# FOUNDATION FACTS

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

Vol. 2 April 1940 No. 4


## Audit Your Sick Absenteeism and Cut Losses

Member companies are writing almost daily saying they will take part in the Foundation's study of "Sick Absenteeism in Industry," a study which promises to save participating companies considerable sums of money. Company participation simply involves the keeping of lost time records. See the Foundation's recent absenteeism report for details. Please return the coupon on the back page, if you haven't already done so. More details later as to forms, procedures, etc. Incidentally, this study is receiving national attention in the daily and trade press. Two metropolitan newspapers have written editorials commenting favorably on the undertaking. New York Times carried a half-column article.

## Ask Questions on Employee Health

Remember, Air Hygiene Foundation is concerned with every aspect of industrial health, whether it be chemical hygiene, dust or skin diseases. This is shown by the range of literature covered in your attached copy of the monthly "Digest of Industrial Hygiene." The chemical age has brought new volatile solvents into industry at a rapid rate. Still, there is yet to be found a material that can't be handled safely with proper precautions. A wealth of data and experience is being accumulated by the Foundation and rich facilities are available to the Foundation at its headquarters in Mellon Institute. Ask us your questions on all phases of employee health.

## Monthly Index of Digest Inaugurated

Starting with this issue of the monthly "Digest of Industrial Hygiene," the Foundation is including an index for each issue. This will be found on the last page. At the end of the year a "master" index will be compiled covering the full year. Meanwhile, as time permits, work is progressing on an index for past years, 1937-39. We hope to have this completed by mid-summer. The index accompanying each monthly Digest, as well as the annual indexes, will make the material more readily available and therefore more valuable to members.

## Do You Want the Digest Punched for Loose-Leaf Filing?

An alert member writes: "We have been enjoying our copies....Why not have this valuable data prepared in such form that there would be a left-hand margin punched with three holes so that the recipient could retain the pages in a permanent binder?" This member will receive the Digest in that form. Any others desiring the punch holes may have them by letting us know. Some companies clip up the abstracts for filing.

## Able Industrial Hygienist Available

An able industrial hygienist, a Ph.D., now associated with one of the Foundation's leading companies, would consider changing his connection. He has wide experience in this field, is in his early 30's and can be recommended without hesitation. Further information is available through the Foundation.

F 130522 .....Pennies for provention save dollars worth of cure.....




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

# DIGEST OF INDUSTRIAL HYGIENE
Literature--News--Developments

## News Items

268. Lighting and Air-Conditioning Improve Draftsmen's Efficiency. Occupational Hazards, 2, 31 (March, 1940).
Last summer, the Detroit Edison Company, Detroit, Michigan, checked the output of its draftsmen and found they were getting out 8988 "work units" in 5008 man-hours. Meanwhile, the draftsmen moved into a new windowless building completely air-conditioned and illuminated electrically with 50 foot-candles at the drafting table top. This year, thanks to the conditioning and lighting, the draftsmen required only 3872 man-hours to do 10,474 work units -- a 51.4 per cent increase in efficiency. No longer does work become smudged by hot sticky fingers; no longer do the tired eyes of tired men bring about time-consuming errors.

269. All Ohio Safety Congress.
The eleventh annual session of the All Ohio Safety Congress and Exhibit will be held April 16, 17 and 18, 1940 at the Deshler Wallick Hotel, Columbus. Among the many speakers listed on the tentative program will be:

Dr. R.L. Johnson, Inland Mfg. Div., General Motors Corp., -- "Medical Department's Place in Industry."
Miss Marion Page, R.N., Gardner Richardson Co., -- "Industrial Nursing."
Dr. L.L. Praver -- "Industrial Dermatoses as Related to the Oil Industry."
E.I. Evans, Chief Actuary, Industrial Commission of Ohio -- "Employers' Workmen's Compensation Responsibility."
C.B. Young, Ohio State Dept. of Health -- "Occupational Health Hazards in the Printing Industry."
W.T. Cameron, U.S. Dept. of Labor -- "Dust Control in Foundries."
C.A. Smucker, Ohio Dept. of Health -- "Toxic Materials and their Uses in the Dry Cleaning Industry."
Dr. K.D. Smith -- "Occupational Diseases Occurring in Ohio."
J.J. Bloomfield, U.S. Public Health Service -- "Control of Occupational Disease Hazards."

270. Annual Meeting of the American Ceramic Society, Toronto, Canada, April 7-13, 1940.
The General Session on Toxicology will present a number of interesting speakers:

T.C. Waters -- "Recent Legislation on Occupational Diseases."
E. Poitevin -- "Undesirable Visitors in the Human Lungs."
L.T. Fairhall -- "Relative Toxicity of Lead and Some of Its Common Compounds."
M.F. Trice -- "Health of Brick and Tile Workers in North Carolina."
A.D. Brandt -- "Engineering Control of Dust with Special Reference to Respirators."

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271. American Foundrymen's Association Annual Convention.
There will be a Safety and Hygiene Section at the forty-fourth annual convention of the American Foundrymen's Association to be held in Chicago, May 6-10. One of the speakers will be Roger Bronson of Chicago who will discuss "Workmen's Compensation and Occupational Disease Insurance." Headquarters for the convention will be in International Amphitheatre.

272. Occupational Disease Claim Held not Barred by Statute of Limitations. Occupational Hazards 2, 14 (March, 1940).
The Workmen's Compensation Act of Missouri provides that a claim for compensation for an occupational disease must be filed within six months from the time it became reasonably discoverable and apparent that the compensable disease has been contracted. The disease in this case was lead poisoning contracted through continued work handling scrap metals, including lead. The claimant went to work for the company in 1927 and continued in their employ until 1935, at which time he was discharged after the plant physician reported that he had high blood pressure, and that the likelihood of an apoplectic stroke made him a hazard on the job. Within six months of his discharge the claimant filed a claim for compensation. It was granted. The company claims the award was erroneous, contending that the claimant had known in 1932, four years before filing his claim, that he was suffering from lead poisoning, and consequently his claim had not been filed within the six months' limitation period. The Court rejected the Company's contention, stating: "An injury which starts the running of the statute of limitations provided for in Workmen's Compensation Act, occurs in an occupational disease case at the time when the disease produces a compensable disability, and mere fact that the employee has reason to know that he is suffering ill effects which, even though attributable to natural incidents of employment, have not progressed to the point of in anywise impairing his capacity for work is insufficient to start the running of the statute." Smith vs Federated Metals Corporation et al (Missouri) 133 S.W. 2nd 1112 (Dec. 1939).

273. Osteomyelitis Develops from Brass Particles in Clothes. Occupational Hazards 2, 15 (March, 1940).
An award in this case was granted to the claimant for temporary and permanent disability resulting from the amputation of one leg. The facts were: The claimant was employed in a factory as a brass polisher. In the course of his work small particles of brass became dislodged from the pieces being polished and settled on his skin and in his clothes, causing scratches on the skin. The claimant's right leg became swollen. He was forced to stop work and was taken to a hospital. The physicians found a large number of healed scratches on the claimant's arms and legs. They also found his right leg swollen and infected with osteomyelitis (inflammation of the bone-marrow) which had been caused by infection resulting from the scratches of the brass particles. It was necessary to amputate the leg to check the spread of infection. Mecca vs Phoenix Brass Fitting Corporation (N.J.) 10 Atl. 2nd 491 (Jan. 1940).

274. Workmen's Compensation Acts: Dementia Paralytica Attributed to Aggravation of Pre-existing Syphilis by Heat Stroke. J. Am. Med. Assoc., 114, 1292 (March 30, 1940).
The employee in this case filed a claim for compensation alleging that during the course of his employment he suffered a "nervous breakdown" owing to the heat to which he was subjected. The state industrial commission awarded compensation and the employer appealed to the Supreme Court of Oklahoma. The employee had worked for two years in and around a boiler room exposing him to high temperatures and occasionally to intense heat. There was evidence that he had suffered three heat strokes. He began to show evidence of an abnormal condition which alarmed his relatives who had him committed to an asylum. The

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diagnosis was general paresis of syphilitic origin. He responded favorably to treatment and was restored to competency by the court which had committed him. Shortly thereafter, he filed his application for compensation. The Supreme Court held that the commission had before it competent evidence which, if believed, was sufficient to support a finding of accidental injury within the meaning of the workmen's compensation act. The award of compensation was therefore affirmed. Oklahoma Gas and Electric Company v. Maloney (Okla.), 88 P. (2d) 363.

275. Recent Commission Findings. Ohio Ind. Comm. Monitor, 13, 41-42 (March, 1940). An employee of a steel foundry applied for compensation, alleging permanent total disability as the result of silicosis, contracted in the course of his employment. Pending a decision on the claim, the claimant died and his widow applied for a death award for the benefit of herself and six minor children. An investigation revealed that decedent worked in the foundry from May, 1922, to June, 1939, in the cleaning department where his duties required him to remove hardened sand from castings by use of a pneumatic hammer. A dust count in the room where decedent was employed showed an exposure well below the accepted safe standard, but the dust contained approximately 20 per cent of free silica. The claims referee was of the opinion that the exposure to silica dust was well established and the claim was approved as compensable by the Silicosis Referees. Acting under the provisions of an amendment to the Occupational Disease Act effective May 26, 1939, the Commission granted an award of $6,500 to the widow and minor children, payable at the maximum rate of $18.75 per week. ****A painter employed by a general maintenance and engineering company died Jan. 17, 1938, and his widow applied for a death award for the benefit of herself and minor child. She alleged that the decedent died as the result of "Silicosis terminating in cancer." Investigation revealed that the decedent had worked at the painting trade all his life, working on interior and exterior work with both spray and brush. When admitted to the hospital his case was diagnosed as one of acute gastric ulcer. The investigator pointed out that, while the claim was filed after the Occupational Disease Act amendment of May 26, 1939, became effective, the conditions giving rise to the claim originated at a time when they came under the provisions of the old law, which did not include a lung cancer on the list of occupational diseases. It was also pointed out that there was no basis for the allegation of silicosis as a contributing cause and no evidence was adduced to show that paints used contained harmful ingredients to bring about the condition causing death. The commission dismissed the application.

## Notices of New Books

276. Pneumoconiosis (Silicosis) The Story of Dusty Lungs. A Preliminary Report. L.G. Cole and W.G. Cole. John B. Pierce Foundation, New York, 1940. 52 pp. with an appendix and index.

"The object of this report is to record briefly the observations that have been made and the conclusions that have been drawn during a further short but intensive investigation of pneumoconiosis. Many of the conclusions herein recorded concerning the scientific aspects of the disease -- its etiology, pathogenesis, pathology, and roentgenology -- as well as its social, economic and legal aspects, are not in accord with accepted ideas." The authors classify the disease into four types. They are, in the order fo severity: Type I, the invasion of the perivascular - peribronchial - lymphatic structures and the hilus by dust laden phagocytes and deposits of collagen; manifested roentgenologically by accentuated hilar and linear markings. Type II, the nodular type, characterized by the presence of whorls of collagen and manifested roentgenologically by

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white spots on a black background. Type III, the pockmarking type, characterized by air cysts in the parenchyma of the lung. In the x-ray, air cysts appear as black spots surrounded by white rings, or small black spots within areas of massive collagenization. Type IV, acute silicosis, manifested by an incomplete aeration or partial consolidation of the alveoli. A general haze or diffuse cloudiness of the film is the outstanding roentgenological finding. The book also discusses the social and economic aspects -- the authors believing "that 90% of the types of pneumoconiosis now recognized as 'silicosis' are not compensable; that the two types hitherto unrecognized or not accepted as silicosis are by all means compensable; and that an adequate clinical history, plus an expert roentgen examination with the cooperation of laborer and employer, are indispensable to any fair and proper solution of the problem." An appendix contains reprints of two articles by the authors. There is an adequate index.

## Papers on Air, Dust and General Industrial Hygiene

277. Silicosis. E.R. Hayhurst. Merck Report, 49, 6, 8, 9, 28, 30, 32 (April, 1940). An excellent short review of the subject of silicosis. The author discusses the types (acute and chronic), occurrence, predisposing causes, pathology, symptoms and clinical findings, complications, course and prognosis, diagnosis, differential diagnosis, and treatment (prevention).

278. Recent Developments in Relation to Silicosis. L.U. Gardner. Ind. Med., 9, 45-49 (February, 1940).
Experimental work in progress at the Saranac Laboratory seems to lead to the conclusion that inhaled asbestos fibres are irritating not because they are silicates but because they are stiff fibres which mechanically irritate the lungs. When asbestos is ground very finely so that few of the fibres are longer than 2 microns in length the irritating property of the asbestos is practically destroyed. Inhalation experiments with this fine asbestos in a concentration of 125 million particles per cubic foot over a period of three years has not produced fibrosis -- in previous experiments exposure to one third this concentration of long fibres has produced well marked fibrosis in two years. This phenomenon is directly opposite to that found in silicosis, where with decrease in particle size, reaction becomes more vigorous. Irritation, from the asbestos fibres seem to be more closely associated with the physical, rather than the chemical, composition as in the case of free silica. There are many experiments whose results are difficult to reconcile with the solubility hypothesis. In vivo, cellular reactions begin 15 to 30 minutes after injections; in vitro, traces of dissolved silica are found by the most sensitive methods only after 12 to 24 hours. There is some experimental evidence that free silica has a specific toxicity. Fine silica injected into the veins or hearts of certain animals acts like a strong poison. This has not been observed with particles of larger size or with suspensions of other minerals. These toxic effects can be neutralized by the addition of different substances, for example, colloidal aluminum hydroxide and ferric hydroxide. More and more experimental evidence seems to demonstrate the physiological insignificance of particles over 3 microns. Finally there is a discussion of the similarity between the silicotic and tuberculous reactions in the lung.

279. Arrest of the Toxic Action of Silica Dust on the Conjunctive Tissue by Aluminum. A.Policard and J.Rollet. Compt.rend.Soc.de Biol., 132, 190-192 (1939).(French).
A study of the effects on the cornea of quartz alone and quartz with aluminum. Quartz produces a serious reaction, with edema, cellular infiltration for some weeks and healing with opacities. There is a very slight reaction with quartz and aluminum.

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280. Warning Incidence of Silicosis on Rand. S. Africa Min. & Eng. J., 50, 673-5 (January 27, 1940). (British).
This is an abstract of the report on the work of the Miners' Phthisis Medical Bureau for the three year period ending July 31, 1938. The rate of incidence of silicosis has fallen to a new low record; however, there is a marked progressive increase in incidence with increase in duration of service, also with the increase in the amount of time spent in machine drilling. A modification of the system of periodical examination is urged.

281. Detection of Silica-Containing Dust in Lung Tissues by Means of Fluorescence Microscopy. M. Oberdalhoff. Arch. Gewerbepath. & Gewerbehyg., 9, 435-442 (1939). Abstracted in Brit. Chem. & Physiol., p. 158 (February, 1940).
Quartz and other mineral dusts show characteristic fluorescence colors under ultra-violet light when treated with fluorchromes, especially auramine, and then washed with water. Quartz dust can be detected similarly in silicotic lung tissues provided that the specimen is first treated with alcohol-ether to remove the covering of fat on the quartz particles.

282. An X-ray Study of the Lungs of Workmen in the Asbestos Industry, Covering a Period of Ten Years. A.W. George and R.D. Leonard. Radiology 33, 196-202 (1939).
A discussion of the exposure to asbestos in the manufacture of brake linings. In 1928 and 1929, 12 workers with symptoms of asbestosis were retired on compensation and were followed for 7 years. In 1933, 800 employees from the same plant were x-rayed and three found to have advanced asbestosis. When the plant closed, 90 men sued for compensation and the authors give a discussion of the trial of 30 cases. During the trial, the 12 men retired 8 or 9 years before were produced. All but the women were performing laborious work, and no progress of the lung condition was apparent. There is a description of the x-ray appearance of asbestosis and the action of the dust on the lung. The authors consider that "the fiber is innocent of producing any pathologic disturbance except an impedance to the air in this region of the lung." Pleuritic changes are also seen -- adhesions and obliteration of the costophrenic angles. Emphysema and changes in the heart contour are other signs. No cases complicatee by tuberculosis were found. X-ray will show asbestos in the lungs when there is enough to cause symptoms.

283. The Roentgenologic Aspects of Bronchomycosis. H.P. Doub. Radiology, 34, 267-275 (March, 1940).
The signs and symptoms of the bronchomycoses are similar to those of tuberculosis and often they are at first thought to be tuberculous in origin. Whenever the history or x-ray changes are atypical of tuberculosis, the sputum should be examined microscopically and also cultured repeatedly, so that these cases may not be treated as tuberculous. In early stages, these patients appear to have a mild bronchitis with some expectoration; later they develop many of the signs and symptoms and even the complications of tuberculosis. The final diagnosis rests on the discovery and identification of the offending organism. The roentgen changes are suggestive of a differential diagnosis in some instances but usually only suggest the presence of a fungous infection. The author describes some of the more prominent roentgen signs of the various bronchomycoses.

284. Lungs Affected by Ochre Dust. H. Otto. Arch. Gewerbepath. & Gewerbehyg., 9, 487-495 (1939). (German). Abstracted in Brit. Chem. & Physiol., p. 159 (February, 1940).
The harmful constituents of ochre appear to be iron oxides and silica. X-ray findings in ochre-affected lungs and pathological anatomy of iron-affected lungs are described.

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285. Dust and Disease. H. J. Spector. Safety Engineering, 79, 33 (March, 1940).
Organic dusts do not produce disabling diseases of the lungs, says this author, basing his claim on autopsy studies of the lungs of 50 patients exposed for many years to organic dusts. Regardless of how violent an effect inhaling industrial impurities might produce in the human system, tuberculous infection takes place only in the presence of disease-producing bacilli. Possible remedial measures for the control of tuberculosis in industry might include: Control of industrial disease hazards, ample wage standards, and periodic physical examinations.

286. Pulmonary Aspergillosis. H.S. Van Ostrand. Cleveland Clinic Quarterly, 7, 66-73 (January, 1940).
The classic instances of pulmonary aspergillosis in man are found in certain occupations which involve prolonged and intimate contact with grains or with birds. Farmers, feed-mill workers and threshers are prone to this infection. Certain dusts are important sources of infection, such as that produced by sponge-cleaners and wig-makers. The symptoms may be of acute or chronic nature. The acute form assumes clinically the picture of bronchitis or pneumonia. The course of chronic primary aspergillosis is similar to that of chronic pulmonary tuberculosis. The author describes the physical and roentgen findings. A case of aspergillosis fumigatus of the acute "bronchitic" type is presented.

287. Experimental Investigation on the Capacity of the Human Nose to Retain Dust. J. Scheideler. Arch. f. Ohren-, Nase-, u. Kehlkopfheil., 146, 133-169 (1939). (German).
Results of the examination of 290 men in an effort to determine the capacity of the human nose to retain dust. There were 10 measurements on each worker and variation was great -- between 9.5 and 91.1%. The individual variation was at most 8.2% and averaged only 2.96%. The author concludes that the capacity of the individual human nose remains constant as long as the rhinoscopic findings are the same. The capacity varies with the construction of the interior of the nose, since this formation determines the direction of the inhaled air stream. Obstacles in the lower nasal duct and the concentration of the dust are without influence. The dust-retaining capacities of the pharynx and larynx are unimportant compared to that of the nose.

288. What to Look for in Respirators. W.H. Lemberg. Safety Engineering, 79, 30 (January, 1940).
Respiratory protective devices must measure up to certain standards and specifications to be fully efficient. They must be provided with a compact and highly efficient filter medium that will exclude dust and fumes, obstruction to breathing must be sufficiently low to provide no discomfort during normal activity, they must fit all types of faces without leakage, they must be comfortable, they must not interfere with the wearing of safety goggles and they must be designed compactly, with a minimum of free space inside.

289. To Solve Silicosis. S.C. Blacktin. Chem. Age., 42, 97-98 (February 17, 1940). (British).
There is first a general historical discussion of the problem of breathing resistance in respirators with the increase in dust-stoppage efficiency. The author presents a new principle, "the Repulsor" based on the repelling action on dust particles of a heated wire diaphragm. It is proposed in the interests of economy where electric safety lamps are used, to exploit the provisions already offered, the air-cleaning unit thus forming a composite part of a new all-purpose lamp. The author feels that the defeat of the attack on silicosis prevention has been due to this resistance of respirators and will now be solved by this method of breathing ease.

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290. Dust Prevention by Use of Carbonate Minerals. H.C. Dod and J.B. Lewis. Chem. Eng. Min. Rev., 32, 57 (1939).
The use of dolomite or a mixture of magnesite and limestone as tamping in drill holes produces a cloud of basic dust particles after firing which neutralize the charge on the silica particles and thereby produce flocculation, so that it is possible to effect complete removal of the silica particles from the air fifteen minutes after firing.

291. Profits in Air: Dust Control. Part I. The Dust Problem, Employee Examinations, Dust Surveys. F.F. Kravath. Heating & Ventilating, 37, 38-41 (March, 1940).
The author outlines a plan for employee examinations and plant surveys with suggested forms for keeping records of employees' physical condition and results of surveys. Careful occupational histories will sometimes obviate time-consuming and expensive physical examination. Periodic examination may be easily brought about at regular intervals by means of a small "tickler" file, containing the employee's name or number. A brief outline of the procedures for plant surveys is given.

292. Keep it Clean. R.D. Mudd. Safety Engineering, 79, 34-37 (March, 1940).
Cleanliness in industry saves money, improves the product and promotes the health and working power of employees. Compensation for skin diseases of occupational origin makes up as much as 70% of all occupational disease claims in some states. Cleanliness could prevent many of these conditions. The writer outlines the steps which plant managers and the working force can cooperate in and thus achieve healthy working conditions. Every dollar put into equipment and services to promote cleanliness is bound to appear eventually on the right side of the balance sheet.

293. Mineral Technology and Output Per Man Studies: Rock Drilling. C.E. Nighman and C.E. Kiessling. W.P.A. in cooperation with U.S. Bureau of Mines, Report No. E-11 pp. 158 (February, 1940).
Primarily a discussion of the kinds of technical changes introduced and the rates at which they have been incorporated into industrial practice. In the extractive industries advances in the methods used in drilling operations have been an important feature of these changes. The development of drilling technology in the bituminous coal industry and in petroleum and natural-gas production has been covered in other reports -- this one deals with rock drilling in other important mineral industries. There is a short discussion on the subject of health and safety. The advent of mechanical drilling greatly increased the prevalence and seriousness of the respiratory diseases. It is estimated that roughly 1/5 to over 1/3 of the miners in typical hard-rock mining camps 20 years ago were afflicted with silicosis. This danger has now been greatly lessened by the wide cooperation of mine operators in dust control programs inaugurated by the U.S. Bureau of Mines and the U.S. Public Health Service.

294. Preliminary Report on Hygiene Studies of Welding. L.B. Case and V.J. Castrop. Ind. Med., 9, 52-55 (February, 1940).
Samples of air taken at a distance of 3 inches from the electric arc show concentrations of nitrogen dioxide as high as 70 p.p.m. These are not, however, average concentrations. The samples taken near acetylene welding showed somewhat smaller results. Analyses were made of the welding rod coatings and partial determinations of the metal fumes obtained in the breathing zones of the welders. The latter seem to indicate that iron oxide is the principal ingredient of the fumes. There is some conjecture by the authors on the coatings of the metals being welded and a short discussion of the matter of personal protection by ventialtion, respirators, etc. It is emphasized that this is a preliminary report.

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295. Cataracta Electrica Following Electric Shock. H. Skydsgaard. Acta Ophthalmologica, 17, 460 (1940). (Scandinavian). Abstracted from J. Am.Med.Assoc., 114, 1122 (March 25, 1940).
One of the most important of eye injuries in persons struck by lightning or who work with high tension currents is the delayed cataract which occasionally appears. The author reports the case of a man who had received a shock of 6000 volts and six months later began to notice loss of vision in one eye. A cataract was finally discovered. The author is convinced that the electrical trauma was the cause. He says that this type may present only features which are common to a large group of cataracts; however, they appear late and may be unilateral or bi-lateral. He contends that lesions near the eye are not necessary for the development of the cataract and that the strength of current is not of decisive importance, but that its duration may be an essential factor. He enumerates the theories for the explanation of the cause of the cataract but believes that no one of them could alone produce the effect.

296. The Course of Disabling Morbidity among Industrial Workers, 1921-1938. W.M. Gafafer. Ind. Med., 9, 55-61 (February, 1940).
The material upon which this report is based is from the reported experience of the memberships of industrial sick benefit associations, primarily (43%) in iron and steel but also (21%) in public utilities and (36%) miscellaneous. The latter is composed of data from the chemical, plumbing fixture, electrical equipment, paper, timepieces, hats, flour, and soap industries. A brief summary of a comprehensive illustrated analysis shows that all sickness is displaying a downward trend, more apparent in males, the prime mover being the respiratory diseases. Non-industrial injuries incline upward for both sexes. A rising curve is evident for males in appendicitis, diseases of the heart and of the circulatory system. Normal rates of pneumonia and rheumatic diseases are relatively high for the iron and steel industry while relatively low for all sickness, respiratory diseases, respiratory tuberculosis and diseases of the circulatory system.

297. Annual Safety Equipment Issue. March, 1940. National Safety News. 210 pp. National Safety Council, Inc., 20 N. Wacker Drive, Chicago, Illinois.
This large issue contains six chapters on: Personal Equipment, Mechanical Equipment, Fire and Plant Protection, First Aid and Medical Service, Sanitary Equipment and Supplies, and Miscellaneous Products and Services. Articles of interest to Foundation readers include: Industrial Ventilation, Lighting for the Plant, Better Housekeeping, Fatigue, and Skin Infections from Cutting Oils.

298. List of American Standards. American Standards Association, 29 West 39th Street, New York, N. Y., January 15, 1940.
A list of the published standards in civil, mechanical, electrical, mining, chemical, safety, highway traffic and other engineering fields. They cover definitions of terms, specifications for metals and other materials, methods of test for the finished product, dimensions, safety provisions for use of machinery and methods of work, etc. These standards represent the composite work of six hundred trade, technical, governmental and other groups.

299. New Problem in the Field of Industrial Hygiene. VI. Occupational Poisons, Reproduction and Offspring. O. Ehrismann. Deutsch. med. Wchnschr., 65, 1802-1806 (1939). (German).
This is a report, based on the literature, of injury to the powers of reproduction and to the offspring, caused by alcohol, nicotine, lead (a father's poisoning supposedly affects the children), magnesium, mercury, chromium, iodine, arsenic, carbon disulfide, benzene, phosphorus and thallium.

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300. Physiologic Observations on Caisson Workers. W. Marquort and J. Rietz. Ztschr. f. d. ges. exp. Med., 106, 597-775 (November 3, 1939). Abstracted from J. Am. Med. Assoc., 114, 1028 (March 16, 1940.)
No increase in basal metabolism was found in caisson workers exposed to 3.75 atmospheres. There is increased respiratory volume with a simultaneous decrease in frequency but no increase in vital capacity. The pulse showed a decrease in frequency in spite of the hard physical labor. There is a decrease in erthyrocytes but this quickly returns to normal.

301. Compressed Air Illness (with special Reference to the middle ear). W.H. Requarth and R.E. Benson. Ind. Med., 9, 115-121 (March, 1940).
The etiology, pathology, symptoms and treatment of compressed air sickness in pressures over 15 pounds are presented. The most efficient treatment is stage decompression. In general, the laws of this country pertaining to work in compresred air recommend a combined stage and uniform decompression which is not equal to the method of stage decompression as practiced in other countries, notably England. Workers in increased atmospheric pressure up to 12 pounds present certain symptoms referable to the middle ear and Eustachian tube. Usually considered minor, these complaints assume major proportions when viewed from the standpoint of workmen's compensation insurance. The only adequate treatment of these middle ear complaints is prophylactic. This is best carried out by a well-planned medical program consisting essentially in a careful, intensive education of men in the use of preventive measures and the selection of employees on the basis of critical examination of the respiratory tracts. -- Author's summary.

302. Antiseptics and Their Action. R.M. Freeman. Ind. Med., 9, 87-88 (February, 1940).
The author discusses briefly the general subject of antiseptics -- their advantages and disadvantages -- and concludes that azochloramid is a valuable and safe member of this group. It is used in 1/500 solution in triacetin.

303. The Inguinal Ligament. C.M. Hillenbrand. Ind.Med., 9, 83-85 (February, 1940).
In a study of 500 cases, of which 300 had inguinal hernias, it was concluded that: (1) individuals with an inguinal ligament of less than 11 cm. have little tendency to formation of inguinal hernia; (2) cases measuring 11 to 15 cm. who develop hernias always have an indirect type; (3) as the length of the inguinal ligament increases from 15 to 19 cm. the hernias are of the direct type. This will be of interest to industrial physicians who need a practical aid in determining whether the so-called borderline cases with large rings, loose rings, etc., should be hired. Its use in job placement is at once obvious.

304. The Anti-Syphilis Campaign. P.J. Ochsner. Ind.Med., 9, 77-79 (February, 1940).
Through its contact with half of the population, industrial medicine has a wonderful opportunity to act as a case finder for syphilis. A sixty-day survey revealed that the number of individuals under treatment represented only one-sixth of the potential treatment load. Industrial physicians can be of great assistance in seeing that patients receive their required courses of continuous therapy, of prime importance in the treatment of syphilis. Only two types of syphilis are liable to produce accidents, the cardiovascular and tabetic or paretic. If these are excluded, there is no available evidence to show that syphilitics are more accident-prone than non-syphilitics. The type of syphilis encountered in industrial practice is usually non-infectious and they may be permitted to continue work provided they undergo continued treatment.

305. A Practical Approach to Supervision of Mental Health In Industry. F.S. Parney. Ind. Med., 9, 72-77 (February, 1940).
In the author's opinion, the successful treatment of psychoneurosis lies not in the man or his job, nor even in his immediate difficulty, but in the doctor's capacity to lead the patient to a recognition of his fundamental problem and the necessity of facing up to it.

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306. Women in Industry. M.E. Pidgeon. U.S. Dept. of Labor, Women's Bureau, Bulletin No. 164, pp. 85 (1938).
This is an outline for group study of the subject of the employment of women in industry and the general conditions under which they work. Ten aspects of the subject have been considered separately. Of most interest here is Chapter V -- "Health Standards for Women's Work" which has been divided into four parts -- (1) Service facilities and sanitary conditions in the workplace, (2) special health needs, (3) industrial hazards - injuries, and (4) industrial hazards - disease.

307. Study of the Factors of Employability. G.A. Paul. Ind. Med., 9, 79-82 (February, 1940).
A survey of a particular industrial organization which showed that many of the workers have major physical disabilities and that the proportion of these disabilities increase as the workers become older. Unwise legislation may throw obstacles in the way of the physically handicapped by increasing the scope of compensation in cases of aggravation of pre-existing illness.

308. The Doctor's Part in the Personnel Program. G.A. Coburn. Ind. Med., 9, 64-66 (February, 1940).
The plant doctor plays an important part in a number of activities: in employment, by assisting the employer to secure the most satisfactory type of personnel; in transfers, by over-seeing the proper replacements of employees; in safety by acting in an advisory capacity to the safety department; in collective bargaining, many of the grievances or complaints have to do with matters in the medical territory; in maintaining satisfactory employer-employee relationship, by his numerous contacts with large numbers of employees which by careful handling can form the foundation of sound relations; in maintaining satisfactory public relationship, by his outside contacts with the local medical profession, hospitals, health agencies and organizations.

309. Relationship of Industrial Medicine to Private Practice. S.J. Seeger. Ind. Med., 9, 66-69 (February, 1940).
"The foremost objectives of industrial medicine.....: (1) to fit every person to types and quantities of work according to his ability to perform such work continually without undue impairment, without injury to himself or his fellow workmen, and with profit to himself and his employer; (2) to procure and maintain fitness for work through efforts applied to the worker as an individual; (3) to educate the worker to a comprehension of the value and significance of physical and mental well-being and, in particular, of personal hygiene and accident prevention; (4) to reduce all loss of time, absenteeism and short work spans in industry, the cause of which may be related in anyway to health." The author also discusses the problems which have arisen between the practice of private medicine and the establishment of modern industrial medical departments in large industries.

310. Small Plant Hired Nurse -- Saves. M.G. Holstine. Factory Man. & Main., pp.68-69 (March, 1940).
Lost time due to injuries or sickness totaled 23 weeks in the year previous to the installation of this regular first-aid department. This was reduced to a little over two weeks in the first year under the resident nurse set-up. There is also the improved employee health and comfort, as well as compensation savings and increased wages for workers who are not off because of illness.

311. The Industrial Nurse. H.M. James. Ind.Med., 9, 61-64 (February, 1940).
The qualifications of the industrial nurse may be listed under physical, personal and professional headings. These are of particular importance in the nurse who works alone in a small organization as she is often the sole representative

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of industrial medicine. In industries where it is possible to use visiting service, experience has proved this function of the nurse to be a most valuable one. "The industrial nurse has certainly left her 'finger wrapping' and has advanced into a highly important role in industry."

312. X-ray in Industry. M.W. Clift. Ind. Med., 9, 51-52 (February, 1940).
It has been demonstrated that the initial cost of x-ray equipment is an extremely small factor in the economics of a medical department. The author's experience is that the entire capital investment has not only been liquidated but has also shown a dividend. The greatest dividend, however, has come from the salvaging of individuals working in factories and by appreciating their physical needs, placing them back in industry in positions they can adequately fill. As an agent in reducing expense by decreasing labor turnover, x-ray equipment is a definite economic measure.

313. A Plan for the Control of Tuberculosis in Industry. M.R. Burnell. Ind.Med., 9, 49-51 (February, 1940).
I. Pre-Employment Physical Examination. This is done for the purpose of placing the individual where he is best physically as well as mentally fitted. This gives the examining physician the best opportunity to detect pulmonary tuberculosis and is not considered complete without an x-ray of the chest. II. Periodic Examinations for Old Employees. There are numerous occasions on which these examinations should be made, such as after illness or layoff, but in any case should be made at least once a year. Cooperation with the family physician is of paramount importance. III. Control of Tuberculosis Within the Plant. The industrial physician is the health officer of the plant -- "it is his duty to locate, identify and determine the importance of all occupational and environmental sources of disease or health impairment and to see that they are corrected.

314. Priceless Possessions. L. Greenburg. National Safety News 41, 26-27 (January, 1940).
There were 1843 cases of compensated eye injuries in New York State in 1938 and the cost was $1,165,000. Eighty per cent of these are caused by foreign matter entering the eye and could be avoided by the simple and cheap method of wearing goggles. Ventilation controls are needed for eye hazards of toxic dusts and fumes and in the past year, the Division of Industrial Hygiene has passed and approved 2000 sets of plans for such control in factories. Special goggles are needed for protection against radiant energy, and fatigue of the eyes can be lessened or eliminated by proper illumination. The author discusses these sight-saving means and methods for promoting their adoption.

315. The Ophthalmologist and the Workmen's Compensation Law. J.H. Delaney. Penna. Med. J., 43, 645-647 (February, 1940).
This is a plea for Pennsylvania (and 23 other states) for uniform standards and methods of evaluating visual efficiency and visual loss. Of the 47 state commissions, only 23 have a recognized method and of these, 7 had different standards in use -- so that there were 18 different methods of calculating the same problem. This condition exists in spite of the excellent method advanced by the Committee on Eye Injuries of the American Medical Association devised after a 6 year study. To date only 11 states have adopted the committee's recommendations. These constitute a threefold method of evaluating vision -- due consideration of central visual acuity for near and far, the weighed factor for consideration of muscle balance, and visual fields. The author feels that in testimony the acuity at 14 inches is twice as important as that at 20 feet since the law intends to compensate a man for reduced earning power and in most occupations this of necessity involves the eyes for near work.

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316. The Use of Air Velocity Meters. G.L. Tuve, D.K. Wright, Jr., and L.J. Siegel. Heating, Piping and Air Cond., 11, 703-709 (November, 1939).
The results of an investigation of methods for instrument calibration and study of the practical use of instruments for measuring air stream characteristics and air quantities. The authors claim that the rotating-vane anemometer to be the best average instrument; the Velometer (bridled-vane anemometer), the most convenient for spot readings; the heated thermometer, the widest velocity range; the heated thermocouple, best adapted for distant reading; and the kata thermometer, the least expensive. The three measuring standards used were a thin plate orifice, an electric-thermal meter and the pitot tube.

317. Some Applications of the Rayleigh Interferometer. E.C. Craven. Indus. Chemist, 15, 354-357 (1939).
A description of some applications of the Rayleigh interferometer in industrial practice, for example, in determining carbon dioxide and consumed oxygen, explosive gas concentrations, hydrocarbons in crude hydrogen and the strength of acetic anhydride by means of the liquid cell. The instrument used, a home-made 50 cm. type, is described briefly. Instead of a compensating optical method for aligning the bands, pressure is applied and the manometer reading is proportional to the gas concentration.

318. Hydrogen Sulfide Detector. F.B. Behrens. Oil and Gas Jour., 38, 36 (March 28, 1940).
A regenerative scrubbing process for vapors before processing in a non-selective polymer plant entailed the handling of hydrogen sulfide in a comparatively pure state. The hazards involved necessitated the use of a detector. As the usual devices are quite costly, a compact and efficient detector was built at reasonable cost by this company. The sampler was designed to handle a volume of 20 cu. ft. of air per minute from 15 different stations. The precipitation of lead sulfide on moist lead-acetate-treated tape cuts off a source of light thus affecting a photoelectric cell which operates the alarm system. It may also be used to operate blowers if necessary. The detector has also been used for the detection of hydrocarbon leaks where hydrogen sulfide is present in the vapors. The electrical measurements are sufficiently sensitive and accurate so that percentages well below the danger point can be detected. Illustrations of the device demounted and in a transite housing are shown.

319. Photocolorimetric Determination of Hydrogen Sulfide in Air, as Copper Sulfide. E.P. Kastner. J. Appl. Chem. Russ., 12, 1097 (1939).
Air is passed through a solution containing copper sulfate, gum arabic, EtOH, and acetate buffer, and the increase in absorption of light by the solution is measured with the aid of a photo electric cell. The hydrogen sulfide of the air is then read from a curve.

320. Determination of Small Amounts of Aromatic Nitro-Compounds in Air. I.S. Scheresheveskaja. Prom. Org. Chem., 6, 592-594 (1939).
Known colorimetric or nephelometric methods of determining intermediates and by-products of manufacture of 2:5-dichloro-7-methoxyacridine are enumerated.

321. Absorption of Gases in Liquids as Used in Industrial Air Analyses. S.Moskowitz, J. Siegel and W.J. Burke. New York State Dept. of Labor, Industrial Bulletin, 19, 33-35 (February, 1940).
A description of apparatus for the collection of air-borne materials which are best absorbed in liquids. In one type, a sintered glass disk is fused to the end of the gas entrance tube to aid in the absorption of the material to be tested. Another type uses an Aloxite stone. By these methods, mixtures of toxic gases may be estimated separately -- complete directions being given for

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simultaneous testing for hydrogen sulfide and carbon disulfide. The method for the determination of formaldehyde in air is also given. Variations of the apparatus will permit the testing for acid vapors and mists, ammonia, methanol and other alcohols, other aldehydes, and phenols.

322. Workmen's Compensation and Occupational Disease Laws in the Commonwealth of Pennsylvania. M. Behrend. Penna. Med. J., 43, 18-20 (October, 1939).
This is a discussion of the history of the Workmen's Compensation Act since its first enactment in 1915 up to the act of 1939. The author speaks of the controversy between the physician and the insurance company as to the right of the injured man to choose his physician. He advocates a "universal" workmen's compensation law for the injured which he feels should be accomplished through a Federal Act. Although there are 672,000 employees exposed to industrial disease hazards in Pennsylvania, less than 20 cases have been posted with the compensation board. This is in part due to the ignorance of the laborers and also to the fact that the adoption of claims for occupational diseases is optional with the companies.

## Papers on Industrial Poisons, Cancer, Dermatitis, etc.

323. Report of the Committee on Volatile Solvents to the Industrial Hygiene Section of the American Public Health Association. H.F. Smyth, Jr., Secretary (October 17, 1939).
This exhaustive report includes 398 articles on the subject of "Volatile Solvents" and yet only covers the period 1937-1938! This gives evidence of the exceedingly rapid growth of the literature on this subject. Better than half of the articles abstracted were on the aromatic and halogenated hydrocarbons. Of 227 papers reporting original experiments or clinical observations, 149 discussed these substances. Due to the inclusion of a report on trichlorethylene covering 20 years, this hazard leads the solvents in relative toxicity as judged by cases and deaths reported. If the weight of this paper is discounted, benzene and homologs are in first place. No important new diagnostic or control methods are reported. There are suggested revisions or new safe limits for benzene, carbon disulfide, chlorinated naphthalenes and diphenyls, methyl "Cellosolve," and tetrachlorethylene. There is a short discussion of the problem of precautionary labeling. There are numerous tabulations, a general discussion of the literature and a discussion of some of the more important solvents. There is an author index and the lengthy list of references with annotations.

324. Research upon the Toxicity of Benzene. R. Charlier. Arch. intern. pharmaco-dynamie. 61, 121 (1939). (French).
Commercially pure benzene like chemically pure benzene possesses a paralyzing action upon the peripheral vasomotor system of the animal by direct action upon the muscle fibers of the vessels and may be clearly toxic upon the myocardium. The commercially pure product is nevertheless possessed of a greater toxicity than that of the chemically pure. The major toxicity is not due to the presence of thiophene in the commercial product, but to the presence of other compounds which distill between 80.4° and 81.2°. The study from the pharmaco-dynamic view will be a subsequent undertaking.

325. Comparative Action of Pure and of Crystallizable Commercial Benzene on the Heart Volume of Dogs. J. Barzin and R. Charlier. Compt. rend. Soc. de Biol., 132, 296-297 (1939). (French).
Commercial crystallizable benzene, perhaps because of the impurities, is more toxic than the pure. Each, however, affects the myocardium seriously.

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326. Sulphemoglobinanemia from Poisoning by Nitrobenzol in Industry. E.C. Vigliani and G. Donati. Rass. Med. Indust., 10, 534-51 (1939). (Italian).
This man was engaged in dipping metal gauze impregnated with rubber in a steel vessel filled with nitrobenzol. He worked without gloves and his hands, arms, and clothing would be saturated. The workroom was unventilated. After the first day he felt a sort of deafness with headache, malaise, irritation of the throat, giddiness and mental obtuseness. His skin became blue and blood examination showed the spectrum of sulphemoglobin. The production of this condition is ascribed to the combined action of nitrobenzol and hydrogen sulfide formed by hydrolysis of the organic sulfur compounds in the vulcanized rubber. Though this condition is thought to be very rare, the authors feel that they are quite frequent but go unrecognized.

327. Diseases in Agricultural Workers Caused by Calcium Cyanamide. H. Gartner. Munch. med. Wchnschr. 86, 1745-1748 (1939). (German).
Commercial calcium cyanamide usually contains only 60% calcium cyanide. In 75 cases of injury from this substance, the greatest number showed damage to the skin and eyes, but the author reports also on 8 cases where internal injury was present. There were general complaints such as nausea, weakness, numbness and later a hyperemia, limited to the head and upper part of the trunk, and bronchitis. In a fatal case there was bronchopneumonia and glomerulonephritis. In one, the effect of alcohol was increased by the raw product; in several others, the alcohol aggravated the effect of the raw calcium cyanamide.

328. Chloroform Liver Injury. L.L. Miller and G.H. Whipple. Am.J.Med.Sci., 199, 204-216 (February, 1940).
Liver injury due to chloroform increases in extent as the protein body stores are depleted. In a protein-depleted dog 15 to 20 minutes of chloroform anesthesia is frequently fatal with extensive hyaline liver necrosis and the typical picture of chloroform poisoning. Twelve minutes of chloroform anesthesia in a protein-depleted dog will cause moderately severe liver injury. Protein depletion is effected by low protein diets alone or combined with bleeding or plasmapheresis. Control experiments in dogs without protein depletion indicate that 90 minutes of chloroform anesthesia can be tolerated with but little liver injury.

329. Studies on the Mechanism of the Protective Action of Xanthine Against Carbon Tetrachloride Poisoning. J.C. Forbes and E.L. Outhouse. J. Pharm. & Exp. Therap., 68, 185-193 (1940).
The injection of xanthine india ink, tri-calcium phosphate and sodium ricinoleate, all materials which protect the livers of rats from injury due to carbon tetrachloride or chloroform, were shown to cause a fall in serum esterase concentration. The marked rise in serum esterase concentration that occurs in rats poisoned with carbon tetrachloride or chloroform is inhibited by the previous administration of xanthine. It is suggested that the maintenance of normal serum-esterase values and the increased resistance of hepatic tissue to poisoning with carbon tetrachloride and chloroform are both associated with a repair process occurring in the tissues at the site of injection of the protective substance.

330. Paraphenylenediamine. J.Am.Med.Assoc. (Queries and Minor Notes) 114, 274 (January 20, 1940).
Exposure in this man (evidently a photographer) resulted in a constrictive chest pain which disappeared when the toxic substance was withdrawn. The industrial use of paraphenylenediamine is outlined, especially its use in the fur and rubber trades. It can apparently be absorbed through the intact skin, or be inhaled in vapor or dust form. It may cause dermatitis, urticaria, edema and asthma. It should either be eliminated or rubber gloves and ventilation should be provided.

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331. Urinary Excretion of Porphyrins by Chemical Workers. C. Rimington and M.W. Goldblatt. Lancet, pp. 73-75 (January 13, 1940). (British).
In workmen exposed to nitro and amino bodies, cyanosis is frequent, due to methemoglobinemia. Toxic symptoms seldom occur. These bodies, of which aniline is an example, increase the urinary excretion of porphyrins. This excretion was studied in workers without exposure, with slight exposure and with great exposure. The porphyrins in micrograms per 1500 of urine averaged 38 for the first group, 70 for the second and 117 for the third. No worker was cyanosed or in anyway clinically abnormal when the specimens were collected. Whether the health is ultimately affected following this great increase in excretion has not been determined. It is suggested that this examination of the excreted porphyrins might prove of value in detecting those hypersensitive to aromatic nitro and amino bodies.

332. Health Hazards in the Rubber Industry. A.N. Currie. Trans. Inst. Rubber Ind., 15, 137-151 (1939).
The risks and regulations are surveyed with especial reference to the use of lead compounds, silica, chlorinated naphthalenes, dusts, benzene, carbon disulfide, carbon tetrachloride and trichlorethylene. The industry, says the author, is remarkably free from troubles arising from these sources.

333. Industrial Health Series. U.S. Dept. of Labor, Div. of Labor Standards. May be obtained from Sup't of Documents, Washington, D.C., for 5 cents each.
No. 10 -- Wood Alcohol Poisoning. 4 pp.
No. 11 -- Chlorinated Solvents. 4 pp.
No. 18 -- Injury from Acids and Alkalies. 5 pp.
Each booklet contains data on the industrial sources of the hazard, how the poisoning or injury occurs, signs and symptoms, treatment and care, and methods of protection and prevention.

334. Biomicroscopic Studies of the Effect of Cobalt Dusts (Smaltite and Cobaltite) on the Cornea. A. Policard and J. Rollot. Compt. rend. Soc. de Biol., 132, 192-193 (1939). (French).
A considerable time after exposure, smaltite, $Co(As)_2$, creates serious reactions. Sulfarsenide of cobalt (cobaltite) causes only a slight reaction.

335. Comparative Toxicities of Cobalt and Nickel. F. Caujolle. J. pharm. chimie., 29, 410-413 (1939). (French).
In animals cobalt is always less toxic than nickel, the latter causing the appearance of definite symptoms of intoxication much sooner. The fatal doses in dogs is 10-20 mg. per Kg. for nickel, and 30 mg. per Kg. for cobalt. These doses were determined by intravenous injection of solutions of the chlorides into anesthetized animals. The histologic lesions of the liver and kidneys are more pronounced after administration of nickel than after equivalent quantities of cobalt. In equal doses, cobalt chloride activates the salivary and pancreatic amylases to a greater extent than does nickel chloride.

336. Toxicology of Nickel. F. Caujolle and G. Canal. J.pharm.chimie., 29, 391-405 (1939). (French).
The respiratory and cardiac nerve centers are affected. Nickel is removed by all evacuating means, but as the action of the metal is intensified the elimination is slower and biliary elimination is almost blocked. These are the results of intravenous injections in dogs.

337. The Effect of Yeast on the Incidence of Cirrhosis Produced by Lead Arsenate. W.C. Von Glahn and F.B. Flinn. Am.J.Path., 15, 771-781 (1939).
In a series of rabbits given lead arsenate and yeast, the frequency of the areas of hepatic necrosis and the incidence of cirrhosis were considerably reduced compared to those not given yeast. There seems to be no connection between hepatic glycogen content and the incidence of cirrhosis.

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338. Manganese Poisoning in the Steel Industry: A Case of Manganism in a Ferro-Manganese Worker. H. Voss. Arch.f.Gewerbepath. u. Gewerbehyg., 9, 453-463 (1939). (German). This is a more complete abstract of Item No. 842, November, 1939. Since there have been only 230 cases of manganese poisoning reported since 1837, the author concludes that it is relatively a rarity considering the extensive use of manganese and its compounds. This is due, he feels, to the fact that few people have the constitution for the development of a chronic manganism, that apparently not all compounds of manganese can produce chronic poisoning, and that the chronic conditions can only arise where manganese or its compounds are inhaled or swallowed in dust or fume for a sufficiently long period of time in sufficient amount. Damage to the central nervous system has been observed in extraction, sorting, and loading of ores, working up of pyrolusite ($MnO_2$), and in processes involving the evolution of metallic fumes, for instance, in welders using electrodes containing this metal. The most serious cases, however, have occurred in men engaged in smelting zinc ores which contained large amounts of manganese. This patient worked in a poorly ventilated room in which ferro-manganese and ferro-silicon were milled and sieved. His job was to transport open vessels of ferro-manganese to the mills, to empty them and shovel the metal into the funnel of the mill. At a later stage he had to put the finely milled metal through an electrically shaken sieve. Both operations produces vast amounts of dust. His first symptoms were weakness of the left leg and a stony stare. Speech was low and indistinct. He had to quit work and finally became so weak and clumsy that he could not stand. His speech became increasingly unintelligible and he drooled. There were fits of involuntary weeping and laughing. He was relatively impotent but evidently not sterile. The author summarizes the neurological findings and differentiates the condition from paralysis agitans, pseudo-sclerosis, Wilson's disease, post-encephalitic Parkinsonism, multiple sclerosis, etc. That his fellow-workers did not develop the syndrome is evidence of predisposition.

339. Tetraethyl Lead Poisoning and its Treatment. Experimental Investigations. W. Lanes. Deutsch. med. Wchnschr., 65, 1746-1748 (1939). (German).
When animals which had been injected with tetraethyl lead were given "Glyconorm" (containing the vitamin B complex), their symptoms were diminished very much or lives were prolonged. This effect, however, was not obtained if the lead was inhaled. Experiments on the brains of animals killed by intraperitoneal injection of tetraethyl lead were performed with the Warburg respirometer. In the author's opinion there was a significant decrease of carbon monoxide. He believes that the effect of lead tetraethyl (or of lead) depends partly on injuring the vitamin B -- nicotinic acid amide complex.

340. Lead Content of Human Blood. J.N. Chalmers. Lancet 238, 447-450 (March 9, 1940). (British).
Raised concentrations of lead in the blood indicate, in the same way as do stippled cells in blood films, an increased absorption of lead but by no means constitute definite evidence of plumbism. They provide a useful estimate of the degree of exposure to lead. There is no close correlation between the duration of exposure to lead and the blood lead value. In 70 people with no known industrial exposure to lead, the range of blood-lead valueswas 30-89 micrograms per 100 cc. with a mean of 57. In 44 lead workers, who had no symptoms of lead poisoning, the blood-lead values were 60-192 micrograms per 100 cc. with a mean of 104. There was some slight degree of stippling in the blood films of 34 of these lead workers.

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341. They Get the Dust Before it Gets Them. B.F. Morris. Factory Man. & Main., (Main. Services) pp. 82-85 (March, 1940).
This is a description of the results of a plan to control a lead poisoning hazard. Through the use of mechanical dust controls supplemented by an intelligent industrial health program, not a case resulted in five years in this battery plant. Economies resulting from this plan have offset the cost of installing and operating a highly efficient, yet simple, control method. Where possible, dust was controlled at its source, but in addition, respirators are used on particularly dusty operations. Periodic physical examinations, blood tests, and rotation of crews were other steps in the control program. Plant surveys were made at monthly intervals as a check on all mechanical safeguards.

342. Effect of Bismuth Therapy on Latent Plumbism. E. Epstein. Arch. Derm. Syphil., 41, 38-41 (January, 1940).
The cases of a painter and a smelter worker are presented. Signs and symptoms of lead poisoning in both patients followed the administration of bismuth in the treatment of a syphilitic infection. It is suggested that bismuth may replace the lead stored in the bones and bring on the mobilization of lead, with the development of such symptoms as cramps and a lead line. Prophylactic treatment of lead poisoning in those exposed to the influence of the metal may decrease the incidence of untoward reactions following bismuth therapy.

343. Lead Poisoning. Part I. Penna. Dept. of Labor & Industry, Safe Practice Bulletin #52, February, 1940. Edited by R. L. Heutz.
Depending upon the rate of absorption of lead in the body, its storage in the tissue, its mobilization and elimination from the body there are produced the clinical pictures known as acute, latent and chronic plumbism. The severity of the resulting toxicity depends on the lead present in the blood stream (not the total lead but the serum or pathological lead); the degree of acidosis (pH); and such pathological conditions which interfere with its elimination from the body. The degree of severity of the symptoms, rather than the kind, indicates the type of plumbism. This is the bulletin which should precede the Part II which was abstracted as No. 228 in the March digest.

344. The Effect of Vitamin C on Lead Poisoning. H.N. Holmes, K. Campbell and E.J. Amberg. J. Lab. Clin. Med., 24, 1119-1127 (1939).
A study of the effects of vitamin A, D and C, calcium gluconate, lactate and diphosphate and ascorbic acid on men suffering from lead poisoning. The latter substance was suggested by the resemblance between chronic lead poisoning and subclinical scurvy. The authors believe that whereas calcium gluconate and lactate cause lead phosphate deposit in the bones, necessitating cautious deleading, vitamin C causes formation of a soluble but unionized lead ascorbic salt or complex, which is preferentially absorbed in the liver and, with the aid of the bile, excreted in the feces. Included is a list of foods providing known quantities of vitamin C.

345. Toxicity of Carbon Monoxide at High Altitudes. J.W. Heim. J. Aviation Med., 10, 211 (December, 1939). Abstracted from J.Am.Med.Assoc., 114, 1113 (March 23, 1940).
Studies show that a concentration of 0.01% of carbon monoxide in the air at 10,000 feet reduces the oxygen-carrying capacity of the hemoglobin by 10.5%, thereby bringing the blood into a state of anoxemia. It is thus apparent that a concentration of carbon monoxide which is innocuous at sea level becomes dangerous at this altitude. It is therefore imperative that not a trace of carbon monoxide should be permitted to exist in airplane compartments at even moderate altitudes.

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346. Treatment of Carbon Monoxide Poisoning. L. Binet. Presse Med., p. 1500-1501 (1939). (French).
When exposed to illuminating gas passed through an aquarium, goldfish die, although they are not affected by pure carbon monoxide. The gas also contains prussic acid in the amount of 0.1 mg./liter. Sodium hyposulfite added to the water will provide protection. Experiments with isolated lungs showed that breathing pure oxygen caused carbon monoxide to disappear faster than when only air is inhaled. Additional acceleration was obtained by adding methylene blue (0.005 mg./450 cc.) to the blood streaming through the lung.

347. Carbon Monoxide Poisoning. W.D. McNally. J. Michigan State Med. Soc., 38, 871 (1939).
Abnormalities of the spinal function result from severe gassing, and anatomical changes occur chiefly in the central nervous system. A psychosis, usually temporary in character, is the symptom commonly noted after carbon monoxide poisoning. Confusion and bewilderment is followed by loss of memory. Amnesia in some form is the most regular feature of the psychosis, and usually consists in defects of memory. Nervous sequelae vary from slightly increased deep reflexes to well advanced Parkinsonism. Sensory disturbances consist in skin anesthesia and peripheral motor neuritides. While all the cases will improve, the final result depends upon the initial damage. Myocardial involvement following carbon monoxide poisoning is more common than is generally supposed. Coronary lesions due to this gas have been often reported.

348. Prevention of Industrial Dermatitis. J.V. Klauder, E.R. Gross and H. Brown. Arch. Derm. & Syphil., 41, 351 (February, 1940).
In the authors' opinion much of the industrial skin disease is caused by the methods of cleaning the skin. They discuss their studies of skin cleansing, methods and materials used and the use of protective applications, of which they give eight formulae. Substitutes for mechanic abrasive soap are given. There is a discussion of various kinds of soaps, and detergents such as triethanolamine soap, naphthenic acid soap and sulfonated oils. In the authors' opinion the detergent properties of the vegetable meals is not sufficiently appreciated.

349. Allergic Occupational Dermatoses. L. Schwartz. J. Allergy, 11, 318-322 (March, 1940).
In a compilation of about 10,000 cases of occupational dermatoses, it was found that the large majority are caused by primary irritants. It is in the groups listed under plants, dyes, dye intermediates, rubber and its compounds, and vegetable oils, fats and waxes that will be found the cases of allergic occupational dermatoses. These comprise less than 18% of the 10,000 cases. In allergic occupational dermatitis there is always a period of incubation, usually 8 to 21 days, although it may be longer. This definite period of incubation is a very important medicolegal point because a worker may justly claim he developed an occupational dermatitis three weeks after leaving his last job. Desensitization as well as sensitization occurs in industry. Workers who do not develop such an immunity should be transferred to other occupations. If difficulties are encountered using the patch test, the passive transfer should be tried. There is a list of chemicals given which have produced allergic occupational dermatitis.

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