

INDUSTRIAL HYGIENE DIGEST

Literature Abstracts

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

Industrial Health News



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INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

1 Arsine Gas Causes Fatality

An industrial accident which shows the importance of a worker's knowledge of the substances he uses in his work, recently occurred in Iowa. The death of a manager of an Iowa creamery was reported to the Industrial Hygiene Division, Iowa Department of Health. Upon investigation, it was found that the creamery manager had spent approximately two hours cleaning his can-washer with a mixture of "Beta Chlor" and commercial muriatic acid which was diluted about 6 times. "Beta Chlor" is an acid inhibitor used to prevent the action of the muriatic acid on iron. The can-washer is a large circular machine in which the 5 and 10 gallon cream cans are cleaned. The cans are placed in the machine open side down and different solutions, followed by dry steam, are forced through small jets up into the can as well as over the outside. The worker placed the mixture of "Beta Chlor" and muriatic acid in the tank at the base of the can-washer so that it could be forced through jets and, thus, spray the solution over the inside of the washing compartment. He closed the machine and sprayed the solution over the inside of the can-washer, then opened it and scraped off deposits which were present, thus exposing himself to the mist formed. That evening he felt tired and ill, became very cyanosed, and was vomiting. The next day he was taken to a hospital where, in spite of numerous transfusions, he died five days after his initial exposure. He passed no urine during his entire stay in the hospital and at the time of death was extremely cyanotic, unconscious, and had a red blood cell count of 900,000. He had an acute hemolytic anemia due to a chemical poison. The can-washer was made of galvanized iron, which, due to the zinc, when in contact with hydrochloric acid, gives off hydrogen. "Beta Chlor" contains a soluble arsenic compound and in the presence of hydrogen, arsine was given off. The Iowa Industrial Hygiene Division was able to produce arsine in a laboratory reproduction of the creamery circumstances, and the death of the manager was clinically similar to fatalities described as due to arsine. - Industrial Hygiene.

2 Tuberculosis.

The Medical Department of the Westinghouse Electric and Manufacturing Company has prepared a series of brief, readable pamphlets on tuberculosis for distribution among its employees. They are entitled: Tuberculosis, What is Tuberculosis? How the Doctor Diagnoses Tuberculosis, Hygienic Living Protects from Tuberculosis, Do I have Tuberculosis?, War and Tuberculosis, Infected Sputum Spreads Tuberculosis, The Modern Treatment of Tuberculosis, and Good Nutrition Helps Prevent Tuberculosis.

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3 Kerato-Conjunctivitis Continues to Spread.

In Vol. 2, No. 12, 1-2 (December, 1942) the news digest "Industrial Hygiene" reports that the epidemics of kerato-conjunctivitis are continuing to spread. Industrial communities in Michigan, New York, Connecticut and other states have recently reported its presence. The seriousness of the disease may be shown by the fact that from 40 to 70 per cent of the cases develop corneal opacities, some of which may be permanent. Dr. Murray Sanders warns that unless great care is exercised, the disease may be carried from one patient to another by the hands of medical personnel. An epidemic of 80 cases in the practice of one physician resulted from one unrecognized case. The following four point program is recommended: (1) Prepare to recognize the disease when it occurs. (2) Exercise meticulous care in technique, such as sterilization of solutions, eye droppers, and instruments used in eye cases. Wash the hands carefully between cases. (3) Isolate patients as soon as the disease is recognized. (4) Educate the patient to prevent infecting others or spreading the infection from one eye to the other. The best treatment seems to consist of cold compresses, installations of atropine, and applications of sulfathiazole ointment. In the more severe cases, x-ray seems to be effective in small doses. Dr. E. J. Waters of San Diego, California, reports his best results with a four or five per cent solution of sodium sulfathiazole sesquihydrate. The treatment should be continued for at least five days after the symptoms have disappeared.

4 Extinguishing Magnesium Fires.

The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio has announced the development of a product for reducing the losses incident to magnesium fires. It is claimed that the product, Carey M.X. Granules, when spread over a fire, will soften and seal the burning magnesium with an air-tight blanket. The product is listed by Underwriter's Laboratories, Inc.

5 Medical Series, Bulletin No. V.

The abstracts of two discussions of Bulletin V, which were reported to the National Tuberculosis Association are presented. Dr. C. C. Birkelo of Detroit, Mich., commented as follows:

"Their original plan for this experiment was good. They selected lesions which are difficult to find and can be seen only in the very best films, even in the 14" x 17" size. I recall at least one of the lesions which they demonstrated at the Cincinnati meeting of the American Roentgen Ray Society in 1941, which could easily have been missed in a slightly over-exposed 14" x 17" film.

"In short, my opinion is this, that in order to make this experiment fulfill all requirements, one should be able to state that the films of all sizes used for the test were the best that could be produced at that time. That statement could be made for their 14" x 17" and their paper, but not for the 4" x 5" size and 35-mm size films which they demonstrated.

"For that reason, I believe their experiment would be worth while repeating and if it were, I would suggest that the most valuable opinions could be obtained from radiologists who have the advantage of some experience with interpretation of the smaller sizes of films."

Dr. Willis C. Beasley of the National Institute of Health, Bethesda, Md., offered the following observations:

"The study reported upon by Dr. Warren appears to me as being both a unique and valuable approach to the problem of evaluating the diagnostic excellence of various sizes of x-ray films. I should like to emphasize that the miniature chest film is of value chiefly as a means of isolating cases for clinical study from among a large population that is predominantly negative for tuberculosis or other thoracic pathology.

"Two types of questions have been involved in comparative studies on miniature films: Which size do you like better? What can you do with each size of film? Our interest is practical and chiefly concerned with the second question.

"(1) If we disregard accuracy of diagnosis, or specific roentgenological interpretation, and consider only the number of cases missed entirely on miniature films from among those which would be held for clinical study on the basis of 14" x 17" radiographs, there is no residual error between the two sizes of miniature films (4" x 5" and 35 mm.), which may be attributed confidently to difference in size.

"(2) The major sources of error in miniature films of either size are: (a) improper exposure factors, especially excessive kilovoltage, which often through overpenetration obliterates small, soft-shadow lesions, especially of the milinary type; (b) wrong poistioning; (c) faulty processing of films. Each of these factors is more critical in photo-roentgenography than in direct radiography.

"(3) There is far greater disagreement between the specific roentgenological interpretations of the same films by two or more roentgenologists, than between readings by the same roentgenologists on three different sizes of film. This applies to positive cases "missed," as well as to specific classifications of positive diagnoses."

6 Silicosis Record.

The total number of silicosis claims filed in Ohio from July 31, 1937 to October 31, 1942 is 1,104. Of this number 467 claims were allowed, 494 disallowed and 143 are still pending. Of the claims allowed, 254 originated in foundries, and 154 in ceramic plants. Of 34 claims considered in October, 1942, half were allowed. - Ohio Ind. Com. Monitor, 15, 171 (November, 1942).

7 Welding Teachers Use Throat Microphones.

Welding teachers in a West Coast plane plant use throat microphones to instruct their pupils, who are equipped with earphones under their welding helmets. By this means the clatter of machines and the crackle of welding flames are eliminated and full attention can be given to instructions at all times. -- L. Miriam Lucas. San Francisco Regional Office.

8 Aluminum Dust Explosion.

The Annual Congress News Letter - October, 1942 of the National Safety Council describes two general precautions wherever aluminum dust is handled. 1. The accumulation of metallic aluminum dust particles in exposed places should be prevented. 2. Flames and other sources of ignition should not be allowed within 30 feet of cleaning or repair work which may produce aluminum dust. The ignition of aluminum dust particles by a welding flame recently caused the death of several workmen and seriously burned a number of others.

9 Flamerproof Work Clothes.

A new chemical, ammonium sulfamate, is being applied to work clothing, such as gloves, aprons, and specially designed headgear, to render it non-flammable when exposed to flying sparks. The treated fabrics are said to be more economical and less cumbersome than orthodox protective materials. The product and process were developed by the E. I. duPont deNemours Company.

10 Lead Poisoning Hazard.

The Maryland State Department of Health has called attention to the danger from the use of leaded gasoline in stoves. In a Press Bulletin No. 953, Dr. Riley said, "Never use it in stoves, because the fumes contain lead, which may cause

fatal lead poisoning, especially in children." The present difficulties in transportation have made lead free gasolines very scarce.

11 Fire Retardant.

A new fire retardant, known as "Firepel" has been offered for sale by the Alibi Chemical Corporation, 9 Park Place, New York City. The material is an aqueous solution which can be applied by brush or spray to unfinished wood surfaces. It is claimed that treated wood will retain its fire retardant properties indefinitely if it is not exposed to the weather. It is recommended for roofs, beams, trusses, rafters, joists, ceilings and stairwells. "Firepel" is said to be non-toxic and fungicidal, and will not generate irritating or inflammable fumes. It reduces the tendency of wood to rot.

Book Reviews

- 12 Vitamins for Health. H. Borsook and W. Huse. Public Affairs Pamphlet No. 69, (1942), 32 pp. Published by Public Affairs Committee, 30 Rockefeller Plaza, New York, N.Y. Price 10 cents with discount for quantities.

This is a thorough but popular discussion of the different vitamins -- effect of deficiency, quantity needed in diet, content in foods, and need and cost of concentrates, for each. The Authors believe that an adequate diet of a healthy person does not generally require the addition of concentrates, but that during convalescence or in other weakened conditions of the body, the addition of vitamins A, B complex and C in concentrates and D in fish liver oils or vitamin D milk is desirable. Also, when the deficiency of vitamins is due to financial reasons, some of the vitamins at manufacturers' prices are quite inexpensive, although not so at retail prices. In the United States there is little beriberi from lack of vitamin B₁ (thiamin) but mild vitamin B₁ deficiency is widespread according to nutrition surveys, and is responsible for much of the constipation, flatulence and dyspepsia characteristic of middle and old age. Mild B₂ (riboflavin) deficiency is also common. Vitamin B₁ is largely removed from wheat in milling, and is now added to the processed flour to restore its original content. The authors believe additional B₁ and B₂ should be added to provide the total amounts necessary for a proper diet. The less known members of the B complex, and vitamins E, K and the advertised but non-existent skin vitamin F, are discussed briefly. On the whole, certain minimum quantities of vitamins are necessary to prevent certain diseases. Larger quantities can aid in attaining buoyant health. A sample menu is given which appears to be plentiful, but when analyzed is found to be short in vitamins A and B₁. Suggestions for calculating sufficient vitamins for diets and for buying food are included. One rule given is that no vitamin concentrate and no food fortified with vitamins should be bought unless the potency is stated in terms of units of weight in a given volume or per tablet.

- 13 Useful Criteria in the Identification of Certain Occupational Health Hazards. Div. of Industrial Hygiene, Utah State Dept. of Health (1942). 88 pp.

This valuable pamphlet is a collection of useful information for the guidance of plant management, the physician, the industrial hygienist, compensation officials, etc. The seven major sections are: I. Classification of Potential Hazards by Chief Industry; II. Classification of Potential Hazards by Occupation; III. Important Physical Properties and Principal Uses of Certain Toxic Substances with Chief Diagnostic Signs and Symptoms of Injury or other Disabilities; IV. Miscellaneous

Handbook of Occupation with Chief Diagnostic Signs and Symptoms of Injury or other Disabilities; V. Occupational Dermatoses; VI. Table of Chemical Warfare Agents showing Persistency, Toxicity, Physiological Action, and First-aid; and VII. Oral Manifestations of Occupational Disease.

- 14 Non-Profit Medical Service Plans. American Hospital Association, Hospital Service Plan Commission, 18 E. Division St., Chicago, Ill. (October, 1942). 40 pp. The history and development of medical service plans is presented briefly in this interesting booklet. The main portion of the text is devoted to descriptions of plans now in operation. They include the Michigan, Colorado, California, Massachusetts, New Jersey, North Carolina, Pennsylvania and some city medical service plans.
- 15 Industrial Relations Digests. XIV. The Medical Department In War Industries. Industrial Relations Section, Princeton University, December, 1942. 8 pp. A summary of the fundamental aspects of industrial medical problems in war industry is presented. The aims, obligations and make-up of the medical department are described under the following titles and sub-titles. A. Direct Functions of the Medical Department: (1) Pre-placement physical examinations; (2) Protection against occupational disease; (3) Treatment for occupational injuries; (4) Attention to the general health of the employees; and (5) the maintenance of adequate health records. (B) Cooperation in other personnel problems: (1) Accident prevention; (2) determination of hours of work; (3) employee sickness insurance and benefits; (4) job specification and re-engineering; (5) transfers; and (6) the pension plan. (C) Organization of the Medical Department. (D) Special Health Maintenance Problems in War Industries.
- 16 The Coming Crisis in Manpower. M.S. Stewart. Public Affairs Pamphlet No. 63 (1942). Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York, N. Y. Price 10¢, discount in quantities. The recent and future increase in industrial manpower is thoroughly discussed. An additional 3,500,000 workers will be necessary, and the following sources are considered: The unemployed, negroes, women and children below the present working age. The question of labor drafting is considered from several angles. The author's conclusions agree in general with those of Mr. McNutt, whose recommendations are given in the summary.

Legal Developments

- 17 Silicosis. Statutory Requirement that Claim for Compensation be Referred to Medical Board. Whether Claimant was Exposed to Silicon Dioxide Dust in Harmful Quantities During Two Years Prior to Terminating Employment. The claimant, Fraga, became an employee of the New River Company, as a coal loader, in 1923, and continued until May 12, 1941. From the 12th of March, 1929, he worked continuously in the Whipple mine. In June, 1941, he was found to have silicosis in an advanced stage, and filed his claim for compensation. His claim was rejected. This appeal followed. The sole question is whether he was exposed to silicon dioxide dust in harmful quantities for a period of two years. When claimant filed his claim, the Commissioner had jurisdiction to hear and determine it. The fact that he was required to show that he had been exposed to the inhalation of silicon dioxide dust in harmful quantities for a period of two years,

was not a matter which bore upon the jurisdiction of the Commissioner to hear and determine the matter, but only on the question whether there should have been an award of compensation. The first duty of the Commissioner was to hear the case upon the non-medical questions. By statute, it is provided that the report of the medical board shall contain findings and conclusions as to whether the claimant or the deceased employee has contracted such disease, and whether or not the exposure in the employment was sufficient to have caused silicosis or to have injuriously aggravated an existing silicosis. It is also provided that the report of the medical board shall be filed with the compensation commissioner, and that if neither party makes objection thereto, the findings of the board on any medical question shall be taken to be plenary and conclusive. It is further provided that if objection is made, a hearing shall be had, and it necessarily follows that the compensation commissioner, upon a consideration of all the evidence and the report of the medical board, must finally determine the right to compensation. While the report of the medical board, if objected to, is not final as to the matters reported by it, and the final decision thereon must rest with the compensation commissioner, this is a case where reference to the medical board should have been made before there was a dismissal of the claimant's case. Such procedure should be followed where there is a reasonable doubt on any medical question, and where an investigation might tend to clarify any matter which might affect the final decision of the commissioner. Claimant has silicosis, and he must necessarily have contracted it while working for the employer in this case. He may have contracted the disease more than two years prior to the date he ceased work; but the statute apparently contemplates that even if he had contracted the disease more than two years before he ceased work, if during the last two years he was employed his condition was aggravated, he might still be entitled to compensation. The statute contemplates reference to the medical board in cases where the exercise of technical learning is calculated to clear up doubts. The action of the Commissioner and the Appeal Board in dismissing claimant's case without a reference thereof to the medical board was erroneous. Therefore, its action is reversed, and the case remanded to the Compensation Commissioner, with instructions to refer the same to the medical board for investigation and report. Fraga v. State Compensation Commissioner, et al. W. Va. Supreme Ct. of App. Decided November 24, 1942. (CCH).

18 Silicosis. Widow's Claim to Compensation Barred Where Husband's Death Occurs More Than One Year After Last Injurious Exposure.

On June 17, 1940, Percy Bowdler was awarded compensation for third stage silicosis. The date of his last exposure was November 27, 1939, and more than one year thereafter, August 9, 1941, he died. Decedent's widow, Eleanor Bowdler, on September 3, 1941, filed application for benefits. The Appeal Board reversed an order of the Commissioner denying compensation, and awarded monthly benefits to the widow and infant children. The position of the employer is that no widow or dependent is entitled to compensation in a fatal case unless death ensues within one year from the date of the last exposure. Section 7 (d) of the silicosis statute provides: "If the employee dies from silicosis within one year from the date of the last exposure of the employee to silicon dioxide dust in harmful quantities, the benefits shall be in the amounts and to the persons provided for in section 1, article four of this chapter ***." The cited statutory reference treats of disbursement of the workmen's compensation fund and provides for payment to the dependents where death has ensued to the employee. Hence, under subsection (d), benefits are payable to dependents if death to the diseased employee occurs within the one-year period. It is asserted by claimant that Section 5, requiring that "claim therefor has been made within one year," compels only that a claim be filed and not one by both employee and the widow, or other dependents. This contention is not persuasive when considered in the light of Section 7 (d).

If the silicosis statute did not specially provide when dependents were to be paid benefits, then the provision for benefit payments to dependents "in case the personal injury causes death within the period of six years and the disability is continuous from date of such injury until date of death," would be applicable. However, Section 7 (d) clearly places a limitation of one year in silicosis cases. The ruling of the Appeal Board is reversed and the claim remanded with direction that the order of the Commissioner be affirmed. Bowdler v. State Compensation Commissioner et al. W. Va. Supreme Ct. of App. Decided September 2, 1942. (CCH).

19 Disability and Subsequent Death Due to Stonecutter's Phthisis. Date of Disability as Fixing Compensation to Widow.

Anna Rueter, plaintiff, is the widow of Otto Rueter, who was employed by defendant Rinshed Mason Company, which was insured by the Employers Liability Assurance Company, a co-defendant. The occupational disease amendment to the compensation law became effective on October 29, 1937. Rueter suffered disability due to stonecutter's phthisis, a dust disease, on March 10, 1939, in the eighteenth month after the effective date of the occupational disease amendment, and was paid compensation in accordance with the then maximum amount under the law. Rueter's death occurred in June, 1940, and plaintiff was paid the balance still due on the award to him. The department subsequently upheld plaintiff's claim that she was also entitled to compensation from the date of disability up to the date of her husband's death. This would make an aggregate award of \$2,100, instead of the former award of \$1,350, which had been paid. The department held that the plaintiff had the right to take the date of death as the basis for compensation. The department erred in not fixing compensation at the time of disability. Placing the maximum amount recoverable for dust diseases at \$500 under the statute, and increasing it at the rate of \$50 per month until the maximum of \$3,000 was reached, was due to the very fact that the legislature realized that a person afflicted with a dust disease might have contracted it previous to the effective date of the act, that such disease might not have manifested itself until after the act went into effect, and that it was not fair to the employers to make them pay more than a proportional amount for a disease contracted prior to the effective date of the occupational disease amendment. If less than \$3,000, the maximum amount payable is fixed by the month subsequent to the effective date of the amendment in which total disability occurs, irrespective of whether death is contemporaneous with total disability or later. The award is set aside and the case remanded. Rueter v. Rinshed Mason Company et al. Mich. Supreme Ct. Decided December 23, 1942. (CCH).

20 Silicosis. Date of Contracting Disease Fixed by Appearance of Symptoms. Timeliness and Manner of Giving Notice of Disability. Exclusion of Evidence.

Defendant employer appeals from an order affirming the deputy commissioner's award of compensation to plaintiff for total disability. It is agreed that appellee suffers from advanced silicosis. Appellee began working in defendant's coal mine about July 31, 1937. The mine closed down for three months in 1940. During this period appellee worked on a farm. Appellee went back to work August 9, 1940. He claims that the engine wheels spun sand into the air to the extent he could not see and had trouble breathing. He quit on August 21, 1940, because of these conditions. He now is unable to work. The main question is whether the record supports the finding that appellee "contracted" the disease of silicosis within 12 months previous to the date of disablement, August 21, 1940. The findings of silicosis dating from the first deposit are hard to detect. Therefore, in order that the statute may be effective and purposeful, it must be construed as providing that the date of contracting starts when symptoms appear. Defendant charges that notice was not given within 120 days after the disablement. The disablement occurred August 21, 1940. Defendant's own mine

superintendent testified he knew about appellee's claim at a hearing held before a deputy commissioner November 12, 1940, which is within the 120 day period. Appellee testified he told the superintendent of his condition on August 21, 1940, and was examined by the company doctor on August 22, 1940. There is ample testimony to justify the holding that appellant had notice within the statutory period. Defendant contends there was error in excluding testimony as to the results of a test of the silica content of the mine. The test was made seven months after appellee's disablement, and both the deputy and the commission on review found that it was not shown satisfactorily by defendant that the conditions were the same as at the time of and prior to plaintiff's disablement. Moreover, the matter of introduction of evidence on review by the commission is within its discretion. The commission did not abuse its discretion. The award is affirmed. Krzewinski v. Robert Gage Coal Company. Mich. Supreme Ct. Decided December 23, 1942. (CCH).

21 Employee Burned in Explosion of Fuel Oil Ignited by Match. Award for Physician's and Hospital's Bills. Culpable Negligence of Employee.

This case presents the question whether an award for the payment of a physician's bill for services amounting to \$12.00 and a hospital bill for \$7.00 shall be upheld. No award was ordered for Fuhs, his disability prevailing for less than seven days. Fuhs received severe burns in an explosion of Diesel fuel oil following his use of a lighted match to ascertain the level of the fluid. An accident which places the employee beyond the pale of the law for the purposes of making awards must be due solely to the culpable negligence of the injured employee and, when the law is applicable to him, reasonable bills for medical and hospital services are allowable and chargeable to the accounts of employers. A claim cannot be disallowed on the ground of the culpable negligence of the workman unless such negligence was the sole cause of the injury. Culpable negligence is something more than the slight negligence necessary to support a civil action for damages. It means disregard of the consequences which may ensue from the act, and indifference to the rights of others. Therefore, the award was proper.

Further, it cannot be said that the district court was in error in deciding that what Fuhs did was not the sole or only cause of the accident. The failure to provide a proper electric bulb and the failure to notify the workman that Diesel fuel was dangerous under certain conditions, were sources of causation of the accident. Affirmed. Fuhs v. Swenson et al. Wyo. Supreme Ct. Decided November 24, 1942. (CCH).

22 Death Caused by Drinking Carbon Tetrachloride by Mistake. Course of Employment. Rule Against Drinking Intoxicants While Working.

Petitioners, the wife and children of Robert Elliott, seek to have annulled an order of the Industrial Accident Commission denying them compensation for his death. Decedent informed Mr. Fordahl, a fellow employee, that he did not feel very well. Mr. Fordahl obtained a bottle containing what he supposed was wine from which decedent took a swallow. The contents of the bottle was carbon tetrachloride, a poison from which decedent died. Mr. Fordahl had found the bottle in the carpenter shop. It bore a label reading "Muskatel Wine." The Commission found that decedent's death did not arise out of his employment. Such acts as are necessary to the life, comfort and convenience of the servant while at work, though strictly personal to himself, and not acts of service, are incidental to the service, and injury sustained in the performance thereof is deemed to have arisen out of the employment. In the instant case, the employee was not feeling well, and took what he supposed was wine as a medication for his indisposition. Certainly a reasonable endeavor to treat by simple remedies a physical ailment occurring during an employee's working hours is an incident of the employment. Respondents refer to the employer's rule that employees "are not allowed

to drink while they are working." Its application should properly be interpreted as prohibiting the consumption of intoxicating liquor for the mere satisfaction of a desire therefore by an employee, rather than its use for medicinal purposes.

There is no evidence supporting the Commission's refusal to make an award in favor of petitioners, and the only reasonable conclusion compels the making of an award in their favor for the compensation to which they are entitled. The award is annulled. Elliott et al. v. Industrial Accident Commission et al. Calif. Supreme Ct. Decided December 2, 1942. (CCH).

23 Double Compensation to Employee Under Eighteen Years of Age.

Appeal from an award for double compensation to an employee under 18 years of age who was employed in violation of Sec. 131 of the Labor Law. No appeal was taken by the carrier on account of the regular award. The evidence sustains the award for double indemnity against the employer. Award affirmed. Masullo v. Centaur Mills Supply Corp. et al. N.Y. Supreme Ct., App. Div., 3rd Dept. Decided September 30, 1942. (CCH).

24 Carpenter's Eye Infected from Exposure to Dust. Injury in the Course and Scope of Employment. Defense of Occupational Disease.

This is a compensation suit, the plaintiff seeking an award for total and permanent disability. The alleged injury was caused by exposure to dense dust while doing carpentry work. He developed an eye infection, followed by shingles or Herpes Zoster. A trial of the case resulted in an award of \$20.00 per week, during the period of disability, not exceeding 400 weeks. At the time of trial, plaintiff's eyesight was such as to make him unfit for his trade. Prior to the time he worked in the dust-filled room for defendant, plaintiff was able to carry on his trade successfully. Plaintiff's family physician and a recognized eye specialist are sure that plaintiff's trouble was caused by the dust. Plaintiff has met the burden of proving that the condition of his eye was caused by the dust while he was in the course and scope of his employment. Herpes Zoster cannot be classed as an occupational disease. Occupational disease has been defined as one wherein the cumulative effect of the employee's continued absorption of deleterious substances from his environment ultimately results in manifest pathology. If conditions are so injurious to health as to produce symptoms which are apparent on the second day, it cannot be classed as occupational. The defense of occupational disease is not good. Judgment affirmed. Glover v. The Fidelity & Casualty Company et al. La. Ct. of App., 2nd Cir. Decided June 23, 1942. (CCH).

Industrial Health Hazards and Their Effects

25 Silicosis and Silicotuberculosis in Coal Miners. R.J. Lassere. Revista Espanola de Tuberculosis, 10, 379 (July, 1941).

A study of 247 coal miners with more than five years exposure is presented. There were 44 cases of silicosis and 15 cases of silicotuberculosis. Anthracosis found in coal cutters did not produce characteristic roentgenologic changes or a special symptomatology. The incidence and severity of silicosis is significant only where rock is cut and drilled for many years. (30 years in this experience.) More silicosis and silicotuberculosis was found in the asthenic type. Anatomic defects of the nose and the pharynx greatly favor the early appearance of silicosis. Tuberculosis rates of the miners were approximately the same as those of

the male population who are not miners. The sedimentation rate of the erythrocytes was normal or only slightly accelerated for the simple silicotics. The rate changes in complicated silicosis were marked. The use of sedimentation rates in differentiating between simple and complicated silicosis is claimed to be of great value.

- 26 Bagassosis, an Industrial Lung Disease. L.I.M. Cassenden and J.L. Hamilton-Paterson. Erit. Med. J., 2, 473-480 (October 24, 1942).

Bagassosis is the term suggested for a disease caused by inhalation of broken sugar cane fiber known as bagasse. It is frequent among workers in breaking the dry bales. The principal symptoms are shortness of breath and cough with scanty sputum. Mottling of the lungs is noticeable in roentgenograms. Although the bagasse contains 5 to 7% of silica, the disease is unlike any known form of silicosis. The cause of acute bagassosis is probably response to an antigen, but the chronic form may be one of the following: (1) a form of silicosis supervening on the allergic phase during or after the latter's resolution; (2) a response to crystalline cellulose; or (3) a chronic process of fibrotic nature occurring in tissues edematous from their response to the antigen. The disease can be prevented by wetting the bagasse before grinding.

- 27 Reaction of the Lungs to Brown-Coal (Lignite) Dust. W. Grieshammer. Arch. f. Gewerbepath., 11, 1-52 (1941).

Subcutaneous and intramuscular injections of a suspension of lignite were made on rabbits, guinea pigs and mice. The lymphnodes nearest the injection site were then examined at periods from three days up to six months. Intravenous experiments were also performed. Doses of 28 ccs. were given in courses of nine injections in five weeks and smaller doses totalling 300 ccs. over 32 weeks. Dust embolies were found in the lung vessels but they disappeared after a short period of time. Some animals were anesthetized and caused to inhale suspended dust. From one to 66 inhalations were given during a 33-week period. The dust was found in larger quantities in the right lung of the rabbit, characteristically. The dust was eliminated by the lymphatics and by breathing. No fibrosis and no persistent characteristic lung changes were found.

- 28 Silicosis. Proposed Action on Medical Committees Report. Anonymous. Colliery Guard., 135, 193-194 (August 14, 1942).

Following the report of the Medical Research Council on Pulmonary Disease in South Wales, the Home Office, in consultation with the Ministry of Fuel and Power, has made a number of definite recommendations for proposed legislation. An important proposal is the inclusion of compensation for pneumoconiosis following inhalation of any dusts in coal mines. Other details would be of interest mostly to those familiar with the British laws, but an interesting feature is the promptness with which the recommendations were made.

- 29 Silicosis -- Occurrence and Control. W. M. Pierce. Chem. & Met., 11, 110-112 (November, 1942).

This is the third of a series of articles on industrial hygiene. The cause and control of silicosis are discussed.

- 30 Hazards and Control of Industrial Toxic Solvents. W.M. Pierce. Chem. & Met., 35-37 (December, 1942).

This is the fourth and last of a series of articles designed to acquaint the chemical engineer with the hazards and prevention of chronic poisoning in industrial chemical operations. The symptoms of solvent poisoning, as exemplified by benzol, and the control of solvents by engineering methods are described.

31 Use of Diesel Engines in Tunnels. S.H. Ash and L. L. Naus. U.S. Bur. of Mines M.T. Circ., No. 7222, U. S. Bur. of Mines, Washington, D.C., 26 pp. (October, 1942). This circular is the latest in the series showing that Diesel engines underground are not as safe as popularly supposed but present the definite hazards of exposure to carbon monoxide, nitrogen oxides, carbon dioxide and sulfur dioxide. The present paper refers especially to Diesel locomotives with measurements of gas concentrations taken from locomotive operation. The most dangerous gases are oxides of nitrogen which are 10 times more deadly than carbon monoxide. In Diesel locomotive operation, the approximate ratio of nitrogen oxide to carbon monoxide concentration is 2.5 to 1 and always exceeds 1 to 1. The volumes of toxic gases produced per minute per locomotive horsepower (full load, maximum speed) are as follows: carbon dioxide - 0.267 cu. ft.; nitrogen oxides - 0.00151 cu. ft.; and carbon monoxide - 0.000592 cu. ft. Air requirements should be based not only on normal consumption and toxicity, but on air purity sufficient to maintain the best of health and alertness and therefore prevent accidents. At least 65 to 75 cubic feet of fresh air must be supplied per minute per brake-horsepower developed at maximum speed and load. This rate under normal conditions is based on a carbon monoxide control value of 10 to 20 p.p.m.

32 Outline for the Treatment of Pulmonary Gas Poisoning. W. Crosley. Ohio State Med. J., 38, 448 (May, 1942). The author suggests an outline of treatment that is brief enough to be posted in emergency rooms and field first-aid units where exposure to war gases is possible. The gases include chlorine, phosgene, diphosgene palite and superpalite, whose end product is hydrochloric acid, the irritant causing pulmonary edema. All treatment should be aimed at neutralizing this irritant and diminishing the fluid shift to the lungs. The stages of poisoning are: (1) immediate sensory reflexes; (2) pre-edemic stage; (3) pulmonary edema, progressing to death or recovery; (4) restorative stage. The summarized treatment includes, immediately: (1) intravenous urease with a few crystals of urea; (2) subcutaneous injection of 1 grain succinate hydrochloride: within two hours: (1) intravenous concentrated plasma, 4 to 1; (2) absolute bed rest with oxygen therapy; (3) digifolin, intravenous or intramuscular every 4 hours until effects of digitalization are observed, coramine or caffeine sodium benzoate, intravenous or muscular; and (4) codein every 3 to 4 hours for severe uncontrollable coughing.

33 Carbon Monoxide. F.S. Rossiter. Ind. Med., 11, 586-589 (December, 1942). The etiology of carbon monoxide poisoning is presented. The reference to carbon monoxide as being non-toxic is rather startling, but theoretically it is correct. The effect of the inhalation of carbon monoxide is to produce oxygen starvation through the reduction in the amount of hemoglobin available for carrying oxygen to the tissues. The author has made a careful study and extensive investigations of the subject over a period of 30 years. He concludes that the condition referred to as chronic poisoning does not exist. There is no definite evidence that the complaints attributed to continuous exposure to small amounts of carbon monoxide are justified. All of these symptoms can be traced to an underlying cause, the correction of which will give immediate relief. There is also no scientific evidence that pneumonia, anemia, tuberculosis, heart lesions, nephritis, and various nervous and mental disorders may be attributed to carbon monoxide. The treatment of carbon monoxide cases is described.

34 The Leucotoxic Action of Benzol. D.R. Climenko and J. MacLeod. J. Ind. Hyg. & Tox. 15, 399-401 (November, 1942). After exposure to benzol vapor for a period of two hours, rabbits show a temporary leucopenia, followed within 22 hours by a leucocytosis. At no stage up to 48 hours is there any evidence of a neutropenia. Most animals show varying degrees of neutrophilia. Evidence is shown that the marrow is refractory to normal

endogenous stimuli for a period of at least 24 hours after such exposures. However, it is capable of responding in a normal fashion to more potent, exogenous stimuli. The oxygen consumption of rabbit neutrophils in-vitro is not affected by the presence of benzol saturated Ringer. -- From Authors' summary.

- 35 Toxicology of Acrylonitrile (Vinyl Cyanide) -- II. Studies of Effects of Daily Inhalation. H.C. Dudley, T.R. Sweeney and J.W. Miller. J.Ind.Hyg. & Tox., 24, 288-293 (November, 1942).

Experiments with the repeated exposures of animals to various concentrations of acrylonitrile confirm previous observations on the acute toxicity of the material. Its action is that of a typical nitrile and the susceptibility to the toxic action varies considerably with different species. There is very little evidence of a cumulative action to repeated exposures. Kidney damage was most marked in both acute and chronic series of exposures in guinea pigs, which are the most resistant species to the effects of acrylonitrile. This suggests that the observed changes are brought about through greater elimination of acrylonitrile through the kidney or it may indicate irritation from detoxification products of acrylonitrile produced in the body. Guinea pigs may metabolize acrylonitrile differently than other species. An addendum by Drs. Neal and Von Oettingen compares the similarity between the toxicity of hydrogen cyanide and acrylonitrile. They propose tentatively that a maximal concentration of 0.43 mg. per liter (20 p.p.m.) of acrylonitrile be adopted.

- 36 Methyl Bromide - Local and Mild Systemic Toxic Effects. R.M. Watrous. Ind.Med., 11, 575-579 (December, 1942).

A manufacturing operation is described in which 90 persons were exposed to concentrations of methyl bromide vapor generally less than 35 p.p.m., and the resulting mild systemic symptoms in 33 of them are described. A characteristic vesicular "burn" and a late itching dermatitis caused by contact of methyl bromide with the skin are described as they affected 22 persons. The skin lesions are due to a special toxic effect or locally absorbed methyl bromide, and not to a thermal effect. Certain types of organic matter, specifically rubber and adhesive tape, may absorb and retain methyl bromide for some time, and contact with such contaminated objects may produce skin lesions. The commonest systemic symptoms are anorexia, nausea, and headache, but a variety of other symptoms of C.N.S. origin occurred in a few cases.

- 37 Some Pharmacological Properties of Polyethylene Glycols of High Molecular Weight (Carbowax Compounds). H.F. Smyth, Jr. and others. J.Ind.Hyg. & Tox., 24, 281-284 (November, 1942).

Polyethylene glycols of average molecular weights of 1250 and 3600 (known as "Carbowax" compounds 1500 and 4000) can be fed in large single doses to rats, guinea pigs and rabbits without causing injury. Serious results from enormous doses are attributable to suppression of kidney function. Very large doses repeated for 90 days do not cause serious injury to rats. The higher molecular weight compound showed the greater cumulative action. The same large doses repeated for 30 days did not interfere with the kidney function of rabbits. Large doses held for thirteen weeks on the rabbit skin did not produce any disturbance of kidney function or any micropathology in the kidney. Both compounds produced less irritation than did white petrolatum. Human patch tests revealed the "Carbowax" compounds to be closely comparable in skin irritation to other products commonly used in ointments and cosmetics, and on the mucous membrane of the rabbit eye their irritation was low. -- Authors' summary.

- 33 The "Elective Poisoning Effect" in Certain Kinds of Inhalation Poisonings. Anatomical and Functional Consideration. W. Kretschmer. Schweiz med. Wochenschr., 421-422 (1942).

A violent neuralgia in the region of the brachial plexus is explained anatomically from a 14-year exposure to benzine. Two cases of damage to the optic nerve are also discussed. The serious heart damage occurring in cigarette smokers is also described.

- 39 Atmospheric Contamination from the Casting of Magnesium. C.R. Williams. J. Ind. Hyg. & Tox., 24, 277-280 (November, 1942).

Of all the contaminants found in magnesium foundries the most significant are the fluorides, which, except in unusual circumstances, can be controlled by well known engineering methods. It is our opinion that fluoride fumes should be collected at their source -- and further that if they are so collected, the exposures will be reduced to safe limits. There is no evidence of concentrations of magnesium oxide or sulfur dioxide reaching suggested maximum allowable concentrations. -- Author's summary.

- 40 Physiologic Properties of Indium. C.P. McCord, S.F. Meek, G.C. Harrold and C.E. Heussner. J. Ind. Hyg. & Tox., 24, 243-254 (November, 1942).

Indium, an elemental metal, in the form of certain of its compounds has valuable industrial properties, and its application as a substitute for other metals not now available or not equally serviceable, is increasing. The biologic properties of indium and certain of its compounds have been examined through experimental procedures in the human being, rabbits, rats and guinea pigs -- a total of 140 subjects. The material of the indium plating bath of the cyanide type is highly injurious to animals on skin application, but this toxicity appears solely linked to the cyanide content without involving the indium. A variety of forms of local application of metallic indium and its chloride and sulfate to humans and animals has furnished no proof of skin irritant properties. The subcutaneous injection of small quantities of either the chloride or the sulfate readily may produce death of rabbits and rats, leading to characteristic and relatively uniform manifestations. Rabbits are more susceptible to indium action than rats. The threshold amount leading to death is about 2 mg. per Kg. for rabbits (although an occasional animal survives a much larger amount) and for rats 10 mg. per Kg. The commoner features before death and at autopsy are: the cessation of food and water consumption, loss of weight, nose bleed, pneumonia, blood damage, widespread hemorrhage (chiefly in the lungs, liver, kidneys, and especially the ureters); paralysis (chiefly involving hindquarters); localized convulsive motions; increased reflexes; inflammatory and degenerative changes in liver, kidneys, heart; atony of the gastro-intestinal tract and urinary bladder. Indium has been detected in urine samples collected at autopsy. Signs of injury may appear on the second or third day after subcutaneous or intravenous injection. The intravenous introduction in rabbits of indium chloride (0.35 mg. per Kg.) produced no obvious injury but 0.64 mg. per Kg. produced death on the tenth day. In the case of indium sulfate intravenously introduced, 0.49 mg. per Kg. appeared harmless but 0.67 mg. per Kg. caused death on the fourth day. All observations at autopsy are identical to those from subcutaneous injection. Indium compounds appear to be approximately four times as toxic when introduced intravenously over subcutaneous implantations. While no known current industrial application of indium provides threatening exposure to indium action, it is clearly established that indium possesses potentially highly toxic properties. -- Authors' summary.

- 41 Dust as a Health Hazard. W.C.L. Hameon and I.R. Tabershaw. Industry, 49-51, 34-38 (November, 1942).

This paper covers the field of silicosis and other dust diseases briefly but adequately. The necessary cooperation of the physician, industrial hygiene chemist

and the engineer is emphasized, and the functions of the Massachusetts Division of Occupational Hygiene are described. Several illustrations of operations with dust removal are included.

- 42 The Absorption of Lead Tetraethyl with Radioactive Lead as an Indicator. R. A. Mortenson. J. Ind. Hyg. & Tox., 24, 265-267 (November, 1942).
The absorption of lead tetraethyl through the lungs of the rat was investigated using radioactive lead as an indicator. The amount absorbed in a given time was found to be nearly proportional to the concentration of the vapor. The quantity absorbed at a given concentration is proportional to the duration of exposure. Over the range of concentrations used, 16 to 23 per cent of the substance reaching the alveoli passed into the blood. In the presence of gasoline vapor, absorption takes place at a rate which depends solely on the concentration of the lead compound. The toxicity of the vapor absorbed by inhalation was quantitatively studied. -- From Author's summary.
- 43 Cadmium. Industrial Data Sheet D-Chem. 42. Nat. Safety Council. Nat. Safety News, 46, 86, 88 (October, 1942).
Cadmium, which resembles zinc in many properties, is rarely used in a pure state, but is a constituent of many alloys with varied uses. The principal industrial hazard is from inhalation and subsequent absorption of the fumes, dust or vapor. Cyanogen may be given off from open plating tanks, and arsine may be found in the refinement of cadmium metal. Cadmium poisoning is comparatively rare, 346 cases with 10 deaths, having been reported since 1858. The first symptoms following inhalation include dryness of the throat, vomiting, headache, cough, chest pain, and loss of appetite. When cadmium is ingested, the most common symptoms are increased salivation, choking attacks, persistent vomiting, abdominal pains, and diarrhea. The obvious means of prevention of inhalation are removal of fumes at the source by suitable apparatus, and design of apparatus to keep vapor and fume concentrations low, closed systems, respirators and general cleanliness. Maximum allowable concentration as approved by the American Standards Association is 1 mg. of cadmium per 10 cu. m. of air. Cadmium-plated utensils should not be used to contain food.
- 44 The Fur Won't Fly. H. Armand. Safety Eng., 84, 12-13 (October, 1942).
In the felt hat industry the separation of rabbit fur from the hide results in the accumulation of much dust and waste material on the floor. The article briefly describes its recovery by a vacuum cleaning system. Other safety precautions are also mentioned.
- 45 Flammable Metal. R.I. Thune. Nat. Safety News. 46, 22-23, 99-101 (Nov., 1942).
Magnesium alloys can be fabricated with safety, if the fire hazards associated with the processes are recognized and controlled. Magnesium and its alloys require special precautions when they are in a molten state or in a finely divided form. When ignited, either will decompose water and other oxygen compounds, combining with the oxygen, sometimes with explosive violence. Machine shop practice, grinding and buffing, the handling of magnesium scrap and fighting magnesium fires are considered in detail. Diagrams of methods of collecting magnesium dust are provided.
- 46 Employee Organization for Fire Safety. National Fire Protection Assoc., (1942). 48 pp. Published by author. Price 25 ¢ - free to members.
This pamphlet contains full instructions for drills for air raids and ordinary fires, and outlines the responsibility of department heads and plant managers in many details.

- 42 Injection of Tannic Acid to Liver Necrosis Occurring in Burns. D.B. Wells, H.D. Gray and J.J. Coll. New England J. of Med., 286, 829 (April, 1942).
Injection of four burn cases which died from "toxemia," central lobular hepatic necrosis was found to be the prominent lesion or sole cause of death. The treatment was careful debridement without an anesthetic, followed by a tannic acid bath. A thin sterile tan was obtained. Dextrose in isotonic sodium chloride solution was given intravenously in adequate quantities. Each patient also received whole blood transfusions and oxygen was given intranasally. The possible role of tannic acid in the liver necrosis was investigated experimentally with rats. Subcutaneous doses of a five or 10 per cent solution of tannic acid were given in doses that did not exceed 1.5 cc. at any one site. Surviving rats were killed on the third or fourth days. Eight rats in a group of 77 did not survive the treatment. Every surviving rat showed hepatic damage which varied, in general, with the amount of tannic acid injected and the number of sites employed.
- 43 Chloracne from Cutting Oils. L. Schwartz and F.A. Barlow. Pub. Health Repts., 57, 1747-1752 (November 20, 1942).
An investigation into an outbreak of dermatitis in a large motor factory disclosed an unusual and previously unreported type of lesions, resembling chloracne. These occurred on the face and other parts of the body of workers on cutting tools lubricated by chlorinated oils. The following recommendations are made: (1) If oils containing organic chlorine compounds must be used, ventilation should provide for carrying away the vapors; (2) Clean work clothes, impervious to oil, and protective ointment should be provided and showers after work made compulsory; (3) Ingredients of all cutting oils used should be determined and reported to the safety director; (4) A form of treatment is given.
- 49 Acne-Like Eruptions Caused by Industrial Fats and Oils. I. Folliculitis Produced by Soya Oil. Y. Nakauchi. Jap. J. Dermat. & Urol., 48, 1 (July 20, 1940).
A mixture of soya oil and petroleum caused 19 cases of dermatitis during 1939. The eruption occurred within 4 to 20 months after beginning the exposure. Comedos, papules, pustules, atheromas and subcutaneous abscesses were characteristic and the common sites were the extensor surfaces of the extremities, the nape of the neck, the breast and the back. In most cases patch tests with soya oil were positive while controls were negative. Discontinuation of the occupation was necessary as further contact caused a progressive exacerbation in the eruption.
- 50 Vitamin C in the War. H.N. Holmes. Science, 96, 384-386 (October 23, 1942).
Vitamin C is valuable in combating heat and allergic shock, in wound healing, in benzene, toluene, trinitrotoluene, lead and zinc poisoning. Therapeutic doses of vitamin C are said to be harmless and data is provided to substantiate its value in the above mentioned cases.
- 51 Vitamin C and Dermatitis. Queries and Minor Notes. J.A.M.A., 120, 1262 (December 12, 1942).
It is not generally believed that deficiency in vitamin C causes acneform or any other dermatitis. It is possible that a deficiency in the vitamin may allow dermatitis to appear, whereas it might not be visible under optimal conditions. There is no proof of such a theoretical relationship; in fact, there is no good evidence for it. Ordinary vitamins should be administered only when there is a demonstrated vitamin deficiency and not otherwise.
- Dermatitis Occurring in a Woollen Mill. L. Schwartz and J.E. Dunn. Ind. Med., 11, 432-435 (September, 1942).
An increase in the incidence of dermatitis among employees of a woollen mill occurred soon after the manufacture of blankets for the armed forces was begun. The

only essential change in the manufacturing process was the increase in the concentration of the mordanting solution of sodium dichromate in the dye bath from 0.5% to 3%. There have been 133 cases of dermatitis among employees of the plant since July 1, 1941 (about three and a half months). At the time of this study 32 individuals who had, or had had, dermatoses thought to be of occupational origin, were available for study. Nine of these cases, on examination, were considered to be non-occupational in origin. Patch tests were performed with the various materials used in the process of manufacturing woolen fabrics. The results of these patch tests indicate that cutaneous hypersensitivity to sodium dichromate and the wetting agent used in the dye bath was responsible for the majority of cases of occupational dermatitis. The results of the patch tests suggest that cutaneous hypersensitivity to the wetting agent is responsible for most of the cases of dermatitis among card room workers, and that cutaneous hypersensitivity to sodium dichromate accounts for most of the cases of dermatitis among dye house workers. All wash room workers reacted to patch tests with the washing solution, and all of them were sensitive to sodium dichromate. Patients from other departments showed less uniformity in their patch test results. None of the spinners, however, was sensitive to sodium dichromate. The exposure to 3% dichromate solution produced chrome ulcers in some workers and chrome sensitivity in others who had not been previously affected when exposed to 0.5 dichromate solution. -- Authors' summary.

- 53 Skin Classification. Job Placement Aid Against Dermatitis. J.N. Gallivan. Amer. Mutual Mag., 21, 10-16 (October, 1942).

The author presents a "classification of skins" which has proved useful in pre-employment examinations in an aircraft factory. Two obstacles to a thorough examination, including patch tests are: (1) in the largest plants, over 90% of the jobs present a skin hazard; and (2) the present rush of employment allows little time for patchtesting. In the absence of thorough test, the classification employed has assisted greatly in placing the workers. Occupational dermatoses are classified into two main groups: (1) folliculitis, or rash characterized by comedones, papules, pimples, pustules and "oil boils" occurring as the result of plugging of the hair follicles on exposed surfaces, and (2) eczematoid, characterized by erythemas, urticarias, vesicles, scaling, weeping, cracking, roughening or itching. The author thinks of folliculitis as resulting from mechanical plugging of the pores, and the eczematoid group as manifestation of allergic or hypersensitivity tendencies. Young men with dark, thick, oily, hairy skin are prone to develop folliculitis, whereas men and women with light, thin, dry, smooth skin, tend to develop eczematoid rashes. In the fuller classification which follows, irritants, sub-types of skin diseases, personal characteristics (as age, skin type, cleanliness, etc.), are given under a single alphabetical arrangement, with conditions to be avoided for each class. The remedy for some conditions is placement on a "dry job," i.e. on free from skin irritants of all types, whether solid, liquid or gas.

- 54 The Prevention of Industrial Skin Diseases. G.E. Morris. Industry, 8, 11-13 (December, 1942).

The fifth article of a series on industrial health describes the nature and functions of the human skin. The understanding of these phenomena will do much to eliminate the causes of industrial dermatoses and to keep war workers on the job. It is urged that all who develop a bad skin rash be sent untreated to a skin specialist. Skin covered with tar, gentian violet or iodine is most difficult to judge properly. Either a dry, clean cloth or a boric acid water dressing is permissible.

- 55 Deposits in Air Compressor Systems. E. Ingham. Colliery Guard., 125, 194-196 (August 14, 1942).

Explosion and carbon monoxide production may result from the presence of deposits in air condenser cylinders, including mill scale, foundry sand, dust and dirt, carbon, oil and also sediment and scale when water cooling is used. Methods of prevention and removal are discussed.

- 56 Annual Report of the Bureau of Industrial Hygiene. Indiana State Board of Health. (July 1, 1941 to June 30, 1942).

As a result of an active campaign, 360 occupational diseases were reported to the Bureau of Industrial Hygiene for the fiscal year. The cases were used as a basis for additional plant and follow-up studies. 310 or 89% of the cases were industrial skin diseases of which it is of interest to note that 178 resulted from chlorpurnaphthalene. Lead poisoning occurred in 16 cases, silicosis and silico-tuberculosis - 13, hydrogen sulfide poisoning - 12, and there were nine other miscellaneous poisonings. The report describes the survey and educational activities of the Bureau.

- 57 Oral Manifestations of Occupational Origin. I. Schour and B.G. Sarnat. J.A.M.A. 120, 1197-1207 (December 12, 1942).

The problem of oral manifestations of occupational origin must be considered according to the pathologic process, structure affected, etiologic agent and occupational distribution. The oral cavity is a chief port of entry for occupational noxious agents. All medical examinations of industrial workers should therefore include an oral examination. In the study of occupational disease an examination of the oral cavity offers the following advantages: (a) the oral cavity is easily accessible, (b) local effects are readily recorded in exposed enamel and dentin and in the soft structures; the record in the enamel and dentin is often permanent and may reveal past occupational exposures, (c) systemic effects may be transmitted in the oral cavity through the blood stream and the saliva and are often manifested in characteristic symptoms. Poor oral hygiene renders the worker more susceptible to oral occupational hazards. These hazards are minimized in the presence of oral health. Oral hygiene is an essential part of industrial hygiene. Adequate provisions for industrial health should include the prevention, the early recognition and the treatment of oral occupational diseases. The problem of reducing oral occupational diseases should, therefore, be met by (a) improving working conditions and (b) establishing and maintaining optimal oral and general health. Further studies of oral occupational disease should be conducted in order to check or confirm previous reports and to discover possible manifestations arising in new industries. -- Authors' summary.

- 58 Disabling Morbidity Among Industrial Workers, Third Quarter of 1942, With a Note on the Occurrence of the Respiratory Diseases, 1933-42. W.M. Gafafer. Div. of Industrial Hygiene, U. S. Public Health Service, National Institute of Health, Bethesda, Md.

A third quarter increase in the frequency of respiratory diseases, amounting to 13 per cent, was recorded. Influenza and gripe increased 40 per cent, bronchitis 12 per cent and pneumonia, 50 per cent. The rate for all sickness for the third quarter of 1942 was eight per cent above the corresponding rate in 1941. When compared with the average rate for the years 1933-1942, the increase was 23percent.

- 59 Industrial Hygiene in War Production. J.J. Bloomfield. Calif. & Western Med., 37, 132-37 (October, 1942).

New problems and the intensification of old problems have resulted from our war effort. The industrial hygienist must use every skill and every facility available to him to conserve the energy and efficiency of our workers.

- 60 Audit Your Absenteeism. John F. McMahon. Personnel Journal. 21, 158-162 (November, 1942).

Production losses from sickness can roughly be approximated on the following basis: each worker in the United States loses on the average about eight days a year because of illness. If we can cut that loss in half, to four days, we will save in our heavy industries, the equivalent of 250,000 additional employees. Absenteeism is a complicated problem. However, no intelligent approach can ignore the recording of absences preferably of one day or two days and longer. Until the causes of absenteeism are known, no effective solution is possible. In the present manpower crisis, absenteeism is a major war production problem.

- 61 The Next Job for Management: Smashing the Health Bottleneck. Kingsley Roberts. Personnel Administration, 5, 15-19 (October, 1942).

The broad outlines of a program to fight the lost time which reduces our production level even while we are working a full schedule in the greatest all-out production effort of history are: (1) The educational campaign in industrial organizations to teach workers sound nutritional habits and how to recognize and get treatment for incipient disease; (2) The inauguration of a rational program for health conservation and preventive medicine in industrial groups; (3) Promotion by management of facilities for competent, efficient medical care in the community at a cost which employees are able to meet; (4) The use of these community medical services for the rehabilitation of industrial rejectees; and (5) Re-examination of standards of physical fitness for specific occupations, in an effort to put handicapped applicants in positions they can fill adequately.

- 62 Safety and Health Problems of Women in Industry. Mary Anderson. Address delivered at 31st National Safety Congress of National Safety Council, Chicago, Ill. October 28, 1942. Mimeographed.

Among the subjects discussed briefly are the need of rest periods, adaptation of machines to the height and strength of women, safe working clothes, safety shoes and cafeterias.

- 63 Womanpower: The Key to the Manpower Problem. Employment Security Rev., 9, 3-24 (December, 1942).

This issue of the Employment Security Review has as its theme, the utilization of women as a solution for our manpower requirements. Factual material is presented on the following phases of the problem: (1) Why the Accent on Woman Power? (2) How much Woman Power is Available? (3) W.M.C. Policy on Wartime Employment of Women; (4) Can Women Master Men's Jobs? (5) More Jobs, More Trainees; (6) U.S.E.S. Reports Changing Employer Attitudes; (7) Union Attitudes Toward Women Workers; (8) Women Clubs Cooperate with U.S.E.S.; (9) Recruitment of Women in other Countries; (10) Recruiting Women on the Firing Line; (11) Gearing a Plant for Women; and (12) Baltimore "Package Promotion."

- 64 Women in Industry - Their Problems of Health. M.H. Kronenberg. Ind. Med., 11, 889-892 (December, 1942).

There are more than 13,000,000 women now employed in this country and an increase to at least 13,000,000 is expected by the end of 1943. The important subject of problems affecting their health is ably presented. With the exception of jobs requiring heavy lifting and great physical strength, women can be employed on most any job. They have certain qualifications for painstaking, tedious and repetitive work requiring great patience, and for finger dexterity. In such jobs they exceed the production of men. While women may lack experience, they do not lack mechanical ability. Jobs should be tailored to the physical limitations of women. In connection with the problem of toxic substances, provisions covering employment of women in Michigan are as follows: Women shall be prohibited in

the handling of the following substances or in the following operations, unless ventilation and working conditions are approved -- lead, benzol, carbon disulfide, mercury, arc welding and dry grinding wheel. It is possible that other states have or will set up similar recommendations.

- 65 Manpower is Warpower. W.S. Knudsen. Nat. Safety News. 46, 56-57, 112-116 (October, 1942).

This paragraph is the keynote of the address: "The time is not far distant when we will be scraping the bottom of the barrel to secure additions to our manpower supply. When that time comes, one fact will stand out in clearest focus: Anything which needlessly costs war production a single hour of a single worker is striking a blow on what may then be the weakest sector of the whole production front." General Knudsen contrasts the flexibility in the use of materials and machines with the limitations on manpower, and briefly presents figures showing the reduction of manpower by accidents, the most significant feature of which is 480 million man-days lost within the past year. Highway accidents have decreased, but the use of recapped tires will lead to an increase unless speed is properly controlled. "Ten commandments in industrial safety," embodying well-known fundamental principles, are proposed.

- 66 Daylight Working Conditions -- Fuel Saving and Increased Production. Anonymous. The Chemical Age, 209 (August 29, 1942).

A committee has been formed by British Manufacturing concerns for the purpose of investigating and developing means for utilizing daylight in factories. The common practice of total "blackout" is felt to be wasteful of fuel as well as a factor in causing mental depression and ill health. The principal aims of the committee are: (1) to encourage the use of daylight in factories and abolish the permanent "blackout" conditions for employees, increase daytime production, and effectively reduce consumption of electricity and fuel; (2) to promote non-commercial cooperation between manufacturers of any products relating to the question and pool information and improvements in order to eliminate waste and to offer the most suitable schemes for the national effort; and (3) to present to the appropriate government departments and others concerned, all the available data on the benefits of working under daylight conditions.

- 67 School Teaches Safety in Explosives Manufacture. C. Field. Nat. Safety News. 46, 80 (October, 1942).

The newly established Explosives Safety Branch of the U.S. Ordnance Dept., with headquarters in Chicago, is charged with responsibility for the safety and security of ordnance and explosive factories and storage places. A staff of highly trained field representatives, called "safety auditors" will make complete safety investigations in ordnance plants throughout the nation. A school has been established to give the necessary training, ^{which is} superimposed upon previous experience in one or more safety fields. The courses given include E.S.B. Procedure, Explosives Fire Protection Engineering, and Accident Prevention, which is subdivided into Explosives Safety, Industrial Safety, Occupational Diseases, Safety Inspections, and Personnel and Training, and the period covers six weeks. The first group was graduated September 12.

- 68 Analyzing Working Environment. E.C. Barnes. Ind. Med., 11, 603 (December, 1942).

This is a report on the results of industrial hygiene surveys in the Westinghouse Electric & Manufacturing Co. The report was made to the employees through the medium of the plant safety news. This is a step forward in industrial hygiene education. The frank presentation of the facts will help to solve the health problems as they now aid in accident prevention. Exposures to lead, solvents, dusts and fluorides are described.

- 69 Back From Death. K.W. Francis. Nat. Safety News. 46, 24, 25, 89-91 (November, 1942).
The knowledge of resuscitation has saved the lives of thousands of victims of electric shock, drowning and asphyxiation.
- 70 More About Noise. Edward Podolsky. Ind. Med., 11, 532-593 (December, 1942).
Noise at and above a level of 80 decibels has a pronounced effect in deranging digestions. It has also been demonstrated that the bursting of a blown-up paper bag will raise the brain pressure four times above normal with a second interval before returning to normal. This effect is greater than may be obtained from morphine or nitroglycerine the two most powerful drugs known for increasing brain pressure. Continuous noise thickens the ear drums, and also stiffens the small bones, reducing their movement. Occupational deafness is becoming more and more common. The noise problem is one of the most difficult that we must solve.
- 71 Effect of Flight Upon Hearing. P.A. Campbell. J. Aviation Med., 13, 56-61 (March, 1942).
There are six factors, as represented by an audiogram, which effect the hearing of an aviator. They are: the inherited hearing apparatus, age, the effect of noise, the ability to equalize barometric pressure changes, disease -- past and present, and the effects of anoxia. There is a loss of perception in the higher frequency ranges with age. Permanent effect from exposure to aircraft noises is indicated, but no data or specific changes are given. Barometric pressure changes cause trouble only when the middle ear ventilating system does not equalize with the outer ear. Anoxia is not normally a serious problem.
- 72 Etiology of Acute Illness Among Workers Using Low-Grade Stained Cotton. R. Schneider, P.A. Neal and B.H. Caminta. Am. J. Pub. Health. 32, 1345-1359 (December, 1942).
The results of a further investigation of an acute illness among workers using low-grade stained cotton are presented. The 122 samples of cotton studied contained no toxic gases, chemically extractable substances, insecticides or pathogenic fungi which would cause the illness. However, gram-negative, rod-shaped bacteria were found in the stained cotton in large numbers. From its properties the bacterium has been tentatively placed in the genus aerobacter. Extensive experiments demonstrated that the illness is caused by the inhalation of an endotoxin-like substance produced by the bacterium described.

Methods of Detection and Determination

- 73 Automatic Dust Sampling and Analyzing Instruments for Atmospheric Pollution Surveys. W.F. Davidson and W. Master. Monthly Weather Rev., 69, 257-260 (September, 1941).
The automatic sampler, chart-editing machine, and photoelectric scanning machine, all of which are used in determination of smoke and dust in the air, especially continuous determination, are described.
- 74 Monochromatic X-Ray Analysis of Fine Dusts for Free Silica. H. Landsbert and R.L. Smith. Safe Practice Bull. No.85, Penna. Dept. of Labor & Industry, Harrisburg, Pa. (April, 1941).
Chemical and petrographic methods of analysis for the free silica content of dust are generally unsatisfactory. The difficulties with these procedures are

described. The X-ray procedure is simple and it is adaptable to rapid routine analysis. The major drawback is the expense of the equipment.

- 75 How To Make Dust Counts. N.R. Bernz. Heat., Pip. & Air Cond., 14, 603-606 (October, 1942).

In the final paper of the series giving a simple presentation of the technique of dust counting, the author presents a table showing the methods of calculation of the results from the various instruments. Choice of instruments is then discussed in relation to purpose and accuracy. For appraisal of a dust hazard the same instrument that was used in setting the safe limits should be employed, but for periodic checking of conditions, more portable and more quickly operating instruments are sufficient. No definite correlation can be established between the results obtained with the various instruments, on account of particle size differences, time required for sampling, etc. The type of microscope, location of samples, and a few miscellaneous factors are discussed. The report should include statements of type of sampling instrument, microcopic setup, time elapsed before counting (of impinger samples), location of samples, and composition of the dust.

- 76 An Apparatus for Determination of the Bacterial Content of Air. S. Moulton, T.T. Fack and H.M. Lemon. Science, 97, 31-32 (January 8, 1943).

To be successful a device must trap all or nearly all the air-borne micro-organisms, must allow quantitative recovery of the bacteria for counting, must allow sampling of a representatively large air sample, and must be simple and convenient for field conditions. The apparatus described in this paper uses the principle of atomization to coat the bacteria with a layer of liquid. The mist is carried into a second chamber where it is bubbled through liquid which absorbs droplets. The collecting fluid is composed of 15 ccs. of sterile broth plus two drops of sterile olive oil to prevent excessive foaming. It has been convenient to take 10 to 15 minute samples at a rate of three-quarters of a cubic foot per minute. This sampler has been tested extensively in laboratories, offices and lecture rooms as well as in unoccupied rooms where test atmospheres of dust suspended micro-organisms have been prepared. The completeness of removal of bacteria has been tested by several methods. A diagram of the apparatus and comparative test data are presented.

- 77 Simplified Photomicrography with a Hand Camera. R.P. Loveland. Science, 97, 24-26 (January 1, 1943).

A technique for the production of good photomicrographs, utilizing a box or a folding hand camera with roll film, is presented. Complete directions are provided.

Control Methods

- 78 Centerline Velocity Characteristics of Round Openings Under Suction. L. Silverman. J. Ind. Hyg. & Tox., 24, 259-266 (November, 1942).

A complete series of unflanged openings from two to 20 inches in diameter were investigated to determine their centerline velocity equations. The data found were compared to BallaVelle's previous work. The new values differ from BallaVelle's due to the greater range of distances explored and to sizes covered as well as to the use of an instrument of more sensitivity and accuracy. A non-dimensional type of equation was found to give a close fit. Limitations of the

non-dimensional equation as well as modified equations for plain and flanged openings are explained. All equations are subject to error within an inch of the opening and at a distance where room eddy currents can influence the velocity contours. -- From Author's summary.

- 79 Velocity Characteristics of Narrow Exhaust Slots. L. Silverman. J. Ind. Hyg. & Tok., 24, 267-276 (November, 1942).

A series of unflanged and flanged slots were studied in order to determine the effect of size on their centerline velocity characteristics. Equations are presented for various slot width to length ratios. The effect of width on flanged slots is negligible which checks observations previously made on flanged tanks. The velocity varies inversely with distance which agrees with theoretical considerations. On the basis of this study it appears that for unobstructed plain or flanged slots the velocity varies inversely with distance and slot length and slot width is of no importance if the slot is flanged. The value of flanging decreases with decreasing slot width. For special slots simulating a tank wall or a wall and base, an approximate value may be arrived at by assuming the velocity to lie half way between a plain and a flanged slot. - From author's summary.

- 80 Ventilation -- Is It a Limiting Factor in Deep Level Mining on the Witwatersrand? R.A.H. Flugge-de-Smit. Colliery Guard., 165, 402-406 (October 2, 1942); 455-458 (October 9, 1942).

The author considers that a wet bulb temperature of 85°F. with a much higher dry bulb temperature denotes the limit of working comfort. Such a condition can be produced theoretically at a depth of 15,000 feet, which is beyond the practical limit of mine depths. Comfort can be secured at all practical working depths by circulation of dry air. The necessity of water for dust suppression is admitted; but the air can be kept dry until it reaches the working face. High air velocity is not necessary or desirable, as fast air movement at temperatures such as 120°F. dries the skin too thoroughly. The lightest clothing should be worn. Refrigeration at the top of a wet shaft is not advisable, as the wet bulb temperature is increased on the way down and underground refrigeration is even less desirable, on account of temperature changes experienced by the worker, and also much more heat must be extracted from the air in order to obtain the same results as in dry conditions. With dry air circulation, the author estimates that, in general, 9,000 feet is probably the limit of working depth for comfort. In certain mines the depth can be only 6,000 feet. In order to mine successfully at great depths, the layout of the mine must be carefully planned by experts.

- 81 The Removal of Dust Clouds from Main Gate Loading Stations by Utilization of Waste Workings. Monmouthshire and South Wales Coal Owners Assoc., Coal Dust Research Committee, 4th Report. Iron & Coal Trades Rev., 145, 40-42 (May 1, 1942) In some locations in mines, especially at main gate loadings, the efficiency of a filter in the dust removal system decreases rapidly, and wetting is often impractical. This report suggests the utilization of waste workings for depositing dust collected at those locations. It describes the arrangement of the necessary cross-cut and apparatus, giving full details of tests carried out and the results obtained.

- 82 Dust Reduction and Suppression on Machine Cut Faces. Monmouthshire & South Wales Coal Owners' Assoc., Coal Dust Research Committee, 5th Report. Colliery Guard., 165, 399-402 (October 2, 1942); Iron & Coal Trades Rev., 145, 833-34, 892 (October 2, 1942).

The dustiness of air at working faces of coal mines was found to be greatly reduced (by 69 to 93% on the whole shift, and 88 to 96% during the gumming period), by water sprays alone.

Dust Research. The Use of Sprays to Suppress Dust on Underground Conveyors. West Virginia Colliery Owners' Assoc., 2nd Report on Coal Dust Research. Published in Colliery Guard., 163, 127-132 (July 31, 1942); Iron & Coal Trades Review, 163, 577-578 (August 7, 1942).

Four types of jets and sprays for dust suppression in mines were investigated. A number of types are given in the Colliery Guardian abstract. The following conclusions were drawn: (1) water mist sprays are less efficient than dust collectors but improve dust conditions very materially where dust collectors are not desirable. Moreover, the sprays require little attention; (2) compressed air operated water sprays are superior to sprays operated by water pressure alone; (3) spraying should not be limited to loading points but should also be conducted at the ends of gate conveyors; (4) care must be taken in the setting of sprays; they should always be directed against the air current.

4. Control of Dust in Mines by Sprays. Anonymous. The Overseas Engineer. 16, 1-10 (October, 1942).

Sprays designed to work with water alone under pressure may be classified according to the means by which the water is atomized in the jet. The types now obtainable commercially are: (1) the water is given a rotary or swirling motion before passing through the outer orifice; (2) the water is passed through an annular jet fitting over a cone; and (3) the water impinges against a pointed or cone shaped revolving target. Most sprays now used are of the first class. Jets of the second class produce a rather coarse spray. One typical spray consumes from 5 to 10 gallons of water at a pressure of 20 lbs. per square inch. At 100 lbs. per square inch the consumption would be 20 gallons. In general the water consumption will vary from 2 to 7 gallons per hour with compressed air flows from 3 to 10 cubic feet per minute. A new type of spray is being investigated. It employs a jet of water projected on to a cone shaped disc which is directly connected to a small electric motor. The disc revolves at speeds up to 2000 r.p.m. The water is thrown off at the periphery by centrifugal force at a very high velocity and strikes a series of fixed blades or baffles arranged concentrically. This arrangement forms a fine mist which is projected forward by the draught from a fan at the back of the motor. Data on the reduction of dust concentration by means of sprays are presented. In the tests made thus far, the sprays have not had an appreciable effect on the general humidity of the mines. This may not be true in the case of deep, hot mines.

55. Environmental Conditions in Mines. A Study of the Kata Thermometer Cooling Power and Effective Temperature as Measures of Environmental Comfort. A. Nelson. Colliery Guard., 165, 429-432 (October 9, 1942); 462-465 (October 16, 1942).

From a number of experiments on effective temperature as determined by the kata thermometer the author concludes that: (1) an increase in air movement is an efficient method of ameliorating an oppressive environment; (2) a velocity ample for shallower and cooler mines is insufficient for deeper and warmer mines; (3) air velocity as well as favorable cooling power and effective temperature must be considered in establishing healthy conditions; (4) it seems impracticable to adopt any definite value of dry kata cooling power or effective temperature alone for defining limiting conditions for working comfort in mines; however, a reasonable suggested standard is a cooling power of 7, effective temperature below 70 and air velocity over 200 feet per minute.

Standards for Use of Diesel Engines in Tunneling. W.B. Harris, L. Greenburg and J. J. ... Industrial Hygiene (N.Y. State) 11, 414-417 (November, 1942).

Extensive hygienic studies have been made in tunnels under operating conditions. Diesel, bulldozers and locomotives have been tested from shafts and portals and in short-end runs and tunnels open at each end. The conclusions from the study

may be summarized as follows: (1) Diesel-powered machinery can be safely and satisfactorily used underground if careful adherence to certain strict regulations is maintained. (2) The New York State Labor Department has issued such regulations to govern the use of Diesel engines in underground operations in New York State. (3) The regulations have been found to stand the test of practical application and adequate control. (4) The first section covers the design and maintenance of the engines. The main parts are: (a) 20:1 minimum air-fuel ration, (b) the exhaust gases must be cooled and scrubbed, (c) before discharge the gases must be diluted at least 10 times. (5) The second section covers the allowable limits of contamination. Careful correlation of all factors has shown that the control of carbon monoxide to the set limit of 0.002 per cent affords adequate control of the noxious element. (6) The requirements of adequate ventilation are described in section three. A minimum of 10,000 cubic feet of ventilation is required in any area for each engine that is or may be operated.

- 87 Why Industrial Dust Control is Necessary. C. A. Snyder. Occup. Hazards, 5, 9 (December, 1942).

Nuisance dusts should be controlled because: (1) Dust causes equipment breakdowns, increasing maintenance and decreasing production. (2) Dust spoils materials by smudging, scratching etc. (3) Dust obscures vision and causes poor workmanship. (4) Dust increases lighting costs. (5) Dust detracts from the appearance of the plant and reflects upon the progressiveness of the management. (6) Dust makes the workmen discontented and decreases their productive efficiency. (7) Dust increases cleaning and painting needs. (8) Some dusts create a slipping hazard - thus increasing the chance for accidents. Health hazardous dusts should be controlled because: (1) Workers are more efficient when they do not live in fear of their health. (2) Insurance rates are decreased through proper dust control. (3) The control of dust should be one of the first undertakings in any modern industrial relations program. A chart is presented showing comparative particle sizes of several smokes, bacteria, and dusts.

- 88 Taking Paint From the Air. Anonymous. Nat. Safety News. 46, 32, 76 (December, 1942).

In each of the two recently completed bomber assembly plants in the Southwest, the paint spray building is 150 feet wide, 200 feet long and 35 feet high, divisible by a partition in the middle. The ventilating system is more than proportionally large. For every pound of paint sprayed, 5,250 pounds of air and 6,446 pounds of water are used. Six men paint a plane in 2 hours, using 25 gallons of paint. All equipment for the air supply units is mounted in the roof trusses, taking fresh air from near the roof line. The air is filtered and the temperature is controlled at 80°F. The exhaust units are at 3 levels, and the air is drawn through a series of conical, high-pressure water sprays. Water and sludge are separated from the air by centrifuges. Both entrance and exhaust systems are fireproof. Additional details are given.

- 89 Protective Clothing For Women. G.A. Sherman. Calif. Safety News. Reprinted in Ohio Ind. Comm. Monitor, 25, 172-173 (November, 1942).

Between 60 and 70% of all industrial injuries to women are caused by the following type of accidents listed in the order of numerical occurrence: (1) falls of persons; (2) machinery; (3) handling of objects. Many of the accidents from machinery are cases of entanglement of hair. Several instances of accidents involving entangling hair, clothing and gloves in machinery are given. Adequate protective clothing is urgent.

- 90 A Plan for Industrial Good Housekeeping. F.N. Williams. Chem. & Met. Eng., 8, 1 (August, 1942).

Inter-plant goodhousekeeping competition is an effective method of promoting cleanliness. Annual awards should be made for good records. Improvement of

cleanliness and orderliness is a means and not an end in itself. Improved safety and health records, employee morale and increased production are the benefits of effective campaigns. The scheme can also be used on an interdepartmental basis.

- 91 Prevention of Explosion Hazards. T.A. Cohen. *Occup. Hazards*, 5, 10, 11, 26-28 (December, 1942).

The danger of explosions to boilers, furnaces, ovens and dryers employing combustible fuels has become more acute since the national war program - by drawing heavily upon experienced manpower in many industries - has made it necessary to transfer to relatively new hands responsibilities for tending equipment in which explosion hazards exist. Combustion safety equipment is being heavily relied upon by management to overcome personnel unexperience. The types of explosion hazards and their solution are described.

- 92 Small Plant Safety - or Else! H.F. Becker. *Amer. Mutual Mag.*, 21, 20-23 (October, 1942).

This is an account of the improvement of health and safety conditions in a small plant, that of the United Boiler, Heating and Foundry Co., of Hammond, Ind. In 1937 the high accident rate made it virtually impossible to obtain Workmen's Compensation insurance. The insurance company and the president cooperated to initiate an improvement program, beginning with removal of occupational disease hazards and then following with general plant safety. Medical examinations, installation of dust exhausts, rearrangement of machinery, periodic cleaning and correcting a number of minor details led to great improvement. Progress in general safety was slower, on account of poor organization of the committee and lack of interest, but those obstacles were finally overcome.

- 93 The Effect of Humidity on Beta Streptococci (Group C) Atomized into Air. W. F. Wells and P. Zappasodi. *Science*, 95, 277-278 (September 18, 1942).

Evidence is presented in this preliminary report showing that dehumidification will give lethal results comparable to those obtained from the use of propylene glycol with and without hexylresorcinol. The lethal effectiveness of those fumigants also decreases with increased humidity. The disinfection rate does not conform to the normal law of equal proportionate bacterial decrease in equal time intervals. Mortality seems to occur at critical phases rather than to follow the normal logarithmic type of death rate.

- 94 Safe Practice in the Manufacture of Brass, Bronze and White Metal Castings for Railroad Rolling Stock. D.C. Haines. *Penna. Dept. of Labor & Industry, Safe Practice Bull. No. 97*, 8 pp. (October, 1942).

After a brief history of railroads in the United States and statement of the importance of railroad work in general and wheel bearings in particular, the manufacture of bearings at the Altoona plant of the Pennsylvania Railroad is described. The means of protection from occupational hazards is described at each stage. They include exhausts at buffing wheels, and moulds and respirators and goggles. Since 1937, lost time accidents have been reduced by 90%. Safety committees are active, and diet and personal hygiene are frequent topics of discussion.

Industrial Medical Practice

- 95 Some Considerations Concerning the Roentgen Diagnosis of Pneumoconiosis and Silicosis. E.R. Pendergrass. *Am.J.Roent. & Rad. Therapy*, 48, 571-594 (November, 1942). This paper is a review of the entire subject of pneumoconiosis, with especial attention to the roentgenological aspects. In the historical portion, several

photographs of extracts from early descriptions of the disease, beginning with Pliny, with translations, are reproduced. A number of radiographs of lungs of persons with anthracosilicosis, baritosis, oil pneumonia and silicosis, certain and uncertain, with and without infection, illustrate the paper.

- 96 Report of the Committee on X-ray Apparatus and Technique. American Trudeau Society. Amer. Rev. of Tuberc., 44, 469-473 (October, 1942).
As an approach to the problem of the betterment of techniques for chest radiography, a film library will be selected from the files of the members. The films will illustrate varying techniques and their effect on the diagnostic value of films. The committee also stressed need for stabilizing the details of radiography to obtain maximum results. Research is being continued on the measurement of X-ray output on short exposures. From 98 to 99 per cent of minimal cases were detected by 4" by 5" film applied to 50,000 cases. Comparative results on the choice film and paper of various sizes, by two groups of investigators, are presented. The 14" x 17" celluloid is first choice in each case. The Bridges survey listed 4" x 5" stereo second, while Pendergrass, Warren and Haegensen list it as third choice. There is disagreement on the desirability of 14" x 17" paper but the 35 mm. film is rated as least desirable by both groups. A report was also made on Body Section Radiography. Dr. Herbert R. Edwards discussed the experience with mass X-ray equipment. He found the 14" x 17" paper to be second only to the 14" x 17" celluloid, agreeing with Pendergrass et al. Diagnostic accuracy, facility of operation, facility in reading, facility in filing and storage, service factors, and cost are also considered.
- 97 Technic for Chest X-ray Examination of Large Groups. Part 1. The Use of Standard Size Films. W. Bailey. Radiology. 39, 306-309 (September, 1942).
A description of equipment and methods for roentgenographic chest studies with standard 14 x 17 inch films is given. Since most of the time consumed in any mass survey goes toward measuring and positioning the patients, this method can be made as rapid as any of the methods employing films of substandard sizes, paper rolls, etc., and has the advantage that the films are of much better diagnostic quality. -- Author's summary.
- 98 Technic for Chest X-ray Examination of Large Groups. Part 2. The Use of Miniature Films. W. Bailey. Radiology. 39, 310-313 (September, 1942).
Technic for the rapid processing of 4 x 10 inch stereoscopic films of the chest is described. Although the detail in these films is considerably less than the best obtainable on 14 x 17 inch films, and little can be said about heart size because of the short target-screen distance, the films are, nevertheless, more satisfactory than might be expected for the purpose of finding active tuberculosis in mass examinations. In comparisons involving a large number of cases, the percentages of active tuberculosis discovered was a little higher with the stereoscopic 4 x 10 inch films than with the single 14 x 17 inch films.
- 99 Special Types of Examinations -- Justifying Their Cost. M.I. Hall. Ind. Med., 11, 183-186 (December, 1942).
If the manufacturer, who has never experienced the benefits that may be derived from an adequate medical service, questions its value from the dollar and cents point of view, then these experiences of other companies should be brought to his attention. It is now generally recognized that good health is an asset in that there is increased efficiency, better employment relations, less spoilage and absences from work, and reduced accident frequency. A doctor on call is not the answer to this problem. The medical supervision must be directed to a physician who knows industry and its needs, who makes regular rounds in the plant, and who supervises the general health of the force through physical examinations and consultations.

- What are We Examining For? - Types and Frequencies of Physical Examinations. R. Lyle Harlett. Ind. Med., 11, 581-583 (December, 1942).
Physical examinations make it possible to place the workman in the correct job. They are important for the protection of the worker from the aggravation of already existing conditions. They are also valuable in preventing the use of a workman with a physical or mental defect in a job where he might endanger the health and safety of fellow employees. A system of examinations based on and tested by experience is described.
- 101 Physical Examinations - Entrance and Return to Service. G.P. Myers. Ind. Med., 11, 573-581 (December, 1942).
The policies of the New York Central System on both pre-employment and return to service physical examinations are presented. This is an interpretation by the Medical Director for the association of surgeons of the system.
- 102 Employment of the Physically Handicapped. G.H. Williamson. Executives Bull. of Metropolitan Ins. Co., Reprinted in Peanut Journal and Nut World, pp. 23-24 (December, 1942).
A candy manufacturer, having been satisfied with the work of the few handicapped persons in his employ for a number of years, employed only handicapped girls on a new job made necessary by agricultural conditions, the selection and removal of burned peanuts. The work involved only good eyesight, agile fingers and plenty of patience. They were paid 12½% less than others on similar jobs as they were not usually available for temporary transfer to other work. The experiment was successful. No accidents were sustained by these or other handicapped workers, and their skill and ability have stimulated normal workers.
- 103 Modern Facilities for Health & Safety. Anonymous. Safety Eng., 84, 68-71 (October, 1942).
A plea is made for clean and modern washroom facilities, with illustrations of the general types recommended, also of obsolete and worn-out fixtures to be avoided. Cleanliness and order are essential to the morale especially of women workers. Recreation facilities and cafeterias also pay dividends in efficiency and productivity.
- 104 Treatment of Burns of the Skin Due To Molten Magnesium. J.A. Wilson and B. Egeberg. Ind. Med., 11, 436-437 (September, 1942).
Burns of the skin by molten magnesium form very slow-healing granulomatous ulcers. Metallic magnesium interferes with the normal physiology of the body cells, causing an interference in the normal repair process of injuries. Prompt removal of the metallic magnesium whether in the form of foreign body spicules, powder or burns, allows ordinary healing to take place. In the case of magnesium burns the area is anesthetized, and the burned tissues completely removed. Accidental burns by incendiary bombs of the civilian population should be treated in the same manner. - Authors' summary.
- 105 The Diagnosis and Treatment of Pulmonary Gas Casualties. L.J. Boyd. Bull. N.Y. Med. Coll., 5, 64-70 (1942).
The two common classes of pulmonary gas casualties are: (1) cases with acute and violent onset, and (2) cases with acute but insidious onset. The first principle of treatment is absolute rest until recovery has occurred. The use of oxygen is the most effective single therapy. Venesection is helpful in the "blue" type of victim but should not be used in the "gray" type or where there is circulatory failure, low blood pressure, or a thready pulse. Pneumonia is a frequent complication. Recovery is normally free from chronic effects. Modern gas masks are very effective instruments for protection against phosgene and similar gases.

- 106 Treatment of Burns. John Herrlin, Jr. and S.T. Glasser. Bull. N. Y. Med. Coll., 5, 79-84 (1942).

Burns which occur as a result of bombing attacks are of three types: thermal, electrical and vesicant. First-aid care and hospital treatment of all types, including special methods, are given in detail. The need for the prevention of infection of burned areas is stressed. The use of physical therapy for healed burned areas is described briefly.

- 107 Treatment of Phosphorus Burns. A.T. Jones. Brit. Med. J., 2, 257-270 (August 29, 1942).

Based on 65 cases of burns caused by phosphorus, the following procedure for treatment is recommended. The affected area should be immediately flooded with water, followed by a thorough wash with warm sodium bicarbonate solution (about two tablespoons to a pint (500 ccs.) of water). Any obvious particles of phosphorus disclosed by examination in the dark should be removed with forceps. The affected area should be swabbed with a one per cent solution of copper sulfate and a further exploration made for phosphorus particles so revealed. The area should be soaked or immersed, if possible, in warm sodium bicarbonate for a prolonged period. Small burns should receive half an hour, large burns from one to two hours. A daily dressing with acriflavine (1:1000) is recommended. Burns near the eyes are best treated by a mask of lint soaked in sodium carbonate solution renewed every four hours. As soon as the healing begins (7 to 10 days) boroseptic ointment provides a satisfactory dressing and its use can be continued until the scar produced is sound. Tannic acid and other coagulants do not give satisfactory results. The disadvantage of acriflavine emulsion is that individual, local and generalized cutaneous eruptions may occur, but a daily inspection will detect them. Boroseptic ointment should then be substituted. With this treatment results are obtained which are comparable to those of burns by caustic soda or sulfuric acid. Healing is slower and scars are thinner in burns caused by phosphorus.

- 108 Cardiovascular Disease in Industry. W.J. Egan. Wisconsin Med. J., 217-222 (March, 1942).

The study of cardiovascular disease by the medical department in a large industry is described. Periodic physical examinations for persons over 40 include routine electrocardiograms. Roentgenograms and sedimentation rates are done where indicated. Individuals with valvular lesions are placed in sedentary occupations. Well developed hypertension or syphilitic heart disease requires easy work where the patient will not endanger himself or his co-workers through accidents. Patients with coronary disease or angina are not allowed to work until sedimentation rates are normal. Cardiac neuroses must be detected promptly to prevent serious consequences. Continuous re-education and the demonstration of normal objective findings to the patient himself have been of great value in preventing cardiophobia. Fatigue is a defense mechanism and it should be heeded. This program has reduced absenteeism and the author believes that employee mortality has also been reduced. This is a reasonable assumption.

- 109 The Food and Nutrition of Industrial Workers in War Time. Committee on Nutrition in Industry. National Research Council. Nutrition Reviews. 1, 13-14 (November, 1942).

An authoritative "chart for action" has been prepared by the Committee on Nutrition in Industry. The report is brief (17 pages) and factual. Copies of the report may be obtained by writing to Dr. Frank Cunderson, Executive Secretary, Food and Nutrition Board, 2101 Constitution Avenue, Washington, D. C.

- 110 This Problem of Food. J.I. Rountree. Public Affairs Pamphlet No. 33, (1942). Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York, N.Y. 32 pp. Price 10 cents, discount for quantities.

The first part of the pamphlet consists of a discussion of the question of maintenance of adequate diet by the great majority of the population; a discussion in which representatives of various interested groups participate. Their conclusion is that although lack of income is one important barrier to adequate nutrition, the main problem is that of education. As a contribution to education in food values, a discussion of food constituents follows including total calories, proteins, calcium, iron, iodine, and the more important vitamins, treated very simply and clearly with graphic illustrations. Several menus are given which afford sufficient and deficient supplies of vitamins, and a weekly food list for a family of four is suggested, which provides more than the minimum quantities of the necessary vitamins and mineral constituents. With such a diet no minerals or vitamins need be bought in drug form. Among the points discussed are vitamins in cereals. Whole grain cereals are inexpensive and high in vitamin B₁ and are therefore greatly preferable to prepared cereals. In other cases a slight substitution greatly improved the vitamin content of a diet. Finally, there is a brief chapter on nutrition and public policies, treating briefly the food stamp plan, the California scrip certificates, the low-cost lunch plans of Great Britain and Sweden, but pointing out that the fundamental problem still remains, with surpluses on the farms and insufficient food for many people. The last revision of this pamphlet was dated July, 1941, and so the complications caused by war conditions do not enter the discussion.

- 111 Food and Nutrition of the Industrial Worker in Wartime. F.G. Boudreau and R.S. Goodhart. Am. J. Pub. Health. 32, 1535-1540 (December, 1942).

The author calls attention to the fact that both Germany and Great Britain have outdistanced the United States in realizing the necessity of keeping the community strong. Great Britain expanded her program of health and nutrition at a time when the military situation was the most desperate. Improvements in diet was followed by increased war production, and a special health program built up unsuccessful recruits so that 82% of them were accepted into the army after 6 months. Studies and surveys made by the committee on Nutrition in Industry of the National Research Council have shown that our war workers, on whom we depend for production of the tools of war, are not adequately fed. Because a large proportion of them suffer from multiple but mild nutritional deficiencies, optimum health is impossible, and output must suffer accordingly. Investigations of the nutritional status of an adult W.P.A. group of 165 persons in New York City showed a high incidence of anemias, blood-plasma ascorbic acid deficiencies in over 26% of the group, and avitaminosis A in 65 of 143 persons examined. Studies of diets of workers in 33 war plants showed the inadequacy of plant cafeterias in helping to make up deficiencies in the home diet. The relation of diet to absenteeism due to illness is not known, but every dietary experiment with workers has shown beneficial results. The first report of the Committee on Nutrition in Industry published in April, 1942 and titled "The Food and Nutrition of Industrial Workers in Wartime," aroused keen interest among doctors, workers, and employers. Due to the interest aroused and the fact that ways to attack the problem were becoming known, the Nutrition Division of the Office of Defense Health and Welfare Service decided to effect an organization to promote better nutrition of industrial workers. A technical consultant in the Office in Washington is to work through representatives, at least one of whom is to be a physician, in each of the 12 Federal security regions. Widespread interest in the health and nutrition of workers is shown by workers, their families, management, communities and states, and has extended to industrial physicians, who formerly did not consider the subject within the scope of their work. Health

- officers, also, should include this phase of health improvement in their programs. The new knowledge and interest in the field of nutrition should be applied in order to place democracies on at least an equal basis with dictatorships in utilizing advances in science for the benefit of their people.
- 112 Square Meals or Sandwiches? H.P. Smith. Nat. Safety News. 46, 20 (Dec., 1942). Many large industrial war plants provide hot lunches for their employees. In some plants that are too large for cafeteria service, trains of portable vacuum-insulated food carriers mounted on trucks distribute lunches to workers over the entire plant.
- 113 Can We Increase the Production of War Workers by Improved Nutrition? R.S. Harris. Occup. Hazards. 5, 12-13, 30 (October, 1942). A survey in Cincinnati revealed that the diets of the majority of factory workers in war industries are inadequate. The army and navy feed their men well in the realization that best performance requires a healthy body and a healthy body requires good nutrition day after day. Industry does nothing about it. In England communal feeding centers have been established in industrial centers, and all factories employing more than 200 must provide a canteen. We can increase the production, health and morale of war workers by education and an enlightened feeding program at each factory.
- 114 Problems in Wartime Industrial Practice. N.K. Forster. J. Indiana State Med. Assoc., 35, 416-420 (August, 1942). The constantly expanding problem of the prevention and treatment of occupational diseases and industrial accidents is more and more of a burden for the industrial physician. One industrial doctor may be required to care for as many as 6,000 workers because of the wartime shortage. Absentecism is also discussed.
- 115 The Medical Profession's Part in the War Industrial Effort. O.J. Johnson. Penna. Med. J., 46, 191-195 (December, 1942). The responsibility for maintaining the health of war workers has not been so well realized by the medical profession as by laymen charged by the government with the production of war material. Prevention is now the keynote of industrial practice. Treatment is being looked upon as a necessary measure where prevention has failed. Absenteeism should be one concern of the profession. In one plant a study of absenteeism led to the employment of an industrial physician and 3 industrial nurses. Smaller plants in the same community then developed a plan by which local physicians visited the plants in rotation, spending at least an hour at each visit. The role of the physician in industry is threefold: (1) prevention of disease or injury in industry by establishing proper medical supervision; (2) health conservation of workers through physical supervision and education; and (3) medical and surgical care to restore health and earning capacity as rapidly as possible.
- 116 The Health of Our Nation in War Time. Thomas Parran. J.A.M.A., 120, 1224-1226 (December 12, 1942). The demands of our military forces for medical personnel must be reconsidered in the light of maximum efficient usage to prevent a serious dislocation of civilian health protection. The experience of Great Britain in meeting the same problem is reviewed and it is shown that the overall picture should be studied by a Medical Personnel and Priority Committee. This committee should have government authority to enforce their decisions. "Unless prompt action is taken to solve satisfactorily the problem of medical care for war workers and other civilians in many communities, I fear that we are inviting trouble. I am confident that there will be the fullest cooperation of the armed forces in reducing their demands for medical manpower in order to insure that vital war production will be kept up and to prevent any possible collapse on the civilian front."

117 Industrial Psychiatry in Wartime: Employability of Certain Mental Cases. L.S. Selling. Ind. Med., 11, 407-411 (September, 1942).

Each plant should have a psychiatrist whose relationship to the personnel department and to the medical department is the same as that of the plant physician. In these times such an expert will be hard to get and hard to integrate. If an adequate specialist cannot be used, the plant physician must first of all eliminate the obvious lunatics; second, must know enough psychiatry so that he can cull out psychiatric cases and refer them to a consulting psychiatrist. And, third, he should realize that there are certain psychiatric cases who, because their condition is constant, are not likely to do harm and can be employed in spite of their ailment, and that there is a second group who have been treated for serious mental diseases and have recovered sufficiently to justify the physician in recommending their re-employment. The use of psychiatry in industry is still limited, both by the psychiatrists' lack of understanding of the problems of industry and by the lack of psychiatrists who have the special talents which would make them able to take cognizance of the dual role that they might play in an industrial organization. The plant physician, while not a psychiatrist and hence more likely to make a number of psychiatric errors, some of which might be serious, is in a position to utilize the knowledge available from this branch of the profession in a competent fashion. He is better off to use what little knowledge of mental medicine he can acquire and apply it, than to ignore the whole subject in times like these when every available man must be utilized. - Author's summary.

118 Medical Service Plans for Larger Industrial Plants. A.R. Smith. Industrial Hygiene (N.Y. State), 21, 369-372 (October, 1942).

The American College of Surgeons has outlined the following features for an adequate medical service in larger industrial establishments: (1) A definitely organized plan for the medical service. (2) A definitely designated staff of qualified physicians and/or surgeons, nurses and attendants. (3) Adequate emergency, dispensary and hospital facilities. (4) Pre-employment and periodic physical examinations - to be made only by qualified medical examiners. (5) Efficient care of all industrial injuries and occupational diseases. (6) First-aid treatment and advice for employees suffering from non-industrial injuries and illnesses while on duty. For further professional care such employees should be referred to their family physician. (7) Education of the employee in accident prevention and personal hygiene. (8) Elimination or control of all health hazards. (9) Adequate medical records, accessibly filed in the medical department under responsible medical supervision. (10) Supervision of plant sanitation and all health measures for employees by the physician or surgeon in charge. (11) An ethical and cooperative relationship with the family physician. (12) The use of approved hospitals. Dr. Smith discusses this program under three main headings: (a) The medical plant, (b) The medical personnel, and (c) The medical Program.

119 Influence of War on Industrial Medicine. J.J. Bloomfield. War Medicine. 2, 331-370 (July, 1942).

The responsibility of industrial medicine is second only to that of military medicine. Industrial health problems have been greatly complicated by the war and there are four broad conditions which exist today throughout the country. They are, first, health problems arising in the community environment; second, the physical composition of the war labor force as compared to the peacetime labor supply; third, hazards which are found in the working environment; and, fourth, the shortage of trained personnel in the various professions concerned with health conservation in industry. These four conditions are discussed in detail.

- 120 Hay Fever and Vitamin C. H.N. Holmes and W. Alexander. Science. 96, 497-499 (November 27, 1942).

Over a period of four years it was observed that there was a lowering of the body level of vitamin C during hay fever attacks. Twenty-five sufferers from hay fever were given 100 mg., 200 mg. and 500 mg. doses of vitamin C, daily, during the ragweed season from August 15 to September 15. The pollen count at Oberlin, Ohio, the location of the tests, averaged 87 for the last half of August and about 80 for the first half of September. "Sneezing begins at 15." After one week of 100 mgs. of vitamin C daily, five of the subjects showed some improvement. Twelve gained decidedly after a week on the 200 mg. dosage and eight reported a remarkable improvement after three or four days at the 500 mg. level. A distinct gain is reported for 86 per cent of the patients. This would appear to be of importance in the reduction of absenteeism.

- 121 Vitamins for the Prevention of Colds. D.W. Cowan, H.S. Diehl and A.B. Baker. J.A.M.A., 120, 1263-1271 (December 19, 1942).

This controlled study yields no indication that either large doses of vitamin C alone or large doses of vitamins A, B₁, B₂, C and D and nicotinic acid have any important effect on the number or severity of infections of the upper respiratory tract when administered to young adults who presumably are already on a reasonably adequate diet.

- 122 Fitness in Industry and Its Maintenance by Indoor Sunbaths. Compiled by Hanovia, Ltd., Slough, England. (Manufacturer's pamphlet).

The installation of solaria in mines and in other establishments in which workers have little sunlight exposure has led to better health, fewer absences, fewer accidents and increased output. Plans and specifications for solaria of various capacities are given.

- 123 Great Britain's Experience with Absenteeism. Anonymous. Management Record. 4, 401 (December, 1942).

If any worker in an "essential undertaking": (1) is absent without reasonable excuse; (2) is persistently late for work; or (3) fails to comply with any lawful or reasonable orders given to him (including any orders as to the working of day or night work and of a reasonable amount of overtime), his case will be referred to the Joint Labor-Management Committee of the plant for action. A worker prosecuted in this manner may be fined or imprisoned or, if he is of military age, he may lose his status as "deferred from military service." Of the 7,500,000 workers subject to the restrictions of the act, about 250 were prosecuted and 40 received prison terms during the 18 months from March, 1941 to September, 1942. The trade unions have accepted these severe measures because management is also rigidly controlled under the Defense Regulations. Inefficient employers can be replaced if the government finds it necessary.

- 124 Missing From the Job. W.L. Fox. Nat. Safety News. 46, 21, 54 (December, 1942).

Eleven plants in Syracuse, employing 15,000 workers cooperated in a study of accidents to employees outside of working hours over a period of 6 months. During that time there were 159 plant accidents with a total of 3,659 days of lost time, against 109 non-occupational injuries with 2,253 days of lost time (excluding disability charges in both cases and one fatality). Motor vehicles accounted for nearly half the non-occupational accidents, and home accidents, about a fourth.

- 125 Can the Industrial Nurse Help? H.G. Murray. Occup. Hazards, 5, 12, 13, 22-23 (December, 1942).

A public registered nurse in industry should be able, through her department, to cut down the number of days lost due to illness or injury with benefit to both employer and employee. A description of the methods employed by a manufacturer and the results obtained are given.

004047

INDEX
(January, 1943)

<u>Asbestos</u>	60	<u>Explosion hazards</u>		<u>Occupational diseases</u>	
<u>Asphyxiation</u>	123	control	91	annual report (Indiana)	
<u>Asphyxiants</u>	124	<u>Explosives</u>		56	
<u>Asphyxiation</u>		safe handling	67	control	114
<u>Asphyxiation by inhalation</u>	35	<u>Fire prevention</u>	46	<u>Personnel problems</u>	
<u>Asphyxiation</u>		<u>Foundry</u>		health aspects	61
<u>Asphyxiation</u>		safe practice	94	<u>Photomicrographs</u>	
<u>Asphyxiation</u>		<u>Gas poisoning</u>		hand camera	77
<u>Asphyxiation</u>		treatment	32	<u>Physical examinations</u>	
<u>Asphyxiation</u>		<u>Handicapped workers</u>		100-101	
<u>Asphyxiation</u>		employability	102	costs of special types	
<u>Asphyxiation</u>		<u>Hay fever</u>		99	
<u>Asphyxiation</u>		vitamin C	120	<u>Pneumoconiosis</u>	
<u>Asphyxiation</u>		<u>Health hazards</u>		baggasosis	26
<u>Asphyxiation</u>		occupational		lignite dust	27
<u>Asphyxiation</u>		classification	13	<u>Poisons and toxicology</u>	
<u>Asphyxiation</u>		<u>Heart disease</u>		elective effect	38
<u>Asphyxiation</u>		in industry	108	<u>Polyethylene glycol</u>	
<u>Asphyxiation</u>		<u>Housekeeping, industrial</u>	90	pharmacology	37
<u>Asphyxiation</u>		<u>Indium</u>		<u>Psychiatry, industrial</u>	
<u>Asphyxiation</u>		physiologic properties	40	117	
<u>Asphyxiation</u>		<u>Industrial health</u>		<u>Sanitation, industrial</u>	
<u>Asphyxiation</u>		solaria	122	103	
<u>Asphyxiation</u>		<u>Industrial hygiene</u>	92	<u>Silicosis</u>	
<u>Asphyxiation</u>		report	68	action on report	28
<u>Asphyxiation</u>		war industries	59	occurrence and control	
<u>Asphyxiation</u>		<u>Industrial medicine</u>		29	
<u>Asphyxiation</u>		effect of war	119	<u>Silicosis and tuberculosis</u>	
<u>Asphyxiation</u>		war effort	115	coal miners	25
<u>Asphyxiation</u>		<u>Kata-thermometer</u>	85	<u>Teeth</u>	
<u>Asphyxiation</u>		<u>Lead tetraethyl</u>		occupational effects on	
<u>Asphyxiation</u>		absorption	42	57	
<u>Asphyxiation</u>		<u>Magnesium</u>		<u>Toxic solvents</u>	
<u>Asphyxiation</u>		safe handling	45	control	30
<u>Asphyxiation</u>		<u>Magnesium casting</u>		<u>Spray painting</u>	
<u>Asphyxiation</u>		air contamination	39	88	
<u>Asphyxiation</u>		<u>Manpower</u>		<u>Ventilation</u>	
<u>Asphyxiation</u>		conservation	65	on the Witwatersrand	
<u>Asphyxiation</u>		crisis	16	80	
<u>Asphyxiation</u>		<u>Medical departments</u>		<u>Vitamin C</u>	
<u>Asphyxiation</u>		in war industry	15	therapy	50
<u>Asphyxiation</u>		<u>Medical service</u>		<u>Vitamins</u>	12
<u>Asphyxiation</u>		large plants	118	<u>War gases</u>	
<u>Asphyxiation</u>		plans	14	treatment of casualties	
<u>Asphyxiation</u>		<u>Methyl bromide</u>		105	
<u>Asphyxiation</u>		toxicity	36	<u>Women</u>	
<u>Asphyxiation</u>		<u>Morbidity, disabling</u>		protective clothing	89
<u>Asphyxiation</u>		industrial worker	53	<u>Women in industry</u>	
<u>Asphyxiation</u>		<u>Nation's health</u>		82-83	
<u>Asphyxiation</u>		in wartime	116	health problems	64
<u>Asphyxiation</u>		<u>Noise</u>	70	<u>X-ray technique</u>	
<u>Asphyxiation</u>		<u>Nursing, industrial</u>	125	95-97-98	
<u>Asphyxiation</u>		<u>Nutrition</u>		Trudeau report	96
<u>Asphyxiation</u>		105-110-112			
<u>Asphyxiation</u>		wartime worker	111		
<u>Asphyxiation</u>		and production	113		