropine and morphine is discouraged. Pain may be alleviated with codeine or barbiturate. In cases of imminent cardiac failure cardiac stimulants may become necessary. Attention is directed to possible late complications.

1030 Inhalation of Filtered Carbon Arc Fumes and Oxides of Nitrogen. J.P. Tollman, E.L. MacQuiddy and S. Schonberger. J.Ind.Hyg. & Toxicol., 23, 269-75 (June, 1941).
Continuous inhalation of the undiluted but filtered arc fumes, arising from a high intensity carbon arc causes the death of mice, rats, guinea pigs and rabbits in 22 hours or less in practically all animals. The pathology found is characteristic of acute intoxication by oxides of nitrogen. Exposure 4 hours per day to the same fumes caused the death of two-thirds of the guinea pigs within 7.5 months, and of all the rats within 17 weeks. The only pathological findings were in the lungs in both cases. The average concentration of the oxides of nitrogen was 107 p.p.m. Very similar results were obtained when the two species of animals were exposed to oxides of nitrogen in approximately the same concentration. The similar pathological findings in animals exposed chronically to the gross arc fumes, to the undiluted filtered arc fumes, and to the generated oxides of nitrogen indicate that the toxicity of the gross arc fumes is due chiefly to the oxides of nitrogen formed in the arc. It is concluded that nitrogen peroxide inhaled in concentrations in excess of 100 p.p.m. 4 hours per day will lead in time to fatal result.

1031 The Removal of Carbon Monoxide from Gases. F. Schuster. Chemische Fabrik. 14, 31-8 (January 25, 1941). (German).
A discussion on the removal of carbon monoxide in the detoxification of gases. Notes are given on permissible carbon monoxide content in detoxified combustible gases, and on the history of detoxification. There is an illustrated description of various processes, discussion on the conversion of carbon monoxide into methane and an extensive bibliography.

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