

# INDUSTRIAL HYGIENE DIGEST

## *Literature Abstracts*

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

## *Industrial Health News*



*Issued Monthly By*

**INDUSTRIAL HYGIENE FOUNDATION**

4400 FIFTH AVENUE  
PITTSBURGH, PA.

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# FOUNDATION FACTS

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

August, 1942

No. 6.

## Annual Meeting, November 10-11

Long-measures for cutting our manpower wastage in the face of a threatened shortage will be detailed at the Seventh Annual Meeting of the Industrial Hygiene Foundation which, it is announced, is scheduled for Mellon Institute, Pittsburgh, November 10-11. The meeting of Foundation members, most of them companies producing war materials, has for its theme "Health Arms the War Workers."

The program, staffed with industrial health specialists, will drive for action in reducing the approximately 2-1/2 million days war workers are losing weekly from illness and non-industrial injuries. Roughly, an average of 350,000 work days are being lost daily at a time when our war production schedule calls for a plane every 3 minutes and a tank every 12 minutes.

Because this subject of wasted manpower is still too much in the talk stage, the Foundation urges these practical measures for member companies and other industrial concerns in war work:

1. Immediate audits and analysis of absences to determine the amount of time lost from illness and non-industrial injuries, the cause and location.
2. Immediate industrial hygiene surveys to locate and eliminate hazards, such as chemical fumes, dusts, etc., endangering the health of workers.
3. Modern medical departments within industry, ably staffed and armed with authority to direct employee health protection in all phases.

This plan of action, which promises actual progress in saving work days, will be amplified at the Foundation's annual meeting. Intensifying demands for an industrial health offense now are those factors:

1. Increased use of chemicals, some of them unfamiliar substances with little-known toxic effects;
2. Longer work periods and consequent longer exposures to toxic materials, perhaps sufficient to tip the balance between health and sickness;
3. Increased employment of women, youths and older men who may lack the resistance of normal workers, and "safe limits" for known toxic substances are based on normal workers;
4. Increased production tends to increase health hazards all along the line and may result in fatigue, carelessness in safe practices and greater human liability to sickness and occupational disease.

Health protection is the counter-attack, and must keep pace with production. Sick workers like sick soldiers can lose this war, for work days mean munitions.

Information on Nutrition Available to Members

It is claimed that only 30% of all industrial workers enjoy a proper diet. More and more companies are trying to do something about malnutrition among their employees. Memo to Members: Nutrition studies have been underway at Mellon Institute (Foundation headquarters) for years. Through the cooperation of the specialists engaged in these investigations, information is available to Foundation members upon request. Please send in your questions. A handy "Guide to Better Nutrition" is being sent to member companies as well as a recent bulletin from the National Research Council on "The Food and Nutrition of Industrial Workers in Wartime."

New Medical Bulletin Issued

Bulletin No.5 in the Foundation's Medical Series is being sent to member companies. This bulletin gives further findings from the X-ray studies which the Foundation has been supporting at University of Pennsylvania for several years. The study, comparing the merits of various sized X-ray films, was made by Dr. Eugene P. Pendergrass, Dr. S. Reid Warren, Jr., and Darrow E. Haagenen.

Personal Items

W.P. Yant, member of the Foundation's Board of Trustees and Preventive Engineering Committee, has recently returned from England. Mr. Yant, of Mine Safety Appliances Company, and Dr. W.C. Sawyer of Eastman Kodak Company made the trip as representatives of the U.S. Government to study industrial hygiene in British war industries.

W.G. Hazard, member of the Foundation's Preventive Engineering Committee, is on leave from Owens-Illinois Glass Company, serving with the Industrial Hygiene Division of the U.S. Public Health Service. He is stationed at Trenton, N. J.

Dr. Clifford Kuh, Chairman of the Committee on Industrial Health, Connecticut State Medical Society, left New Haven August 15 to assume the position of Chief of the Bureau of Industrial Hygiene, California State Department of Health.

Welfare or Recreation Director Available: For details write Industrial Hygiene Foundation.

Seventh Annual Meeting --- November 10 and 11!

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Industrial Hygiene Foundation,  
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INDUSTRIAL HYGIENE DIGEST  
Literature and News

News Items

- 691 Connecticut Occupational Disease Report (May, 1942).  
Of a total of 119 cases of occupational diseases in Connecticut during May of this year, 99 were classified as dermatitis with oils being responsible for 72 of the cases. Silicosis and pneumoconiosis caused 4 and 11 cases respectively. There were 3 poisoning cases, one each from carbon monoxide, ethylene dichloride and nitrogen oxides.
- 692 Occupational Disease.  
The O.I.C. Monitor of July, 1942 states that occupational disease experience in Ohio continued to show a substantial increase in claim costs, this increase being particularly pronounced in industries where dust diseases are prevalent. This has required a revision upward in the O.D. rates in 76 industry classifications, while 40 classifications received reductions and in 270 classifications the O.D. rates were not changed. A manual containing the premium rules and rates can be obtained upon request from the Industrial Commission of Ohio, Division of Safety and Hygiene, Columbus, Ohio.
- 693 Outbreaks of Eye Disease.  
Three outbreaks of a contagious eye disease affecting nearly 600 shipyard workmen are reported by Dr. Forrest E. Rieke in the July 18 issue of the J.A.M.A. The germ which causes the disease has not been identified, but the disease was believed to have originated in Hawaii, where it was reported in 1941. Most of the eye inflammations lasted from 16 to 26 days and were resistant to every known form of treatment. It cannot be stated at this time whether the vision will return to normal or not. Federal health service officials believe that the disease may have been spread by contaminated masks and goggles.
- 694 Corrosive Dust.  
The extremely corrosive nature of the dust which accumulates in the firebox of and oil-fired boiler is described on page 12 of the July, 1942 issue of SAFETY ENGINEERING. The dust when moistened with water will generate sufficient heat to reach a temperature as high as 180°F. Attention is called to the necessity for protecting workmen's eyes by goggles. It is also apparent that respirators should be on the must list for such exposures.

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695 Motors for Magnesium Dust Locations.

Announcement is made in Chemical and Engineering News for July 25, 1942, that a new line of polyphase induction motors in sizes from 1 to 20 horsepower, N.E.M.A. frames 203 to 326 inclusive, suitable for use under magnesium dust conditions has been developed by General Electric Company.

696 Noted Public Health Expert Joins Illinois Staff.

Dr. Allan J. McLaughlin, a past president of the American Public Health Association, has become a medical administrative consultant of Illinois State Health Department. Dr. McLaughlin's extensive experience was obtained as Assistant Surgeon General and also as Medical Director of the U. S. Public Health Service. He is a veteran of many national and international public health campaigns and has unselfishly abandoned his retirement to provide leadership in the present wartime emergency.

697 Public Health In Germany.

The plight of the medical profession in Germany and occupied Europe is described in the July 3, 1942 issue of SCIENCE (p.17). Especial attention is being paid to the selection of the personnel of medical schools to insure the proper education of "the new generation of physicians in the principles of the physicians' new communal task in every sphere of medical science." Sensational figures on the number of cases of communicable diseases are given with instances of recent increases of the order of 500 to 800 per cent. The original material for this article appeared in the Journal of the American Medical Association.

Legal Developments

698 Dermatitis Caused by Allergy to Soap Furnished by Employer. Failure to Prove Accidental Injury.

The employer in this case contends that there was no proof of an accident within the provisions of our compensation laws to support the award upon which a judgment was entered. The claimant was in the employ of the defendant for many years. His work consisted of handling defendant's products when they were packed in boxes, sealed with glue and ready for shipment. The glue when fresh not infrequently stuck to his hands. On June 18, 1939, at the lunch hour he went to the washroom in the plant as was his custom to wash his hands and to remove the glue therefrom. He used hot water and the same soap that he and a large number of his fellow employees had been using without apparent ill effect for years. About 4 o'clock his hands began to burn, the skin cracked and a rash appeared. At the end of three days the skin affliction had extended to his elbows and was so painful that he quit work. His condition grew worse and upon examination, a doctor found that the claimant was suffering from a dermatitis principally on his hands and forearms. After the claimant had given him a history of his affliction and he had received some of the glue and liquid soap the doctor "patch-tested" claimant with these materials and found he had a positive reaction to the soap and a negative one to the glue. The mere proof of an injury, apparently attributable to claimant's skin being allergic to soap, does not justify a conclusion that the injury resulted from an accident. There must in all cases be an accident. Here there was none. The judgment is reversed and is now entered for the defendant. Kusevich v. H.J. Heinz Company. Penna. Superior Ct. Decided July 23, 1942. (CCH).

699 Death from Lobar Pneumonia Contracted While Performing Regular Duties. Not an Accident in Course of Employment.  
The referee in this workmen's compensation case disallowed compensation. The Board affirmed the order of disallowance, and the court of common pleas dismissed claimant's appeal and affirmed the action of the board. The board was of the opinion that claimant's deceased husband did not sustain an accident in the course of his employment which resulted in his death. Defendant was in the business of dismantling, moving, and erecting heavy machinery and equipment. Deceased was a superintendent or outside foreman who had charge of rigging and hauling the machinery and equipment. He usually went to work about 7 a.m. and returned about 6 p.m., but he had no regular or specified hours. In the performance of his duties it was necessary for him to be out in all kinds of weather. The deceased, while inspecting the installation of certain machines was out in a heavy rain for quite some time. Two or three days later he developed a chest cold, but he continued to work until April 29, 1939, when his family physician was called, and he diagnosed deceased's condition as lobar pneumonia from which he subsequently died. In deceased's line of work getting wet would not be unusual or extraordinary, or in itself constitute an accident. The fact that deceased got wet and contracted a cold which subsequently developed into pneumonia did not constitute a fortuitous or unexpected event, but it was the natural and foreseeable result of his voluntary and deliberate act in exposing himself to the elements without any extraordinary circumstances impelling him to do so. Where the exposure causing the pneumonia or similar disease is not only intentional but deliberate and protracted, and in the regular course of the employee's work, there is no accident either in the happening of an untoward event, or in an unexpected and exceptional result. Judgment affirmed. Osteritter v. Moore-Flesher Hauling Company. Penna. Superior Ct. Decided July 27, 1942. (CCH).

700 Stone Cutter on Highway Injured by Heat Prostration. Non-Compensable as not Being Result of Accident.  
Claimant was denied recovery in the court below for heat prostration, while performing his usual duties as a stone cutter on a highway improvement. There is no evidence of any unusual happening in the performance of that work. To be compensable, an injury arising out of a claimant's employment must be accidental in origin and cause. There was no accidental incident, no occurrence out of the normal routine of the employment. Judgment affirmed. Rosato v. Industrial Commission of Ohio. Ohio Ct. of Appeals, 9th Jud. Dist. Decided April 16, 1942. (CCH).

701 Collapsed Lung. Lack of Causal Connection. Injury not Compensable.  
Plaintiff seeks an award of workmen's compensation on the theory that while performing the duties imposed by a contract of hiring with the defendant, Brown Paper Mill Company, Inc., he suffered an accident within the meaning of the Employers' Liability Law from which resulted permanent total disability. It was his duty to oil certain machinery in a wood room and to lift from the floor and place upon a chute or carrier heavy pieces of timber or wood which had fallen therefrom. He alleged that while lifting a heavy piece of timber, the physical strain and exertion needful to do so caused a collapse of his left lung and did seriously and permanently impair both lungs and the nerves, tissues and muscles of his chest. Plaintiff consulted Dr. J. C. Graves, defendant's regularly employed physician, and was treated intermittently for several months. At that time Dr. Graves' tentative diagnosis was that of incipient tuberculosis. He was able to resume work on November 22nd. He worked until July 16th and quit because he was again running temperature. Dr. Graves again examined him. His

physical condition enabled him to return to work on March 9th. He suffered a recurrence of same ailments experienced on the two previous occasions and again consulted Dr. Graves on June 16th. At that time he had fever and his chest was paining. Spontaneous pneumothorax may be caused from physical strain, coughing, laughing, riding, etc. Dr. Graves testified that while his early opinion was that plaintiff likely had incipient tuberculosis, he concluded that plaintiff was suffering from undulant fever. Assuming that the pneumothorax was caused by the strain, a fact not at all certain, the effect of this injury has definitely passed from the case because all the physicians agree that from nature's process the collapse has disappeared; the lungs has regained its normal condition. The cause of the recurring and intermittent fevers could easily be produced by different diseases, particularly by tuberculosis and undulant fever. If plaintiff has undulant fever it cannot be said that the accident caused it, and should we concede that he has tuberculosis, to make the case compensable, we would have to assume or conclude causal connection between its existence and the accident, a fact, in our opinion, the record does not at all make certain. The testimony fails to establish with reasonable certainty the cause of disability to be that alleged upon, but does disclose that the disability could be the result of another disease. Plaintiff is required, before being entitled to a recovery, to prove the verity of his contentions by a fair preponderance of the evidence, and this he has failed to do. Judgment affirmed. Spears v. Brown Paper Mill Company, Inc. Louisiana Ct. of Appeals, 2nd Circuit. Decided April 30, 1942. (CCH).

- 702 Death of Foundry Worker from Heat Exhaustion. Injury by Accident. Claimant's husband, died suddenly while in the course of his employment as a molder in the foundry room of the defendant brass manufacturing company. Contending that this employee's death was caused by "heat exhaustion", his widow sought compensation for herself and three children, under the age of sixteen, upon the theory that the death was "accidental" within the intentment of the Workmen's Compensation Act. The referee found that the temperature in the foundry and furnace rooms was at least 25 to 30 degrees higher than outside, and that the deceased died as a result of heat exhaustion produced while working during continuous and extreme heat. Upon these findings the referee made an award in accordance with the provisions of the statute in force at the date of the occurrence. The board affirmed the award. This appeal by the employer and its insurance carrier followed. There is a conflict in the evidence relative to the approximate temperatures inside the one-story brick building, with a ventilated flat roof, in which the deceased was working. The room in which he was stricken contained "two open flame furnaces and three pit furnaces," separated from the molding benches by a "sheet and steel" partition containing a door. The president of the defendant company expressed his opinion that when the furnaces were in operation the temperature in the room would be "about ten degrees" higher than the outside temperature. But John Knight, who was working near the deceased testified that it was "just about twenty-five to thirty degrees hotter" where they were working than outside. It was within the exclusive province of the referee and board to decide which estimate they would adopt. The finding is therefore adequately supported by competent evidence. Upon the question of causal connection, covered by the fifth finding, but one medical expert, Dr. Paul H. Franklin, was called. Heat exhaustion overtaking an employee in the course of his employment may be considered an "injury by an accident" within the meaning of the statute. That the prostration and death of claimant's husband was an "extraordinary and unlooked-for mishap" is apparent from the testimony of Dr. Franklin. Judgment affirmed. Reinhold v. Pittsburgh Brass Mfg. Co., et al. Penna. Superior Ct. Decided July 23, 1942. (CCH).

- 703 Injury to Skin from Wood Preserving Chemical. Oral Instructions to Jury.  
This is a compensation case. Judgment was for appellee against appellant for compensation for total disability for 156 weeks at \$10.80. Appellant has prosecuted its appeal. Appellee's employer was engaged in preserving timber by use of pentachlorophenol. It was appellee's duty to brand the timbers after being dipped. Striking the timbers caused his face to be sprayed with the preservative, which inflicted on him the injuries in issue. Appellee testified that the wood preservative affected his breathing, eyes and hearing. A doctor testified that appellee was suffering from an acne form eruption following a chemical burn. There was no error in overruling the appellant's motion for an instructed verdict. The jury, answering special issue No.10, found that appellee has suffered a total incapacity, running from the 3rd day of August, 1941, to the 3rd day of August, 1944. Appellee's testimony, and the medical testimony support the jury's verdict in answer to special issue No.10. The court committed error in giving to the jury an oral charge, in that after the findings of the jury had been returned into court and heard and considered by the court, the court spoke to the jury orally, pointing out a conflict in the jury's answers to two special issues. Reversed and remanded. Consolidated Underwriters v. Ruff. Tex. Ct. of Civ. App., 9th Sup. Jud. Dist. Decided July 9, 1942. (CCH).
- 704 Tuberculosis Contracted in Service of State. Not Compensable Because of Special Appropriation Made for Victim's Benefit.  
Certiorari to review a decision of the industrial commission. Relator contracted tuberculosis while in the employ of the state. The legislature appropriated \$960 to compensate her for the disability. She now claims that she is entitled to Workmen's Compensation. She has availed herself of the appropriation. There can be no doubt that the legislature did not intend to pay relator \$960 in addition to what she might show herself entitled to recover under the Workmen's Compensation Law. Rather, the legislature proposed to settle relator's claim for compensation by paying her \$40 a month for 24 months. The evidence shows that she has accepted that proposition. Under the special enactment, relator is entitled to receive \$960, neither more nor less. Affirmed. Wolner v. State of Minnesota. Minn. Supreme Ct. Decided July 17, 1942. (CCH).
- 705 Action for Damages. Reasonably Safe Place to Work. Silicosis. Alleged Misconduct of Jury.  
This is a petition for a rule to show cause why a verdict should not be set aside. The suit involved the question of whether or not the defendant furnished the plaintiff a reasonably safe place in which to do his work as a machinist, and whether or not the plaintiff contracted silicosis as a result of his work. The jury rendered a verdict in favor of the plaintiff. The affidavit of the defendant says that during the trial, juror number one whispered to a witness for the plaintiff, the word "congratulations." Nothing is shown in the way of misconduct so far as this statement is concerned. The defendant's affidavit says that juror number eleven asked the court whether or not the defendant carried compensation insurance. This question was fully discussed in the court's charge and the jurors were told that the question of compensation insurance had no place in the trial. The defendant further states that juror number eleven read a book called "Everybody's New Jersey Law." It is not shown how any reading by a member of the jury during the trial can be said to have affected the verdict of the jury. The defendant further alleges that juror number seven, during the trial, discussed the case with some other person in the corridor of the Coliseum Building, which discussion dealt with the question of compensation insurance. Defendant further states that the jury discussed only the question of damages, and that there was no discussion of the question of assumption of risk, contributory negligence or proximate cause. It may well be that the

jurors were so well satisfied that it was unnecessary on their part to consider them. Furthermore, what may have taken place in the jury room is not a subject of inquiry on this application. Rule granted to show cause, at which time testimony is to be presented as to the conduct of this particular juror in the discussion in the corridor of the Schwelm Building during the trial. Conover v. LeBeck. N. J. Supreme Ct. Decided June 27, 1942. (CCH).

726 Pulmonary Tuberculosis. Failure to Maintain Proper and Sufficient Ventilation. Running of Statute of Limitations from Time Injurious Effects First Experienced. Assumption of Risk.

Plaintiff sued to recover damages due to his contracting tuberculosis while working for the defendant at its ready-mixed concrete plant. Plaintiff was caused to work in a small room at said plant in which there was present a very high percentage of dust from cement and other materials used by defendant in preparing its ready-mixed concrete products. Plaintiff alleged he breathed this dust laden atmosphere over a period of three years, as a result of which he was totally and permanently disabled with pulmonary tuberculosis. Judgment was for plaintiff, and defendant appealed. The question raised is that the disability of plaintiff is not shown to be the result of any industrial disease, contracted in the course of his employment. Plaintiff is now totally disabled by active pulmonary tuberculosis, and it is true that there is no absolute physical proof that his condition was caused by his breathing the cement dust. The medical evidence seems to conclude that a man working under conditions such as plaintiff was subjected to would predispose him to the activity of the tubercular germs, and would be calculated to aggravate a more or less dormant or inactive condition of same. It seems probable that plaintiff's general condition was lowered or impaired by the constant breathing of the dust laden air, and that this paved the way for the tuberculosis germs to attack successfully. The evidence sufficiently showed that plaintiff was a reasonably well man at the time he went to work for defendant and that he suffered a total disability as a result of being subjected to dust laden air. There was evidence to support the verdict of the jury convicting defendant of negligence in failing to provide some way to remove the dust from the air. Occupational or industrial diseases, when due to the negligence of an employer in failing or refusing to comply with the statute, are actionable. The one-year statute of limitations cannot apply here. Plaintiff instituted suit within one year from the time he first experienced any injurious effects from the tortious acts of defendant, and, therefore, he was entitled to recover full damages even though his disability represented the accumulated effect from said tortious acts over a longer period of time. Defendant contends that plaintiff assumed the risk. This position is without merit. This is not a case where plaintiff's contributory negligence is a controlling factor. This suit is based upon the violation of a statute prescribing safety rules to be observed by an employer. To sanction a rule which would deny a recovery because an employee knew the safety rule was being violated would have the effect of nullifying the wholesome provisions of the statute, and defeat the very object of same. Judgment affirmed. Brooks Sand and Gravel Co., Inc. v. Bond. Tenn. Ct. of Appeals, East. Section. Decided June 27, 1942. (CCH).

727 Pulmonary Tuberculosis. Silicotic Lung Condition.

Appeal from an award for permanent total disability based upon a finding that claimant contracted an occupational disease. Claimant was a miner. He became disabled as a result of pulmonary tuberculosis. This disease was imposed upon a silicotic condition of the lungs. There is competent medical evidence to the effect that the silicotic condition was not disabling. There is also evidence that the disease of tuberculosis was caused by claimant's employment, which exposed him to wet and cold conditions, fumes, gases and improper ventilation.

Award affirmed. Webster v. St. Joseph Lead Company, et al. N. Y. Supreme Ct., App. Div., 3rd Dept. Decided May 6, 1942. (CCH).

708 Dermatitis. Several Employments. Whether Disability Due to First or Second Employment.

Appeal from an award of disability benefits. Claimant became disabled by reason of dermatitis, an occupational disease, sustained while in the employ of the appellant. He quit work on December 13, 1940. He returned to work on February 4, 1941, for another employer in the same occupation. He suffered a recurrence and was compelled to stop work again on February 28, 1941. The principal question is whether the disability resulted from his return to work on February 4, 1941, or was a recurrence of his previous disablement and the result of his employment prior to December 13, 1940. The evidence sustains the finding that such recurrence of the disease and the disability were the result of the first employment. Award Affirmed. Mountford v. Wright Photo Offset Co., Inc. et al. N. Y. Supreme Ct., App. Div., 3rd Dept. Decided May 6, 1942. (CCH).

709 Silicosis. Sufficiency of Evidence to Establish that Silicosis not Contracted in Defendant's Mine.

Appellant filed a claim for a personal injury by accident by contracting silicosis. Compensation was denied. The Board found that the work the claimant did for the defendant did not cause the silicosis from which he is now suffering and did not cause or light up, or aggravate tuberculosis, and did not aggravate the silicosis more than any other work would have done if it aggravated it at all; that neither the onslaught of silicosis nor the aggravation thereof was sudden. In compensation cases, claimant has the burden of proving his case by a preponderance of the evidence. The credit and weight to be given the testimony in industrial accident proceedings is for the industrial accident board. The Industrial Accident's Board's findings are conclusive upon appeal, if supported by competent evidence. The evidence is competent to support the board's finding that the work the claimant did for defendant did not cause the silicosis from which he is now suffering and did not cause or light up, or aggravate tuberculosis. Claimant was afflicted with chronic silicosis at the time he entered respondent's employment and had also been afflicted with tuberculosis. The board's finding that appellant did not contract silicosis during his employment by respondent is supported by substantial, competent evidence and will not be disturbed on appeal. Affirmed. Benson v. Jarvis. Idaho Supreme Ct. Decided July 11, 1942. (CCH).

710 Silicosis. Apportionment of Liability Between Insurance Carrier and Occupational Disease Fund. Applicable Statute.

The claimant had been employed as an electric welder by the Erie Forge Company, defendant, for a period of about thirteen years. In the performance of the duties of his employment claimant was constantly exposed to silica dust and as a result contracted silicosis and became totally disabled on December 12, 1939. On May 7, 1940 claimant filed a petition seeking compensation for total disability. To this petition answers were filed by the insurance carrier for the defendant company, and by the State Workmen's Insurance Board. The referee awarded compensation under the Act of June 21, 1939, P.L. 566, section 301 (g), 77 PS 1401, and apportioned liability equally between the defendant company and the State Workmen's Insurance Board in accordance with section 308 (a) of the said act, 77 PS 1408 (a). The defendant company and its insurance carrier appealed to the Workmen's Compensation Board on the ground that the apportionment of liability was to be determined in accordance with the Act of July 2, 1937, P.L. 2714 rather than the Act of 1939. The Workmen's Compensation Board affirmed the award of the referee. On appeal by the defendant and its insurance

carrier to the court of common pleas, the order of the board was affirmed.

Section 308 (a), relating to the apportionment of payments made jointly by the employer and the Commonwealth out of the Occupational Disease Fund applies to the instant case since it is one of silicosis. Clearly, the legislature must have intended that as to these diseases the act was to become effective October 1, 1939, since it specifically provides that if disability begins between October 1, 1939 and September 30, 1941, the employer shall be liable for and pay fifty per centum of the compensation due and the Occupational Disease Fund fifty percentum thereof. This section thus indicates that the legislature contemplated the payment of compensation even in those cases where the disability occurred any time within the first six months of the operation of the act. Judgment affirmed. Silva v. Erie Forge Company, et al. Penna. Superior Ct. Decided July 23, 1942. (CCH).

Book Reviews

- 711 Aerobiology. The American Association for the Advancement of Science - No.17. The Science Press Printing Company, Lancaster, Pa. (1942). 289 pp. Price -- \$3.50 members; \$4.00 non-members.

This symposium on Aerobiology was presented at a meeting of the A.A.A.S. held in Chicago, September 22-24, 1942. The volume consists of two distinct parts, extramural aerobiology and intramural aerobiology. In the former there are eight papers and in the latter there are twenty-nine papers. The large number of contributions indicates the great diversity of the problems in this field. Of particular interest to the students of industrial hygiene are the papers on air-borne infection, the behavior of microscopic particles in the air and in the respiratory system and the means of sterilizing the air by germicidal aerosol mists and vapors and by radiation. The subjects of disinfection of the air by air conditioning and recent experiences on the importance of dust are also of considerable interest.

- 712 The Hand -- Its Disabilities and Diseases. Condict W. Cutler. W. B. Saunders Company, Philadelphia, Pa. (July, 1942). 572 pp. Price -- \$7.50.

"To one who examines it carefully the hand tells much concerning its owner; for in it is written the record of age and sex, of health or disease, of occupation and habit, of skill or ineptitude, of accident or misuse, of work or indolence. One does not need the mysteries of palmistry to read there something of the past, a good deal of the present, and even a little of the future." This book offers a practical guide to those physicians in private practice, in military service, in industrial plants, in emergency departments and in clinics where conditions of the hand must be diagnosed and treated. There are 274 illustrations of the disabilities and diseases of the hand and their treatment. The portion of the book dealing with restoration of function and repair and reconstruction will be of particular interest to the industrial physician.

Industrial Health Hazards and Their Effects

- 713 Acute Illness Among Rural Mattress Makers Using Low Grade Stained Cotton.  
P.A. Neal and others. J.A.M.A. 119, 1074 (August 1, 1942).  
This report deals with an acute illness occurring among workers in rural mattress making projects in a cotton mill and in cottonseed processing plants in which the workers were exposed to high concentrations of stained cotton dust. Hundreds of cases of this illness occurred during the spring and summer of 1941. Outbreaks of this disease ceased when protective respiratory apparatus was used by the workers or when the use of the low grade, stained, dusty cotton was discontinued. Reports of the outbreak of this illness are continually being received from upholstering and cottonseed processing plants in which stained cotton is used. The acute illness is caused by the inhalation of a gram-negative, rod shaped micro-organism or its products contained in or on dust from stained cotton. The severity of the symptoms and physical manifestations in this illness are dependent on the presence and concentration of the cotton bacterium or its products in the cotton dust inhaled and on the duration of the exposure.
- 714 Glycol Poisoning. I. Ethylene Glycol. S. Caccuri. Fol. Med. (Napoli.) 25, 823 (1939). (Chem. Absts.)  
Peroral poisoning with ethylene glycol has been accomplished but thus far no occupational poisoning has been observed. The connection between oxaluria and kidney damage is emphasized.
- 715 Glycol Poisoning. II. Behavior of Blood Lipide in Ethylene Glycol Poisoning.  
V. Mauro. Fol. med. (Napoli.) 25, 840 (1939). (Chem. Absts.)  
Subcutaneous and muscular injections of ethylene glycol were well tolerated, there being no signs of irritation or necrosis. Absorption proceeded rapidly. Symptoms of slight irritation in the eyes and respiratory passages appeared upon inhalation of ethylene glycol vapors and a slight transitory narcosis was also noted. Administration was given orally (15 cc. per kg.) or subcutaneously on alternate days for 4 months. A slight diarrhea appeared after each subcutaneous injection of 1.5 cc. per kg. The rabbits died after 110-130 days. At autopsy no necrosis was found at the site of the injection, the peritoneum showed slight congestion, the liver was somewhat enlarged, the capsule was retractile, congestion was observed on the section surfaces and the renal pelvis was normal. In a 2nd experimental series the rabbits received, in the fasting state, 2 cc. of ethylene glycol per kg. on alternate days for over 4 months. In a 3rd series the rabbits were given in addition 0.5 g. of cholesterol suspended in lukewarm milk. The blood lipide curves were studied during the poisoning. The administration of ethylene glycol causes disturbances in these curves which are attributed to injury of the liver and other organs important in fat metabolism. All fractions were concerned in the change, generally a transitory increase. In poisoning, either parenterally or by way of the alimentary canal, cholesterol, neutral fats, soaps, and phosphatides increased. The behavior of the phosphatides was however variable. All fractions increased in loading tests with cholesterol. An increase in the total lipide was quite generally established in ethylene glycol poisoning. Liver and kidney damage are probably predominant.

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- 716 Glycol Poisoning. III. Behavior of Creatine Bodies in Ethylene Glycol Poisoning. V. Mauro. Fol. med. (Napoli.) 25, 986 (1939). (Chem. Absts.)

In ethylene glycol poisoning there is an initial increased excretion of creatine in the urine, which is followed by a decrease almost to the point of absence. In the blood the creatine increases from the beginning but especially from the time where the urinary excretion falls. Excretion of albumin appears simultaneously with the disappearance of the creatine excretion in the urine. The blood creatine is particularly high in chronic poisoning. The reason for the alteration of the creatine metabolism must be sought in the kidney changes which occur.

- 717 Glycol Poisoning. IV. Glucemia and Ketonemia in Ethylene Glycol Poisoning. V. Mauro. Fol. med. (Napoli.) 25, 1026 (1939). (Chem. Absts.)

Ethylene glycol produces hyperglucemia. This hyperglucemic activity can nullify the action of insulin. The ketone bodies in the blood are considerably increased during poisoning. The increased ketone content of the blood must be connected with the changes in the liver and kidneys produced by ethylene glycol.

- 718 Glycol Poisoning. V. The Electrolyte Equilibrium in the Blood in Ethylene Glycol Poisoning. M. Cerabona. Fol. med. (Napoli.) 25, 1139 (1939). (Chem. Absts.)

Three rabbits received daily subcutaneous injections of 1 cc. of 33% aqueous solution of ethylene glycol, a 4th rabbit serving as a control. The body weight and the blood chlorine, calcium, potassium, phosphorus and magnesium were determined before and on the 10th, 20th, 35th, 50th and 65th days after the beginning of the administration of the glycol. Rabbit 1 died after 27 days with the body weight falling from 2100 to 1350 grams. Rabbits 2 and 3 showed slight decreases in weight (2000-1850) and (2400-1950). The body weight of the control rabbit did not change. The blood chlorides fell somewhat in rabbit 1 but increased steadily in 2 and 3. The other electrolytes studied showed no essential changes. The increase in blood chloride is attributed to damage of the kidney by ethylene glycol.

- 719 Glycol Poisoning. VI. Morphological Alteration of the Blood in Chronic Ethylene Glycol Poisoning. L. DiPrisco and M. Szwarc. Fol. med. (Napoli.) 26, 287, (1940). (Chem. Absts.)

Groups of 3 rabbits received the following treatments: (a) exposure to ethylene glycol vapors 1 hour daily for 1 month; (b) 15 oral administrations of 2 ccs. of ethylene glycol diluted 1:3 every other day; (c) subcutaneous injections of 1.5 ccs. of ethylene glycol diluted 1:1 every other day, and (d) intravenous injections of 0.5 cc. of ethylene glycol diluted 1:1. In each group a 4th animal served as the control. Blood was taken before the experiment and on the 5th, 10th, 15th, 20th and 30th days. In ethylene glycol poisoning produced subcutaneously or intravenously the number of erythrocytes and leucocytes and the percentage of hemoglobin decreased, and immature red and white cells appeared. The number of lymphocytes remained unchanged. The animals lost weight, especially those who received ethylene glycol intravenously. Peroral administration and inhalation caused only a slight diminution of the hemoglobin and a tendency toward lymphocytosis.

- 720 The Dangers of Carbon Monoxide. Stüning. Reichsarbeitsblatt (N.F.), 20, 115 (1939). (Chem. Absts.)

A short presentation on the occurrence and the mode of action of CO on the human organism is presented. Conclusions and precautions are derived from a series of accidents and personal experiences, especially in foundries (coke ovens), cupola furnaces, producer plants, etc.

- 721 The Effect of Carbon Monoxide on the Inner Ear and Its Nucleus in the Medulla Oblongata. N.F. Popov. Vestn. Otol. i.t.d., 3, 471 (1938). (Chem. Absts.)  
In addition to other organs, both the peripheral receptors and the central portion of the inner ear in the medulla oblongata (tuberculum acusticum, triangular nucleus, Deiters' nucleus) are affected in CO poisoning. The changes are initially caused by functional circulatory disturbances with simultaneous anoxemia and disturbances in the nutrition of the structural elements of the inner ear through the histotoxic action of CO. Almost all of the clinical symptoms referable to the inner ear in man after CO poisoning can be explained by the changes found in experimental animals (mice, cat and dogs). There are circulatory disturbances with extravasations of blood by frank hemorrhage and by diapedesis and alterations of the nerve cells, part of which are reversible.
- 722 Action of Acute Carbon Monoxide Poisoning on the Agglutinin in Titer of the Serum. G. Scotti. Fol. med. (Napoli.) 26, 275 (1940). (Chem. Absts.)  
The influence of CO poisoning on the agglutinin content of the serum against typhoid bacteria and various proteus strains (Hx 19, O<sub>x</sub> 19, O<sub>XX</sub>, O<sub>x</sub> 2, & OKL) were studied in the rabbit. The animals were immunized with typhoid vaccine and, after a relatively favorable agglutinin titer (1:6400 to 1:3200) had been reached in the serum, they were poisoned with CO. The agglutinin value, determined in the blood after death, was the same as before the poisoning. No spontaneous agglutinins against the proteus strains were found in the rabbit. In non-immunized rabbits no agglutinins against proteus or typhoid were present. Naturally, the results were also negative after poisoning. The literature on the influence of chronic poisoning on the powers of resistance of the organism is reviewed.
- 723 Dangers from Protective Gas in Incandescent Polishing Plants. Kappe. Zentr. Gewerbehyg. Unfallverhüt. 27, 57-8 (1940). (Chem. Absts.)  
The purpose of the protective gas in incandescent polishing is to envelop the incandescent material upon cooling or even during heating so as to prevent oxidation. The protective gas must be completely dry, must contain no constituents which will react with iron, no oxygen and the carbon dioxide must not exceed a few per cent. A plant for the manufacture of such a protective gas is described. The industrial inspection board objected to this plant, however, because the development of an explosive mixture was feared. A plant is now being built in which the protective gas will be obtained from the complete combustion of city gas; it is said that it will be entirely unobjectionable from the technical viewpoint and to be non-inflammable.
- 724 Killing of Bees by Factory Waste Gases Which Contain Fluorine. G. Bredemann and H. Radloff. Deut. Imkerführer. 13, No.2, (1939). (Chem. Absts.)  
Fluorine containing waste gases, especially those produced by superphosphate industries, glass factories, tile works, certain metal foundries and chemical factories, can cause mass killing of bees through the ingestion of fluorine containing food or the inhalation of the fluorine containing gases. Injuries to vegetation, diseases of wild and grazing animals and the destruction of bees are danger signals of gas injuries which should be abolished or reduced before health disturbances for the human population appear.
- 725 Effect of Aromatic Hydrocarbons on the Growth of Young Rats. H.D. West and H.C. Jefferson. J. Nutrition. 23, 425-30 (1942). (Chem. Absts.)  
Both biphenyl and chrysene retard the growth of young rats on a low-protein diet. This condition is relieved by introduction of either l-cystine or dl-methionine into the hydrocarbon diets.

- 726 The Danger of Hydrochloric Acid Gas Poisoning when Testing Salt Treated Cream. H.C. Hanson and R.S. Snyder. *J. Dairy Sci.*, **25**, 189-94 (1942). (Chem. Absts.)  
Salted creams of 5 to 13 per cent salt concentration, when treated with sulphuric acid for the determination of the fat content by the Babcock method, release HCl fumes. Single samples of salted cream of 7.5, 10.0 and 13.0 per cent salt concentration release hydrogen chloride in amounts above the maximum allowable for prolonged exposure. Sets of 12 to 24 samples in any of the concentrations released HCl gas above the amount allowable for even a short exposure (1/2 to 1 hour). The slow rate of diffusion also causes high concentration of the gas near the operator, increasing the danger of injury.
- 727 Tetranitromethane-hydrocarbon Mixtures. The Most Brisant Explosive Mixtures Known up to the Present Time. A. Stettbacher. *Tech.-Ind. Schweiz. Chem.-Ztg.*, **24**, 265-71 (1941). (Chem. Absts.)  
On May 27, 1920, 10 students were killed and 20 severely wounded by an explosion of 10 g. of a tetranitromethane-toluene mixture. Tetranitromethane forms with hydrocarbons, such as  $C_6H_6$  and toluene, the most brisant, destructive explosive mixture possible to prepare today. It gives the highest pressure and temperature rises and sinister reaction of all chemistry. Tetranitromethane is very poisonous, affecting the membranes of the eyes and nose. It is always formed as a troublesome by-product in nitration of aromatic hydrocarbons and always accompanies crude trinitrotoluene, from which it is removed by washing and as a volatile vapor in coolers. It is not known whether or not it has been so collected. It is best prepared by reaction of  $Ac_2O$  and fuming  $HNO_3$ ; cooling is used to control the violence of the reaction. The yield is 58% of theory. Plate tests show the penetrating effect of explosion of the mixture, in comparison with other explosives. Pancastite approaches the strength of tetranitromethane, but has a lower d.
- 728 Aniline Poisoning and Its Treatment with Report of a Case. E. Winderlich. *Msehr. Unfallheilk.*, **46**, 434 (1939). (Chem. Absts.)  
An employee was showered with fluid and fumes when a flask broke during the distillation of crude aniline. His hands and face were washed after the accident, but his clothes were not changed. Paleness, noted some time after the accident, was followed suddenly 2 hours later by a bluish livid coloration of the face, coldness of the skin, difficulty of speech, dyspnea, cardiac dilation and a thready and very rapid pulse; later, vomiting, abdominal cramps, diarrhea and idiomuscular contractions also appeared. The treatment consisted of cardiac remedies and the intravenous injection of 1.5 mg. methylene blue per kg. of body weight. The action of the methylene was striking. The skin color and other disturbances were visibly improved. The cardiac dilation subsided after one hour. The electrocardiogram revealed signs of injury of the cardiac muscle a rather long time after the poisoning. It is possible, however, that this injury may have existed previously. The literature on acute and chronic aniline poisoning is reviewed briefly.
- 729 Primary Papilloma of the Ureter after Benzidene Injury. A. Müller. *Arztl. Sachverst. Ztg.*, **45**, 249 (1939). (Chem. Absts.)  
Cancer of the ureter in a workman, employed in a chemical plant, was attributed to the action of benzidene. The view that cancer of the bladder is caused by aromatic amines from the poison in the urine is not upheld, while other theories which explain the development by way of the blood through injury of the blood vessels possibly connected with absorption of poisonous substances from the urine are supported.

- 730 Poisoning by Chlorinated Hydrocarbons. R. Isenschmid. Schweiz. Arch. Neur., 44, 288 (1938). (Chem. Absts.)

A case of chronic poisoning with trichlorethylene is described. The question, as to whether arteriosclerosis observed in this case was coincidental and led to hypersusceptibility or was the result of the poisoning, is discussed. It is shown that young persons are especially susceptible and that alcoholism intensifies the action of the chlorinated hydrocarbons. It must be assumed that in heavy work more poison will be taken into the system, as a result of the increased respiratory volume, than in light work. Therefore, many cardiac patients and those with certain forms of obesity should be considered disposed to such poisoning. The protective action of calcium is pointed out, and the importance of fat in the diet in order to favor the absorption of the chlorinated hydrocarbons is mentioned. A vicious circle is believed to exist in that the poisons damage the vessels and the damaged vessels form a site of lowered resistance against the continued action of the poison in chronic poisoning, where the state of the vessels results in poorer nutrition of the nerve tissue.

- 731 Chronic Toxicity of Diphenylene Sulfide to the Albino Rat. J.O. Thomas, F. DeEds and A.J. Cox. Food Research, 7, 161-9 (1942). (Chem. Absts.)

The continued feeding of this new spray material to young male rats for 165 days resulted in lessened growth rates on concentrations of 0.10 and 0.05% in the diet. Food consumption decreased as the slopes of the growth curves decreased, and varied inversely with the concentration of diphenylene sulfide in the diet. Retardation of growth on the 0.05% dosage level was due to the decrease in food intake. Even on the diet containing 0.10% of the compound inanition was chiefly responsible for the growth inhibition. The spleens of the experimental animals decreased in weight as the dose of the sulfide increased. However, the histology of the organ remained normal. There was no evidence of blood injury.

- 732 Therapy of Illnesses from Carbon Disulphide. G. Rodenacker. Ber. 8. intern. Kongr. Unfallmed. u. Berufskrankh., 2, 1112 (1939). (Chem. Absts.)

Carbon disulphide, a fat soluble narcotic, is transported through the blood to the lipid containing ganglion cells and cells of the adrenal cortex. The symptoms of CS<sub>2</sub> poisoning are, therefore, in part of the central nervous system, and in part hormonal. That ulcer is a symptom of CS<sub>2</sub> poisoning is disputed. The adrenal cortical hormone and also vitamins and limitation of calcium intake are important in the treatment of CS<sub>2</sub> poisoning. The CS<sub>2</sub> content of the air should not be allowed to exceed 0.15 to 0.20 mg. per liter of air.

- 733 Toxic Possibilities of Sulphur Purification. Queries & Minor Notes. J.A.M.A. 119, 854 (July 4, 1942).

In the smelting and purification of sulphur there are so many special procedures possible that this statement is limited only to the simple procedure of sulphur purification by settling and skimming in the molten state. In this simple method the chief offending material is sulphur dioxide, although under some circumstances hydrogen sulphide may be evolved. In the absence of exhaust systems some six per cent of sulphur dioxide may contaminate the atmosphere. Sulphur dioxide is primarily a respiratory irritant and as little as 0.001 per cent may produce coughing and slightly higher concentrations may produce conjunctivitis, pharyngitis, bronchitis and the like. Prevention centers about the non-production of sulphur dioxide or if this is impossible in the collection and removal of the gas to non-dangerous areas. The tolerable limit being near 10 parts per million, efforts should be made to maintain working conditions approximating this level.

- 734 A Source of Industrial Hazard from Hydrogen Sulfide Gas. L.F. Robinson, M.N. Camp and E.C. Chamberlain. *Southern Med. J.*, 35, 621-3 (1942). (Chem. Absts.)  
A group of cases of local and systemic  $H_2S$  intoxications is reported in workers engaged in excavating in the oolitic limestone of South Florida.
- 735 The Sensitivity of the Human Skin to War Gases of the "Yellow Cross" Group. W. Koller. *Dermatologica*, 34, 257 (1941). (Chem. Absts.)  
Yperite and Lewisite were tested by spraying measured amounts on the backs of 100 white individuals. The resulting changes were recorded at intervals. Graphs show that lewisite is about 25 times more toxic than yperite. The threshold dose varies widely with the individual sensitivity. The minimum concentration becomes effective after a varied period of time in different individuals, and the curves recording the relation between concentration and time of exposure and incubation, although showing some proportionality, vary with the person. No immunity (due to habit formation, acquired insensibility or desensitization) occurred on repeated application of small doses.
- 736 Influence of Vitamin C Therapy on Arsenical Sensitivity. A.D. Vail. *J. Missouri State Med. Assoc.*, 38, 110-20 (1941).  
The article deals with the use of Vitamin C in patients receiving arsenicals. The inclusion of Vitamin C in arsenical therapy does not lessen the therapeutic response but as blood Vitamin C values improve, symptoms of arsenic sensitivity disappear. The recurrence of symptoms is usually reflected in the lowering of blood vitamin C values.
- 737 Casuistics of Basedow's Disease in Lead Poisoning. H. Waniek. *Arch. Gewerbe-path. Gewerbehyg.*, 10, 43 (1940). (Chem. Absts.)  
A 43-year old compositor suffered from acute lead poisoning with colic and the usual signs of lead intake, as basophile stippled erythrocytes and increase in urinary porphyrin and in blood lead (132 gamma per cent). Thyroid symptoms appeared a short time later. The liver function was also disturbed. It is debated whether this disturbance of the liver function, which is also a frequent finding in pure Basedow's disease, is caused by plumbism. Various views on the occurrence of hyperthyroidism in lead poisoning are considered. X
- 738 Incidence of Lead Poisoning in the City of Baltimore. J.M. McDonald and E. Kaplan. *J.A.M.A.* 119, 370 (July 11, 1942).  
Largely as a result of studies associated with a followup of a blood laboratory service, it has been possible for the Baltimore City Health Department to acquire relatively accurate information concerning the incidence of lead poisoning in the community in recent years. In the ten year period 1931-1940 at least 228 cases of plumbism are known to have occurred in Baltimore. Of these, 93 cases, or 41 per cent, involved adults, and 135 cases, or 59 per cent, occurred in children. There were seven fatalities among the adults, as compared with 49 fatalities among the children. Lead poisoning was of more frequent occurrence among colored children than among white children. Adult lead poisoning of occupational origin was more common among the white population than among the colored. X
- 739 Experimental Treatment of Acute Mercurial Poisoning in Guinea Pigs by Ascorbic Acid. J.V. Marin. *Rev. soc. argentina biol.*, 17, 631-6 (1941). (Chem. Absts.)  
To be an effective antidote the ascorbic acid must be injected into the blood stream within 10 minutes after the ingestion of  $HgCl_2$ . It probably acts by reducing the Hg compound. A mixture of  $HgCl_2$  and ascorbic acid in the mol. ratio of 1:2 is not toxic since all of the  $HgCl_2$  is reduced to  $HgCl$  or Hg.

- 740 Occupational Lead Anemia. E. Pfeil-Verhandl. deut. Ges. inn. Med., 582 (1940). (Chem. Abstrs.)

There is no lead poisoning without lead anemia. The action of lead should be distinguished from lead poisoning. The demonstration of an increased porphyrin excretion in the urine and of the basophile stippling of the red blood cells offers specific proof that an anemia is caused by lead. No decisive significance is attached to an increased lead content of the blood. Amounts of coproporphyrin up to 60 gamma/liter urine are considered normal. Values up to 60-700 gamma/liter with occasional intermediate values of 1000-2000 gamma/liter in those who have worked with lead for many years are considered harmless. Even with the simultaneous existence of basophile-stippled erythrocytes it may not be necessary to discontinue work with lead. The procedure of Fikentscher and Franke is recommended for the determination of urinary porphyrin and the staining method of Manson-Schwarz for the demonstration of the basophile stippled cells. There are no limiting values between healthy lead carriers and those endangered by their work with lead. Several thousand basophile-stippled erythrocytes per million are not sufficient, even with the simultaneous demonstration of increased porphyrin excretion in the urine, to make a diagnosis of plumbism. All the cardinal symptoms of lead poisoning, including the lead line, are necessary for the diagnosis of lead poisoning. The absence of only one of the cardinal symptoms makes the diagnosis doubtful. In practice, the estimation of the hemoglobin is recommended as the simplest and best control method for persons exposed to lead.

- 741 Relation of the Excretion of Arsenic in the Urine to Arsenic Poisoning. Queries & Minor Notes. J.A.M.A. 119, 954 (July 4, 1942).

No fixed amount of arsenic as detected in the urine may be accepted as the point of demarcation between arsenic absorption and clinical arsenic poisoning. A number of imponderable factors necessitate this statement, such as arsenic tolerance and the duration of the period in which arsenic appears in the urine. In connection with recent investigations on experimental arsenic intake in human beings, as much as 2.5 mg. of arsenic has been found in the daily output of urine without apparent arsenic poisoning. Approximately the same output continued for several days. Conversely, in known clinical arsenic poisoning as little as 1.36 mg. of arsenic represented the maximum urinary content per liter during the period of subacute poisoning. Some arsenic may be found in the urine of all persons. This represents a portion of the trivial intake with ordinary food, drink and in some instances tobacco. In Washington, D.C., men and children without known exposure to arsenic, presented a urinary content of 0.06 and 0.065 mg. of arsenic per liter, respectively. In general it appears tenable that any value of arsenic in the urine to a peak near 0.7 mg. per liter may be regarded as within normal limits although exception may be taken to this statement. Higher values up to 3 mg. may be regarded as representing unusual and undesirable arsenic intake except in connection with arsenical therapy. Persistent output of this order probably would be clinically significant. If the exposure has been of long duration, examination of the arsenic content of the hair may be of greater diagnostic value.

- 742 Copper Content in Various Water Supplies Due to Copper Plumbing. R.R. Kountz and C.H. Suurman. Proc. Iowa Acad. Sci., 48, 276 (1941). (Chem. Abstrs.)

The survey covers different types of waters, including treated and untreated well and surface supplies, and softened water (private and municipal). In each case the copper values are correlated with the age of the plumbing and the analysis of the water. The copper was determined by the modified diethyldithiocarbamate method. Although amounts of copper such as are found are toxic to many kinds of fish, they are not harmful for human consumption.

- 743 Classification, Treatment and Prevention of Heavy Metal Injuries in the Oral Cavity. P.C. Hesse. *Z. Stomat.*, 39, 19 (1941). (Chem. Absts.)  
The storage of heavy metals is differentiated from the resorptive action of heavy metals. The latter is subdivided into (a) dental heavy metal shock, indicating the toothaches which at times appear in the resorptive action of metals, (b) toxic chemical injuries i.e. metal lines and impregnations, and (c) toxic-infectious injuries i.e. simple and necrotic stomatitis. The alterations in the oral cavity in poisoning with lead, zinc, cadmium, chromium, tin, bismuth, iron, manganese, copper, silver, gold and mercury and erosions from heavy metal salts in the oral cavity are described and the therapeutic measures are discussed.
- 744 Injuries of the Pituitary-Diencephalon System in Industrial Poisoning. H. Grootzschel. *Therap. Gegenwart.*, 80, 120 (1939). (Chem. Absts.)  
Basedow's disease caused by carbon monoxide poisoning and the possibility of producing hypertension by CO through diencephalon injury are discussed. The connection with central polycythemia, central glycosuria and parkinsonism is elucidated. Lead Basedow's disease, the question of central lead asthma, manganese poisoning and disturbances of the lenticular nucleus and pallidum produced by carbon disulphide and solvents, especially chlorinated hydrocarbons, are also discussed. A bibliography is provided.
- 745 The Behavior of the Blood Sugar in Chronic Poisoning with Beryllium Oxide. A. DeConcillis. *Fol. med. (Napoli.)* 25, 290 (1939). (Chem. Absts.)  
Rabbits received daily subcutaneous injections of a milky solution of beryllium oxide (BeO) (1:1000), containing sodium bicarbonate (0.5:1000) as follows: 1 cc. for the first 20 days, 2 cc. for the next 10 days, 4 cc. for the following 10 days, 8 cc. from the 41st to the 50th day and 10 cc. from the 51st to the 60th day. The fasting blood sugar was determined by the Bang-Condorelli micromethod. Under the influence of BeO the blood sugar was increased in some animals but decreased in others. It was concluded that BeO acts on the carbohydrate metabolism with the disturbances depending upon damage to the liver function.
- 746 Fire Hazard of Zinc Dust. H. Berger. *Metallwirtschaft.*, 20, 475-80 (1941). (Chem. Absts.)  
In contact with moisture zinc dust heats, and even glows. Similar results were observed with alkaline solutions or AcOH. The cause is attributed to the formation of galvanic elements because of the presence of extraneous admixtures. The ionization generates heat, and the nascent H reduces the protective oxidic layer on the zinc particles, thereby enabling autoxidation, dry zinc dust, ZnO and ZnCO<sub>3</sub> take on a negative charge if exposed to vibration. To prevent fire, zinc dust must be kept dry and avoid vibration.
- 747 Relative Toxicities of Certain Antiseptics Containing Soap and Alcohol with Special Reference to Mouthwashes. H. Welch and C.M. Brewer. *Am. J. Pub. Health*, 32, 261-7 (1942). (Chem. Absts.)  
By using the destruction of phagocytic activity as a measurement of toxicity and comparing toxicity with germicidal ability under a similar set of conditions to obtain a toxicity index, the authors found that the addition of alc. to a solution of phenol increased the toxicity index. A very marked increase in the toxicity index occurred when soap was added to phenol solution. The relatively high toxicity index caused by the addition of soap was demonstrated with several phenolic compounds and essential oils. The toxicity of alc. and soap was obtained for comparison. The toxicity and germicidal power of 87 common mouthwashes have been determined. Only 9 of these were found to be germicidal under the conditions of test, while 62 were toxic in a 1:5 dilution; 14 were toxic in a 1:10 dilution; 2 were toxic in a 1:15 dilution and one each was toxic at dilutions of 1:25, 1:30, 1:40 and 1:50. The application of the toxicity-index method to the evaluation of antiseptics is briefly discussed.

- 748 The Problems of the Toxicity of Calcium Cyanamide. D. Cavallazzi. Zacchia (2), 3, 581 (1940). (Chem. Absts.)

The question of the toxicity of calcium cyanamide is especially important for those engaged in its manufacture. The mechanism of the action is discussed in detail. The injuries are more severe, the greater the exposure to the dust, but individual differences exist. The injuries are intensified by the use of alcohol. Death occurs through inhibition of the nerve centers. Ulcers in the nasal mucous membrane, phagocytosis or anthracosis in the lung parenchyma are not observed. Mild damage in the liver and adrenal glands is demonstrable as well as blood infiltrations and, at times, hemorrhagic infarcts.

- 749 Preparation of Calcium Hydroxide and the Explosions in Connection with this Preparation. H. Strofer. Mitt. bl. Steinbruchs - Berufsgenossenschaft., 34, 305 (1939). (Chem. Absts.)

The explosions during the slaking of lime are caused not by chemical but solely by physical processes. Measures are given for preventing explosions and safely preparing slaked lime.

- 750 Resorptive Power of the Skin. Meyenberg. Dermatol. Wochschr., 112, 31-3 (1941). (Chem. Absts.)

Chemical substances penetrate into the system as readily when applied to the skin as by other methods of administration, especially O, I, H<sub>2</sub>S or H<sub>2</sub>CO<sub>3</sub>. Skin absorption takes place through solution in the cellular membrane, or penetration through the pores or through the plasma membrane of the epithelial cells. Camphor, terpene, ethereal oils, chloroform, certain hormones and mercury penetrate the skin readily. Increase of absorption is produced by ammonia, croton oil, ultraviolet irradiation, salicylic acid, pyrogallol and other solvents of horny layers of the epidermis. Iodine, cinchophen and chrysarobin are quickly absorbed and eliminated. Alkaloids, hormones and vitamins are percutaneously absorbed. Olive, linseed and cottonseed oils and wool fat are slowly absorbed, and suspensions of drugs in such oils even more slowly than aq. or alc. solutions. Aromatic oils are well adapted for the conveyance of remedies, such as alkaloids, through the skin. If the skin is previously treated with glycerol or tannin solution, the absorption of nicotine is retarded. Acidulous wax softens horny layers of the skin. Readily penetrating substances frequently cause skin irritation.

- 751 Folliculitis in Brass Plating Workers. Queries & Minor Notes. J. A. M. A. 119, 1152 (August 1, 1942).

A brass plating operation is described which has resulted in a number of cases of pustular eruption surrounding the hair follicles on the forearms, wrists and hands of the workmen involved. The description of the skin condition indicates that it was probably a low grade pyogenic affair, perhaps from Staphylococcus aureus or albus or both. Methods of treatment and prevention are discussed.

- 752 Oil Folliculitis. Queries & Minor Notes. J.A.M.A. 119, 919 (July 11, 1942). The condition known as "oil pimples" is an oil folliculitis and it is a common occupational dermatosis among workers with oil, such as machinists and machine tool operators. Numerous oils and emulsions are used in this process, and it is improbable that any one oil is at fault. Oil folliculitis, or cutting oil dermatitis, has been discussed rather well in a recent bulletin, No. 244, November, 1941, of the Massachusetts Division of Occupational Hygiene, 23 Joy Street, Boston, in which the treatment and prevention are carefully outlined. It would seem probable that the oil could be contaminated and if it were recirculated without sterilization it could cause infection in persons working in it.

- 753 Protective Clothing and Ointments for Workers Exposed to Chromates in Tanneries. Levin & Miner Notes. J. A. M. A. 119, 681 (July 4, 1942).

Dermatitis is of frequent occurrence among workers in tanneries. Chromate tanning solutions are among the principal causes. Concentrated solutions of the alkaline bichromates will cause chronic ulcers called "chrome holes," especially if they enter into abrasions in the skin. Such ulcers are fairly common among workers in tanneries. Exposure to chromic acid and the chromates may in time also cause allergic eczematoid dermatitis. Effective preventive measures used in most tanneries against this type of dermatitis consist in the wearing of impervious sleeves, aprons and gloves. These could formerly be obtained from rubber manufacturing concerns; but this is now difficult because of priorities. Oilcloth or any of the water impervious synthetic resins such as pliofilm, keroseal, vinylite, cellulose acetate or waterproof cellophane may be substituted. Sleeves should be worn over rubber gloves and fastened at the wrist. No information has been found on manufacturers of such protective clothing and the workers must usually make them for themselves. Protective ointments offer less protection than garments such as described, but if protective ointments are used they should be of the water insoluble type, such as mixtures of hydrous wool fat 70 per cent and castor oil 30 per cent. To this may be added 2 per cent of a wetting agent such as dupanol to facilitate its removal after work. Personal cleanliness and the daily change of clothing are of the utmost importance in the prevention of dermatitis.

- 754 Zinc Dermatitis. An Additional Hazard in the Aircraft Industry. H.E. Freeman. J. A. M. A. 119, 1016 (July 25, 1942).

Sensitivity to zinc may be regarded as very rare. It has been suggested that the case of dermatitis reported in this article may have been due to the formation of zinc chloride from zinc reacting with perspiration. This cannot be disproved as of course perspiration would occur under a patch test, but it is true that similar scrapings of kirkcaldie have been applied as patch tests on several other persons without inducing any reaction. Zinc chloride is a primary irritant, and these negative results in other persons would indicate that there was a true zinc sensitivity in this case and that the reaction was not due to zinc chloride. A flare-up at previously involved sites when a zinc patch test was applied emphasizes the truly allergic nature of the reaction. This phenomenon has been previously described as the recurrent patch test reaction.

- 755 Iodine Allergy. L. Pelnar. J. Lab. & Clin. Med., 27, 1150 (June, 1942).

Five cases of hypersensitivity to iodine and its salts are described. A patch test for the detection of this sensitivity was used on all five patients who gave positive reactions. Several forms of cutaneous eruption followed the use of iodine or its salts in these patients, appearing in from eight to twelve hours. Scarlatiniform eruptions developed in two, and a purpuric rash in another.

- 756 Bakers' Eczema. Schmidt. Reichsarbeitsblatt (N.F.), 18, No.3, 57 (1938). (Chem. Absts.)

Animal experiments revealed no difference in the capacity of improved or unimproved flour to produce sensitization. No difference was found in the action of improved or unimproved flour in intracutaneous tests on patients with bakers' eczema. In simultaneous hypersensitivity to flour and ammonium persulphate the question of the primary injury was not explained. Persulphate hypersensitivity was found in 21 persons. Nine individuals showed an acid hypersensitivity which can depend on a faulty neutralization capacity of the skin. Dough conditioners are not as important a cause of bakers' eczema as has been supposed.

- 757 The Changes in the Chemistry of the Stomach Upon Prolonged Action of Histamine and the Importance of this Phenomenon in the Interpretation of Dyspepsias in Occupational Skin Diseases. A.G. Silvani. *Mod. lavoro*, 30, 237 (1939). (Chem. Absts.)  
Small amounts of histamine given over rather long periods decreased the acidity of the gastric juice. During artificial dermatitis in rabbits histamine or histamine-like substances appeared in the skin and produced gastric hypoacidity. This is believed to explain the digestive disturbances which frequently appear in chronic occupational diseases of the skin.
- 758 Synthetic Carcinogenic Hydrocarbon Compounds and Their Influence on the Endocrine Organs. T. Yasunaga. *Scripta Soc. Radiol. Japon.*, 6, 631 (1938). (Chem. Absts.)  
After the administration of methylcholanthrene the hypophysis increased in weight before and after the onset of the tumor growth, and the eosinophile cells were greatly increased in the male rats and also the chief cells in the female rats. The testes and ovaries decreased in weight as a result of atrophy of the seminal tubules or alteration of the corpus luteum and ova. The extent of alteration was characterized by the appearance of unirefractory fat or an increase of occluded ova, respectively.
- 759 Erythema Nodosum and Occupation. *Queries & Minor Notes.* *J.A.M.A.* 119, 1152 (August 1, 1942).  
The question of a causative relationship between erythema nodosum and chemical agents such as triethanolamine, glycerol, acetic acid, caustic soda, hydrogen peroxide, beta naphthol, A.S. Naphthol and formaldehyde is raised. It is believed that erythema nodosum is not a characteristic occupational disease but occupational factors, particularly wetness, may constitute a contributing factor to such cutaneous lesions.
- 760 Dermatitis from Textiles; Its Cause, Precaution and Prevention. N.D. White. *Rayon Textile Monthly*, 22, 479-80, 549-50 (1941). (Chem. Absts.)  
Outbreaks have been traced to the use of new resins, plasticizers and anti-septics in finishes, but not to new textile materials themselves.
- 761 Miners' Nystagmus. D.L. Davies. *Lancet*, 1, 573 (1940). (Chem. Absts.)  
Miners' nystagmus is not considered to be a psychoneurosis and the illumination theory is also disputed. It is believed to be a form of chronic poisoning caused either by bacteria or gases.
- 762 Unusual Reaction to Short Wave Exposure. *Queries & Minor Notes.* *J.A.M.A.* 119, 1154 (August 1, 1942).  
A man was exposed to the radiation from uncovered arterial feeders of an ultra high frequency transmitter of about 2.5 meter wavelength for about five minutes. It produced a sensation of numbness throughout his body which disappeared immediately upon cessation of the exposure. A feeling of inebriation however lasted for a half to three quarters of an hour. These unusual symptoms are not known to be related to short wave exposure as there is no report in the literature of similar results.
- 763 Safety Gets Its Wings. L. Silverman. *Safety Eng.*, 84, 33 (July, 1942).  
The problems of the protection of aviation personnel against anoxia, low temperatures, decreased atmospheric pressure, the effects of centrifugal force and pilot fatigue are described.

- 764 Chemical Poisoning of Municipal Water Supplies. H.M. Taylor. Am. City, 57, 46-7 (1942). (Chem. Absts.)  
Possible poisons are: heavy metals, cyanides, organic arsenicals, alkaloids and war gases. Critical examination of water analyses and phys protection of the water supply are safeguards against such poisoning.
- 765 Training and Ethyl Alcohol Changes of the Cardiac Rhythm, Respiration and Arterial Blood Pressure in Fatigue. L. Gramegna. Lavoro umano., 1, 179 (1940). (Chem. Absts.)  
In young men, 20-24 years old, who used a bicycle ergometer (performance: 20 Km/hr. for 10 min.), the administration of 1.0 cc. alc./Kg. caused a greater increase in the heart rate during the test and prolonged the recovery phase. Under the influence of alcohol the difference between trained and untrained experimental subjects became smaller; the reaction of the trained became more like that of the untrained. This was also true for the respiratory rhythm. The changes in arterial pressure were less pronounced and could be evaluated only with difficulty.
- 766 The Effect of Driving Fatigue on the Critical Fusion Frequency of the Eye. R.H. Lee and E.C. Hammond. Ind. Med., Ind. Hyg. Sec., 3, 360 (July, 1942).  
Measurements of critical frequency made on 528 subjects in Baltimore, Nashville and Chicago show differences in the mean between groups classified by hours of driving since major sleep. In general, these differences show a slight but consistent tendency toward lower critical frequency with increasing hours of driving. Within the age limits of the drivers tested no age trends were discernable. Relative large differences were found in the critical fusion frequency of men examined in the three cities. This same result has been found by other investigators using other test methods.
- Health Hazards in Steel Mills. J. Wm. Fehnel. Ind. Med., Ind. Hyg. Sec., 3, 353 (July, 1942).  
See Abstract No.361, April, 1942 Digest.
- Industrial Hygiene Control on Tunnel Construction in Hydro-Electric Projects in Western North Carolina. M.F. Trice. Ind. Med., Ind. Hyg. Sec., 3, 364 (July, 1942).  
See Abstract No.915, December, 1941 Digest.

Methods of Detection and Determination

- 767 Standard Methods of Measuring the Extent of Atmospheric Pollution. C.E. Brown and H.H. Schrenk. U.S. Bur. of Mines, Inf. Circ., No.7210 (May, 1942).  
The nature of harmful and otherwise objectionable atmospheric contaminants is discussed. The principles upon which the methods for determining the concentration of gaseous contaminants are based and the concentration, composition, and size properties are considered. Suggestions are made for the collection of comparative information on the concentration of atmospheric contaminants, especially the particulate ones. An excellent bibliography is included.

768 Air Flow Measurement by the Dilution Method. Preventive Engineering Series, Bull. No. 3, pt. 1, Industrial Hygiene Foundation, (June, 1942).  
The fundamental factor which determines the rate of exhaust ventilation for certain industrial processes is the rate of air displacement produced by the process itself. As a starting point in the development of a basic approach to the design of exhaust systems, it is desirable to measure the rate of air displacement produced by the process which is to be ventilated. In general, the air displacement occurring in a given process takes place in such a way that the ordinary air flow meters are not applicable. It becomes necessary therefore, to utilize a different method of measuring air flow. The bulletin describes a method developed to meet these needs, and is capable of measuring the rate of air flow in a complex system which has multiple air inlets and outlets. A major advantage of the method is that it is not necessary to measure the amount of air escaping from every opening. Practical field tests have indicated that the technique offers a useful and practical approach to the determination of basic exhaust ventilation requirements for those industrial operations which by their operation cause air displacement. The test gas used in the dilution method is carbon dioxide.

769 The Determination by the Dropping-Mercury-Electrode Procedure of Lead, Cadmium, and Zinc in Samples Collected in Industrial Hygiene Studies. F.L. Feicht, H.H. Schrenk and C.E. Brown. U.S. Bur. of Mines, Rept. of Invest., No.3639, (May, 1942).

The internal-standard procedure followed by the Bureau of Mines, Health Laboratory in conducting analyses by a non-recording device is described. The lower limit for reliable determination of lead by this method is between 0.01 and 0.05 mg. (10 to 50 gamma); of cadmium, between 0.025 and 0.05 mg.; and of zinc, less than 0.05 mg. The accuracy of the procedure is in reasonable agreement with the values  $\pm 2$  per cent in the concentration range  $10^{-4}$  to  $10^{-2}$  molar and about  $\pm 5$  per cent in the range  $10^{-5}$  to  $10^{-4}$  molar reported in the literature. The precision of 56 determinations of lead, cadmium, and zinc averaged 3.5 per cent and exceeded 10 per cent in only 4 determinations. The use of this method in determining lead in samples of particulate matter collected from the air in approval testing of respirators and in determining lead, cadmium and zinc in samples collected in connection with an investigation of the atmospheric contaminants in a zinc smelter is described.

770 Röntgen Study of the Fine Structure as a Method of Medical Investigation. Gärtner. Reichsarbeitsblatt (N.F.) 20, 3, 193 (1940). (Chem. Absts.)

Quartz, fluoroite, calcite, kaolin, clay, sillimanite, carborundum, corundum, sericite, ~~g~~ <sup>g</sup> ~~ings~~ of main, palatinate, taunus and Eifel sandstone, dusts of manganese ~~d~~ <sup>d</sup> ~~o~~, Thomas slag, limestone and tobacco were examined with a Mikro-Metall-Röntgen fine structure apparatus. Tobacco dust from a tobacco factory was found to contain 20% insoluble silicic acid. Dust from the lungs of miners, grinders and porcelain workers was also studied and compared in some cases with the industrial dust. A satisfactory analysis could almost always be obtained; it could, in part, be confirmed by chemical analyses. In some instances, only kaolin or sillimanite, without the participation of the free silicic acid, could be suspected as the cause of the silicosis. A quantitative diagnosis is theoretically possible but meets with practical difficulties.

771 Fluoridation of the Fluoride Determination: Addendum. R.D. Scott. J. Am. Water Works Assn., 34, 322 (1942). (Chem. Absts.)

Acid content of the reagent is important. Normality of mixed acids should not exceed 2.7.

003949

- 772 Some Photometric Instruments Used in X-Ray Diffraction and Spectrographic Methods of Analysis. J.W. Ballard, H.I. Oshry and H.H. Schrenk. U.S. Bur. of Mines, Rept. of Invest., No.3638 (April, 1942).

A recording microphotometer and three non-recording densitometers for measuring lines on x-ray film or spectrographic plates are described in detail. The essential features of the recording instrument are linear filament image to illuminate the film or plate; low power microscope to align the filament image with the line to be measured; music wire under constant tension and pulleys to couple recording system to plate carriage, eliminating expensive screws and gears; stability of operation and ease of adjustment; and operation of instrument in a lighted room to measure either film or plates. The essential features of the non-recording instruments are satisfactory operation on alternating current with a clear plate to opaque reading of 1000 mm.; variability of illuminating system so that film or plate may be illuminated either with a spot or a sharp line of light; 31 cm. of calibrated screw to measure line separations; mounting of the film or plate horizontally in a readily accessible position; rapid movement to any part of the film or plate; reversible motor drive for rapid measurement of line densities; stability and ease of operation; and variable resolution and sensitivity. The instruments are free from drifts, variations and adjustments that may accompany vacuum-tube amplifiers. This is accomplished by using moving-coil galvanometers, which were matched, under conditions of operation, to barrier layer-type photocells. The adjustment of the Zero position is accomplished by means of a special potentiometer circuit without affecting the response of the galvanometer or photocell. -- Authors' summary.

- 773 Physical Diagnosis of Radium Poisoning. I. Franke. Fundamenta Radiol., 5, 113 (1939). (Chem. Absts.)

The occurrence and course of radium poisoning and the size of the toxic dose are considered. The necessary conditions for a method of diagnosis of radium poisoning or for the supervision of those exposed to radium have been studied. The determination of the intensity and the distribution of the radium deposits by the gamma radiation emitted by the radioactive substances constitutes the most exact and certain method. A method is described which permits the radium deposits in amounts of 0.2 microgram of radium or more in a few minutes. An apparatus for carrying out the practical diagnosis of radium deposition is described and its application explained.

- 774 Industrial Application of a Method for Determining the Thoron Content of the Air. R.D. Evans, S.J. Wilson, C. Goodman and W.R. Bernz. Ber. 8. Intern. Kongr. Unfallmed. u. Berufskrankh., 2, 1006 (1939). (Chem. Absts.)

A new instrument is described for the determination of the thoron content of the air. Practical experiments in various factories with analytical evaluation in the laboratory showed a thoron content of the air in individual locations in plants which was 100-1000 times higher than that which is ordinarily considered harmless. In such cases adequate ventilation should be provided.

- 775 Dust and Disease. VI. Dust Measurement. C.S. Chubb. Colliery Eng., 19, 13-16 (1942). (Chem. Absts.)

A description of several methods and instruments used for determining the concentration of dust in the air. The methods are divided into two types. In one, the sample of air containing the dust is projected at high velocity against some medium which will retain the dust; such instruments are collectively called impingers. Alternatively, a sample of air is drawn through some device which allows the air to pass but will retain the solid matter; such instruments are called filters or precipitators. Among the instruments described are the Weiss Konimeter, the Greenburg-Smith Impinger, paper filters, sugar-tube filters and the thermal precipitator.

- 776 Determination of the Dispersion of Dust in the Air. A.I. Pakhomychev. Hig.i. Sanit. No.12, 38-42 (1939). Khim. Referat. Zhur., No.5, 84 (1940). (Chem. Absts.)  
To determine the dispersion of dust use a graph of the percentage distribution of the dust particles according to their size. In the methods of open desposition and of filtration, corresponding data are plotted on the graph and conclusions of the composition of dust in the air are made from the graph obtained. The velocity of air currents in the room and the moisture content of the air must be considered in determining the dispersion of dust in the air and samples must be taken at various levels between the floor and ceiling. For approximate determinations the air samples can be taken 1.5 m. above the floor.
- 777 The Use of the Acidity Quotient of the Urine in the Selection of Stone Cutters and Those Endangered by Dust. A. Wiesinger. Vertranensarzt. u. Krk. kasse. 7, 229 (1939). (Chem. Absts.)  
The development and progress of silicosis are believed to depend on the tissue acidosis, in acid lung tissue the dissolved silicic acid exerts a non-specific acid irritation in addition to its special irritant action, while in the alkaline tissue the silicic acid, which gradually dissolves, is neutralized and excreted as salt through the kidneys. A concept of tissue acidosis is outlined and a suitable method for determining the acid-base ratio in the tissues is established. On the basis of this method, numerous examples are given which show that the acidity quotient is increased in stone cutters with severe silicosis, while low or negative acidity quotients predominate in those with mild symptoms, in spite of years of working with stone. The relation of the tissue acidosis to the pyknic habitus and mode of nutrition is illustrated with additional examples. The diet of those exposed to stone dust should be predominately alkaline and markedly severe physical work should be avoided because of the increase of lactic acid. In severe pneumoconiosis with a diminution of alveolar surface and subsequent cardiac insufficiency, however, the combustion is lowered in consequence of O deficiency and a lasting tissue acidosis results.
- 778 Determination of the Firedamp Content of Mine Air by Means of the M.S.A. Methane Tester. J.H. Griffiths, W.L. Gyles and T.D. Jones. Proc. S. Wales Inst. Engrs., 57, 164-77, 248-58 (1941). (Chem. Absts.)  
The instrument is portable, robust and simple to operate. Results obtained underground agree well with analyses. The zero should be reset if changes of atmospheric temperature occur as, e.g., in passing from an intake to a return airway. The reliability is improved by substituting a storage battery for the dry battery originally used to heat the combustion wire.
- 779 Attacking the Silicosis Problem. J.J. Shank. Pit & Quarry. 34, 40-1 (1942). (Chem. Absts.)  
A discussion of the primary importance of the determination of the concentration and particle size of free silica in dust when studying this problem. There is stated a need for the further study and control of the dust hazard together with the intelligent establishment of various standards by which these hazards can be judged. The chemical, petrographic, and x-ray methods of silica determination are briefly described and compared.
- 780 Spectrographic Determination of Silicon in the Blood. Clara Richter. Arbeitsschutz, 37-8 (1940). Chem. Zentr. 1, 3432 (1940). (Chem. Absts.)  
Determinations of the silicon content of the blood of normal persons and of those suffering from silicosis showed no relation between this disease and the silicon content of the blood. The ignited residue from the sample under examination was decomposed with a soda-potash mixture and, after the addition of a

definite amount of Ga, the Si was determined spectrographically by use of the 2831 A. line of Si and the 2874 A. line of Ga. In both normal and diseased individuals the lower limit was found to be 8-9 and the upper limit 24-8 mg. Si per 100 cc. of blood.

- 781 A Mixed-Color Dithizone Method for the Determination of Bismuth in Biological Material. E.F. Kluchesky, B.J. Longley and F.L. Kozelka. *J. Pharmacol.*, **74**, 395-400 (1942). (Chem. Absts.)

A simplified mixed-color dithizone method for determination of Bi is described, based on the methods previously reported. After wet destruction of organic matter, treatment of the digest with  $\text{SO}_2$  prevents decomposition of the dithizone by the Fe and eliminates Sn as interfering metal; this permits determination of Bi with a single extension. The method eliminates the necessity of removing excess dithizone or preparing standard dithizone solutions. The mean error is less than 1 gamma.

- 782 The Detection of Fluorine Poisoning by the Determination of the Fluorine Content of Teeth and Bones. P.W. Danckwortt. *Z. physiol. Chem.*, **268**, 187-93 (1941). (Chem. Absts.)

Bones and teeth of cattle poisoned by hay containing fluorine from factory waste gases were analyzed by the method of Kolthoff and Stansby as modified by Kraft and May. Fluorine is not present entirely as insoluble calcium fluoride and therefore low results were obtained when teeth or bones were cleaned by boiling with water or after storage in alcohol. Fluorine content is increased by prolonged storage. The normal average fluorine content of the teeth of healthy oxen is 0.0443%; the range is 0.0370-0.0484%. Rib bone contains 0.091%, rib bone without marrow 0.071%, marrow of rib bone, 0.013%, and the middle foot bone without marrow 0.051%. An increase of 5-10 times the normal content was found in fluorine-poisoned animals. The tooth of a deer contained 0.017% fluorine. The normal fluorine content in the wisdom tooth of a man in good health is 0.016%; 0.110% was found in fluorine poisoning.

- 783 A Method for Determining Phosphine and Arsine in the Air. M.K. Berezova and O. Ya. Mogilevskaya. *Hig. i. Sanit.*, 45-9 (1939); *Khim. Referat. Zhur.* 67, (1940). (Chem. Absts.)

The existing method for determining  $\text{PH}_3$  and  $\text{AsH}_3$  in air are based on their oxidation to  $\text{P}_2\text{O}_5$  and  $\text{As}_2\text{O}_5$  by passing the air through absorbers containing an aqueous  $\text{Br}_2$  solution. After removal of  $\text{Br}_2$ , the sum of  $\text{P}_2\text{O}_5 + \text{As}_2\text{O}_5$  is determined colorimetrically in an aliquot part of the solution, assuming that equal amounts of each produce identical colors. The easy reduction of  $\text{As}_2\text{O}_5$  to  $\text{As}_2\text{O}_3$  is used for their separation. Berezova and Mogilevskaya investigated the possibility that equal amounts of  $\text{As}_2\text{O}_5$  and  $\text{P}_2\text{O}_5$  may not produce the same intensity of the color by comparing the effect of Denigès and Tsintsadze reagents (to 10 cc. of water containing known amounts of  $\text{P}_2\text{O}_5$  and  $\text{As}_2\text{O}_5$  were added 0.5cc. of Denigès reagent or 0.3 cc. of Tsintsadze reagents). A comparison of the colors after 30 min. indicated that Denigès reagent always produced the same color when equal amounts of  $\text{As}_2\text{O}_5$  and  $\text{P}_2\text{O}_5$  were present. A slight difference in the colors was observed sometimes with the Tsintsadze reagent. Heating accelerated the appearance of the color and increased the sensitivity of the reaction, the intensity of the color depending on the time and temperature of heating. The degree of the change in the color intensities was not identical for  $\text{P}_2\text{O}_5$  and  $\text{As}_2\text{O}_5$ . These facts exclude the use of heating in simultaneous determinations of  $\text{P}_2\text{O}_5$  and  $\text{As}_2\text{O}_5$ . Denigès reagent is simpler to prepare, requires only easily available compounds and produces more accurate results.

The method for the separation and determination of  $P_2O_5$  and  $As_2O_5$  by reducing  $As_2O_5$  was investigated and the reduction with  $SO_2$  and by the Rashkovan method (HCl and  $HClO_4$ ) were studied. The Rashkovan method was more convenient. The following method is proposed for determining  $PH_3$  and  $AsH_3$ : absorb  $PH_3$  and  $AsH_3$  with aqueous  $Br_2$  solution, determine colorimetrically  $As_2O_5 + P_2O_5$  in a part of the solution, reduce  $As_2O_5$  in another portion according to the Rashkovan method, determine  $P_2O_5$  colorimetrically and determine the  $As_2O_5$  by difference.

Correction:

Abstract No. 550 (June, 1942) -- Blood Lead Determinations as a Public Health Department Laboratory Service. E. Kaplan and J.M. McDonald. Am. J. Pub. Health, 32, 431 (1942).

The first word of the abstract should be ten and not the.

Control Methods

- 784 Safety in the Manufacture and Application of Acrylic Plastics. D.S. Frederick and R.L. Houtz. Penna. Dept. of Labor and Ind., Safe Practice Bull. No. 95, (May, 1942).

The term "acrylic" refers to derivatives of acrylic and alpha-methyl acrylic acid. In the preparation of the monomeric esters, some toxic compounds are used, including sodium cyanide. The lower monomeric acrylic esters are themselves lachrymators and skin irritants. Workmen manufacturing these compounds are protected by a system of downdraft ventilation through the floor with a complete change of air being provided every five minutes. Employees who handle sodium cyanide are protected with gloves and respirators. Antidotes for cyanide poisoning are immediately available in case of emergency and the workmen in the plant have passed the Red Cross first aid course. The equipment in which the cyanide is used is enclosed and exhausted. The exposure to solvents such as toluene and ethylene dichloride is also provided with exhaust ventilation. There are five illustrations of the processes and products.

- 785 Control Welding Hazards. Anonymous. Safety Eng., 84, 34 (July, 1942).

A review of the typical hazards associated with welding is given with particular attention to the gases, fumes and smokes which are produced.

- 786 Why Dust Control? C.A. Snyder. Safety Eng., 84, 44 (July, 1942).

A short summary of the economic and sanitary reasons for the control of industrial dust is given. Nuisance, health hazardous and explosive dusts are considered.

- 787 Fresh Air for the Paint Shop. Anonymous. Nat. Safety News, 46, 38 (July, 1942).

A paint shop for the spray painting of equipment, on a once-through assembly line, is in operation at the East Pittsburgh Works of the Westinghouse Company. The paint mists are removed by downdraft ventilation through open grill work in the floor and are deposited on a water surface in a pit covering nearly the whole of the floor. The water in the pit is recirculated with makeup water being supplied to retain the proper level. Fresh clean air enters the shop through the ceiling. 200,000 cubic feet of air is handled per minute, which is equivalent to 380 air changes per hour.

789. Engineering Health Services for Small Plants. John Buxell. A.J.P.H., 32, 853 (August, 1942).

The term small plant is defined for the purpose of this paper as one with less than 100 employees. Approximately 90 per cent of all manufacturing and mechanical industrial establishments are in this class with 50% of them employing less than 10 persons. The smaller the plant, the more costly are health services to the employer and employee. In general the health and safety provisions in the small plant are inadequate. The answer to the problem of the small plant lies in cooperative servicing by public or private subsidy or by inventing preventive methods which will be within the cost range that can be afforded. Some of the problems in reaching this important 90 per cent of our manufacturing establishments are discussed in detail.

- 790 Dust and Disease. VIII. Air Cleaning. C.S. Chubb. Colliery Eng., 19, 98-100, (1942). (Chem. Absts.)

A description of several methods used for reducing the dust concentration in the air to a safe level. Methods of ventilation, passing the air over water, filtration, electrical precipitation and the use of respirators are briefly described and compared. 15 references.

- 790 Electrostatic Removal of Dust from Furnace Gases. D.D. Howat. Mine & Quarry Eng., 7, 59-66 (1942). (Chem. Absts.)

A description of the various features of the equipment employed including: (a) the form of the collecting electrode; (b) the type of the discharge electrode; (c) the force acting on the dust particles; (d) the operation conditions. The advantages and main applications of the method are given. The specific application of the process to the mining, smelting, roasting and furnace operations of copper and lead ores and the calcining of alumina are described.

- 791 Removal of Dust and Fume from Furnace Gases. D.D. Howat. Mine & Quarry Eng., 7, 95-102 (1942). (Chem. Absts.)

A description of the various types of equipment used including cyclones, gas washers, gas filters and bag-house filters. Operating characteristics and applications of each type are also described.

- 792 Color for Production. Faber Birren. The Architectural Forum (July, 1942).

Light is not the only factor which controls seeing and the problem of providing conditions which make for adequate vision is of the greatest importance to our war production. Color is the actual thing perceived with light acting as the source of stimulation. There has been a failure to understand the importance of color in industrial interiors. Under a single foot candle of light a black button on a ~~white~~ cloth will be as visible as a black button on a black cloth under a thousand foot candle. The factors of color and illumination, the choice of hue and brightness are discussed and described by case histories taken from industrial experience. The article is provided with a number of fine pictures to illustrate each point.

- 793 Color Conditioning in Modern Industry. Faber Birren. Dun's Review (July, 1942).

This article on the use of color to increase production in industry discusses the matter from the viewpoint of business management. See Abstract No. 792, August, 1942.

- 794 Destruction of Noxious Gases in Mines. V.K. Solov'ev. Gornyi Zhur. 34-7, (1940). Khim. Referat. Zhur. 147 (1940). (Chem. Absts.)

The method of Godzhello of spraying the gas-filled crevices in sulphur mines with solutions of bleaching powder or hypochlorite would form Cl<sub>2</sub>, which is more

noxious and dangerous than  $H_2S$ . Satisfactory results were obtained from solutions of slaked lime, which reacts readily with all acid gases. After the spraying, the content of  $H_2S$  did not exceed the permissible content instead of 0.002-0.004 vol. %. However, gases such as  $H_3As$ ,  $H_2Se$ ,  $CH_4$  and  $CO$  do not react with slaked lime.

- 795 Removal of Fluorine Gases from the Air in the Production of Superphosphate. P. Laites and G. Gerovoi. Hig. i. Sanit. (U.S.S.R.) No.2-3, 40-1 (1940). (Chem. Absts.)

$HF$  and  $SiF_4$  are eliminated in the production of superphosphate. If the gases come into the air without a preliminary purification, they contaminate the surroundings and affect both human beings and plants. These gases are easily absorbed by water with the formation of  $H_2SiF_6$ , which upon treatment with  $NaCl$  gives  $Na_2SiF_6$ ; this can be utilized in agriculture and industry. The observations at the Voskresensk chemical plant VVKH showed that the absorption of the fluorine gases was less than 50%, owing to inefficient application and to insufficient absorption. It was found in Leningrad that the absorption of fluorine gases can be increased to 95-98%.

- 796 Experiments and Trends in Spray-Residue Removal. H. Fallscheer and F.L. Overley. Proc. Wash. State Hort. Soc., 37, 119-26 (1941). (Chem. Absts.)

Experiments with dual washes of Na silicate and  $HCl$  showed that the higher the viscosity of the oil used in Pb arsenate sprays, the greater was the difficulty of Pb residue removal from the apples. When stove oil was used in the spray program, either as a diluent with other heavier grades of oil or alone, in combination with Pb arsenate, the Pb residue after washing was always comparatively low. Wherever fish oil or a mixture of fish oil and stove oil was used in the spray program the Pb residue was readily removed with an alkaline wash. When a temperature of  $100^\circ F$ . was maintained in the Na silicate wash and temperatures of  $90-100^\circ F$ . in the  $HCl$  wash, 2-5 cover, sprays of cryolite in combination with fish oil, mixtures of fish oil and stove oil, or the lighter mineral oils, were satisfactorily cleaned below the tolerance of 0.02 grain/lb. Where cryolite was used throughout the season for 7 or more cover sprays, residue removal was more difficult. A single wash with  $HCl$  was not effective in removing residues to the 0.02-grain tolerance for F, regardless of the number of sprays applied. With Pb arsenate sprays the tolerance for Pb (0.05 grain/lb.) is the limiting factor and it has not been necessary to be especially concerned about meeting the tolerance for As (0.025 grain  $As_2O_3$ ) per lb. The F-residue tolerance is usually the most difficult to meet.

- 797 Control of Oil Fires. A.F. Dabell. Petroleum Times, 46, 207-8, 210, 212 (1942). (Chem. Absts.)

In coping with the present-day hazards of unusual and unforeseen nature, action must at times be restricted to precautionary control of a fire in a storage tank or pipe main, rather than to its immediate extinction. In general, danger latent in oil is exaggerated and that in gas or vapors is not duly appreciated. A fundamental means for fire extinction and salvage of oil is an underground collecting sump with a tapering roof and, as an alternative and last resource, wells sunk to the level of a porous stratum from which the oil is recoverable by pumping. Other specific suggestions include funnels on the roof of the tank, ample drains in the retaining walls around the tank to prevent a fire from spreading over into an adjacent tank, transverse trenches under the pipe lines, and funnel vents instead of the conventional fire traps in the lines. Thus, a fire can be controlled by draining the oil into the sump and letting the vapors burn themselves out in tank funnels and funnels over the drain channel. The hazard of oil on navigable waters and the various types of fire-extinguishers are briefly reviewed.

003955

Industrial Medical Practice

- 799 Fighting Malnutrition Among Workers. Don Samson. Forbes. 50, 13, (August 1, 1942).

One study shows that only 30% of all industrial workers enjoy the benefits of a good diet and that half of the remaining 70% suffer "hidden hunger." A growing number of companies are pushing nutritional programs that are getting results. Programs generally fall into two phases: (1) Providing the right kind of food on the job and selling workers on the importance of eating it; (2) Providing workers' families with literature and counsel that will help them prepare more wholesome meals. Specific steps in the development of such a program are listed and discussed.

- 799 Women and Wartime Health Problems. M.H. Kronenberg. Ind. Med., 11, 333 (July, 1942).

Women are gradually displacing men in the war industries. Fifty per cent of the manufacturing in England today is done by women. They work in tool rooms, and operate cranes and electric trucks and various other types of machinery. They have become so skillful on these jobs that they are often more efficient than men were. However, absenteeism among women in industry is very high, a daily absence of 10% is not unusual. Their annual rate exceeds that of men by approximately 200%. A recent survey by the Federal Security Administrator has indicated that only 331 out of 1900 kinds of jobs analyzed are definitely unsuitable for women. The problems of muscular strain, seating, hours of work and fatigue, rest periods and rest rooms, night work, working clothing, washing and toilet facilities, living and social conditions, accidents and industrial poisons are all ably discussed.

- 800 Emergency Preparedness. Report of the American Assoc. of Industrial Physicians and Surgeons. Committee on National Defense. Ind. Med., 11, 338-342 (July, 1942).

A summary of the basic principles upon which industrial medicine was founded and a method by which its objectives may be attained are given. The committee offers seven suggestions, a summary of which follows: First: During the period of the nation's emergency, local or district industrial health committees should be developed in each industrial community. Second: More general and frequent use should be made of the State and Federal Public Health Services. Third: Medical service should be provided for employees in all industries engaged in production for war. Fourth: Particular diligence is required for the control of communicable disease, especially of venereal disease and tuberculosis. Fifth: Hours of work should consider not only immediate maximum productive effort but also the effects on health, which will control eventually the efficiency of our effort. Sixth: The problem of nutrition of war workers is of vital importance which will be the subject of another report. Seventh: Medical service in industry or where none exists; management should organize a plan for the care of workers who may be injured in the event of enemy attack. A chart prepared by the Westinghouse Medical Department is presented to illustrate an emergency plant protection organization.

- 801 Industrial Hygiene All 24 Hours. Anonymous. Ind. Med., 11, 337 (July, 1942). The recommendations of Division of Industrial Hygiene of the Illinois Department of Public Health are summarized. A six point program based on the broader industrial hygiene services advocated by the U.S. Public Health Service, as set forth by Surgeon-General Thomas Parran, is suggested.

- 802 Current Needs for Health Personnel. G. St.J. Perrott and H.F. Dorn. Pub. Health Repts., 57, 997 (July 8, 1942).  
A survey of the number of vacancies and the probable need for new personnel has been conducted among the State, City and County health departments and among some voluntary health agencies. Based on replies obtained from 80% of the questionnaires, there are existing vacancies for 1095 persons and a need for 5008 additional persons to provide the services required during war time. Assuming that the additional 20% of the health departments have similar needs, slightly more than 6000 new persons are needed. 46% of the required personnel are public health nurses, 25% are sanitary engineers and other sanitation personnel, 9% are physicians.
- 803 Educational Needs in the Field of Industrial Health. L.D. Bristol. J. A. M. A. 112, 1069 (August 1, 1942).  
This paper deals with the education of those who render professional services to industry, particularly the medical practitioner or specialist with particular emphasis on postgraduate education. The present needs for strengthening and broadening our entire industrial health program has made this subject a very timely one.
- 804 Medical Services in Small Industrial Plants. Crit Pharris. A. J. P. H. 32, 860 (August, 1942).  
The needs for medical services cannot be estimated from the size of an industrial plant. The problem requires careful study with each unit requiring a separate evaluation. The modern industrial medical service, the industrial physician and the industrial nurse are considered from the viewpoint of the small industrial concern. The Connecticut plan for extension and improvement of the medical services is also described.
- 805 Disabling Morbidity Among Male and Female Industrial Workers During 1941 and Among Males During the First Quarter of 1942. W.M. Cafarer. Div. of Industrial Hygiene, National Institute of Health, (1942).  
This report on the frequency of sickness and non-industrial accidents records the experience among both males and females for the year of 1941, and among males for the first quarter of 1942. The last report of the series referring to the experience among females appeared in 1941.
- 806 Koppers Coal Company Expands Its Welfare Program. T.E. Lightfoot. Mechanization, 6, 31-4 (June, 1942).  
A program of hospitalization and medical care for all employees and their families is described. A permanent camp on a 75 acre tract along Greenbrier River in Summers County, West Virginia and a camp for colored children at Wyndall on the Gauloy River are provided. Staff physicians and nurses direct child clinics at the camps. The company operates in Pennsylvania, West Virginia and Kentucky.
- 807 Medical Aspects of Industrial Poisons. H.M.F. Behrman. Northwest Med., 41, 135-5 (1942). (Chem. Absts.)  
A lecture on methyl bromide, zinc, lead, lead arsenate, ethyl mercury phosphato, tetrachloroethylene, metal-fume fever, benzene and carbon monoxide.
- 808 Background or Current Conflicts in Industrial Hygiene. M.I. Roemer. Ind. Med., 11, 376 (July, 1942).  
The broad aspects of the dispute between labor and health departments over the jurisdiction of industrial hygiene are discussed.

Industrial Hygiene Digest - 30.

- 809 Fitness for Victory. W.S. Paine. Nat. Safety News, 46, 34 (July, 1942).  
The cost of accidents, occupational diseases, absenteeism and property damage for 1941 is estimated to have been \$2,700,000,000. The tremendous impact of this loss on our nation's welfare is discussed and a call to arms against this waste is sounded as a part of our victory campaign.
- 810 Advances in the Domain of Occupational Diseases. E.W. Baader. Forschungen u. Fortsch., 13, 277 (1939). (Chem. Absts.)  
A brief survey of recent work on occupational diseases including lead and manganese poisoning, injuries from solvents, pneumoconiosis, cancer of the lungs and skin, and caisson disease.
- Cardiovascular Survey of Supervisors. W. L. Cook. Ind. Med., 11, 320 (July, 1942).  
See Abstract No.418, April, 1942 Digest.

003958

INDEX  
(August, 1942)

|                             |         |                             |         |                                |     |
|-----------------------------|---------|-----------------------------|---------|--------------------------------|-----|
| <u>Acrylic plastics</u>     |         | <u>Ethanol fatigue</u>      |         | <u>Mine gases</u>              | 794 |
| manufacture                 | 734     | 765                         |         | <u>Miners' nystagmus</u>       | 761 |
| <u>Air analysis</u>         |         | <u>Ethylene glycol</u>      | 714     | <u>Morbidity statistics</u>    | 805 |
| arsine & phosphine          | 785     | creatine                    | 716     | <u>National defense report</u> |     |
| dust dispersion             | 776     | electrolytes                | 718     | 800                            |     |
| dust measurement            | 775     | glucemia & ketonemia        | 717     | <u>Nutrition</u>               | 798 |
| lead, cadmium, zinc         | 769     | lipides                     | 715     | <u>Occupational diseases</u>   |     |
| standard methods            | 767     | morphology                  | 719     | review                         | 810 |
| thoron                      | 774     | <u>Exhaust ventilation</u>  |         | <u>Oil fires</u>               |     |
| <u>Air flow measurement</u> |         | paint shop                  | 737     | control of                     | 797 |
| 70                          |         | <u>Explosion</u>            |         | <u>Polishing, incandescent</u> |     |
| <u>Allergy</u>              |         | calcium hydroxide           | 749     | protective gas                 | 723 |
| iodine                      | 755     | <u>Fluorine</u>             |         | <u>Radium poisoning</u>        |     |
| <u>Aniline poisoning</u>    | 728     | determination               | 771     | diagnosis                      | 775 |
| <u>Antiseptics</u>          |         | gases                       |         | <u>Short wave exposure</u>     |     |
| toxicity                    | 747     | control of                  | 795     | 762                            |     |
| <u>Arsenic</u>              |         | in teeth and bones          | 782     | <u>Silicon</u>                 |     |
| in urine                    | 741     | in waste gases              | 724     | analysis                       | 780 |
| vitamin C therapy           | 756     | <u>Folliculitis</u>         |         | <u>Silicosis</u>               | 779 |
| <u>Aviation medicine</u>    |         | brass workers               | 751     | acidity quotient               | 777 |
| problems                    | 763     | oils                        | 752     | <u>Sulphur</u>                 |     |
| <u>Benzidone</u>            |         | <u>Health</u>               |         | sulphur dioxide from           | 733 |
| cancer                      | 729     | personnel needs             | 802     | <u>Tetranitromethane</u>       |     |
| <u>Beryllium oxide</u>      |         | industrial                  |         | hazards of                     | 727 |
| poisoning                   | 745     | educational needs           | 803     | <u>Toxicology</u>              |     |
| <u>Bismuth</u>              |         | <u>Hydrocarbon</u>          |         | heavy metals                   | 743 |
| analysis                    | 731     | aromatic                    | 725     | pituitary effects              | 744 |
| <u>Calcium cyanamide</u>    |         | chlorinated                 |         | <u>Water</u>                   |     |
| toxicity                    | 748     | poisoning                   | 730     | copper content of              | 742 |
| <u>Cancer</u>               |         | <u>Hydrogen chloride</u>    |         | <u>Water supply</u>            |     |
| carcinogenic agents         | 758     | poisoning                   | 726     | poisoning of                   | 764 |
| <u>Carbon disulphide</u>    |         | <u>Hydrogen sulfide</u>     | 734     | <u>Welding</u>                 |     |
| therapy                     | 732     | <u>Illumination</u>         |         | hazards                        | 785 |
| <u>Carbon monoxide</u>      |         | production factors          | 792-793 | <u>Welfare program</u>         |     |
| agglutinin studies          | 722     | <u>Industrial Hygiene</u>   | 809     | 806                            |     |
| effect on ear               | 721     | jurisdiction                | 808     | <u>Women</u>                   |     |
| poisoning                   | 720     | program                     | 801     | in industry                    | 799 |
| <u>Dermatitis</u>           |         | small plants                | 788     | <u>X-ray diffraction</u>       |     |
| tanning industry            | 753     | <u>Industrial poisons</u>   | 807     | photometers                    | 772 |
| textiles                    | 760     | <u>Insecticides</u>         |         | <u>Zinc dust</u>               |     |
| zinc                        | 754     | spray residue removal       | 796     | fire hazard                    | 746 |
| <u>Dermatoses</u>           |         | <u>Lead</u>                 |         |                                |     |
| bakers' eczema              | 756     | and Basedow's disease       | 737     |                                |     |
| histamine                   | 757     | anemia                      | 740     |                                |     |
| skin penetration            | 750     | poisoning                   |         |                                |     |
| <u>Ethylene sulfide</u>     |         | Baltimore                   | 738     |                                |     |
| toxicity                    | 731     | <u>Lewisite and Yperite</u> |         |                                |     |
| <u>Eye fatigue</u>          | 766     | skin reaction               | 735     |                                |     |
| 70                          |         | <u>Mattress industry</u>    |         |                                |     |
| control                     | 786-789 | acute illness               | 713     |                                |     |
| chemical gases              |         | <u>Medical services</u>     |         |                                |     |
| 70-731                      |         | in small plants             | 804     |                                |     |
| study of                    | 770     | <u>Mercury poisoning</u>    |         |                                |     |
| <u>Fluorine poisoning</u>   |         | treatment                   | 739     |                                |     |
| prevention                  | 759     | <u>Methane analysis</u>     | 778     |                                |     |

003959