



FOUNDATION FACTS

Shilling No. 813

PLAINTIFF'S
EXHIBIT

WH-120

This newsletter 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 12 million workmen in heavy industry.

Vol. 3.

No. 4.

Beware of "Black-Outs"

For months the Foundation has warned that, "Increased production increases health hazards — demands greater precautions." In this connection comes a report from a member company headed "A BLACK-OUT OF SAFE PRACTICES" which discloses a 14% increase in lost time accidents in February over February 1940 with only a 3% increase in hours worked. While the Foundation's field is industrial health, rather than industrial accidents, the above experience is a significant warning. Remember, the Foundation can help you increase your precautions to safeguard employee health through industrial hygiene surveys, appraisals of ventilating equipment and other services. A slogan of 1917 was, "Food Will Win the War." Today it is more accurate to say, "Health Will Win the War."

Dr. Haythorn Honored

Dr. Samuel R. Haythorn, Medical Advisor on the Foundation's staff, was recently elected President of the American Association of Pathologists and Bacteriologists. Dr. Haythorn, who is Director of the Singer Memorial Laboratory, Allegheny General Hospital, Pittsburgh, was also elected Vice President of the International Association of Medical Museums.

New Members

Latest companies to affiliate with the Foundation are Marck & Company and Hazel-Atlas Glass Company, both well known organizations.

"Group Discipline" Can Eliminate Need for Government Control

U.S. Senator Alexander Wiley (Wis.) said in a recent address: "I prefer to see governmental control voluntarily applied on a cooperative basis with the individual and the group, or even better, I prefer to see individual or group discipline which is so effective that it eliminates the need for government control...."

"As far as I know, the greatest achievements in safety have resulted from the organized effort of comparatively small groups cooperating with government rather than by arbitrary government control alone. In other words, the greatest advances in safety have resulted from intelligent self-discipline rather than arbitrary government control...."

The above applies with equal force to industrial hygiene. This Foundation represents voluntary, organized action by representative industrial concerns for the conservation of employee health. This is the American method of dealing with socio-economic problems. Instead of 250 companies there ought to be 2,500 companies participating in Air Hygiene Foundation.

Annual Index Issued for Monthly Digest

Enclosed with this issue of the monthly Digest of Industrial Hygiene is the annual index for 1940. The Index is intended to assist Foundation members in locating specific data. Additional copies are available if desired.

April, 1941.

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

DIGEST OF INDUSTRIAL HYGIENE
Literature--News--Developments

News Items

231 Saranac Symposium on Tuberculosis.

Among the subjects to be discussed at the Symposium on Tuberculosis in Industry to be held at the Saranac Laboratory from June 9 to 14 are the following:

Tuberculous Infection, Sources and Modes of Transmission.

--- Dr. Leroy G. Gardner.

Comparative Mortality Statistics on Tuberculosis in Various Industries.

--- Dr. Louis K. Dublin.

Disabling Morbidity from Tuberculosis.

--- Dr. W. M. Gafar.

Predisposing Factors, Therapeutically Significant.

--- Various speakers.

Incidence and Causation of Tuberculosis, Various Industries.

--- Various speakers.

Methods of Control.

--- Drs. J. A. Sawyer, L. D. Bristol, and W. Siegal.

A Labor Viewpoint of Tuberculosis in Industry.

Mr. Matthew Woll.

232 Maryland State-Wide Safety Conference.

Maryland's First Annual State-Wide Safety Conference will be held in Baltimore, Maryland, on May 19 and 20, 1941, under the auspices of the Department of Safety of the State Industrial Accident Commission. An entire morning of this conference will be devoted to the study of the Maryland Occupational Disease Law, the State and city health departments' responsibilities under this law, and methods for the prevention and control of occupational diseases.

Legal Developments

233 Utah Occupational Disease Disability Law.

Utah has enacted an occupational disease disability law to become effective July 1, 1941. Twenty-seven diseases are enumerated as occupational diseases and diseases not listed are not to be deemed compensable. In all cases where injury results by reason of an accident arising out of or in the course of employment and compensation is payable under the Workmen's Compensation Act, no compensation shall be payable under the new Act. The list of compensable diseases follows:

Digest of Industrial Hygiene - 2.

1. Anthrax
2. Glanders
3. Poisoning by acetaldehyde or its compounds
4. Poisoning by acetanilide or its compounds
5. Poisoning by cyanogen and its compounds
6. Poisoning by chlorine and its compounds
7. Poisoning by arsenic or its compounds
8. Poisoning by antimony or its compounds
9. Poisoning by cadmium or its compounds
10. Poisoning by lead or its compounds
11. Poisoning by manganese or its compounds
12. Poisoning by mercury or its compounds
13. Poisoning by selenium or its compounds
14. Poisoning by tellurium or its compounds
15. Poisoning by vanadium or its compounds
16. Poisoning by phosphorus or its compounds
17. Poisoning by hydrogen sulphide or carbon by-sulphide
18. Stomach ulceration and poisoning
19. Poisoning by toxic halogenated hydrocarbons
20. Poisoning by benzol or its derivatives including toluol, xylol, and the nitro, nitroso, and amino derivatives of these substances.
21. Methanol poisoning
22. Epitheliomatous cancer or ulceration of the skin or of the corneal surface of the eye, due to tar, pitch, bitumen, mineral oil or paraffin, or any compound, product or residue of any of these substances
23. Gastrointestinal disorders due to contact with petroleum products and their fumes
24. Dermatitis (Venereum) excluding any dermatitis of which the primary cause is infectious or parasitic in nature.
25. Synovitis, or tenosynovitis, or bursitis, or cellulitis, of the wrist, elbow, knee, or hand, due to continual pressure or friction or to repeated trauma or vibration of tools
26. Ulceration of the skin or destruction of tissue due to the prolonged exposure to roentgen rays or radium emanations
27. Silicosis (CCH)

234 Total Disability Caused by Lead Poisoning. "Compensation" for Occupational Disease Includes Medical Expense.

Claimant contracted lead poisoning and was totally disabled. The referee and the board made an award of \$143 for loss of earnings but denied a claim for medical expenses of \$98. On appeal both claims were allowed as compensation. The Commonwealth appealed, raising the question whether the term "compensation" includes the supplying of medical and hospital services. The word "compensation" is used both in its limited sense -- contemplating the loss of wages only, and in the more comprehensive sense -- including medical and hospital expenses. The provision requiring the employer to furnish medical service is in the interest of the employee and when the employer's liability is established, supplying medical service is as much compensation as payments for loss of earnings. Whatever relieves one from necessary expense is the equivalent of a direct payment to him. Judgment affirmed. Staller v. Staller et al. Superior Ct., East. Dist. Decided February 28, 1941. (CCH)

235 Death from Silicosis. Time for Presenting Claim. Effect of 1934 Amendment to Law. James Hayden, deceased husband of the appellee, was an employee of the predecessor of the Standard Sanitary Manufacturing Company. Hayden and the Company were operating under the provisions of the Workmen's Compensation Act. Hayden developed silicosis and left the Company's employment on December 22, 1936. He died of silicosis on June 3, 1938. Mrs. Hayden filed her claim for compensation May 31, 1939, within a year after her husband's death. The full Board ruled in favor of Mrs. Hayden. Hayden's last opportunity for exposure to silica dust was on December 22, 1936. If the position of appellant is well taken, Mrs. Hayden would have had to present her claim within one year after December 22, 1936, notwithstanding the fact that her husband was alive during that period and had reached an agreement with the appellant as to his compensation. The position of appellant is not well taken. There is basis for the contention that the legislature intended by the 1934 amendment to section 4914 to treat dependents of persons being compensated for the disease of silicosis differently from dependents of any other person receiving compensation. Judgment approving the award of the Board is affirmed. American Radiator & Standard Sanitary Corp. v. Hayden et al. Ky. Ct. of App. Decided March 14, 1941. (CCH).

236 Dermatitis. Effect of Medical Report. Date of Disablement to be Determined. Plaintiff filed a notice and application for settlement of claim under the occupational disease amendment to the compensation law reciting that "he is suffering from the disease known as dermatitis." Defendant company filed denial of liability and motion to dismiss deeming that plaintiff was suffering from said disease. The commission appointed a commission of three qualified impartial physicians to examine plaintiff. These doctors filed a medical report reciting that "Goldwin A. Smith is not suffering from Dermatitis venenata." Subsequent to the filing of the report, the application of plaintiff came on for a hearing before a deputy commissioner. Motion to dismiss was granted on the ground that the medical commission found the plaintiff, Goldwin A. Smith, is not suffering from dermatitis venenata." Plaintiff thereupon appealed to the commission. The commission remanded the cause to a deputy commissioner for the purpose of taking testimony to determine whether or not plaintiff had suffered disableness from dermatitis venenata due to causes and conditions characteristic of and peculiar to his employment with the defendant prior to the examination by the medical commission; and whether or not he was entitled to compensation therefor. Defendant company appeals from this order of reference and contends that the department of labor and industry has no right to inquire with regard to a prior condition of the employee with reference to which no medical commission has been appointed. Section 6 of part 7 of the compensation law provides in part: "The report, when signed by at least two of the members of said commission, shall be final and conclusive as to the condition of said employee with respect to the alleged disease or diseases." It appears that the medical commission is limited and may only determine the condition of the injured employee on the date that he appears before it for examination. Its report is final only as to the date of the examination, but the liability of the employer is to be determined as of the date of the disableness of the employee. The date of disableness is a fact to be determined by the department. Under the theory advanced by defendant company, an injured employee cannot have a determination of the period of his disability if the medical commission subsequently finds that he is not suffering from an occupational disease. Such a theory deprives an injured employee of his rights. The order of the department of labor and industry remanding the cause to a deputy commissioner for the purpose of taking testimony to determine whether or not plaintiff had suffered an injury under the occupational disease act was a proper order. Affirmed, with costs to plaintiff. Smith v. Wilson Foundry & Machine Co. Mich. Supreme Ct. Decided March 11, 1941. (CCH).

Digest of Industrial Hygiene - 4.

237 Death from Monoxide Poisoning. Necessity for Determining Proportion which Occupational Disease Bore to all Causes of Death.

This is an appeal from an award of dependency compensation granted plaintiff under a finding by the commission that a contributing factor in causing the death of her husband was an occupational disease arising out of and in the course of his employment by defendant Field Pontiac -- Cadillac Company.

Defendants claim there was no competent evidence in support of the findings and, in any event, the findings required the commission to also determine the proportion which the said occupational disease, as a causative factor, bore to all the causes of death and hence proportion the compensation accordingly.

The finding of the commission that monoxide poisoning contributed toward death from pulmonary edema, caused by cardiac failure, brought the necessity of determining the proportion which the occupational disease, as a causative factor, bore to all the causes of death and to proportion the compensation as provided in section 8, part 2 of the act. This was not done and the case was remanded to the commission in order to comply with the mentioned provision of the occupational disease act. The award as made is vacated and the proceedings remanded to the commission to make proper award. Kail v. Field Pontiac - Cadillac Co. et al. Mich. Supreme Ct. Decided March 11, 1941 (CCH).

238 New Montana Legislation.

The "injury" for which an employer must pay compensation, by Section 2911, Revised Codes of Montana, 1935, Chapter 222, is qualified in Section 2870, as follows: "Injury or 'injured' extends only to an injury resulting from some fortuitous event, as distinguished from the contraction of disease." Laws of 1937, Chap. 82, Part IX, as amended by Laws 1941, Chap. 5, approved February 11, 1941, effective July 1, 1941, provides for \$30 monthly benefit payments to persons having silicosis resulting in total disability to do manual labor. A condition to the receipt of such payment is not receiving compensation under the Workmen's Compensation Act or old age assistance in the amount of \$30 per month. (CCH).

239 Traumatic Neurosis. Injury Suffered Within Meaning of Workmen's Compensation Act Where Shock or Fright Results in Disability.

This appeal is from a decision of the Industrial Commission of Virginia awarding the appellee, Inez Hagood, compensation for disabilities alleged to have been due to an accident in the course of her employment. On March 23, 1939, Mrs. Hagood, was working at a machine, approximately 15 feet away from an electric motor which was being repaired. A loose wire in the motor caused a short circuit, which produced an electric flash and a sound resembling that of a shotgun. Mrs. Hagood saw the flash and had started to fall backwards when she was rescued by a coemployee. She said that she felt as if something had run up her arm. While at work on April 13, 1939, she looked up and suddenly saw the employee who had caught her when she fell on March 23rd. She thereupon fainted and fell, and has not returned to work since. An award was rendered the employee at the rate of \$6 per week, beginning April 13, 1939, to continue during disability and until subsequent conditions should justify a modification, together with allowances for medical and hospital attention. The appellant contends that the evidence does not support a finding that the appellee was suffering from traumatic neurosis. Three medical doctors testified. The doctors, in effect, stated that traumatic neurosis was traceable to the shock or disturbing effect on the nerves of the patient, and that in turn, the irritation of the nerves caused functional disorders, and, that whether the disability resulted from nervous reaction or from auto-suggestion set in motion by memory of the accident, the result was the same to the injured person. The majority of the reported

cases take the view that there is an accidental or personal injury within the workmen's compensation acts where an employee, in the course of his employment, receives a sudden shock or fright, involving no physical impact, which results in his disability. The disability of Mrs. Hagood was occasioned by an injury which may be fairly traced to a risk which arose out of and in the course of her employment. There was a direct causal relation between the electric flash and the irritated condition of her nervous system. The order of the Industrial Commission is affirmed. Burlington Mills Corp. et al. v. Hagood. Va. Supreme Ct. of App. Decided February 24, 1931. (CCH).

240 Partial Disability Because of Silicosis. Constitutionality of Act.

This is an action at common law wherein an employee seeks to recover damages for alleged partial disability on account of silicosis or other dust disease caused by the alleged negligence of the employer. The employer moved for judgment on the pleadings dismissing the complaint on the grounds that it failed to state a cause of action and that the court was without jurisdiction of the subject of the action. The motion was based on sections 66 and 72 of the Workmen's Compensation Law (Cons. Laws, ch. 67), which, according to the defendant, not only deny compensation under the Workmen's Compensation Law, but also bar a recovery for damages in an action at common law where a claim is made for partial disability due to silicosis. The Supreme Court entered a judgment dismissing the complaint, and from that judgment plaintiff appeals directly to this court; attacking the constitutionality of such a statute. Prior to 1935, the Workmen's Compensation Law made no provision for the payment of compensation for disability, partial or permanent, due to silicosis. The following year the Legislature amended subdivision 2 of section 3 by adding a twenty-eighth category: "Any and all occupational diseases" (L. 1935; ch. 254; but this amendment did not apply where "the last injurious exposure * * * occurred prior to September first, nineteen hundred thirty-five"). Silicosis thus became a compensable disease and it also became subject to the bar of section 11 concerning actions at common law. In 1936 silicosis was excluded from paragraph 28 of subdivision 2 of section 3, and made the subject of a separate article in the Workmen's Compensation Law, article 4-A (L. 1936, ch. 897). The concluding section of article 4-A is section 72, entitled "Alternative remedy," which in language almost identical with that of section 11 provides that "The liability of an employer prescribed by this article shall be exclusive and in place of any other liability whatsoever, at common law or otherwise * * *." But in the course of enacting article 4-A, the Legislature also provided that "Compensation shall not be payable for partial disability due to silicosis or other dust disease" (Sec. 66). This is the point at which plaintiff is aggrieved and which causes him to argue that if sections 66 and 72 taken together rule out both the payment of workmen's compensation and the recovery of damages at common law in cases of partial silicosis disability, article 4-A is to that extent unconstitutional. Plaintiff's contention on the merits may not be considered at this time, and the appeal must be dismissed because there are involved questions other than the constitutionality of the statute. In order for the plaintiff to succeed the attack on either section 66 or section 72 must presuppose the existence of the other section. If plaintiff were sustained in his contention that the 1936 amendment is unconstitutional in so far as it purports to deprive him and others similarly situated of the right to compensation theretofore created by the act of 1935, then it would follow that his rights are governed by the act of 1935 as relieved of the invalid amendment which the Legislature sought to engraft upon the statute. In that event plaintiff possesses not the right to recover damages at common law, but only the right to receive workmen's compensation. An action to recover damages at common law cannot conceivably lead to an award of compensation and, therefore, the question of the plaintiff's right to compensation cannot possibly be

Digest of Industrial Hygiene - 6.

litigated in this action for damages which he has brought. In considering the second alternative the validity of section 66 is assumed. It is not intended to pass upon the merits. It is clear that the appeal in the case at bar must be dismissed because there are presented questions other than the constitutionality of the statute whose validity is challenged by the appellant. The appeal should be dismissed, without costs. Powers v. Porcelain Insulator Corp. N.Y. Ct. of App. Decided March 6, 1941. (CCH).

241 Pneumoconiosis. Death From Improper Ventilation Not Compensable.

Plaintiff, as sole dependent of Jacob Sutter, deceased, sought compensation under the occupational disease amendment to the Workmen's Compensation Law. Decedent had worked as a molder in the foundry of the Kalamazoo Stove & Furnace Company, defendant, for approximately 12 years. Decedent had suffered from a bilateral diffused pneumoconiosis and silicosis and active proliferated tuberculosis with cavitation; he contracted the disease some eight years prior to his death. Both the deputy commissioner and the board on appeal denied plaintiff compensation.

The testimony leaves no doubt that the room in which decedent was working was continually dusty. Tuberculosis is not compensable under the act. Silicosis is only compensable under sec. 2 when it is caused by mining. Pneumoconiosis is the only possible disease for which plaintiff can recover. The causes enumerated must be causes which are "characteristic of and peculiar to" claimant's trade. Grinding of metal is not a portion of the trade of molding. Decedent's death, in the present case arose from the lack of proper ventilation in the foundry in which he worked. While the legislature has provided for the maintenance of sanitary conditions in foundries, it has not seen fit to predicate statutory liability thereon under the occupational disease amendment. Plaintiff's decedent was not engaged in quarrying, cutting, crushing, grinding or polishing of metal and, therefore, plaintiff may not recover under the act. The award of the commission is affirmed, with costs to defendant. Sutter v. Kalamazoo Stove & Furnace Co. Mich. Supreme Ct. Decided April 8, 1941. (CCH).

242 Trichinosis Held Compensable under Workmen's Compensation Act.

(Massachusetts Supreme Judicial Court; Destefano v. Alpha Lunch Co. of Boston, 30 N.E. 2d 827; decided January 3, 1941.) In actions for breach of the implied warranty of fitness of food under a Massachusetts statute it appeared that the plaintiffs worked for the defendant company in one of its restaurants. Each plaintiff took two meals a day, except Sunday, at the restaurant, the meals forming part of the pay. Both plaintiffs became ill with trichinosis and testified that, during the 2 weeks preceding the onset of the disease they ate pork and other products of the pig at the defendant's restaurant and nowhere else. The defendant was insured under the workmen's compensation act and the plaintiffs had made no reservation of common law rights under that act.

The supreme court took the view that what happened to the plaintiffs constituted a "personal injury" within the workmen's compensation act. "It differed from the inhalation of germs of disease, illustrated by Smith's Case, Mass., 30 N.E.2d 536. It resembled more the cases of poisoning therein cited, and Osterbrink's Case, 229 Mass. 407, 118 N.E. 657, where the employee drank muriatic acid by mistake for water." Also the court was of the opinion that such personal injury arose out of and in the course of the plaintiffs' employment. "Since the injury was compensable under the workmen's compensation act, it will not support an action against the employer at law, whether in tort or in contract, or whether or not based upon a statute. * * * The action of the court below in ordering judgment for the defendant was sustained. Pub. Health Rep., 56, 300 (February 14, 1941).

Digest of Industrial Hygiene - 7.

243 No Exposure to Silica in Glass Plant.

This claimant applied for an award from the Occupational Disease Fund, alleging that he was forced to quit work on May 31, 1940, as the result of getting glass in his lungs while in the course of his employment. The claims reviewer reported that the claimant entered the service of the employer in January, 1937 and worked until May, 1940, when he was compelled to quit work. He was a laborer in the plant, which has a glass processor for the preparation of glass sheets for shipment and sale. He did not do any of the work of grinding or polishing and the evidence was to the effect that there was an infinitesimal quantity of free silica in the air of the plant and no more dust than in the average plant. Medical proof of record shows that the claimant's disability was caused by pneumonia and that silica was not a factor. Proof also failed to show that claimant had any injurious exposure to silicon dioxide either before or after the date of the Silicosis Amendments. The medical department also disapproved the claim and the Commission ordered that it be denied. Ohio Ind. Comm. Monitor, No. 27, (February 1941).

244 Recovery of Damages Because of Contraction of Silicosis.

(Pennsylvania Supreme Court; *Rohr v. Standard Scaffolding Mfg. Co.*, 16 A. 2d 534; decided December 4, 1940). In an action to recover damages the plaintiff alleged that he had contracted silicosis while in the employ of the defendant company as a result of the latter's violation of the following provision of a Pennsylvania statute regulating employment in industrial establishments: "Exhaust fans of sufficient power and other sufficient devices, shall be provided for the purpose of carrying off poisonous fumes and gases, and dust from emery-wheels, grind-stones and other machinery creating dust." The plaintiff presented proof to the effect that although there were exhaust fans in the grinding and sand-blasting room they were not sufficient to carry off the dust in that room and that this deleterious substance permeated the atmosphere of the welding room where plaintiff was employed, which room was separated from the grinding and sand-blasting room by a 12-foot roofed alley. The plaintiff prevailed in the trial court and the defendant appealed, its principal contention before the supreme court being that the statute added nothing to the responsibility of the employer or to the right of the employee and that, therefore, the plaintiff could not recover until he had shown the availability or practicability of more sufficient devices for the prevention of dust. With this argument the appellate court said that it could not agree. That this legislation, said the court, placed a definite responsibility upon the employer could not be successfully controverted, for it was well settled that a violation of the statute, which resulted in injury to the employee, made the employer liable in a common law action for damages. "There was no burden upon plaintiff to establish that more efficient devices than those used by defendant for the prevention of dust were available. All plaintiff was required to show was that the exhaust fans in use were not proper or sufficient compliance with the provisions of the statute." Also the court was of the view that the defense of assumption of risk was not permissible, as there was nothing in the employment as a welder that presupposed any scientific knowledge "such as a knowledge of the properties of silica dust and their injurious effect upon the body." Respecting the word "sufficient" used in the statute, the court stated that it was a relative term depending upon the facts of each case. Another claim made by the defendant was that the above-quoted statute had no bearing upon the controversy since it had been repealed without a saving clause, but the court found no merit in this contention, saying that the vested right under the provisions of the statute which plaintiff had immediately upon the injury occurring in 1935 could not be impaired by the 1937 repealing statute. "It is well settled that the repeal of a

Digest of Industrial Hygiene - 8.

statute cannot deprive a plaintiff of his cause of action under it for damages for injury either to person or property." The judgment of the lower court in favor of the plaintiff was affirmed. Pub. Health Rep., 56, 400-401, (February 28, 1941).

Papers on Dust, Gases and General Industrial Hygiene

- 245 Medical Service in Industry. D. Hunter. Lancet. pp. 1-3, (January 4, 1941). Industrial medicine, in its function of safeguarding the health of workers and minimizing lost time, is not confined to routine tasks, but also presents problems for research when unusual diseases occur. The author cites a number of unusual diseases which have led to successful research. For instance, the similarity between turpentine dermatitis and the irritation of the skin in workers exposed to the juice of oranges, lemons and celery, brought to light the terpene, limonene, with its irritating qualities. The action of metallic poisons varies according to their physical state, whether organic or inorganic, whether solid, liquid or gas, or whether inhaled or ingested. For instance, tetraethyl lead is absorbed through the skin and causes ataxia, insomnia, delusions and mania, instead of the wrist-drop, colic and anemia of inorganic lead poisoning. These facts, besides a number of others that are mentioned, show that there is constant call for research. Industrial medicine increases in importance as a special branch, and, as such, it must be taught by specialists with opportunities in industry.
- 246 A Critical Review of Dust Sampling Methods Employed in Witwatersrand Gold Mines. J. de V. Lambrechts. J. Chem. Met. Min. Soc., So. Africa 141, 210-40 (December, 1940). The author has made an extensive comparison of the konimeter and the thermal precipitator as used in the South African Gold mines. His conclusions are summarized as follows: (1) the thermal precipitator, if used in conjunction with the technique which only requires ignition of records, frequently gives entirely misleading information as to the number and size distribution of rock-dust particles in the air, and the consequent asbestos risk; (2) a revised technique is recommended by which the soluble and other less important particles are removed, without losing over 10% of the rock-dust particles; (3) the efficiency of the konimeter can be greatly improved by a similar change in technique; (4) aggregates of dust particles are broken up by impingement on the konimeter slide, but are not broken in the thermal precipitator; (5) for most types of dust encountered in these mines, the konimeter has an efficiency almost equal to that of the thermal precipitator; (6) with the darkfield technique, the efficiency of the konimetric method falls off with increased dust concentration, very largely due to deficiency in the microscope technique; (7) generally speaking, the konimeter with the recommended treatment should give an entirely reliable indication of the dust risk at the time and place of sampling; (8) the thermal precipitator, used as recommended, is invaluable for special investigations, because, besides giving a continuous sample, it gives information both as to numbers and sizes of dust particles. In certain types of investigations a darkfield technique can be employed to advantage with thermal precipitator samples. The paper is illustrated with numerous charts, tables and photomicrographs, and a bibliography is appended.

Digest of Industrial Hygiene - 9.

- 247 The Determination of Dust Concentrations in Mine Atmospheres. (29th Report to the Committee on the Control of Atmospheric Conditions in Mines.) J. Howard Griffiths and T. David Jones. Trans. Inst. Mining Engrs. (London). 99, 150-80, (July, 1940).

This report is the result of a year's study of methods of dust sampling in coal mines, and covers choice of methods, rate of sampling and size of apparatus. Only weighing methods are considered, as is customary in British mines. An apparatus including a Soxhlet thimble was found superior to a filter-paper device. The authors' conclusions are as follows: (1) a correct sample can be obtained only when the velocity of sampling is the same as that of the air current; (2) if the sampling velocity is low, the weight of the sample is too high and contains too high a percentage of coarse material; (3) if the sampling velocity is high, the weight is too low and the percentage of fine particles is too high; (4) the effect of high velocity is not as marked as that of low velocity; and (5) sampling tubes down to 0.4 inch in diameter give correct results within the experimental error of 4%, but smaller tubes give inconsistent results and have the additional drawback of requiring a long time to collect the necessary samples. Extensive discussion of the paper is reported.

- 248 The Design and Testing of a Dust Collector for a Conveyor Loading Point, Placed in an Intake Roadway. Coal Dust Research Committee of the Monmouthshire and South Wales Coal Owners' Association. Abstracted in Iron & Coal Trades Rev., 141, 33-41 (July 12, 1940) and Colliery Guardian 161, 29-32, 55-6, (July 12 and 19, 1940).

The report gives a detailed description of a dust collector constructed at the loading point, at which the dust is much heavier than at any other point in the mine. A mist projector materially increased the efficiency of the collector for fine particles. In sampling tests, the dust 4 feet from the loader was reduced from 0.112 to 0.027 g. per cu. ft., an efficiency of 94%. Recommendations for additional improvements are made, especially in reducing the size of the collector when the mist projector is used.

- 249 Sprays for Dust Suppression. Coal Dust Research Committee of the Monmouthshire and South Wales Coal Owners' Association. 2nd Report. Abstracted in Iron & Coal Trades Rev., 141, 362 (October 11, 1940) and Colliery Guardian 161, 366-8 369-92 (October 11 and 18, 1940).

This report covers a study of the efficiency of various water sprays and water with compressed air in allaying mine dust. Water sprays are not very effective against air-borne dust, but are ideally suited for wetting the surface of the coal and so preventing dust-cloud formation. The addition of certain chemicals to the water to reduce the surface tension increases the effectiveness by decreasing the mist particle sizes, but the increase is only 10% even when using relatively strong solutions, and does not warrant the additional cost and trouble entailed. The most efficient atomization is obtained by passing water through the inner nozzle and compressed air through the outer nozzle. The average size of the mist particles produced by a South Wales mist projector is about 60 microns. In general, the greater the air to water ratio the finer the mist, but there is a critical figure beyond which very little advantage is gained by further increasing the air consumption. The finer the mist, the more effective it is against air-borne dust. However, if it is too fine the water evaporates before it can wet the dust. In practice it is best to adjust the mist so that the air feels damp, but not wet, at a distance about 4 feet from the projector. The greater the relative velocity of the mist to the dust cloud, the greater the effectiveness of the mist, and therefore it is recommended that the mist should

Digest of Industrial Hygiene - 10.

be projected in the opposite direction to which the dust cloud is moving. The South Wales mist projectors, found superior to all others, are capable of suppressing 80 to 90% of air-borne dust containing particles below 2 microns. The efficiency of all such projectors is much greater than that of steam.

- 250 Predicting Dust Concentration. Frank B. Rowley and R.C. Jordan. Heating, Piping and Air Cond., 12, 699-702 (December, 1940).

This article is devoted to the factors affecting dust concentration levels in enclosed spaces. The rates at which dust laden air is introduced into the space, with which dust is produced in the space and with which dust settles from the air, and the rate at which air is filtered, are usually of greater importance in the determination of actual dust concentrations than the efficiencies of the filters themselves. Methods of rating filter performance, in filtration and exfiltration, internal dust sources and settling of dust are discussed in detail.

- 251 Predicting Dust Concentration. II. Frank B. Rowley and R.C. Jordan. Heating, Piping and Air Cond., 13, 99-101 (February, 1941).

In this installment the application of the data derived in the first paper (Abstract No. 250) to continuous filtering processes is given. The treatment is largely mathematical.

- 252 Cleaning of Air and Gas by Thermal Repulsion. I. Samuel C. Blacktin. J. Soc. Chem. Ind., 58, 334-8 (1939).

The effect of heated solid bodies of red form in producing at normal pressure a dust-free region around them is termed a radiometer action. The author conducted experiments testing various sources of heat and different types of dust-repelling apparatus. Electrical heating (by conduction) and hot-water heating gave comparable results. A peripheral hot-wire repulsor was developed and served well as a dust repeller. In an electrically heated apparatus with air originally containing at 18.4°C. 90,900 dust particles per cc., the contents were at 25.5° 52,000, at 55° 25,760, at 74° 17,080, and at 85.3° 3,200 particles. An apparatus using hot-liquid heating gave with air originally containing at 14° 56,350 particles per cc., at 29° 17,100, at 44° 4300, at 55° 3100 and at 81° 12 particles per cc.

- 253 Cleaning of Gas and Air by Thermal Repulsion. II. Samuel C. Blacktin. J. Soc. Chem. Ind., 59, 153-4 (1940).

The author gives data showing the efficiency of a perforated repulsor 0.25 in. in diameter and 0.375 in. in length, described in the first paper. An efficiency of 94% was obtained with different smoke dispersions at a rate of 4 cu. ft. of air per hour with the extremely low resistance of 2 in. water gauge for the perforated repulsor of 0.2 sq. in. of effective area. The author claims that the resistance can be further lowered by increasing the length of the repulsor. Trial of an unperforated repulsor gave decidedly inferior results, because the black body radiation from the perforated device contributes very materially to its efficiency. The work described is being made the subject of patent rights.

- 254 Silicosis from Porphyry with a note on "Acute Silicosis." Symanski.

Arbeitsschutz, p. 272-4 (1940). (German).

Porphyry contains 30 to 50% free silica. The author reports a serious case of silicosis in a man who worked for 7 years as a quarryman but was endangered only during 9 month's experience as a driller. Twenty other cases, mostly slight or medium, were noted in workers in porphyry.

Digest of Industrial Hygiene - 11.

- 255 South African Silicosis Report. Anonymous. Iron & Coal Trades Rev., 141, 524 (November 22, 1940).

The Annual Report of the South African Government Mining Engineer for 1939, just issued by the Union of South Africa Department of Mines, records that silicosis prevention work was continued energetically throughout the year, on the same general lines as in the previous year. Water is still relied on as the principal method of controlling dust production, but ventilation has been increased, and is considerably in excess of the minimum requirement. Generation of dust by jackhammer drills has received considerable study. The incidence of silicosis has steadily fallen from 11.95 per 1000 in 1931-2 to 7.61 per 1000 in 1938-9. This decrease, however, is partly due to the increase from 51.9 to 60% in the number of miners with less than 5 years' service. The number of new cases of silicosis, 230, detected in 1938-9, is the highest recorded since 1929-30, and is to be expected, because the number of miners with over 12, and even 15 years' service has greatly increased. Practically all the new cases are of "old miners" who had begun work before 1916, and before the beginning of protective improvements.

- 256 Investigations Comparing the Danger to the Lungs from Natural and Artificial Grindstones in Grinding Shops. Baertner. Arbeitsschutz, pp. 245-8 (1940). (German).

Experiments were conducted in which rabbits inhaled dust produced by crushing 2 natural and 2 artificial grindstones. One of the latter was compounded of minerals, the other of ceramic compounds, containing 25% insoluble silicic acid. No silicotic changes were produced by their dusts, but only slight connective tissue and capillary proliferation. The dust of the natural grindstones, containing 93.2 and 74.2% quartz, produced typical silicotic nodules. A fuller report is being prepared.

- 257 Dust in the Stone and Earth Industry. Anonymous. Arbeitsschutz, p. 226-9 (1940). (German).

A short review of the dust problem in the ceramic industry is followed by a report by Baer on the technical aspect of the problem, especially regarding dust sampling and counting, mentioning only the komimeter and tyndallimeter. He recommends portable vacuum cleaners for dust elimination in the workshops. A report follows by Buckup on the medical aspects of the problem. The Saxon ministry has installed an x-ray car with which over 13,000 examinations have been made in 9 months. The screen method used is cheap but not always reliable in diagnosing first stage silicosis.

- 258 The Silicotic Nodule in Human and Experimental Silicosis: a Comparative Study. I.H. Belt, A.A. Farris and E.J. King. J. Path. and Bact., 51, 263-7 (September, 1940).

The authors have made a comparative study of silicotic lesions in man and in rats, the latter produced by single intra-tracheal injection of silica, ranging from 0.8 to 5 microns. They stress the zone of fibrous tissue practically without silica particles ("redundant fibrous encapsulization") as an important difference between silicosis as seen in man and that in experimental animals, in which they found the condition was absent. They also point out some differences in the character and pattern of the fibers. They speculate on the possibility that in man the lesion may be complicated by infection. An additional report is promised.

- 259 Phagocytosis of Foreign Material in the Lung. O.H. Robertson. *Physiol. Rev.*, 21, 112-39 (January, 1941).

The author reviews the modes of entrance, distribution and disposition of foreign material in the respiratory tract. First, the progress of foreign particles to the lung is impeded by the sinuous course of the nasal passages, the sticky mucous character of the surfaces, action of the cilia of the membrane and the cough reflex. Disposition of the material that has entered the terminal respiratory units is less simple. The principal method is by phagocytosis by amebic cells, the type of cell employed depending upon the character of the foreign matter. Bacteria such as the pneumococcus are handled by the polymorphonuclear leucocytes, which appear in great numbers. However, with mineral dusts, the large macrophage normally present in the region goes into action. They quickly engulf silica dust particles and carry them rapidly to lymph vessels and lymphoid tissue. On occasion the amebic cell degenerates, leaving the silica free in the parenchymal tissue. With asbestos, the process is somewhat different. On account of the large size of the dust fiber, macrophages accumulate around the fiber and form giant cells in which the so-called asbestosis bodies appear. Inasmuch as the lung appears to act as a filter for foreign material injected intravenously, it has been suggested that the pulmonary capillary endothelium carries on phagocytic activity. The evidence, however, is to the contrary. The same is true of the cells lining the tracheo-bronchial tree. A bibliography of 155 references is included.

- 260 Asbestosis in Grinders and Drillers of Brake Bands. Brachmann. *Arbeitsschutz*, p. 172-4 (1940). (German).

Brake bands are made of sheet asbestos, or are pressed out of asbestos waste products and a filler impregnated with artificial resin. Afterwards the bands and plates are ground and drilled. In Saxony all workers in asbestos plants must be examined annually. Clinical and x-ray examination of the grinders, drillers and men who file individual pieces has shown a few light cases of asbestosis after 2 years' work, and in nearly all such workers after 5 years employment.

- 261 The Struggle Against Asbestosis Today. Ehrhardt. *Arbeitsschutz*. pp. 191-3 (1940). (German).

The paper is a brief description of asbestosis, rather than an account of the struggle against it. The author states that no relationship was found between nasal dust filtering ability and degree of asbestosis.

- 262 Methods of Avoiding the Dust Danger in Asbestos Plants, Valid from August 1, 1940. Anonymous. *Arbeitsschutz*. pp. 263-5 (1940). (German).

The new regulations concerning exhaust systems, established by the manufacturers, insurance association and German factory inspectors, are described. The efficiency of the systems must be tested by a representative of the insurance association.

- 263 Regulation to Change the Regulation Regarding Manufacture of Glass, Grinding, Etching, Painting, Glass Containers and Related Industries, Dated September 13, 1940. Anonymous. *Arbeitsschutz*, p. 263 (1940). (German).

The German regulations prescribe that x-ray examinations be made of all workers employed at certain jobs in rooms where glass containers or refractory materials are produced or where sandblasting is conducted. The examinations are repeated every second year. All persons engaged in producing lead-containing mixtures or using lead colors are to be examined at least every 6 months.

Digest of Industrial Hygiene - 13.

- 264 Silicosis in Ohio in 1940. Anonymous. Ohio Ind. Comm. Monitor. 14, 15 and 30. (January and February, 1941).

Although incidence of silicosis at large may be on the decrease due to the knowledge gained regarding the disease during the past twenty years, nevertheless many more cases have come to the attention of the Ohio Industrial Commission in 1940 than during any year since the disease became compensable in 1937. During the first 29 months of operation of the law, 330 claims were filed; while in the 12 months of 1940, 449 claims were filed. In the 29-month period previous to 1940, 111 claims were allowed and 165 claims rejected. This is about a 40 per cent allowance. In the year 1940, 83 were allowed and 113 disallowed, a percentage of about 42.

- 265 X-Ray Examination of the Structure of Dust as a Method of Medical Examination. Gaertner. Asbestose, pp. 193-5 (1940). (German).

The x-ray examination of air-borne dust and dust in the lung is described. The author found no quartz in silicotic lungs of china-clay workers who used kaolin and talc. He concludes that these substances are also able to produce silicosis.

- 266 Elementary Processes in Dust and Vapor Filtration. H. Witzmann. Z. Elektrochem., 46, 313-21 (1940). (German).

The basic laws of aerosol filtration are discussed, with reports of experiments on filter materials of known porosity and structure with definite test vapors. The condensation aerosol of the Isopropyl Alcohol G is used as test vapor. With multiple-layer filters of cellulose and rayon the deposit of the precipitated vapor within the filter cross-section follows a simple absorption law. The percentage absorption power for numerous paper and silk filters as well as for filter bricks and Jena glass frits was determined. The ideas of separation of dust particles by sedimentation, reflection and spinning-out are transferred to aerosol filtration. The controlling significance of flowing motion for aerosol filtration is proved. Laws found for the system drying filter-aerosol are likewise basic for the filtration of liquid suspensions.

- 267 Developments in Electrical Precipitation in Steel Plants. C.W. Hedberg and L.M. Roberts. Iron & Steel Engr., 17, 18-27 (July, 1940).

The authors discuss the general principles and history of electrical precipitation, and describe its use in various processes in steel manufacture including cleaning of blast furnace gas, ferro-manganese gas, high silicon iron furnaces, and detarring coke oven gas. A special application in cleaning coke oven gas under high pressure is described. In each of these uses, the problems involved and their solution are discussed. Studies on the applications mentioned and on new ones are being continued, and promise improved performance and lower initial cost.

- 268 Soldering Fluid Containing Hydrochloric Acid, and Pulmonary Fibrosis. J.Am.Med. Assoc., (Queries and Minor Notes.) 116, 355 (January 25, 1941).

A tinsmith has used hydrochloric acid in his work for 20 years, and now has widespread pulmonary fibrosis and disabling dyspnea. The question is whether the acid is responsible, and whether the use of Spear soldering fluid will prevent similar trouble. In the reply the conclusion is given that hydrochloric acid does not cause pulmonary fibrosis, although it has injurious properties when inhaled in excess. Spear soldering fluid when properly employed is said to yield no free acid and the manufacturer claims that it is free from lead and arsenic.

Digest of Industrial Hygiene - 14.

- 269 Colorimetric Determination of Carbon Monoxide. S.M. Chumanov and M.B. Aksel'rod. J. Applied Chem. (U.S.S.R.) 12, 1568-70 (1939). (Russian, with French summary).
Experiments were carried out for determining minute amounts of carbon monoxide in air. Ferric salts as well as salts of palladium and gold are reduced by carbon monoxide. The reduction is slight without a catalyst but reaches almost 50% in the presence of silica gel. The divalent iron formed by the action of 0.02 mg. of carbon monoxide per liter can be detected with potassium ferri-cyanide.
- 270 An Indicator Method for the Determination of Carbon Monoxide in Air. L.E. Karlson. Hig. i. Sanitariya (1939). No. 5. 50-3. From Chem. Absts., 34, 721 (November 18, 1940).
Optimum conditions were found for the determination of carbon monoxide by the indicator method based on the formation of a light bluish green color appearing from the contact of carbon monoxide with a suspension of iodine pentoxide in fuming sulfuric acid added to silica gel. The color obtained is compared with standards prepared by wetting pumice with various solutions. The important details are given in the above abstract.
- 271 Small Amounts of Carbon Monoxide in Gas Mixtures. P.J.G. Nell. Hot Gas, 50, 18-21, (1940). (Dutch).
A method of determination of small amounts of carbon monoxide by means of palladium chloride colorimetry is described. It is shown from a number of tests with palladium chloride paper in mixtures of city gas and air, of hydrogen, carbon monoxide, carbon dioxide and air, and in flue gases that a proper gradation of blackening can be obtained with palladium chloride papers without addition of gold chloride. In the presence of the latter the color tends to be purple and inconclusive below carbon monoxide concentrations of 0.1%. It is furthermore pointed out that the blackening is more intensive if hydrogen is present in the gas mixture and least intensive in diluted city gas. The palladium chloride paper was exposed to the gases for 20 minutes, then washed out in diluted hydrochloric acid to remove excess chemical, dried and compared with standards made up in similar manner. The lowest concentration used was 0.0125% carbon monoxide.
- 272 Dangers of Carbon Monoxide. Sueming. Arbeitsschutz, pp. 125-7 (1940). (German).
The author reports that 75% of the workers in a foundry were poisoned to some degree in a room heated by coke stoves without exhausts. Carbon monoxide hazards in foundries, especially in drying molds and heating of drying chambers, are discussed. Two cases of poisoning during repair work on a gas generator are also reported.
- 273 The Mental and Neurological Sequelae of Carbon Monoxide Asphyxia in a Case Observed for Fifteen Years. N. Raskin and O.C. Mullaney. J. Nervous and Mental Dis., 92, 640-59 (November, 1940).
The author presents a thorough summary of the clinical and anatomical changes following carbon monoxide asphyxia as reported in the literature, and describes observations made on a case over a period of 15 years. A woman of 43 suffered sub-lethal carbon monoxide poisoning. Partial recovery from the early symptoms was followed 7 years later by nervous disorders which persisted until her death 15 years after the accident. The clinical picture was essentially that of Parkinson's syndrome. Clinical and anatomical details are given.

Digest of Industrial Hygiene - 15.

- 274 Determination of Carbon Monoxide Hemoglobin in the Blood by Means of the Photo-electric Colorimeter. R. Havemann. *Klin. Wchschr.*, 19, 1183-3 (1940). (German).
Determination by this method, which is described, requires only a short time and 1 cc. of blood, or even as little as 0.1 cc. The error is said to be 0.5%.
- 275 Sulfur Dioxide in the Foundry. F.A. Allen. *Metal Ind.*, (London), 57, 172 (August 30, 1940).
Sulfur dioxide is inevitably present in varying concentrations in foundries producing magnesium alloy castings. It is used in magnesium casting to act as a diluent of the air to prevent serious oxidation. It is also often used in treatment of castings undergoing solution treatment for the same purpose. The question of its effect on health is important now, because magnesium casting production is increasing. Workers acquire considerable tolerance to the gas, but it is possible that this apparent tolerance is attained at the expense of general health conditions, although there are some workers who have been in the magnesium industry for about 15 years without injury from the gas. The (British) Department of Scientific and Industrial Research has established one part sulfur dioxide in 100,000 parts of air by volume as the maximum concentration allowable for several hours exposure, and one part in 2,000 as dangerous even for short periods. It is necessary, then, for foundry managers to test their foundry atmosphere to ascertain whether their sulfur dioxide content is within the safe limit. The tests should be made at points near the workers and at approximately head level.
- 276 The Treatment of Acute Hydrogen Peroxide Poisoning. I.D. Meshinin. *Bull. biol. med. exptl.*, U.S.S.R., 6, 189-191 (1938). (Russian, with English summary.)
The injection of a solution of 0.5% hydrogen peroxide and 1% sodium bicarbonate in physiological saline solution into dogs in a paralytic state as a result of the injection of lethal doses of sodium sulfide solution (4.0-4.6 mg. hydrogen sulfide per kg. body weight) led to complete recovery in all 9 cases in which it was tried.
- 277 Carbon Disulfide: Its Toxicity and Potential Dangers. Div. of Industrial Hyg., Nat. Inst. of Health. *Pub. Health Repts.*, 56, 574-582 (March 21, 1941).
An excellent short but complete discussion with bibliography on carbon disulfide. The topics discussed are: Physical-Chemical Properties, Maximal Permissible Concentration (20 p.p.m.), Sources of Exposure, Determination in Air, Blood and Urine, Absorption and Excretion, Relation Between Concentrations in Air and Toxic Symptoms, Clinical Picture of C_2S Poisoning, Pathological Changes, Changes of Tolerance, Physiological Mechanism, and Prevention.
- 278 Alarm Devices for Indicating the Presence of Dangerous Gases and Vapors. *Chemisch-technische Reichsanstalt. Z. ges. Schiess- u. Sprengstoffw.* 34, 337-9 (1939). (German).
Upper and lower explosive limits are given for 18 combustible gases in mixture with air, and dangerous and lethal concentrations are given for 16 poisonous gases. The requirements which a satisfactory alarm device should meet are listed. All commercial devices tested by the Chemisch-technische Reichsanstalt and by certain other testing stations are named and the principles upon which they operate are described briefly.
- 279 Physiotoxicology of Poison Gases. L. Harlant. *J. pharm. Belg.*, 21, 815-24 (1939). (French).
The gases are classified and tabulated according to their toxicity. Symptoms produced by the different gases are given.

- 280 War Gases and Other Toxic Substances. Louis Diserens. Teintex. 3, 2-9 (1940). (French).

The importance of the following factors in war gases and related materials is reported: stability, density, volatility, heat of vaporization, melting point, ease of atomization, solubility, action on metals, odor, color and toxicity. A list of some gases is given, classified as asphyxiants, vesicants, respiratory irritants, lachrymators and general poisons. The specific use, physical and chemical properties, preparation and physiological action of eleven of the most common war gases are discussed.

- 281 War Gases and Toxic Substances. II. Louis Diserens. Teintex. 3, 43-54 (1940). (French).

The physical and chemical properties and physiological action of some additional war gases are discussed. Preparation of papers and solutions used for the detection of poison gases is discussed and formulas are given. A chart is included which gives the name, formula, physical properties, action, detection, and disinfection for each of the gases included in the paper.

- 282 Blood Tests in Gas Poisonings. Schwantke. Arbeiterschutz, pp. 139-140 (1940). (German).

On account of the difficulty of diagnosis of carbon monoxide poisoning, the Insurance Association of the German smelting works and rolling mills has developed a plan by which blood samples are taken in all suspected cases according to instructions furnished by the Association and are sent to a cooperating laboratory for examination.

- 283 War Gases. Their Detection. Ch. Barthelot. Chimie et Ind. 43, 91-106 (1940). (French).

A discussion and description of the physical properties of the chief war gases, of their chemical and physiological detection, of their methods of projection and practical value, of the disinfection of contaminated premises and of first aid for gassed persons.

- 284 Dangerous and Explosive Gases in Industry and War. E.A.C. Collis. Trans. Can. Inst. Min. Met., 43, (In Can. Mining Met. Bull. No. 336) 179-204 (1940).

Dangerous industrial gases and safety means for protection against them are described. The types of war gas, their properties and effects, methods of liberation and protective measures are tabulated.

- 285 An Apparatus for Producing Constant Gas Mixtures. R.A. Lewis and G.F. Koepf. Science 93, 407-408 (April 25, 1941).

Because of the prohibitive cost and variation in composition of commercial gas mixtures, an apparatus has been designed by means of which constant mixtures of atmospheric air and nitrogen can be made economically. Two wet gas meters are connected by means of a ladder chain and sprocket gears. Nitrogen from a cylinder is introduced into the first meter creating enough mechanical force to turn the second at a corresponding speed. Air drawn into the second meter as it revolves, passes into a bottle where it mixes with nitrogen from the first meter. Any change in rate of flow of nitrogen through the first meter causes a similar change in rate of rotation of the second, keeping the composition of the mixture constant at all times. The apparatus is not designed to work against a large back pressure, but will produce gas mixtures of unchanged character, despite fluctuations in the rate of flow.

Digest of Industrial Hygiene - 17.

- 286 Pharmacological Properties of Certain Saturated Fluorocarbons. H.C. Struck and E.B. Plattner. J. Pharmacol., 55, 217-9 (1940).
Breathing air containing high concentrations of decafluorobutane, boiling point -- 4.5°C., and decafluorocyclopentane b.p. 23°, profoundly depressed mice but did not produce true anesthesia, the mice responding to stimuli at all times. Death followed from congestion of the lungs due to irritation.
- 287 Benzene (Benzol): Its Toxicity and Potential Dangers. Div. of Ind. Hyg., Nat'l Inst. of Health. Pub. Health Rep. 55, 519-527 (March 14, 1941).
Another in the series of short but complete discussions of common industrial hazards. This follows the standard form discussing: Physical-Chemical Properties, Maximal Permissible Concentration (100 p.p.m.), Sources of Exposure, Determination in Air and Blood, Absorption and Excretion, Relation Between Concentrations in Air and Toxic Symptoms, Symptoms of Acute and Chronic Poisoning, Pathological Changes, Physiological Mechanism, Habituation, Prophylactic Measures, and Treatment.
- 288 Benzene and Benzene Hydrocarbons Used as Solvents. Arbeitschutz, pp. 135-1967. (German).
This exposition of the poisonous nature of benzene, benzene and its homologs covers acute and chronic poisoning as well as irritating effects on the skin. Benzene and its homologs, toluene and xylene, have more injurious effects, acute and chronic, than those of the mixtures of aliphatic hydrocarbons known as benzine, naphtha or light gasoline. Pennsylvania benzine contains 1.4 to 2.3% aromatic hydrocarbons, of which 0.1 to 0.3% is benzene; the product from the Dutch East Indies contains 3% aromatic hydrocarbons, including 7% benzene. No chronic effect has been noted from these mixtures but blood changes and non-hematogenous diseases have been noted. Among the aromatic hydrocarbons, benzene is much more dangerous than toluene and xylene, probably because toxic intermediary products are formed from benzene and not from the others. On the other hand the irritating effect on the skin is stronger from the paraffins than from the aromatics, and less in low-boiling fractions than in the high-boiling ones.
- 289 Chronic Benzol Poisoning in Plastics Industry: Note on Liver Damage. H. Heimann and C.B. Ford. N.Y. State Dept. Labor, Ind. Bull., 19, 224 (November, 1940).
A study of 13 employees of a factory processing cotton cloth with benzene disclosed 1 fatal case of benzene poisoning, with symptoms and clinical signs of aplastic anemia, and multiple hemorrhages. There were also 3 mild cases, in which the symptoms disappeared after removal from exposure except that in one, a case of normocytic anemia, the normal blood picture was not regained. As a result of the investigation another solvent was substituted for benzene, and adequate ventilation was installed. There is now no apparent health hazard.
- 290 Colorimetric Determination of Vapors of Nitrobenzene, Azobenzene, Aniline and Benzidine in Air. M.S. Bykhovskaya. Org. Chem. Ind., (U.S.S.R.) 6, 638-9 (1939). (Russian).
The analysis by known methods of contaminated air in the production of benzidine is described in detail. The air is passed through a nitrating acid to convert nitrobenzene into dinitrobenzene and azobenzene into dinitro-azobenzene. The latter reacts with glucose and sodium hydroxide to give an intense blue. Dinitrobenzene in acetone with sodium hydroxide gives a violet reaction. In vapors absorbed in water, benzidine gives a blue reaction with ferric chloride and sodium hydroxide, and aniline gives with sodium hypochlorite and phenol a pale-blue indophenol reaction.

- 291 Toluene and Xylene. Industrial Data Sheet D-Chem. 35, National Safety Council. Nat. Safety News. 42, 36, 38 (August, 1940).
The hazards of both substances include: (1) acute poisoning through respiration of the fumes or vapors, or ingestion of the liquids; (2) chronic poisoning through respiration over a longer period of small concentrations of the fumes or vapors; (3) dermatitis due to the drying action of the solvents, and (4) fire and explosion. Both are good solvents for a number of substances used in industry, such as resins, rubber, castor and linseed oils. They are both less toxic than benzene but have possibilities of acute and chronic poisoning. The acute effects of toluene include headache, drunkenness, vomiting, disturbances of equilibrium, feeling of illness and sometimes unconsciousness. In chronic cases the signs are headache, dizziness, insomnia, lack of capacity for work, loss of appetite, nausea, vomiting, and bleeding from the nose and gums. Xylene is similar in action but to a lesser degree. Workers exposed to either material should be given physical examinations before employment and at regular intervals, including urinalysis particularly if benzene is also present. Accepted local exhaust and general ventilating systems should be installed. Synthetic rubber gloves should be provided. Frequent air tests should be made, and supplied air respirators should be used in any place where the vapor concentration is over 2%. Fire precautions must be taken.
- 292 Porphyria in a Case of Industrial Methyl Chloride Poisoning. J.N.M. Chalmers, A.E. Gillam and J.E. Knoch. Lancet. pp. 806-808 (December 28, 1940).
The case reported is that of a refrigeration engineer, aged 38, who experienced severe methyl chloride poisoning as a result of exposure to fumes while at work. Delirium, convulsions and tremor were the principal symptoms. Coproporphyrin series III was found in large quantities in feces and urine, disappearing with the subsidence of toxic symptoms. The possible origin of porphyrins in such cases is fully discussed without definite conclusion. Recovery was complete at the end of 7 weeks. Most of the previously reported cases of methyl chloride poisoning have been in America. The substance is widely used in domestic refrigerators. Its slight odor makes it difficult to detect; its greatest action is on the respiratory and nervous systems. Its effects appear to resemble those produced by certain nitro- and amino- compounds, as well as drugs of the sulfamide group, which probably act on the liver and interfere with the normal breakdown of hemoglobin.
- 293 Nitrous Fumes in the Chemical Grinding of Files. Schramm. Arbeitsschutz, pp. 221-2 (1940). (German).
A new method for sharpening old files consists in part of dipping them in nitric acid. Nitrous fumes are generated in the process. In one plant every worker exposed to the fumes was injured, one seriously.
- 294 Water Spray as a Means of Fighting Respiratory Poisons. Moebius. Feuerschutz, 20, 2-4 (1940). (German).
A spray of water from a nozzle can be used to decrease the hazard to life from industrially used toxic gases that have escaped from their containers (chlorine, ammonia, sulfur dioxide, hydrogen chloride, hydrogen sulfide, etc.) and to counteract the effects from war gases. The efficiency of this "atomized" water depends on the solubility of the chemicals, adsorption, increased reactivity, etc. The application of the method is described.
- 295 Air Conditioning in Elektron Metal Foundries. Anonymous. Giesserei. 27, 347-8 (September 6, 1940). (German).
This article discusses and illustrates principally the methods and equipment employed for the removal of sulfurous fumes resulting from electric furnaces in foundries.

Digest of Industrial Hygiene - 19.

- 296 Ionization in Mine Atmospheres. L. Funda. Glueckauf. (1940). (German). Abstracted in Iron & Coal Trades Rev., 141, 279, 282, 306 (Sept. 20, 27, 1940). While almost every other phase of mine conditions has been investigated, little attention has been paid to electrical conditions of the air. The author has studied ionization in some German mines, making a total of 3,000 measurements at 50 points in 6 mines. The ion concentrations found at the intake were normal. The concentration tends to increase with distance from the intake on account of the presence of radium emanations, but absorption on dust particles and other factors tend to decrease the number of small ions, so that in some cases the ionization is less than in surface air. Usually, however, the concentration is greatly increased. Large ions exhibit great irregularities in distribution. The concentration of positive ions is much higher than that of negative ions. The effects of explosion products, water vapor and pressure were studied. The possibility of ionization as a cause of ignition of fire is discussed.
- 297 Measurements of the Ozone Concentration of the Air Near the Earth. Victor H. Regener. Met. Zeits. 55, 459-62 (1938). From Chem. Abstr. 34, 7780 (November 20, 1940). The author describes a variation of the thiosulfate method which he used for the determination of ozone. No oxides of nitrogen or hydrogen peroxide, which would interfere with the determination, were present in the air tested. The volume ratio of ozone to air amounted on an average to 3.0×10^{-8} on the Jungfrau Pass (3600 m.) and to 2.1×10^{-8} in Friedrichshafen (400 m.). The decrease in ozone content in lower altitudes is regarded as due to the decomposition of ozone from the stratosphere on the dust and smoke particles of the troposphere.
- 298 Incidence and Cost of Acute Respiratory Disease in Industry. A.J. Lanza. J. Am. Med. Assoc. 126, 1342-1343 (March 29, 1941). Records of sick absenteeism in industry show a preponderance of colds as a cause of lost time. Occupation shows some relation to the incidence, but not geography. Women show much higher rates than men, averaging one per person compared to 0.5 per 100 for males in a study of 14,000 clerical workers. Another study among the employees of a public utility company showed the average number of colds, disabling for one day or longer, was 22 per 100 males and 40 per 100 females. If an average of one day a year per person, male and female, is assumed to be the loss due to colds and acute respiratory infections, the total cost is believed to be conservatively in the neighborhood of \$400,000,000 for workers and \$400,000,000 for employers. Such an amount is its own argument for scientific study and attack.
- 299 Influence of Environment on Mucous Membranes of the Upper Respiratory Tract. A Review. H. Feussner. Hals-, Nasen-, u. Ohrenarzt 50, 41-57 (1940). (German). The author describes the physiological function of the nose, and discusses the influence of dust, vapors, gases, smoke, cold, dryness, and humidity on the ears and respiratory tract.
- 300 Accident Prevention in the Chemical Industry. E. Schildt. Chemische Fabrik, 13, 268-72 (July 27, 1940). (German). This is a review of German official reports on accident prevention and occupational disease published in 1939.

- 301 Role of the Physician in Industry in the Control of Acute Respiratory Diseases. G.M. Piersol. J.Am.Med.Assoc., 116, 1339-42 (March 29, 1941).

The common cold and acute infections of the respiratory tract remain the outstanding problem in industrial medicine. They will continue to tax the resourcefulness and the best efforts of the physician in industry, until the existing knowledge of virus diseases is further advanced. One of the most important steps in the proper control of respiratory diseases among any group of workers is to institute an adequate system of checking up absenteeism and the reporting of all acute illness. With the compiled reports such a system would afford him, the industrial medical officer can readily determine in what department the greatest incidence of respiratory diseases occurs. Correction of various unhealthy conditions such as overheating, improper ventilation, the existence of drafts, working in wet clothing or various factors that lead to undue fatigue, all of which may be important contributing causes in the production of colds and like infections, can then be achieved.

- 302 Workmen's Compensation in Great Britain. Monthly Lab. Rev., 51, 888-891 (October, 1940).

Compensation payments for all disabled workers, their wives and children are increased by the Workmen's Compensation Act of 1930. Workers suffering from silicosis and certain other industrial diseases also share in the increasing benefits. Up to the end of 1938, compensation had been paid for 7,504 cases of silicosis, since this disease became compensable. Payments were made in 2,739 cases in 1938. In 8 years, compensation was made for 257 cases of asbestosis of which 4 fatal cases and 54 disablement cases occurred in 1938. Dermatitis increased from 270 cases in 1934 to 3,489 in 1938. Skin ailments occur in a variety of industries but chiefly among bakers and confectioners, dye workers, French polishers, and engineers.

Report on Industrial Poisons, Cancer, Dermatitis, etc.

- 303 Determination of Small Quantities of Lead with Dithizone. Hellmut Fischer and Marie Leopoldi. Z. anal. Chem., 119, 161-88 (1940). (German).

A study of 56 papers published in the last 12 years on the determination of very small quantities of lead with dithizone shows that there is sometimes a lack of clarity with respect to various important steps in the procedure. A new, improved procedure is given for the colorimetric determination of lead which is based on various suggestions in the literature and on some new experiments. A simple procedure for titrating the colored solution is also given which can be carried out with simple apparatus. A particular study was made of the pH effect with respect to the complete extraction of the lead dithizonate. A good extraction can be made in alkaline potassium cyanide solutions so that separation and determinations of lead can be made in the presence of large excess of a metal like zinc. Traces of copper may catalyze the oxidation of dithizone by certain substances but such an effect can be prevented by adding hydroxylamine hydrochloride and boiling the solution. Since it is possible to extract the lead from solutions containing potassium cyanide, the sensitivity of the test for lead in the presence of bismuth or stannous tin can be increased greatly; as little as 0.5 gamma of lead can be detected in the presence of 1 mg. of bismuth or 2.5 mg. of stannous tin. At pH 9, 0.5 gamma of lead can be detected in the presence of 12 mg. of thallium. For the detection of lead in the presence of considerable bismuth, it is recommended to effect an extraction of the lead first at pH 3, whereby most of the bismuth is removed and then carry out a second extraction in strong potassium cyanide solution. In the separation of lead from

Digest of Industrial Hygiene - 21.

thallium in the presence of potassium cyanide advantage is taken of the fact that the lead dithizonate is formed before the analogous thallic compound.

- 304 Lead Encephalopathy Simulating Cerebral Tumor. A.M. Nussey and I. Drybrough-Smith. Brit. Med. J. 2, 379-80 (September 21, 1940).

A case is described in which the patient's occupation had been collecting bullets fired on a target range, ordinarily collecting half a ton per night, with very inadequate respiratory protection. Illness began after 2½ years work, with characteristic symptoms of lead poisoning. The similarity of the symptoms to those of cerebral tumor is discussed. He improved on a milk diet with sedatives and calcium gluconate, and his condition after 14 weeks of treatment appeared normal.

- 305 Mercurialism and its Control in the Felt Hat Industry. F.A. Neal and others. Public Health Bull. No. 1263. 132 pp. U.S. Public Health Service, Washington, D.C., 1941. For sale by Superintendent of Documents -- 20 cents.

Fifty-nine cases of chronic mercurialism were found on medical examination of 534 hatters employed in five representative felt hat factories. Four of the twenty men engaged in mixing and blowing; 8 of the 34 coners; 6 of the 29 hardeners; and 33 of the 173 starters, wetters-down, and sizers were so diagnosed. Mixers and blowers were exposed to 5 mg. Hg per 10 cu.m. of air; hardeners to 2.7; and starters, wetters-down, and sizers to 2.1 mg. Hg per 10 cu.m. of air. In any range of exposure above 1.0 mg. Hg per 10 cu.m. the incidence of mercurialism increased with increasing duration of employment. No cases were found among hatters exposed to less than 1.0 mg. Hg per 10 cu.m. of air, as measured by the Nordlander method. Chronic mercurialism is characterized by fine, intention tremor; psychic irritability of an exaggerated degree; dermatographia, excessive perspiration, and abnormal readiness to blush; exaggerated tendon reflexes; pallor; and certain abnormalities of the mouth. Mercurialism cases were found to excrete slightly less mercury in their urine than similarly exposed but nonaffected workers. Workers with elevated systolic blood pressure and albuminuria tended to excrete less mercury in their urine than similarly exposed workers who were normal in these respects. The most direct means of preventing the occurrence of mercurialism among hatters is to substitute a nontoxic coloring agent for mercury. Until this is practicable, control of the mercury hazard depends on coordinated general and local exhaust ventilation so arranged and maintained as to prevent the escape of mercury into the breathing zone of workers, and upon enclosure or segregation of fur storage rooms, blowers, driers, and other sources of volatile mercury. Sketches of hoods and other enclosures, and specifications for air flow are presented.

Methods for quantitative chemical analysis of the mercury content of air, fur, tank water, etc., and for the quantitative spectrographic analysis of mercury in urine are described in detail.

- 306 Toxicity of Mercury Vapors. Mario Adamo. Rass.med.ind. 10, 584-90 (1939). (Italian).

With guinea pigs subjected to inhalations of mercury vapors under a variety of conditions the greatest toxic action was found when the degree of humidity and the carbon dioxide content of the air were high. Mercury mines must be kept thoroughly oxygenated and low humidity must be maintained.

- 307 Industrial Mercury Poisoning. Leon Pollet. Arch. maladies profes. 2, 385-94 (1939). (French).

Industrial poisoning by mercury is not very common in France. In Sweden it is caused by working on thermos bottles and in Belgium by working with mercury compounds. The principal sources of poisoning are distillation of mercury, use

Digest of Industrial Hygiene - 22.

of mercury pumps, manufacture of barometers and other instruments, silvering of mirrors, manufacture of chemical compounds, use of mercury salts in treatment of hides and the manufacture of fulminate caps.

- 308 Experimental Investigation on the Absorption of Mercury Vapors. Folco Domenici. *Rass. med. ind.* 10, 703-11 (1939). (Italian). From *Chem. Absts.*, 34, 2934 (May 10, 1940).

It was shown that when rabbits inhaled mercury vapors the nervous system and nasal passages were affected, but intestinal lesions appeared only in a small percentage of the animals but when the fumes entered the digestive system the typical intestinal hemorrhagic lesions were present. In this way may be explained the nervous disorders occurring in cases of mercury poisoning.

- 309 Occupational Arsenic Poisoning and its Detection by Chemical Methods. Kuenkele. *Chem.-Ztg.* 64, 29-32, 37-8 (1940). (German).

The chief causes of occupational arsenic poisoning are reviewed and the colorimetric method for the determination of arsenic in the human body is described. The effects of occupational (chronic) arsenic poisoning are discussed on the basis of clinical cases both of agricultural and industrial workers. Arsenic contents higher than 10 gamma per 100 cc. of urine and 3 gamma per g. of the hair of the head indicate arsenic poisoning. Public hair may contain 3.8 times as much arsenic as hair of the head. As much as 130 gamma per 100 cc. of urine and 120 gamma per g. of hair of the head have been observed.

- 310 Self Poisoning by Cadmium Oxide. J. Schenck. *Samm. v. Vergiftungsfall.*, 103, 77-80 (1939). (German).

The author, a chemist, relates his experience with cadmium oxide poisoning, having inhaled a considerable quantity of the dust and fumes. The symptoms were an irritating cough, chest pains and oppression. He recovered in 8 days.

- 311 Pathology in the Dry Battery Industry. E. Zanetti. *Med.del. Lavoro.*, 31, 218-226 (1940).

The author describes in detail the manufacture of dry batteries and the case of manganese poisoning which occur in that occupation. During a year's observation only minor ailments other than manganese poisoning were suffered by the men, none of whom had worked longer than 2 years.

- 312 New Data for Practical Design of Ventilation for Electroplating. W.P. Battista, T. Hatch and L. Greenburg. *Heating, Piping, Air Cond.*, 13, 81-5 (February, 1941).

Because all electrolytic tanks have conventional shapes and proportional dimensions, certain basic fundamentals of design are applicable to all processes wherein dissemination of contaminants makes control of ventilation essential. This article considers fundamentals of tank ventilation with reference to proportion and design. In usual practice, the atmospheric contamination is removed from an electroplating tank by means of lateral exhaust ventilation through slotted air chambers or ducts along the two long sides of the tank. The capacity of the exhaust system should vary approximately with the 1.6 power of the tank width rather than directly with the tank width. The rate of ventilation should be constant throughout the length of the tank, but that condition is not always achievable. The uniformity can be improved by use of manifolds of uniform cross-section with distributing vanes.

- 313 The Neglected Danger of Baths Containing Cyanide Salts. Fatal Accident in the Hardening of Tools by Sodium Cyanide. Fichtl. *Arbeitsschutz* pp. 257-8 (1940). (German).

When an experienced worker pushed a tool through the crust on the surface of a cyanide salt bath, the molten material splashed through the opening and many

Digest of Industrial Hygiene - 23.

droplets made small burns on the man's skin. He fainted a few minutes later and died after 45 minutes. Autopsy proved poisoning by hydrogen cyanide absorbed from the burned areas.

- 314 Fluoride Intoxication. D.A. Greenwood. *Physiol. Rev.*, 20, 582-616 (October, 1940).

An extensive review with 380 references to the literature on fluoride intoxication, covering methods of analysis, industrial uses of fluorides and acute and chronic intoxication in man and animals.

- 315 Effect of Chronic Intoxication with Chlorine at Low Concentration on Experimental Tuberculosis in Guinea Pigs. Fernand Arloing, Etienne Berthet and J. Viallier. *Presse med.*, 49, 381 (1940). (French).

The tuberculous process is accelerated by respiration of small quantities of chlorine, regardless of whether the chlorine is applied preceding or following the infection.

- 316 Aseptic Necrosis of Bone Occurring in Caisson Disease. A. Walker. *J. Bone and Joint Surg.*, 22, 1080-4 (October, 1940).

This is a report of a case of aseptic necrosis of bone following caisson disease, with microscopic and X-ray studies. A number of bone changes seen are stated to represent the remains of extensive infarcts caused by nitrogen emboli formed when the patient suffered caisson disease 25 years previously, not treated by recompression.

- 317 Experimental Data on the Effect of Naphtha Products on the Skin. S.K. Rozental. *Arch. sci. biol. (U.S.S.R.)*, 52, No. 1 45-58 (1940). (Russian, with English summary.)

Various samples of naphtha oil were injected into rabbit ears and the ensuing atypical epithelial proliferations were histologically examined as to their intensity. Oils with a paraffin content of 2 to 3% are less toxic than those containing 1.5%. The sulfur and tar contents of the oils do not influence the intensity of the skin reaction. The lower aromatic fractions of naphtha distillates and the oxidizable high-molecular naphthenes are most toxic. Sulfuric acid treatment renders the lower fractions harmless but not the higher ones. By means of selective solvents (alcohol and phenol) it is possible to make the oils and the naphtha harmless, but also to obtain very harmful extracts. Naphtha oils as such have no carcinogenic effect.

- 318 Allergy and the Photographer. H.W. Greenwood. *Brit. J. Phot.*, 86, 578-80 (1939).

"Metol poisoning" is caused by impurities in the metol, of which sym. N,N-dimethyl-p-phenylenediamine is most usual. The commonest symptoms are those of a weeping eczema, and treatment consists in the application of an ointment containing ichthylol and boric acid, and the wearing of gloves day and night. p-Phenylenediamine and its derivatives are known by the experience of the fur and hair-dyeing trades, to be toxic to many persons. Chrome sores are due to the handling of chromium compounds, and take the form of ulcers around the finger nails and on the knuckles.

- 319 A Case of Dermatitis from 9-Bromofluorene and a Peculiar Reaction to the Patch Test. Alfred Cavendish. *Brit. J. Dermatol. Syph.*, 52, 155-64 (1940).

A generalized rash in a chemistry student was traced to contact with 9-bromofluorene. Fluorene, fluorenone and fluoronol, to which the student was also exposed, were found to be innocuous.

Digest of Industrial Hygiene - 24.

- 320 A New Industrial Chemical Dermatitis. K.O. Stingily. South Med. J., 33, 1268-71 (December, 1940).

Sodium tetrachlorophenoxide is employed to rid lumber of a fungus that causes injury and discoloration. This chemical has been observed to cause a fairly characteristic dermatitis. Those affected come in direct contact with the material in solution and the lesions appear in the exposed parts of the body. The symptoms are, first, a sensation of burning, followed by erythema and ulceration which may persist for months or years. Conjunctivitis is frequent. No pathogenic organisms have been grown from the wood, but it is suggested that a second degree fungus infection may be present, as the material from the ulcer is capable of local auto-inoculation. Treatment as yet is not highly satisfactory, but the author believes that curettage and acetic wash has beneficial effects.

- 321 Dermatitis in Rubber Industry. W.E. Oletz. Rubber Age. (NY) 28, 22-30 (October, 1940).

The author lists the chemicals used in rubber manufacturing processes which are most frequent offenders in production of dermatitis. Causes are classified, with notes on skin lesions. Treatments are briefly described, and preventive measures are outlined. A summary of claims filed in 1939 is included.

- 322 Seven Million Dollar Itch. J. Stutter. Can. Chem. & Process. 25, 117-8 (March, 1941).

This is a brief general paper on industrial dermatitis, listing some of the most common irritants and methods of protection, especially by use of liquids and creams.

- 323 Constitutional Eczema (Late Exudative Eczematoid of Frost) and the Question of Compensation. F. Koch. Dermatol. Wchnschr. 110, 383-7 (1940). (German).

The author denies the occupational nature, and therefore compensation, in two of five cases of eczema, although in one of the two there was a clear connection with the occupation, because it later developed the character of constitutional eczema and all skin tests were negative. The author emphasizes the fact that skin tests must imitate the circumstances of worker's occupation so far as possible. In the other 3 cases the patch tests were positive, and the occupational connection was clearly recognizable.

- 324 Constitutional Eczema and the Question of Compensation. E. Doellken. Dermatol. Wchnschr., 110, 437-9 (1940). (German).

The author believes that the two cases rejected by Koch (Abstract No. 323) are unquestionably occupational. In one of them the patch test was made too late, 2 years after the occupation as a baker had ended. According to (German) court rulings, the disease must be compensated in spite of a contributory constitutional weakness, provided the disease is aggravated or accelerated by the occupational influence; this case is evidently covered by this interpretation. Many occupational diseases are not consequences of sensitization but are caused by "wear and tear"; therefore, the value of the patch test should not be overrated.

- 325 Constitutional Eczemas and Expert Opinion. A. Welcker. Dermatol. Wchnschr. 111, 683-5 (1940).

In continuation of the discussion of cases published by Koch and Doellken (Abstract Nos. 323 and 324) Welcker recognizes the one case as of occupational origin but not the other. He refers to a case of eczema, existing for 6 years in a man who ground and polished nickel plate parts. The occupation was very dirty, and the worker had considered the dirt and dust as causes of the eczema. However, careful inquiry showed that he also polished chromium plated parts and that he was hypersensitive to all chromium compounds.

- 326 Occupational Dermatitis (Oil). C.G. Lane. Arch. Dermatol. & Syphil., (Soc. trans.) 43, 184 (January, 1941).

The author describes a case of dermatitis in a machinist, which evidently was caused by the oil which he used in his 40 years' experience. In addition to a number of areas of dermatitis, autopsy revealed carcinoma of the esophagus. This type of oil dermatitis is fairly common in England but rare in this country, possibly because oils employed here are less carcinogenic.

- 327 Experimental Pulmonary Cancer Induced in the Rat by Respiration of Petroleum Combustion Gases. A.H. Roffo. Bol. inst. exptl. estud. cancer. 16, No. 52, 1-6 (1939). (Spanish, with English summary.) From Chem. Absts. 34, 6355 (September 20, 1940).

This paper gives a fuller account of the work described in our abstract No. 218 in the preceding Bulletin. Rats exposed to the effects of combustion gases from fuel oil developed malignant pulmonary tumors, with symptoms and complications which are fully described. The author states that hydrocarbons are responsible for the development of cancer, in the lung through respiration of combustion gases, and in the stomach through absorption of food exposed to their toxic action.

- 328 Does the Tarring of Roads Produce Cancer? G. L. Minetti. Bull. acad. med., 122, 89-94 (1939). (French).

According to the author there is no convincing evidence that tar dust ever caused cancer in man.

- 329 The Carcinogenic Action of Wood Tar. P. Valade. Bull. assoc. franc. etude cancer. 28, 849-51 (1939). (French).

No carcinogenic action was noted when tar from various woods (chestnut, oak, poplar, etc.) was painted three times a week for 6 weeks on the skin of the backs of 40 white mice and on the inner surface of the ear of 2 rabbits. Unlike oil tar, the wood tar caused no toxic effects (diarrhoea, loss of weight, etc.). Similarly, no carcinogenic action was exhibited by resin, powdered and made up as a 20% ointment in silica gel, applied to the backs of 20 mice; however, as the ointment did not adhere well to the skin, the results with it are not conclusive. It is suggested that the absence of carcinogenic activity of wood tar is due to its low temperature of distillation from the wood (not over 400°C), and that the carcinogenic agents of oil tar are formed by polycyclicization at temperatures of about 850°C.

- 330 Tumors Produced by Tar and Benzopyrene in Amphibia. C. Koch, B. Schreiber and G. Schreiber. Bull. assoc. franc. etude cancer. 28, 852-9 (1939). (French). Metastizing skin tumors were produced in adult Triton cristatus and T. taeniatum by injection of a solution of 0.25% tar in olive oil or by injection of a 1,2-benzopyrene solution obtained by mixing (1:10) olive oil and a 0.025 (%) solution of 1,2-benzopyrene in benzene and then allowing the benzene to evaporate.

- 331 Biological Considerations on Resin Cancer. J. Firket and A. Malter. Bull. assoc. franc. etude cancer 29, 24-35 (1940).

The 1,2-benzanthrene and 3,4-benzopyrene contents of various resins, determined spectrographically, were as follows: British resin 2 and 0.3%, German resin 0.8% and traces, Cockerill resin 1 and 0.2-0.3%, ougre resin 3 and 0.3-0.4%. Despite the presence of these carcinogenic agents, workers in Liege exposed to resin did not show a higher cancer incidence than the general population.

- 332 Should Coronary Disease and Hypertension be a Cause for Rejection in Industry? H.M.P. Behrman. J. Am. Med. Assoc. 116, 309-13 (January, 1941).

Coronary disease and hypertension in workers present a dilemma in that they are not industrial in origin but restrict capacity for laborious work, and it is difficult to judge what procedure is fair to the employer, the worker and the insurance company. The best method for industry would be to adjust at once the work of any of its employees who over a period of years develop symptoms of these diseases. In case of applications for employment, an electrocardiogram will aid in determining the probable extent of injury present, and special jobs may be found at which the subject may safely work. In some states a waiver may be obtained which clears the employer of responsibility. The laws could properly be amended to reduce the responsibility of the employer and therefore encourage the employment of men having hypertensive or coronary disease.

- 333 Cardiac Adaptations in Acute Progressive Anoxia. C.J. Wiggart. Ann.Int.Med., 14, 1237-47 (January, 1941).

In acute progressive anoxia the supply of oxygen to cells is not solely conditioned by the degree of pulmonary ventilation and the oxygen-carrying capacity of the blood; it involves also an increased blood flow. The mechanism of the decrease in circulation was extensively studied in experiments on slightly anesthetized dogs, during hypoxia (progressive decrease in respired oxygen volumes to about 12%) and true anoxia, which begins when the volume is progressively below 12%. Detailed conclusions are given in the paper. When oxygen volume decreases to 7 or 8%, a respiratory crisis ensues. It is essentially an acute congestive heart failure due to depressant effect of anoxia on the myocardium. It probably supervenes when the increasing coronary flow can no longer keep pace with the rapidly diminishing tension of oxygen in the blood.

- 334 Visual Efficiency in Industry. A.M. Culler. J.Am.Med.Assoc., 116, 1349-1355 (March 29, 1941).

A record of visual acuity, with and without glasses, of all industrial workers is important. The establishment of minimum standards of visual efficiency for various occupations is necessary. It is urged that the American Medical Association appoint a committee for the study of this problem. This committee may also aid in the correction of faulty legislation. The sequelae of eye injuries is discussed, some of which may make manifest latent refractive errors. The conservation of eyesight in industry depends upon (1) testing the eyesight of applicants, (2) examination of the eyes of those having defective vision, (3) proper placement of workers with defective vision, (4) proper illumination without glare, (5) education of workers regarding hazards to the eye, (6) protection of eyes in hazardous jobs, and (7) prompt treatment of ocular injuries.

- 335 Protective Equipment for Eyes in Industry. H.F. Carman. J.Am.Med.Assoc., 116, 1343-1348 (March 29, 1941).

Eye injuries are preventable -- the experience of a large industrial concern over 10 years shows that this is possible -- 22,000 employees having been saved from loss of sight or even partial loss of vision. It has been estimated that 15% of the blind of America have lost their sight because of occupational hazards. About 2,000 eyes are lost in industrial accidents each year. The author outlines the method for instituting a complete eye protection service in any plant, providing for preliminary visual examinations of employees and a survey of the plant. There is a lengthy discussion of mechanical protective devices, especially goggles of all sizes and types. Safety devices on machines, illumination and ventilation are briefly considered. The author intimates that there is little information available on the eye hazards of industrial poisons.

Digest of Industrial Hygiene - 27.

- 336 Radiation in Electric Arc Welding. J. May. Arbeitsschutz, pp. 117-8 (1940).
(German).

The author reports on the investigations made by LeComte (Abstract no. 395, 1940). In his own investigation of electric welding he found only the same rays as in carbon arc welding, no x-rays and no gamma rays.

- 337 Industrial Injuries to the Eye. S. Walker and H.L. Auten. J. Am. Med. Assoc., 116, 1356-1357 (March 29, 1941).

It is important to determine the visual acuity at the time of the first visit, and in the injured eye first. Injuries which appear trivial are often potentially dangerous, especially in the presence of focal infection. The use of a mydriatic (a drug for dilating the pupil) after removal of foreign bodies from the cornea or after any injury to the cornea affords the patient comfort and expedites healing. Bandages and patches tend to produce infection by damming up secretions and should not be used. In doubtful cases, the plant physician will do well to turn the case over to an oculist. The authors present a breakdown of 1500 cases into the various types of lesions. In their series of more than 100,000 eye injuries, foreign bodies have been the causative agent in 45%.

NOTE: The appearance of an article in this Digest does not imply approval or disapproval of its contents by the Foundation. The Digest merely reports, it expresses no opinions. With this in mind we cite the instance of Abstract #201 entitled "An Abortive for the Common Cold" which appeared in the March issue for this year. The Medical Director of a member company points out that the dosage of tincture of iodine quoted is in excess of that given by two textbooks in pharmacology. Such a dosage, he indicates, would be dangerous in individuals with tuberculosis, syphilis, or kidney diseases. Our lay readers are advised to consult their physicians before undertaking any medication mentioned in abstracted articles.

WESTINGHOUSE CASES 3/13/92

INDEX
(April, 1941)

<u>Aerosol filtration</u> 266	<u>Electrical precipitator</u> 267	<u>Occupational disease</u> compensation 302 statistics 300
<u>Aniline determination</u> 290	<u>Electroplating</u> ventilation design 312	<u>Ozone determination</u> 297
<u>Anoxia</u> 333	<u>Eye injuries</u> 337	<u>Phagocytosis in lung</u> 259
<u>Arsenic poisoning</u> 309	<u>Fluorocarbon</u> toxicity 286	<u>Protective equipment</u> for eyes 335
<u>Asbestosis</u> in brake band industry 260 general 261	<u>Fluoride poisoning</u> 314	<u>Respiratory tract</u> physiology 289
<u>Azobenzene determination</u> 290	<u>Gas indicators</u> 278	<u>Silicosis</u> experimental 236 bronchopneumonia 254 pathology 258 report 255 statistics 264
<u>Benzene</u> general 267-268 in plastics industry 269	<u>Gas mixtures</u> 285	<u>Skin diseases</u> bromofluorine 319 general 322-323-324- 325 oil 326 in photography 318 in rubber industry 321 sodium tetrachlor- phenoxide 320
<u>Benzidine determination</u> 290	<u>Gases, poison</u> detection 283 protection 294 toxicology 279-280-281-282	<u>Soldering fluid</u> 268
<u>Cadmium poisoning</u> 310	<u>Hydrogen sulfide</u> treatment 276	<u>Sulfur dioxide</u> in foundries 275-295
<u>Caisson disease</u> pathology 316	<u>Ionization machines</u> 234-235	<u>Thermal repulsion of</u> dust 252-253
<u>Cancer</u> experimental 327-328 resin 329 tar dust 325 wood tar 323	<u>Lead</u> determination 303 encephalopathy 304	<u>Toluene</u> general 291
<u>Carbon disulfide</u> general 277	<u>Legal decisions</u> 234-235-236-237-239- 240-241-242-243-244	<u>Tuberculosis</u> effect of chlorine 315
<u>Carbon monoxide</u> determination 269-270-271 in foundries 272 pathology 273	<u>Manganese poisoning</u> 311	<u>Water</u> 282
<u>Carbon monoxide hemoglobin</u> determination 274-282	<u>Medicine, industrial</u> 245	<u>Welding</u> 336
<u>Colds, common</u> incidence 298 prevention 301	<u>Mercurialism</u> experimental 306-308 in felt hat industry 305 general 307	<u>X-ray examinations</u> 263 of dust 265
<u>Coronary disease</u> 332	<u>Methyl chloride poisoning</u> 292	<u>Xylene</u> general 291
<u>Cyanide poisoning</u> 313	<u>Naphtha oil</u> effect on skin 317	
<u>Dust control</u> 248-249 in ceramic industry 257 in asbestos industry 262	<u>Nitrobenzene determination</u> 290	
<u>Dust determination</u> general 250-251 methods 246-247	<u>Nitrous fumes</u> 293	