



FOUNDATION FACTS

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

Vol. 2

June, 1940

No. 6

HW88-8810042

Production--Preparedness--Protection

Industrial illness is a national foe in these days of defense needs. Sick absences from work, occupational disease, etc., slow down production and production now means protection. The health of workmen, too often overlooked, is a keystone of our whole preparedness program. Says Postmaster General James A. Farley:

"All this mobilization will be useless without that other mobilization of the stamina of the manhood and womanhood of America."

Tanks, guns, planes, or battleships can't win wars or protect people alone. They must be operated. More important they must be built. There is work to be done by healthy hands and healthy minds. Illness must not interfere. Further, increases in the production tempo increase industrial health problems. World War I proved that. It also proved that for every soldier in the field, six to eight workers were busy keeping him equipped.

Utilize your Foundation membership and "tell your friends." Ask the Foundation your questions regarding possible health hazards and the protection of employee health, whether these questions involve sick absenteeism, toxic chemicals, dangerous dusts, fumes, etc. Take advantage of the Foundation's plant survey services to check up on hazards. Avail yourself of the Foundation's warehouse of information on industrial hygiene. Available to the Foundation are the broad resources of Mellon Institute where investigations progress in 90 different lines of industrial research.

James H. McGraw, Jr., President, McGraw-Hill Publishing Company, says that imposed on the problem of industrial mobilization is another vital specification -- "sustained speed." Time, he continues, "is the all-essential ingredient of modern war. It cannot be bought with an appropriation, however great; once lost, it cannot be recaptured; we must make effective use of it while we still have it....."

Don't overlook industrial health. It is doubly important now. It is the backbone of production and production is the backbone of defense.

Legal Section Added to Monthly Digest

Starting this month, a short section on current legal developments will be added to each issue of the Digest of Industrial Hygiene. It will contain a few timely, higher court decisions respecting workmen's compensation, occupational diseases and employers' liability. This section, which will also report the enactment of new laws affecting industrial health, is intended to help keep member companies posted on current legal trends. This "news service" is in addition to the Legal Bulletins which are issued by the Foundation through its Legal Committee.

New Member

Latest addition to the Foundation's membership list is the Colorado Mining Association which recently affiliated.

.....Pennies for prevention save dollars worth of cure.....



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STANLEY A. WIS
JUN 1992

A Letter From LIFE

The Foundation recently received the following letter from the magazine LIFE. It tells its own story:

"We are delighted to hear that you were so interested in our report on the preventive work that has been done by the New York Industrial Hygiene Division in connection with silicosis on the Delaware Aqueduct. Your account of the cooperation of contractors - in particular, the Bravo Corporation - in furthering such employee health work was very much appreciated and we regret that space did not permit us to publish your letter in LIFE." Sincerely yours, (s) Muriel Fox, for the Editors of LIFE.

Guarding Employees' Health

Under the caption, "Guarding Employees' Health," the Passaic, N.J. HERALD-NEWS of May 4 carried an excellent editorial calling attention to the work of Air Hygiene Foundation. In conclusion it states, ".....These are just a few of the numerous preventive measures which mark the progress of preventive medicine in industry. A united effort by employers will carry forward this humanitarian cause. Air Hygiene Foundation through its studies and services, is helping to dispel the ignorance by advancing knowledge on an industry-wide front."

In the Morning Mail

Letters like the following from an Ohio member help start the day right:

"I intended writing you a long time ago about Medical Series Bulletin No. III (X-ray report), but I guess I never did. This is certainly a splendid job. It contains more information on the subject than was ever available before -- and it's all gathered together in one book. It's a piece of scientific research that the Foundation can well be proud of."

Committee to Study Pre-Employment Physical Examinations

The Committee on Pre-Employment Physical Examinations, which has been named by Secretary of Labor Frances Perkins, held an organization meeting in Washington on May 22. The Committee is composed of 16 persons, representing management, labor and the public. Four of the 16 are directly or indirectly associated with Air Hygiene Foundation. The Committee:

Representing Labor: Robert J. Watt, International Representative, A.F.L.; John P. Frey, President Metal Trades Dept., A.F.L.; Herbert W. Payne, Textile Workers Org. Committee; Thos. F. Burns, United Rubber Workers.

Representing Management: W.H. Winans, Union Carbide Co.; V.P. Ahearn, National Sand and Gravel Assoc.; Dr. Ralph Greene, Eastern Airlines; Dr. Harvey Bartle, Pennsylvania Railroad Co.; M.M. Olander, Owens Illinois Glass Co.; Victor G. Heiser, M.D., National Association of Manufacturers.

Representing the Public: Cyril Ainsworth, American Standards Assoc.; Prof. Philip Drinker, Harvard University; I.S. Falk, Social Security Board; Martin P. Durkin, Dir., Illinois Dept. of Labor; O.F. McShane, Accident Boards and Commissions; Utah Industrial Commission; Dr. Lee Price, International Ladies Garment Workers.

Dr. Gardner Receives Knudsen Award

The annual William S. Knudsen Award for outstanding achievement in industrial medicine was presented to Dr. Leroy U. Gardner, Director of The Saranac Laboratory. Dr. Gardner is a member of the Foundation's Medical Committee and is in charge of the research which the Foundation supports at Saranac.

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THE AIR HYGIENE FOUNDATION

NW88-0010043

June, 1940

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

HW88-0010045

DIGEST OF INDUSTRIAL HYGIENE
Literature--News--Developments

News Items

431 Beat the Heat.

Suggestions for better health in hot weather:

- Wear light, porous clothing
- Drink plenty of cool water (not iced)
- Get sufficient sleep
- Bathe frequently
- Eat well-selected light foods

Use from 3 to 8 salt tablets during the work period.

Health, efficiency and output are essential factors, both from the worker's as well as the employer's standpoint. Investigations have shown that there is a loss of body salt and also a loss of sugar with hard work and excessive sweating. These body losses frequently result in heat cramps and heat exhaustion. The best available knowledge in recent years for the prevention of heat sickness suggests the use of salt-dextrose tablets. Since many workers are required to work in high temperatures the use of these tablets is again recommended. The tablets should contain 7 grains of salt and 3 grains of dextrose.

Recommended work period consumption:

- Hard work in high temperatures - 6 to 8
- Light work in high temperatures - 5 to 6
- All work in moderate temperatures- 3 to 4

The proper use of salt tablets will not only eliminate the possibility of heat disease, but will also tend to prevent extreme fatigue which occurs when working in hot locations. T. Lyle Hazlett, M.D., Medical Director, Westinghouse Electric and Manufacturing Company.

432 Skin Protection for Hosiery Mill Workers.

A special ointment to protect the hands of hosiery mill workers without damaging the silk hose they work on was devised by a druggist called in consultation on this industrial health problem. Ordinary ointments or lotions protected the skin of the girls' hands from the strong alkaline solutions with which the raw silks were treated. The fats or oils of these ointments, however, damaged the silk causing serious losses. The pharmacist, called in consultation by a skin specialist, made up a protective ointment of the vanishing cream type, containing no oil, but with enough acid to neutralize the strong alkaline base used in treating the silk. Science News.

433 Health Conservation Contest.

The Health Conservation Contest conducted by the National Chamber of Commerce in cooperation with the American Public Health Association has as its primary purpose the development of sound public health work and to improve community health

services. An industrial hygiene program is one of the factors upon which communities are scored. The first award winners for 1939 in order of descending population are: Milwaukee, Wis., Memphis, Tenn., New Haven and Hartford, Conn., Newton, Mass., Greenwich, Conn., and Plainfield, N.J.; and for the third year in succession, first in its class, Englewood, N. J.

434 Oklahoma State Industrial Hygiene Division.

H. J. Darcey, Chief Engineer of the Oklahoma State Health Department says in a recent communication: "The Industrial Hygiene Division, under the direction of the Engineering Bureau, was created during the latter part of 1939, but at that time only one engineer was assigned to the division, but it is planned within the near future to add a doctor and a chemist to the division. At present the work is confined to the Tri-State Mining District, which is located in the northeast corner of the state. This program will include a survey of dust conditions, not only in the mines but on the surface, together with a general sanitation program of the entire area. The progress of this work has been rather slow, but it is expected that it will speed up greatly now that the work has been completely organized and coordinated with the work being done in our neighboring states of Kansas and Missouri."

435 Los Angeles Industrial Hygiene Unit.

The Department of Health of the City of Los Angeles announces the establishment of a Division of Industrial Hygiene. Due to the rapid growth and increasing importance of Los Angeles industry, making this city one of the large industrial centers of the United States, it was felt that such a division to look after the problems of industrial hygiene was justified. It was formally approved by the City Council in March of this year, although preliminary organization was started at the first of the year and is still continuing. The director is A.V. Nasatir, M.D., and there is also an engineer to administer the duties of this division which will have the cooperation of other divisions in the Department, particularly the Laboratory for the efficient performance of its functions. An active program will be initiated with the beginning of the new fiscal year in July, at which time it is anticipated all equipment and necessary resources will have been accumulated and organized.

436 Maintenance of Local Exhaust Ventilation Equipment.

Industry very frequently utilizes the spring and early summer months as a time for cleaning up, painting up and making general repairs about the plant. At this time, many departments take on a new coat of paint and are transformed from perhaps dark, dingy departments into those which present an entirely different atmosphere. Many plants are now utilizing this same period in which to conduct a general housekeeping program and a time in which to completely check hoods, piping, motors, fans and other equipment used for controlling toxic materials which may be used or produced in various operations. Each year, housekeeping and maintenance projects are assuming a more and more important role in this program.

It seems that this is a very logical time to check such equipment which has been in operation during the winter months to see that dust collectors have been properly cleaned and maintained, and that hoods and piping are still operating effectively for the removal of the various vapors or toxic materials which they were designed to control. Such a routine check-up plays an important part in eliminating the possibility of over-loaded systems which have been extended considerably beyond their capacity. During warm summer months, the factory windows are frequently opened to provide additional ventilation, and very often may defeat the purpose of providing comfort to the workers by actually creating a hazard if care is not taken to see that stray breezes do not interfere with local

exhaust provided to prevent the escape of toxic materials into the atmosphere breathed by workers. Such a routine check-up, should include inspection of exhaust outlets and dust collector outlets, to see that they are not discharging near an open window through which the exhausted vapors or dusts may return to the workroom atmosphere. Although it is not suggested that windows not be opened during these warm days, it is important that care be taken that breezes and drafts will not interfere with otherwise effective local exhaust ventilation systems. Such a routine check-up program is being undertaken by many plants as part of the regular spring cleaning program and, in the end, is well worth the additional time required for such important observations. Conn. Health Bull. 55, 117, (April, 1940).

- 437 The Washington State Fund. J. Dewey Dorsett. Casualty and Surety Journal, 1, 47-52 (May, 1940).

This is a discussion of a grand jury report and findings on the Washington State Workmen's Compensation Fund. It was alleged in the Report that satisfactory and accurate account of the assets of the Fund were not kept, that funds were wrongly diverted to Accident and Medical Aid Funds, and that legitimate appeal costs were improperly charged. The Report asserts that the original purpose of the Industrial Insurance Act was to insure workmen compensation for injuries without litigation but that this condition does not now obtain. The Report also shows that "the Accident Fund is not now and never has been kept upon an actuarial reserve basis" and that "many complaints were filed with the Jury against the Department by injured workmen who alleged these claims had been but partially honored, and then only after long litigation....." The jury also found that "the Accident Fund is critically insolvent with actual deficits existing in light classes or subclasses necessitating the issuance of so-called 'red' warrants." The author also contends that not only does the state fund pay no taxes to support the cost of the government, but that it appears that the government will have to come to the support of the Fund, because of the unlawful diversion of the reserve.

Notices of New Books

- 438 Manual of Industrial Health Hazards. J.B. Ficklen. 175 pp. \$4.00. Service To Industry, Box 133, West Hartford, Conn.

This is "an attempt to present methods for the evaluation of industrial hygiene exposure resulting from many dusts, vapors and gases in a concise and simple manner." The first chapter presents certain principles which are basic procedures for making surveys and also describes certain sampling devices. All the other chapters are given over to the materials or groups of materials which may cause industrial disease. For each substance is given: the occurrence and uses, certain physical properties, the clinical symptomatology it produces in man, the physiological responses of man to various concentrations, the concentrations allowable in the air of the workplace and a simple method of estimation in air. Numerous references are given and in an appendix are certain useful constants, formulae and instructions for the preparation of standard solutions.

- 439 Legal Aspects of Engineering. W.C. Sadler. 631 pp. \$4.00. John Wiley & Sons, Inc., New York.

This is a direct application of the case method to engineering problems, three hundred odd cases being selected after carefully analyzing some 6500 legal cases actually dealing with engineering problems. Our readers will be most interested

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AMERICAN INDUSTRIAL HYGIENE

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in those dealing with Workmen's Compensation. There is a general discussion of the subject and then cases are given to illustrate the following points: Elimination of Defenses, Hazardous Employment, Employer-Employee Relation, The Accident, Arising Out of and in the Course of, Proximate Cause, Award, Dependency, and Jurisdiction.

- 440 Carbon Monoxide Asphyxia. Cecil K. Drinker. 246 pp., 40 Illustrations, 21 Tables, Cloth, \$4.50. Oxford University Press, 114 Fifth Ave., New York, N.Y. "This book is written primarily for men and women who have practical concern with the problems of carbon monoxide asphyxia. As a contribution to the intricate physiology and biochemistry of oxygen lack, it may have a certain place, but its chief purpose is to supply information to individuals working in fields of industry in which carbon monoxide is a lively problem, men who, as the author knows through years of association, need and will use a monograph dealing with the subject as it exists in our modern world, and as it has to be met. Engineers, men interested in certain problems of insurance, men handling compensation for accidents, safety directors and teachers of safety, lawyers, employees of utility companies, many plant physicians, all are concerned with the carbon monoxide problem. For these readers, the author has tried to answer many riddles without making the answers more confusing than the riddles, and has made constant effort to keep the subject in the simple realm of fact. No one who has seen what carbon monoxide can do has any desire to minimize the possible effects of this dangerous byproduct of some of our great modern conveniences. But, as in the case of other dangerous instruments, it is our task to learn to control the danger, not to abandon use of the instrument. "The book describes acute and chronic carbon monoxide poisoning in all their ordinary and bizarre forms. While the subject is necessarily medical, the treatment is such that engineers and laymen with chemical training can readily utilize the material presented. "The text devotes particular attention to such vital topics as hazardous concentration of carbon monoxide, methods for treating poisoning and descriptions of the sequelae which follow serious cases. A final chapter describes modern methods of analysis for carbon monoxide in air and in blood."

Legal Developments

- 441 Occupational Dermatoses Under the Illinois Workmen's Occupational Diseases Act. H.R. Foerster. Illinois Med. J., 77, 79-85 (January, 1940). The development of knowledge regarding occupational skin diseases and the Wisconsin experience with so-called "blanket legislation" is discussed. The physician is limited to a medical interpretation of cases and is not expected to make a medicolegal report. After analyzing various sections of the Illinois law, the author reaches the conclusion that "any skin disease therefore may legally be an occupational disease in Illinois." The statement that it is the duty of the insurance investigator or state examiner to determine the relationship of the disease to working conditions ignored the responsibility of the examining physician to determine the etiology of occupational disease. The author also believes that latent cerebral syphilis which has been activated by a severe head injury while at work, or an extensive ulcerative syphilis at the site of a severe ulcerated wound which results from an industrial accident should be considered a compensable occupational disease, at least for the period of activity -- unless the injury is not due to a hazard of the employment -- the reason being given that compensation is not dependent upon any implied assumption of perfect health. The author believes that the law is inconsistent in the exclusion of cases of skin diseases which develop in agricultural employees. There is a brief mention of the various types of skin diseases which may occur in different occupations, with interesting examples used to illustrate various principles.

HW88-0010048

- 442 Carbon Monoxide Poisoning. New York State Industrial Bulletin, 19, 79 (April, 1940).

Mechanic who tested a large number of automobile motors each day in an ill ventilated room became blind as a result of optic neuritis. Industrial Board's findings that the blindness resulted from exposure to toxic amounts of carbon monoxide gas emanating from running motors and that claimant's condition was an occupational disease covered by this law, affirmed. *Rosky v. Cadillac Motor Car Co.*, -- App. Div. --, March 15, 1940.

- 443 "Bell's Palsy." Facial Paralysis. Exposure to Cold when Driving Open Motor Truck.

On November 27, 1937, claimant, while driving an open motor truck in the course of his employment, suffered a right facial paralysis. There was expert testimony that the ailment was "Bell's palsy" and that it may be caused by exposure to cold air. The Board made an award for occupational disease upon a finding that claimant's injury was caused by his exposure to draught, cold and wind necessitated by his employment. Appellants (employer and carrier) contend that the finding was precluded by the fact that on the occasion in question the temperature ranged from forty-four to forty-nine degrees. This court may not assume that "Bell's palsy" cannot result from exposure to temperature of that degree. The evidence is sufficient to support the finding of occupational disease. Order affirmed. Matter of Naylor. N.Y. Ct. of Appeals. Decided April 26, 1940. (C.C.H.)

- 444 Carbon Monoxide Poisoning. Whether Cab of Grader is an "Enclosed Place" Within Meaning of Statute.

Goaslind was employed by the City of Pocatello as a driver of a grader propelled by a diesel motor. He drove on a platform on the grader covered by a metal top, 7 by 8 feet, supported by four uprights. The exhaust pipe from the motor was approximately a foot in front of the canopy or top of the cab in which Goaslind rode, extending vertically a foot above the metal top. In driving under trees, the exhaust pipe had been broken at a place just about even with Goaslind's head and had been repeatedly repaired by him as part of his duties. On July 26, 1939, the pipe was broken and fumes therefrom were blown directly onto Goaslind, who had to get out of the cab numerous times to overcome the effects of the gas fumes containing carbon monoxide gas. Such inhalation of carbon monoxide caused his death on the 29th. Upon application the board awarded compensation to the widow for the death of her husband as from an accidental injury. If the last sentence in section 43-1001, as amended by sec. 1, chapter 161, 1939 S.L., p. 287, construed together with 43-2104 of sec. 2 of said 1939 S.L., being added as chapter 21 of the Workmen's Compensation Law, and the paragraph immediately following subsec. 11 of sec. 43-2104 of the 1939 Act, mean anything, they mean that where death of an employee results from an occupational disease, recovery may be had only because of the onslaught of such disease and not by reason of accidental injury. Carbon monoxide poisoning is defined by the statute as an occupational disease and therefore recovery may not be sustained as for an accidental injury.

Sec. 43-2104 I.C.A., chapter 161, 1939 S.L. page 288, includes the following: "(2) Carbon monoxide poisoning in any process or occupation involving direct exposure to carbon monoxide in buildings, sheds, or enclosed places." It is held that the legislature by using the word "buildings, sheds, or enclosed places" very evidently meant and intended "enclosed places" to include other places than buildings or sheds and must have intended to include other than fixed loci.

That there is no dispute that decedent died from carbon monoxide poisoning, and that the roof of the cab constituted a sufficient enclosure to deflect into decedent's lungs a lethal quantity of carbon monoxide, are sufficient reasons,

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LIBRARY

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under a liberal construction of the statute, for holding that the cab of the grader constituted an enclosure or enclosed place, within the meaning of the statute. The award to respondent may therefore be sustained on the ground that her husband died from carbon monoxide gas, as an occupational disease, under the terms of the statute. The order of the board, to the effect that the respondent is entitled to recover compensation for the death of her husband is affirmed, but the cause is remanded with direction to the board to fix the proper compensation for death under sec. 43-2107, I.C.A., chap. 161, S.L. 1939. Coastland v. City of Pocatello et al. Idaho Supreme Ct. Decided May 8, 1940. (C.C.H.)

445 Hernia as an Occupational Disease. "Prompt Report" Requirement. Date of Dis-
ablement. Computation of Award. Average Weekly Wage.
Plaintiff, a truck driver, was required to handle heavy metals. When at home on the evening of January 7, 1938, he noticed a small lump or swelling on his right groin. He continued at his regular trucking work until six months later, when he hurt his back while helping a friend build a chimney. He was then given work as a watchman. On July 15th, the lump "came out big and really hurt", and he was unable to do any work. He consulted a doctor who advised him that he had a hernia. An operation was performed on August 3rd. Notice and application for adjustment of claim were filed on October 18th. Plaintiff was awarded \$18 per week for total disability from July 15, 1938, until further order. The occupational disease amendments (Act No. 61, Pub. Acts 1937, as amended, Stat. Ann. Sec. 17.220 et seq.) to the Workmen's Compensation Law provide for compensation for hernias "clearly recent in origin and resulting from a strain, arising out of and in the course of employment and promptly reported to the employer." Plaintiff reported the hernia to his employer as soon as he knew of its existence. This satisfied the prompt report requirement. Sec. 1 defines "disability" as "the state of being disabled from earning full wages at the work at which the employee was last employed." Notice of a claim for compensation must be given within 120 days after the disablement. The Board correctly determined the date of plaintiff's disablement to be July 15, 1938, and that the notice of claim was filed within the statutory period. The Board found that the hernia resulted from a strain experienced by plaintiff while lifting heavy metals, even though he did not remember the particular occasion. It drew a reasonable inference from the established facts. While employed as a truck driver, plaintiff's average weekly wage was \$31.20, and while employed as a watchman, \$15. In occupational disease cases the date of disablement is regarded as the date of the injury. (Sec. 2, Stat. Ann. Sec. 17.221). The award should have been computed upon the basis of the \$15 average weekly wage which plaintiff was earning on the date of disablement. Award affirmed but remanded for correction as to amount. Gauss v. Hewitt Metals Corp. et al. Mich. Supreme Ct. Decided June 3, 1940. (C.C.H.)

446 Hernia. "Prompt Report to Employer" Required. Construction of Statute.
Plaintiff petitioned for an award under the Occupational Workmen's Compensation Law Reporting Service Disease Amendment. On November 4, 1937, plaintiff was lifting buckets of paint. That evening he noticed a lump in his groin. On November 6th he consulted a physician and was advised that he had a hernia. He continued his regular work until January 5, 1938, when he was laid off. The following day he notified his employer (defendant) of his disablement. This notice given on January 6th was the first notice to the employer. It is held that the statutory provision that the hernia be "promptly reported to the employer" is mandatory and that it refers to the happening of the hernia rather than to the happening of subsequent disability. The Commission denied compensation on the ground that plaintiff failed to comply with this provision of the statute. Order denying compensation affirmed. Riley v. Berry Bros. Paint Co. et al. Mich. Supreme Ct. Decided June 3, 1940. (C.C.H.)

NOVEMBER 1938

0010050-0088

447 Silico Tuberculosis Compensated as Occupational Disease. Occupational Hazards, 2, 18 (June, 1940).

The claimant, after working for the defendant, an automobile body manufacturer, for ten years, was forced to quit work because of the development of a silico-tuberculosis condition. This is a condition combining the two pathological conditions known as silicosis and tuberculosis. The claimant was a metal finisher, and his job was to smooth the automobile bodies in preparing them for the paint job. The evidence disclosed that in finishing off the bodies various tools were used, including buff wheels, disc wheels, sandpaper, files, hammers, etc. It was shown that the room in which the work was done was at all times permeated with dust--so dense that it could be seen by eye. Analysis of the dust disclosed that a high percentage of silica was present in it. The men working with the disc and buff wheels were furnished respirators, but the claimant and other workers who worked in close proximity to the men with the respirators did not have them.

The company contended that the claimant had contracted silicosis years before he entered their employ when he worked as a miner in Colorado. The Court refused to recognize this contention and made an award. It said that even though the claimant may have had silicosis before, his work with the automobile factory aggravated such condition, and regardless of whether the disease was wholly contracted in his present employment, or a prior diseased condition was made worse by the employment, he still was entitled to compensation for the occupational disease. Leonard vs Fisher Body (Mo.) 137 S.W. 2nd 604 (March 1940).

448 Kentucky Workmen's Compensation Act Amended.

An amendment to the Kentucky Workmen's Compensation Act (S.B.No. 192 effective June 12, 1940) increases the maximum compensation payable for total disability from \$6,000 to \$7,500 and the maximum period during which payments are to be made from 8 to 10 years. Maximum compensation payable for death has been increased from \$4,000 to \$4,800 and the period during which payments are to be made has been increased from 335 to 400 weeks. (C.C.H.)

449 Typhoid Fever. Drinking of Contaminated Water While at Work. "Accident?"

Loudon, claimant's husband, was one of 150 men engaged in reconstructing a highway near Carlisle. During August, 1936, an epidemic of typhoid fever broke out among the men. Loudon became ill on or about August 21 from typhoid fever. He died on September 14, 1936. The compensation authorities' award of compensation to claimant was affirmed by the court below. Defendants appeal. Defendants concede, for the purposes of this case, that decedent's death was definitely traceable to the drinking of contaminated water while at work sometime during August, but they assert that there was no evidence of an "accident." There was medical testimony that the average period of incubation of typhoid fever germs is from ten to fourteen days. Accordingly, the referee counted back ten days from the date of decedent's pronounced symptoms (August 21) and found that August 11 was the approximate date of the accident. This court does not know why twelve or fourteen days were not selected. The deceased evidently drank contaminated water not only on the 11th but for days or maybe weeks prior, and most probably subsequent, thereto. To fix a time when the germ entered decedent's body, which is the accident alleged, would be a mere surmise. In common parlance, typhoid fever is considered as a disease, not an accident, unless the illness is attributable to some antecedent occurrence of an unusual and unexpected character which may fairly be termed an accident. An accident is a "sudden and unexpected event." A sudden event implies a distinct happening or occurrence at a particular time. All the members of this court are of the opinion that the award of compensation cannot stand. Judgment for claimant reversed and judgment here entered for defendants. Loudon v. H.W. Shaul & Sons et al. Penna. Superior Ct., Middle Dist. Decided April 29, 1940. (C.C.H.)

NOVEMBER 1932

MINERS' LABORERS' ASSOCIATIONS

HW88-0010051

450 Electrical Shock Aggravating Pre-Existing Heart Condition and Resulting in Death
The referee and board found that claimant's husband sustained an electrical shock, which aggravated a previously existing heart condition and resulted in his death. The deceased, who was the operator of a traveling crane, within two hours after he started to work, was found lying dead over the controls in the cab room of the crane he operated. There was testimony that twelve "hot" wires, with a voltage of 220 and an amperage of between 300 and 400, were exposed in the cab. The undertaker who prepared the body for burial, and who had examined the bodies of 50 to 100 persons who had been burnt by electrical current, testified that burns on the decedent's right hand and on the left leg below the knee were electrical burns. No other explanation for them was given. Three doctors testified that in their opinion death resulted from electrical shock. The inferences to be drawn from all the testimony - and there was evidence in opposition to the claim - were for the fact finding body, and this court is of the opinion that the testimony was amply sufficient to sustain the findings. Judgment affirmed. Wilkinson v. Jones & Laughlin Steel Corp. Penna. Superior Ct., West Dist. Decided April 29, 1940. (C.C.H.)

451 Heat Stroke Resulting in Death. Inspection of Manufacture of Paper. High Temperature.
Claimant seeks compensation for the death of her husband, Russell, from heat stroke. Russell, who was employed by defendant as a consumer's representative, was required to inspect all paper in the various stages of its manufacture throughout the mill. This work necessitated much walking and a close approach to the paper machines and conveyers, which are steam heated and maintained a high temperature. On July 10, 1937, Russell reported at the mill for work at 8:00 a.m. At 11:00 a.m. he was found lying down in the locker room "pale, like a sick person would look," where he had probably been unconscious from the last time he was seen around at 9:30 a.m. He was given first aid and taken to the company's doctor, who made a diagnosis of heat stroke. Russell died on July 15, 1937. The family physician made a diagnosis of heat stroke, resulting in lobar pneumonia and death. Russell, according to the testimony, had every symptom of heat stroke. The temperature at 7:30 a.m. on July 10th, 1937, was 83°, rising to 94° at noon. Russell was 41 years of age and in perfect health, as shown by his physical activities up to the time of the attack and also by the autopsy, which showed him to be in perfect physical condition. He was working in a very high temperature, and the diagnosis of heat stroke, according to the diagnosis of the two attending physicians, accepted by the compensation authorities, is conclusive upon this court. Judgment for claimant (Russell's widow) affirmed. Russell v. Scott Paper Co. et al. Penna. Superior Ct., East. Dist. Decided May 1, 1940. (C.C.H.)

452 Heat Exhaustion. Conditions at Place of Work. Heat Intensified? Essential Evidence Lacking.
Heat stroke or heat exhaustion is claimed as the cause of Muesenfechter's death. It is conceded that heat exhaustion is an accident arising out of the employment when the employee is exposed to a greater hazard or degree of heat than that faced by the general public. Muesenfechter, an employee of defendant, St. Louis Car Company, was an electrical worker, engaged in connecting electrical appliances under cars in the course of construction. He worked under the cars, which were placed over a pit about three feet deep. Muesenfechter quit work at noon on August 18th, 1936; he died the next morning. The coroner's report showed that Muesenfechter died from heat stroke. According to the records of City Hospital No. 1, 529 heat cases were admitted to the hospital during the heat spell of 1936. The situation here is entirely different from that in Wessel v. St. Louis Car Co., 136 S.W. (2d) 388, where several fellow-workmen testified that the

IN RE: ALBERT A. MUESENFECHTER
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heat where the employee worked was intensified by reason of the situation in which the employee was placed to do his work, and their observations of how the heat affected Wessel and his fellow-workmen. All of such testimony is lacking in this case. In the absence of thermometers this court knows of no more persuasive proof than for others who worked under exactly the same conditions to describe their own feelings and tell whether the heat was intensified by reason of the place they performed their labors. Likewise, it would be persuasive for those present to say whether or not the air was in circulation and a breeze was entering from the doors and windows. When the employee in the case at bar said he was sick and was advised to sit down and cool off, he sat on a box there in the pit, and then went back to work. He did not complain of the heat at that time and place. No substantial aid is gained from the testimony of the air-conditioning expert. The court would accord some value to such testimony as to the rise or fall of temperature at a given place where the expert's opinion is based on the conditions prevailing at that place; but here the expert's testimony was based on conditions existing elsewhere. The most that can be said of the evidence as a whole is that one is left in doubt as to whether this employee suffered a heat stroke while at his work, and then if the court conjectures that he did, it would have to assume without substantial proof that it was brought about by reason of intensified heat caused by reason of the place where he worked. The judgment of the court below, reversing the commission's award of compensation, is affirmed. Muesenfechter et al. v. St. Louis Car Co. St. Louis Ct. of Appeals, Mo. Decided May 7, 1940. (C.C.H.)

453 Superficial Burn on Hand. Infection. Pre-Existing Latent Mental Disturbance Aggravated.

Plaintiff, a hammer man, sustained an accidental injury on July 16, 1937, when a small piece of hot metal entered his glove and inflicted a superficial burn at the base of the right thumb, an infection later developing at the site of the burn. Thereafter, he alternately worked for the defendant employer at his regular employment and at work intended to rehabilitate him until October 28, 1937. He continued to complain of his injury and inability to work and was examined by various physicians, including Dr. Foster, a neuro-psychiatrist. Upon application to the department, he received an award of compensation, from which this appeal is taken by defendant. The testimony of Dr. Foster supports the finding of the department that the accidental injury aggravated a pre-existing latent mental disturbance, resulting in a disabling condition. The result is comparable to situations wherein an accidental injury has aggravated and precipitated a pre-existing latent physical ailment, resulting in disability. The record contains testimony which would have sustained a finding that there was no causal connection between the injury and the disability and that plaintiff is malingering. However, this court is not the trier of the facts. The finding of fact made by the department has some support in the evidence of Dr. Foster, which establishes the necessary causal connection, and distinguishes the case on the facts from Schnoyder v. Cadillac Motor Car Co., 280 Mich. 127, 273 N.W. 418, wherein the mental condition was collateral to the injury. Award affirmed. Karwacki v. General Motors Corp. Mich. Supreme Ct. Decided June 3, 1940. (C.C.H.)

454 Reversal. Occupational Hazards, 2, 18 (June, 1940).

A case was previously reported in which the Superior Court of Pennsylvania had granted an award for death resulting from pneumonia. The pneumonia had been contracted when it became necessary for the employee to work a number of days in mud and damp to clean out a plant which had been inundated during the Pittsburgh flood of March, 1936. The company took an appeal from this decision, and recently the highest court in Pennsylvania reversed the Superior Court and entered a decision for the company. The finding of the Court was to the effect that the

contraction of the pneumonia in this case could not be considered an "accident" within the meaning of the Pennsylvania Workmen's Compensation Act. *Parks vs. Miller Printing Machine Co. (Pa.)* 9 Atl. 2nd 742 (Dec. 1939) reversing 4 Atl. 2nd 831.

Papers on Air, Dust and General Industrial Hygiene

- 455 Nineteenth Annual Report of the Industrial Health Research Board to June 30, 1939. H.M. Stationery Office, London, 1939. (British).
Much of the work of the Industrial Health Research Board is being interfered with at present because of problems brought up by the war. It is hoped that the knowledge gained will be of practical value in the prevention of unnecessary and uneconomical mental and physical strain in war-time industry. A report on the effect of variations in brightness contrast on the illumination required for simple visual tasks involving the discrimination of fine detail will be published soon. A study has been made of the hearing acuity of weavers and beetlers in Lancashire mills, and the noise of the environment has been measured and analyzed. The work on toxic solvents has been continued. Studies on the effects of mechanization, mass production, and "speeding-up" are being carried on. A theoretical study of incentives is also in progress. It has been possible partly to predict by means of psychological tests accident proneness among skilled workers, but hitherto no positive results have been obtained in connection with unskilled work. Further investigations are being made.
- 456 Report of the Medical Research Council for the Year 1938-1939. H.M. Stationery Office, London, 1940. (British).
Experience gained during the last war showed the uneconomical effects of over-long hours of work. This knowledge together with information on optimum length of spell, the effect of rest pauses, the influence of various environmental conditions, the physiology and psychology of work, accident proneness, vocational selection, and labor wastage, are all capable of practical application during normal times. Much of it is now of increased importance owing to the war, as for example, in relation to the "black-out," knowledge about optimum conditions of lighting, heating and ventilation. Application of existing knowledge is more important at the moment than are new researches, although the war is likely to raise fresh problems. The objectives of the investigation into pulmonary disease in miners are to determine the incidence of chronic types of these diseases, to elicit the cause of excessive incidence of silicosis, and to discover whether other disabling industrial pulmonary conditions exist that do not come under the present definition of silicosis. All suitable autopsy material is being examined chemically and histologically, and x-ray diffraction spectroscopy is being employed in the examination of mineral residues of pulmonary tissue, air-borne dust and rock samples.
- 457 Evolution of Pneumoconioses. M. G. Parrique. *Ann. d'hyg. pub.*, 18, 1-16 (1949). (French).
The identity of silicosis and tuberculosis, in the opinion of some French authors, is based entirely on pathologic-anatomical findings ("nodule absolument superposable"). The author discusses this view and presents nine case histories of silicosis (minors, stone-masons and sandblasters) with typical x-ray pictures and without any symptoms of tuberculosis. In his opinion silicosis is a separate entity and should be listed among the compensable diseases. In France silicosis is not recognized as a separate disease, either by scientists or by the law.

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- 458 A Study of Experimental Tissue Reactions Following Intravenous Injections of Silica and Other Dusts. F.W. Simson and A.S. Strachan. Publ. So. African Inst for Med. Res., No. 45, 9, 95-122, Johannesburg, January, 1940.
This article describes animal experiments in which intravenous injections were made with quartz, sillimanite, orthoclase, muscovite, rutile, glass and air-borne mine dust. The particles were less than 5 microns in diameter and most of them were under 0.4 microns. Four animals received weekly injections of 2 cc. doses or a total of 300 mgm. of dry weight of dust suspended in sterile saline. With quartz and mine dust, a few of the animals died of shock following the injection. This did not occur with the other dusts. The authors believe that very finely divided silica causes an upset in the normal pH of the blood. All the other animals survived for periods as long as two years when they were killed. Autopsy showed pathological changes in the liver, spleen, lymph nodes and bone marrow. According to these changes the dusts can be classified into two groups: the active group, quartz and air-borne mine dusts which produced fibrosis; and all the others which were non-fibrosis producers. The direct toxic action of the silica on the cell as the primary factor in the production of the silicotic lesion is favored by the authors, but they do not exclude a phospholipid as partly responsible for the fibrosing effect.
- 459 The Nature of Anthracotic Foci. Experimental Research. A.G. Savellini. Folia med., 26, 21-32 (1940). (Italian).
A review of the literature and of the views of some French and Italian workers who are of the opinion that the greater part of the "anthracotic" pigment in the lungs is not truly anthracotic but iron of hemolytic origin. Animal experiments by the author lead to the conclusion that carbon and iron participate in the common anthracotic focus -- some contain carbon, some iron only.
- 460 Two Fatal Cases of Pulmonary Asbestosis. E.C. Vigliani. Rass. med. indust., 11, 26-52 (1940). (Italian).
The first of these cases concerned a woman who worked for thirty years in a factory using asbestos in the manufacture of cord. The second woman worked for seven years in an asbestos factory. Her susceptibility to colds increased while she was working and she suffered all her life from bronchitis and asthma. She died at the age of fifty, with symptoms of a lung disease, nearly thirty years after having stopped work. The autopsy showed interstitial sclerosis of the lungs and asbestosis bodies.
- 461 Clinical Studies and Animal Experiments on Pneumoconiosis Caused by Aluminum. G. Goralawski. Arch. f. Gewerbepath., 9, 676-688 (1939). (German).
Two out of a large number of workers in a bronze powder plant, exposed to an excessive amount of metallic aluminum dust, were stricken on the same day with spontaneous pneumothorax. The original diagnosis was tuberculosis. Both showed small shadows over the entire lung field in the x-ray film. There were no tubercle bacilli, no change in the blood picture, no shift to the left. For ten months there were no changes in the chest x-rays, but the complaints, cyanosis and dyspnea increased. Animal experiments with the inhalation of metallic aluminum dust and metallic copper dust, for 40 days with aluminum powder and 20 days with bronze (copper) powder showed slight proliferation of the connective tissues and thickening of the alveolar walls in the case of the aluminum dust, and somewhat more noticeable similar changes with the copper dust. The author thinks that the disease may be a peculiar kind of pneumoconiosis, and refers to a previous case described in the same journal (which, however, involved inhalation of the spray from aluminum paint rather than aluminum dust). (F.C.F.)

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- 462 Explosibility of Aluminum Powder-Silica Dust Clouds. R.B. Mason and C.S. Taylor. *Ind. Eng. Chem.*, 32, 67-68 (1940).
Because of the interest in the use of aluminum powder as a possible agent in the prevention of silicosis, the effect on the explosibility of silicon-aluminum dust clouds in air was studied. A silicon content of twice the concentration of aluminum dust was necessary to prevent an explosion. However, in actual practice where one ounce of aluminum powder is enough to insolubilize the silica in a dust cloud of 8000 cubic feet volume, this amount of aluminum dust would have to be concentrated in a volume of not more than 25 cubic feet of clean air in order to produce an explosive mixture. The effect is similar to that of rock dust in preventing coal dust explosions.
- 463 Lungs of Cement Workers. S. Caccuri and L. DiPrisco. *Folia med.*, 26, 7-20 (1940). (Italian).
A review of the literature on the subject, especially in Italian, which seems to give a less favorable picture of the health of cement workers than is found in other countries. Histories of seven cases with illustrations are given which show silicosis in grades 1 and 2, and emphysema. Tuberculosis was not found.
- 464 Serial Chest Roentgenograms of 3179 Office Employees, 1926-1938. H.H. Fellows. *J. Ind. Hyg. & Toxicol.*, 22, 157-158 (May, 1940).
The first x-ray examination of this group was made between 1926 and 1932. Those whose first x-ray was suggestive of pulmonary tuberculosis were not included and the remainder were divided into three groups: (1) those with "negative" chests, (2) those with apparently healed primary complexes and (3) those with lesions requiring further clinical study. Serial routine roentgenograms were made at varying intervals and the results have been tabulated. When the development rate of pulmonary tuberculosis of those with "negative" chests was compared with that of the employees whose first x-ray showed a healed primary complex, no significant difference was found. It is believed that roentgenographic examination is essential in any study of the lungs.
- 465 Dust Control in Rock Drilling. L. Greenburg, T. Hatch, W. Burke and W. Harris. *J. Am. Public Health Assoc.*, 30, 463-476 (May, 1940).
The code of dust control requirements for rock drilling in New York State provides two standards of permissible dust concentrations, one for drilling in high silica rocks and the other for rock containing a low percentage of quartz. Class I -- silica content less than 10% - maximum limit: 100 million particles per cubic foot. Class II -- silica content 10% or greater -- maximum limit: 10 million particles per cubic foot. This departs from the general practice of accepting the inverse relationship of free silica and the permissible dust concentration in a sliding scale. This is based on the fact that rock formations in New York State tend to be fairly high or highly variable in silica content or below ten per cent. The code also requires dust control methods for all underground drilling operations and for all surface drilling in Class II rock.
The technique for classifying rocks from various drilling operations is described. There is a discussion of dust control in dry and wet rock drilling, the drill design and ventilation requirements with wet drills.
- 466 Report on Air Conditioning in Surgery. Dept. of Industrial Hygiene, University of Pittsburgh, 13 pp. (1940).
The conclusions which have been reached thus far are: (1) that air conditioning is valuable to an operating room personnel from a comfort standpoint; (2) that complete air conditioning decreases the bacterial count in an operating room; and (3) that further studies are necessary before the advantages of an air conditioned recovery ward and operating room, with regard to the physiological aspects of the patients, can be determined.

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- 467 Morphological Changes in the Central Nervous System After Short Experiments with Diminished Pressure. R. Merk. Arch. f. Psychiat. u. Nervenkrank., 3, 160-177 (1940). (German).

These are the results of animal experiments on the effect of diminished pressure. Guinea pigs were exposed daily for 1-2 hours to a pressure of 198 mm. of mercury (equivalent to 10,000 meters altitude). All the animals showed serious symptoms of the nervous system but there was quick recovery. After several days of repeated exposure, the animals died. Post-mortem examination revealed marked and irreversible changes in the ganglion cells in the medulla, cerebellum and intracranial brain. Death occurred upon the first exposure when a lower pressure, equivalent to 12,000 meters, was used. Violent cramps developed in animals exposed to artificial heights of 12,500 - 13,000 meters but most of them recovered if they were removed before death occurred. In these there were no clear morphological changes in the ganglion cells.

- 468 Syphilis in Industry. T. Rosenthal. J. Soc. Hyg., 26, 62-67 (February, 1940). A discussion of the advances made in recent years in discovering cases of syphilis in industry. The New York City Health Department's Bureau of Social Hygiene assists by educational efforts, the collection of statistics, by furnishing diagnostic facilities and free drugs to physicians. Emphasis is placed on the great social and economic need of hiring or retaining employees with non-infectious syphilis, also the responsibility of the worker in continuing treatment.

- 469 Clay Shoveler's Fracture. R.D.M. Hall. J. Bone and Joint Surg., 22, 63-80 (January, 1940).

The history given in these accidents is practically the same in all cases. The laborer (digging drains in clay soil) throws up a shovelful of clay usually from 10-15 ft., the clay sticks to the shovel and the worker feels a crack somewhere between the shoulders and is unable to continue working. This article suggests that the cause of clay shoveler's fracture is closely associated with the origins and actions of the trapezius (middle portion), the rhomboideus major and minor; the serratus posterior superior acts merely as an accessory to these muscles, for when the worker is in the act of throwing, his muscle is probably in full contraction, thus helping to fix the chest. The three possible mechanisms of this fracture are direct muscle violence, reflex muscle contraction and whip-like pull transmitted through the supraspinal ligaments. Early removal of the detached fragments is doubtless the treatment of choice.

- 470 High Tension Electric Burns. C.R. Edwards and H.C. Bowie. Am. J. Surgery, 47, 299-311 (February, 1940).

Since, next to bone, skin offers the greatest resistance to electricity, and the greater the resistance the more severe the burn, it is a common experience to see serious burns in the hands, especially of hard, calloused hands. Electric current kills tissue, once contact has been established. Charring of tissue is more definite and instantaneous the higher the voltage, up to 5000 to 10,000 volts. Therefore, in the somewhat lower level of high voltage current, damage to tissues not immediately manifest by desiccation or charring is frequently encountered. The current penetrates deeply through skin and underlying structures, often charring only the superficial layer of skin, but enough damage is done to the tendons and their sheaths to set up an inflammation resulting in dense adhesions between these structures. Sometimes what appears to be a superficial injury develops into a very serious and far reaching one, and the reverse is also true. If an immediate debridement is undertaken the tendon sheaths and joint spaces will be opened widely, which if conservative treatment is carried out sufficient granulation will occur to seal these spaces beneath the slowly

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separating coagulum. When bone is attacked by high tension current most of the damage is done to the cortical layer. Dead bone slowly separates, and when the sequestrum has been removed the area can soon be prepared for skin grafting. The authors point out that the customary classification of burns should not be applied to those due to electric currents.

- 471 A New Method of Gas Analysis. W.J. Gooderham. J.Soc.Chem.Industry, 59, 1-8 (January, 1940). (British).

The simplest form of gas analysis, given a series of accurate gas meters, which do not appreciably absorb gas or cause loss of pressure, can be obtained by passing gas through a meter, a reagent to remove completely one constituent of the gas, another meter, another reagent, another meter, and so on. Gas analysis then becomes a matter of reading gas meters. This paper describes how, by using soap films as gas meters, it has become possible to obtain simple and accurate gas analyses from stop watch readings without the use of taps or mercury as integral parts of the measuring apparatus. Using diaphragm pumps, a new form of gas holder made of corrugated metal rings, and a special type of governor, average gas samples can be readily collected, stored under pressure, and analysed.

Papers on Industrial Poisons, Cancer, Dermatitis, etc.

- 472 The Relative Retention by Growing Rats of Lead Ingested in Water and in Food, and in Soluble and Insoluble Forms. J.B. Shields, H.H. Mitchell and W.A. Ruth. J. Ind. Hyg. & Toxicol., 22, 199-205 (June, 1940).

The purpose of this investigation was to determine with growing rats the retention of lead in the body when it is consumed in water solution as compared to the retention of an equal intake of lead consumed in the food. The calcium content of the diet was purposely made inadequate in order to facilitate the absorption and retention of lead. When ingested with solid food, the absorption of water-soluble lead is decreased by 27%. At low dosages, the assimilability of the soluble form (lead nitrate) is not greatly different from that of the insoluble compound (acid arsenate of lead), the observed difference being only 14%. The difference in lead retention (and in its toxicity, presume the authors), between ionized lead in water and insoluble lead in food is of the order of 38%. A computation from this indicates that 1 p.p.m. of lead in drinking water is the hygienic equivalent of from 2176 to 5.52 p.p.m. of lead in the food, depending upon the proportion of the water intake that is contained naturally in the consumed food.

- 473 Field Determinations of Carbon Disulfide in Air. F.J. Viles, J.Ind.Hyg. & Toxicol., 22, 188-196 (May, 1940).

The diethylamine reaction proved to be the most satisfactory of a number of procedures tested. Four procedures for colorimetric determinations in air have been developed by making use of the reaction of carbon disulfide with diethylamine and copper acetate. This results in the formation of cupric diethyldithiocarbamate of a yellow color which is compared with standards made from the absorbing reagent and an alcoholic solution of known carbon disulfide content. The reagent is an alcoholic triethanolamine solution of diethylamine and cupric acetate.

Four methods for the collection of air samples are described. Organic double-bonded sulfur compounds and 10 p.p.m. or more of hydrogen sulfide will result in interference. Tests of these procedures proves them applicable for field work.

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ALBION ALMS

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- 474 I. Lead Content of Human Blood. II. Lead as a Poison. An Annotation. J.N.M. Chalmers. *Lancet*. pp. 447-450 and 462-463 (March 9, 1940). (British).

In this study, Tompsett's method of determination was used. Blood was obtained from twenty normal people and fifty hospital cases, all with no known exposure to lead, and also from forty-four factory workers with a definite lead exposure in the manufacture of white lead and storage batteries. The blood of the controls showed a lead content which varied from 30-90 micrograms per 100 cc. with a mean of 57. The lead workers, who presented no symptoms of poisoning, had blood lead values ranging from 60-192 micrograms per 100 cc. with a mean of 104. Augmented concentrations of lead in blood indicate increased absorption of lead, but do not constitute evidence of plumbism; they are a useful estimate of the degree of exposure. Clinical findings must still continue to govern the diagnosis of lead poisoning. There is a discussion of the problem and also of the value of milk in the diet of lead workers. With a high calcium diet, there is less lead absorbed from the gut than on a low calcium intake. But since industrially most lead enters the body through the lungs, the calcium probably acts by helping to fix the lead in the bones and thus preventing it from circulating in the blood. Though of great value, blood studies and similar biochemical investigations must not be given too much consideration.

- 475 I. The Relative Toxicity of Lead and Some of Its Compounds. L.T. Fairhall and R.R. Sayers. II. Pathologic Changes Induced by Lead and by Some of Its Compounds. J.W. Miller. U.S. Public Health Bulletin No. 253, 40 pp. (1940). For sale by the Superintendent of Documents, Washington, D. C., 25 cents.

An extensive investigation into the relative toxicity of lead and its compounds. The results of administration of these substances by mouth, by intraperitoneal injection and by inhalation were studied in over 500 guinea pigs. Symptoms of anemia and muscular incoordination were looked for, note was made of blood changes, especially basophilic stippling, polychromasia and morphologic changes; blood calcium was also determined. Results were kept on body weight changes and mortality. Measured amounts of the lead compound were administered in both the ingestion and intraperitoneal injection experiments, and sampling and analyzing of the dusty air done at intervals during the inhalation experiments. Determinations were made of the amounts of lead present in the various organs in order to ascertain the degree of absorption which had taken place. In the inhalation experiments, identification of the particles in situ were compared with particle size determinations of the suspended lead fume or dust. Lead compounds were much more toxic on inhalation than when administered by mouth or injection. Lead arsenate was extremely toxic upon intraperitoneal injection compared to the other compounds. In the feeding experiments, the order of toxicity did not vary much, but lead carbonate, monoxide and sulfate were more toxic by mouth than lead itself or the remaining compounds employed. The carbonate and monoxide were the most toxic following inhalation. In part II, there is an account of extensive study on the pathological material obtained from the experimental animals. It appears that the fatty metamorphosis found in the liver is the result of the toxic action of the lead compounds on the cells rather than the result of circulatory disturbances. A fair pathological index of the relative toxicity of lead and its compounds is the splenic hemosiderosis, probably an indication of the destruction of red blood cells. Subacute interstitial nephritis occurred with significant frequency. The dust in the peritoneal tissue, although slowly absorbed, produces nodules similar to those of the inert mineral dusts.

- 476 Carbon Disulfide. Ohio Dept. of Health, Adult Hyg. Div., 7 pp. (1940). A brief booklet giving in concise form general information, industrial health aspects, industrial and occupational exposures, selected abstracts, and a list of references on this compound.

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- 477 Chronic Carbon Disulfide Poisoning in the Rayon and "Zellwolle" Industry. H. Schramm. *Dtsch. med. Wchnschr.*, 66, 180-182 (1940). (German).
In Germany, the viscose process is used to produce 85% of all rayon and 95% of all "Zellwolle." Early symptoms of poisoning are general complaints and the only demonstrable findings are disturbances in the gastric secretions, with hypo- or hyper-acidity and catarrhal or ulcerous changes. Loss of weight is an important symptom; this is quickly recovered during convalescence. Functional neuroses develop quickly and organic nervous disturbances are seen after working months or years. Disturbances of pupillary reaction are common but absence of the corneal reflexes is rare. Some workers show resistance to carbon disulfide.
The author describes two cases, one of which showed symptoms after working one year, the other after eleven years. The former (schizophrenic-catatonic attacks, choked papilla) at autopsy showed numerous glia nodules in the brain, perivascular infiltrations and inflammatory infiltration in the pia mater. The second case had a paresis of the right hand and the left facial nerve; he recovered considerably after two months.
- 478 Ventilation of a Trichlorethylene Degreaser. W.N. Witheridge and H.T. Walworth. *J. Ind. Hyg. & Toxicol.*, 22, 175-187 (May, 1940).
A study was made of four types of local exhaust systems for a large open type degreaser to determine their effectiveness in controlling exposures to trichlorethylene. Of these systems the horizontal slot type proved most efficient from the standpoint of power requirement in reducing solvent hazards. The vertical slot type produced the lowest solvent loss but was least efficient in controlling the hazard. The round hole system required nearly twice the power of the horizontal slot type to reduce the solvent exposure to 100 p.p.m. and also caused the highest solvent loss increase. The performance of the elongated hole system was similar to that of the round hole. Two gallons per 9 hour day or 1.2 gallons per square foot of tank area per 100 hours of operation was the maximum solvent loss increase. The authors found no significant relation between ventilation rate and solvent loss. A reduction of the average trichlorethylene concentrations in the operator's breathing zone from a maximum of 400 p.p.m. without ventilation required a rate of 615 c.f.m. around the 20' perimeter of the tank using the horizontal slot or round hole system. A rate of 1400 c.f.m. was required to accomplish the same result with the vertical slot system. The vapors were not found to "roll over" the edge of the degreaser during operation, either with or without ventilation.
- 479 The Effect of Choline on the Fatty Liver of Carbon Tetrachloride Poisoning. H.M. Barrett, C.H. Best, D.L. MacLean, and J.H. Ridout. *J. Physiol.*, 97, 103-106 (1939).
The removal of excess liver fat caused by phosphorus poisoning can be hastened by adding choline to the diet. To control the liver fat deposit due to the lack of choline alone, low choline diets were administered to which known quantities could be added. Carbon tetrachloride was used because it produces very fatty livers and the degree of poisoning can be more easily controlled than with phosphorus. The experiments showed that "rats maintained on a diet low in lipotropic factors with an amount of added choline sufficient partially to prevent the increase in liver fat due to a low choline diet develop very fatty livers during the 20-day period following the administration of carbon tetrachloride. Animals poisoned with carbon tetrachloride and fed the same diet, with the addition of excess choline, have almost normal livers at the end of the same period."
- 480 Detection of Minute Amounts of Carbon Monoxide in the Blood. O. Schmidt. *Dtsch. Ztschr. f. d. ges. ger. Med.*, 32, 404-406 (1940). (German).
This is a description of a combustion method for measuring gases withdrawn from the blood. Manometric measurements are made of the decrease in volume of the gas brought about by combustion of the carbon monoxide after absorption of the carbon dioxide. As little as 0.1% may be detected by this method.

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STRAUBS LIBRARY

- 481 Death From the Use of "Flaschengas" (Propane). F. Koelsch. Münch. med. Wchnschr. 87, 130-131 (1940). (German).
Propane requires a great deal of oxygen in combustion and if an adequate amount is not present, carbon monoxide might be produced by incomplete oxidation. The propane may also be decomposed to carbon monoxide and other products by contact with the hot stone. This fatal case occurred after fifteen minutes in a very small bathroom in which water was heated by propane. Carbon monoxide, together with lack of oxygen, could have caused death in this small room.
- 482 The Carbon Monoxide Content of the Blood of Smokers. O. Schmidt. Reichsgesundheitsbl., 15, 53-58 (1940). (German).
A report of investigations into the carbon monoxide content of the blood of smokers. In men smoking and inhaling more than 30 cigarettes daily, the mean carbon monoxide content of the blood was 8.7% of saturation capacity. In those smoking 20 to 30 daily, the figure was 4.2% and in those smoking 10 to 20, the result was 2.7%. For those consuming up to 10 cigarettes, the average was 1.8%; 0.19-1.23% in occasional smokers, and 0.1% in non-smokers. As high as 7.2% carbon monoxide saturation has been found in chronic smokers after 12 hours abstinence; complete elimination may take as long as 36 to 52 hours. Values of 8.9% have been found after the smoking and inhaling of 3 cigars and 20.9% after 4. For pipe-smokers, the results were from 2.59 to 6.93%.
- 483 Remarks Regarding the Pathogenesis of Anilin Tumors. A. Müller. Schweiz. med. Wchnschr., 70, 232-233 (1940). (German).
This is a report of papillomata of the bladder and ureter in a benzidine worker. The author discusses the theory of the causes of such tumors -- whether they result from poison contained in the urine stored in the bladder, or whether poison in the circulating blood is responsible.
- 484 Dermatitis from Cashew Nut Shell Oil. J.G. Downing and S.W. Gurney. J. Ind. Hyg. & Toxicol., 22, 169-174 (May, 1940).
Contact with the oil from the shells of cashew nuts causes a dermatitis, but no effect occurs on ingestion of the cooked nuts or on inhalation of the extract. The oil is a primary irritant, all the subjects tested reacted unfavorably. The affection follows the ordinary course of a dermatitis venenata -- the eruptions were not symmetrical. Dilutions of 1:20 and 1:30 of the shell oil may be used in patch testing. This should not be done at the outset of an attack for it may aggravate the condition. The authors give further details for testing and some therapeutic advice.
- 485 Contribution to the Study of Occupational Poisoning by Cresols. A. Corcos. E. Vigot Freres, Paris, 1939. Abstracted from Rass. med. indust., 11, 55 (1940).
Cresol poisoning is similar to but less serious than that by phenols. Examination of workers using cresol in the manufacture of artificial resin revealed headaches, tremors, vomiting and some affection of the kidney with moderate hypertension. More than the normal amount of phenol was found in the urine. In France, only the chronic dermatosis caused by cresol is on the list of notifiable diseases.
- 486 Chlor-Acne in Railway Workers. H. Haldin-Davis. Brit.J.Dermatol. Syph., 51, 380-383 (1939).
Workers engaged in making electrical circuits from wires insulated with perchloronaphthalene are subject to acne. This is a description of such an affection in twelve workers. It may be avoided by covering the skin with "rosalex" and washing at the end of the day with Westrosol soap, which is a 2% solution of trichloroethylene.

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Digest of Industrial Hygiene - 18.

- 487 Occupational Dermatitis Due to Mint. Report of Two Cases. W.M. Sams. Arch. Derm. & Syphil., 41, 503-505 (March, 1940).
The mint grown in Florida (*mentha citrata*) differs from the native mint (*mentha vera*) in that the former seems to cause a dermatitis. This is a report of two cases of occupational origin. Both patients were bartenders and had been for years, but first had trouble with the mint when working in Florida. Of 18 subjects tested with the leaf, five were positive; 7 positive reactions resulted from a test with an ether-soluble fraction.
- 488 Skin Diseases of Hairdressers. A. Tzank and E. Sidi. Presse med., pp. 5-7 (1940). (French).
This is a discussion of the dermatoses of hairdressers and especially those caused by sensitization. The most frequent are the dermatoses caused by hair dyes containing paraphenylenediamine. A table is given which presents twelve cases. Emphasis is placed on the necessity of skin tests. Positive reactions may occur only during menstruation. A hypersensitiveness to paraphenylenediamine is often associated with a similar sensitivity to anesthetics (novocaine).
- 489 Plants Containing Rotenone -- Industrial Dermatitis. J. Rucouchot. Arch. maladies profes., 2, 149 (1939). (French).
Replacing the arsenicals previously used in France is an important new group of insecticides derived from plants containing rotenone, and including such substances as derris. A violent dermatitis of the genital region with a rhinitis with anosmia and irritation of the tongue and lips developed after two to three days in workers preparing these substances. Further trouble was prevented by improvement in ventilation, the provision of respirators and close attention to personal cleanliness.

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