Feb. 1938

PLAINTIFF'S
EXHIBIT
IHF-116

[redacted] Dr. Harrison

[redacted] Mr. Bowe Esq

T. Z. Hayden

File

Air Hygiene Foundation of America, Inc.,
4400 Fifth Avenue,
Pittsburgh, Pa.,
February 10, 1938

NWGB-6007903

INDUSTRIAL HYGIENE LIBRARY

REFERENCES TO RECENT LITERATURE ON DUST DISEASES

1.News Items

98 NEW ROCK DRILL DUST CONTROL. Eng. News Rec. 119, 1058-61 (Dec. 30, 1937).
A group of contractors in the New York area, under the direction of a consulting mining engineer, have developed a dust control system involving wet drilling principles. The system was designed to meet requirements of the New York State silicosis law calling for approved dust control methods on every rock drilling job in the State. The first unit has been put in operation on the Sixth Ave. subway. The equipment consists of 6 wet drills and ventilating pipes, connected to a centrifugal fan at a distance. Water is sprayed on the fan and the combined dust and water is forced at right angles into outlet pipes. The ventilating system has a capacity of 10,000 cubic feet of air per minute. Impinger dust counts under operating conditions are usually under 5 million particles (under 10 microns) per cubic foot. The contractors point out objections to the dry drilling with local exhaust hoods and present several points of evidence against the existence of a pneumonia hazard in wet drilling.

99.WET DRILLING FOR SILICOSIS CONTROL. Eng. News Rec. 120, 118 (Jan. 20, 1938).
This note reports progress in the testing of the wet process drilling system just described. Tests were made at Totts Gap, Pa., the Letchworth Village site being unsuitable. Tests were made during June to November, 1937. On the basis of the results, the contractors, in cooperation with the Compressed Air Institute, submitted an application for approval of wet drilling with ventilation, and the State proposed a code based on the application and tests. The code and suggested rules are now under consideration by a new advisory committee, and if their report is favorable, the early approval of wet drilling with ventilation is expected as an accepted method of control under the Silicosis Act.

100 DEALING WITH VIOLATIONS OF THE WORKMEN'S COMPENSATION LAW. Survey of Labor Law Admin. 8 (December 1937).
Effective campaign against employers who flout or evade the law has been waged by the New York Labor Department with the cooperation of the Attorney General, according to Industrial Commissioner E. F. Andrews. The principal type of evasion which arose during the depression was the "leasing" of chairs or space to workers or partnership or sub-contract agreements. The weapons used are first, education and then prosecution. Many employers, their organizations, unions, and banking and financial organizations have cooperated in the educational program. The law has also been violated by physicians in various respects, including solicitation, flagrant advertising, false testimony, padded medical bills, refusal to operate without written orders, and limitation or discontinuance of treatment for fear the bill will not be paid. In handling these violations, the Labor Department has the support of the courts and of county medical societies. A committee is now considering complaints against physicians as part of the larger problem of establishing sound principles of medical practice for possible future amendments to the law.

03117815

HW68-6007984

101 PREPARING STATE INFORMATION FOR WORKERS. Survey of Labor Law Admin. 8 (Dec. 1937)
The New York State Department of Labor has just issued a 32 page, vest pocket booklet concerning the State Unemployment Insurance Law, entitled "Information for Employees." It explains the procedures for filing applications for laws and for unemployment insurance benefits. To meet the public demand, 5 million copies are being printed.

102 OCCUPATIONAL DISEASE COMPENSATION. Pittsburgh Med. Bull. 27, 71 (Jan. 22, 1938) and other sources.
A new occupational disease compensation law went into effect January 1 in Pennsylvania, the 21st State to adopt such legislation. The causes of compensable industrial disease are specifically listed. They include: poisoning from lead, mercury, arsenic, manganese, phosphorus, methanol, carbon bisulfide, hydrocarbon distillates, halogenated hydrocarbons, benzol and its nitro, amido or amino derivatives, radium, x-ray, chromic acid and its salts; infection from tar, pitch, bitumen, mineral oil, paraffin, oils, cutting compounds, lubricants, dust, liquids, fumes, gases, vapor and anthrax; and injury from asbestosis, silicosis or anthracosis (miner's asthma) and caisson disease (compressed air illness). Silicosis, anthraco-silicosis and asbestosis are not compensable for temporary or partial disability; employers' liability may not exceed $3,600 in any one case. These limitations do not apply to the other industrial diseases named. The cost will bear more heavily on the industries having the greatest industrial disease hazards.
A recent survey of industrial disease hazards in Pennsylvania, tabulated and analyzed by a WPA project, involving a field survey of 16,000 industrial establishments, indicates that the total number of employees exposed to industrial disease hazards was 672,010, of which 445,671 will be covered by the new law.
Copies of the Occupational Disease Compensation Law are obtainable from the Department of Labor and Industry at Harrisburg.

103 TRAINING PENNSYLVANIA FACTORY INSPECTORS. Survey of Labor Law Admin. 3, (Dec. '37
Certificates were recently awarded to 90 Pennsylvania State factory inspectors who had completed the training offered in three separate, 2 weeks' safety and health training courses. These 3 courses were organized by the Pennsylvania Department of Labor and Industry in cooperation with the University of Pennsylvania, University of Pittsburgh and Pennsylvania State College, assisted by members of the safety and health staff of the Division of Labor Standards. The schools supplied instruction and classroom and study facilities. The practical lectures on safety and health subjects were supplemented by inspection trips to a variety of industrial plants with satisfactory and with unsatisfactory conditions. These trips were followed by classroom discussion of the hazards observed, with proposed and accomplished methods for their correction. Daily examinations and a final 3 hour examination were given. Plans for continued training are being made, and special courses in safety promotion and safety organization are being considered for inspectors who have indicated ability for advanced work. Addressing the candidates for certificates, Secretary of Labor Perkins forecast a new type of factory inspector who, through training, study and practical service, would elevate his profession to a high plane.

104 DRAFTING RULES FOR DUST AND FUME CONTROL. Survey of Labor Law Admin., 2 (Dec. 193
A committee has been appointed to assist the Massachusetts Department of Labor and Industry in the preparation of rules and regulations for the control of hazardous dusts and fumes in the manufacturing establishments of the State. This effort toward industrial dust control is a sequel to the investigation of the Massachusetts Industrial Disease Commission of 1933-34 and to the findings of the granite dust control project, conducted during 1935 and 1936 by the Department's Division of Occupational Hygiene.

03117816

NWBB-0007905

105 NEBRASKA'S SAFETY CODE FOR THE CLEANING AND DYEING INDUSTRY. Survey of Labor Law Admin. 4 (Dec. 1937).
Under the Nebraska law empowering the creation of code commissions to provide protection to employees, the State labor department and the code commission for the industry have recently revised the cleaning and dyeing code, the new rules to take effect April 1, 1938.

106 STATE-WIDE SAFETY CONFERENCE IN SOUTH CAROLINA. Survey of Labor Law Admin. 14-5 (December 1937).
The first South Carolina State-wide Safety Conference, sponsored by the State Industrial Commission with the State Department of Labor cooperating, was held in Columbia, Nov. 19 and 20, with registrations exceeding 2,000. Representatives of industry from all parts of the State participated in the general sessions and sectional meetings.
A variety of safety devices and accident prevention material was exhibited. The joint exhibit of the South Caroline and the U.S. Departments of Labor pointed out the possibilities through concentrated safety effort and the task ahead.

107 I. L. O. BIBLIOGRAPHY ON INDUSTRIAL HYGIENE. Reviewed in Survey of Labor Law Adm., 6 (Dec. 1937).
Issued in September, this bibliography contains 50 pages of well-classified references on industrial medicine, covering such topics as the medical inspection of factories, physiology, mental hygiene, the pathology of industries and processes, causes of injury, infections, hygiene, first-aid legislation, social medicine and social insurance statistics. Sample copies may be obtained from the Washington office of the International Labor Office, 734 Jackson Place, N. W.

2 Papers on Dust, Dust Diseases and General Industrial Hygiene.

108 BUREAU OF MINES MIDGET IMPINGER FOR DUST SAMPLING. J.B.Littlefield, Florence L. Feicht and H.H.Schrenck. U.S.Bureau Mines, Rept. Investigations No. 3360. Free copies obtainable from Division of Information, U.S. Bureau of Mines, Washington, D.C.
The chief disadvantages in the use of the regular impinger, especially in mines and other places accessible with difficulty are its bulk, weight, and power requirements. It requires either a source of electricity or compressed air, which necessitates connections and extension of existing supply lines to each sampling point; the only alternative is the use of a relatively large pump hand-operated with considerable effort. To overcome these objections a midget sampler has been devised, which samples at about one-tenth the rate of the regular instrument, and is easily operated by a small, hand-cranked pump contained in the carrying case. The entire outfit does not weight over 12 pounds. It can be operated in relatively confined places and with little physical effort. A 12-inch head of water is required for operation. The impinger tube and cylinder are similar in design to the regular instrument, but have a total height of about 5 inches. The tube may be provided with projections to ensure proper centering in the cylinder. The orifice is 1 mm. in diameter. Midget impinger samples are counted essentially as are samples collected with the regular instrument. The procedure described in United States Public Health Bulletin 217 is followed, except that alcohol (ethyl, normal propyl or isopropyl) is used as the collecting and diluting liquid. Tests on silica dust in various concentrations showed that the counts agree with those obtained with the regular instrument. Synthetic rubber (Neoprene) stoppers were found not to contaminate the sample, and are preferable to black or gray rubber stoppers for that reason. (Announcement of the availability of this instrument from a manufacturer is expected in the near future.)

03117817

NIOSH-0007906

109 INVESTIGATION OF THE CHARACTERISTICS OF THE BAUSCH AND LOMB DUST COUNTER. S. M. Gurney, C.R.Williams and R. D. Meigh, Engineering Lab., Liberty Mutual Insurance Co., Boston, Mass. J. Ind. Hyg. 20, 24-35 (Jan. 1938) Reprints obtainable from Senior author.
The Bausch and Lomb dust counter is in principle an Owens jet counter with several features added, designed to make it a more practical instrument for general field use. Its essential features are a pump, a moistening chamber, a circular glass slide, a microscope and a slit which was 6 x 0.1 mm. in the original instrument. Dust particles adhere to the slide by means of water condensed on them, by preliminary humidification as in the Owens instrument. The particles are counted under a darkfield magnification of 200. Various slit widths were tried in preliminary experiments, but the 0.4 mm. width was selected as the best alternative to the original 0.1 mm. width. In the experiments, dust clouds of foundry dust, Manhattan schist, silica, talc and a mixture of zinc and magnesium oxides were set up, and 5 sets of samples were taken during settling of the dust. Each set included 1 impinger sample and 2 Bausch and Lomb samples, one with the 0.1 mm. slit and one with the 0.4 mm., all taken simultaneously. Two such series were made for each dust. Simultaneous samples of dust were also taken in several industrial establishments. The ratios of the counts with the Owens counter, with each slit, to that with the impinger, were found for each dust. Those ratios varied from 0.25 to 69 for the 0.1 mm. slit and from 0.18 to 50 (excluding uncountable samples for the 0.4 mm. slit. The highest ratios were found in the mixed oxide dusts. The principal factor in variation of the ratio was the particle size, more of the finer particles being visible in the Bausch and Lomb field. With the 0.1 mm. slit, a reasonable difference in velocity of the plunger made little difference in the count, and a half stroke for heavy dusts, as provided for, was practicable; with the 0.4 mm. slit, on the other hand, the count was reduced 10 to 15% by a decrease of 50% in speed of the plunger, and a half stroke gave unreliable results. The results lead the authors to believe that the Bausch and Lomb Counter fitted with the 0.4 mm. orifice can be used as a relative measure of industrial dustiness for engineering or control purposes. However, no correlation figure appears possible for use in changing Bausch and Lomb counts to equivalent impinger values under the varying conditions of concentration, size range and composition found in industry, although with the 0.4 mm. slit the correlation is better than with the 0.1 mm. orifice.

110 THE BEHAVIOR OF CERTAIN DUSTS UNDER MECHANICAL IMPINGEMENT. J.B.Ficklen and L.L. Goolden. Science 85, 587-8 (June 18, 1937). No reprints.
This brief paper reports a study of breakage of atmospheric particles in the process of impingement on a glass plate, as in the Owens jet counter. The authors find that the ratio of smaller particles to particles of the original size varies from 4.3 times to 100 times, according to the velocity of impingement, in the case of feldspar, and quartz similarly gives ratios of 3 times to 50 times. Dried spores of penicillium oxalicum show no particles smaller than the original. (The count of original particles was evidently made by Ficklen's photographic method.) In all cases of dry impingement a variable amount of scattering of particles outside the field of impingement was seen. In impingement on a wetted surface considerable material below 0.5 micron was noted. The authors conclude that any estimate of particle size distribution in the air from the particles resulting from impingement is erroneous.

111 METHODS OF SAMPLING AND DUST DETERMINATION IN THE MINES OF ONTARIO. Geo. H. C. Norman. Am. Inst. Min. Met. Engrs., Tech. Pub. No. 857, 20 pp. (1937).
The konimeter, Greenburg-Smith impinger, thermal precipitator, Owens jet dust counter and filters as dust samplers are compared. The standard procedure for konimeter sampling as used in Ontario is described in detail.

03117818

HWGS-0007907

112 DUSTS THAT HARM. R.R.Sayers. Nat. Safety News 37, 51-2, 82-5 (Jan. 1938).
Although several extensive papers on effects of dust have been prefaced by a classification of dusts, the present paper deserves attention as an interesting and logical classification of dusts with regard to their effects. The two general classes are organic and inorganic; and organic dusts are divided into non-living and living. Non-living dusts are again classified as toxic and irritant, and allergic. Irritant dusts are those producing local effects, while toxic dusts are those causing general or systemic symptoms, but a dust may be both toxic and irritant. The worst offenders in this class are paranitraniline, the dinitrobenzenes, chlorodinitrobenzenes, trinitrophenol and nitronaphthalene. Methyl violet often causes eye irritation, and some other dye dusts are also hazardous. Inhaled tobacco dust has a nicotine action on the organism 15 times greater than that produced by smoking the same tobacco. Picric acid and other explosives, quinine, sugar and cereal dusts produce specific effects. Allergic dusts do not affect all workers, but have a decided effect on the skin or respiratory system of those especially sensitive to them. Examples are pollen, fur, certain woods, and resins. Living dusts include bacteria and fungi, and are of the same size range as other harmful industrial dusts. Examples of bacteria are those of anthrax and tetanus, but a variety of other diseases is similarly caused. Among fungus dusts are a mold affecting basket makers, and aspergillus, found in cotton mildew. Inorganic dusts may be toxic and irritant, fibrosis-producing or non-fibroris-producing. The toxic dusts include heavy metals, such as lead, arsenic, mercury, cadmium, zinc and their compounds. Lime and other alkalies and dichromates are especially irritating, and arsenic is an example of a dust that is both toxic and irritant, producing dermatitis and cancer as well as systemic effects. It is unnecessary to go into detail about fibrosis-producing dusts, except to mention those such as marble dust, which produces a mild fibrosis. Those classed as non-fibrosis-producing and non-irritant are not necessarily harmless, as when inhaled in high concentrations they may lead to bronchitis and other respiratory diseases. It is pointed out in the introduction to the classification, that the more soluble a dust is, the more harmful it is, other things being equal, although a relatively insoluble dust such as silica may be decidedly injurious over a long period.

113 DUST CONTROL IN INDUSTRY. J. D. Leitch, L. B. Leppard and H. V. A. Briscoe. Natur (letters) 140, 772-3 (Oct. 30, 1937).
The first two authors criticize the suggestion of Briscoe (our abstract 393, 1937) that the mixture of other dusts might be used to minimize the effect of siliceous dusts. The real way to prevent silicosis is to remove dust from the breathed air either by dust suppression or by the use of respirators. In his reply, Briscoe agrees that dangerous dusts should be suppressed by all known means. He maintains, however, that the most dangerous, i.e. the finest, fraction of dusts is the most difficult to suppress, and that therefore it is possible that good ventilation and still more, the wearing of masks, may give a false sense of security.

114 DUST CONTROL IN MINING OPERATIONS. J. T. McIntyre. J. Chem. Min. & Met. Soc. So. Africa 38, 145-7 (Sept. 1937).
(The paper is not given under the above title but rather as a contribution to the discussion of Briscoe's paper - our abstract 393, 1937). The author describes an ejector, operated by compressed air, with a rubber ring which fits over a drill shaft, which is used to exhaust the dusty air from a drill hole. A brief discussion of methods and principles of wetting dusts follows.

03117819

NWBB-66007968

INDUSTRIAL HYGIENE ABSTRACTS

115 SILICO-TUBERCULOSIS. D.M.Brumfiel and L.U.Gardner, Saranac Laboratory, Saranac Lake, N.Y. Am. Rev. Tubere. 36, 757-62 (Dec. 1937). Reprints are probably available at the above address.
The term "silico-tuberculosis" is used in the United States to denote a chronic tuberculosis in silicotic lungs. The same condition is called tuberculosilicosis in South Africa, and the other term applies there only to a tuberculosis imposed on a generalized nodular silicosis. The disease differs from common tuberculosis in the following respects: (1) it appears usually in the 5th or 6th decade of life; (2) there is a strong tendency toward chronicity and a low grade of toxicity, and (3) tubercle bacilli are difficult or impossible to demonstrate in the sputum until very late in the course of the disease. The x-ray may show characteristic patterns with no changes, and the person may remain apparently healthy for a long period. Eventually, however, an advance in tuberculosis will be seen. Advanced silico-tuberculosis is not a superimposition of either disease on the other, but "appears more like a mixture of reactions to both tubercle bacilli and silica in the same area. The rudiments of organizing tuberculosis granulation tissue and a modified silicotic fibrosis, often not nodular in form, can be identified." Another form is a tuberculosis that develops on an existing silicosis without the symbiotic or pseudo-symbiotic silico-tubercular stage. Further clarifying study should be made on these forms. When x-rays show characteristic shadows in silicotics, they should be watched carefully in spite of apparent good health. The ideal method would be the routine rest treatment at the first sign of progression, but as that is not practical for psychological reasons, probably the best plan is removal to very light work.

116 EMPHYSEMA AS A FACTOR IN THE DYSPNEA OF PNEUMOCONIOTIC COAL MINERS. S. Lyle Cummins. J. Ind. Hyg. & Toxicol. 20, 1-13 (Jan. 1938).
The author believes that with the attention focused on the silicotic nodule, mottling seen in radiograms, and shortness of breath, found in silicosis, other symptoms, such as emphysema, have been insufficiently considered. It is well known that shortness of breath does not run parallel with mottling and nodulation in silicotic patients, and emphysema may be a factor in development of dyspnea, to a greater extent than has been suspected. The following types or stages of emphysema are described: (1) infundibular emphysema, the "sorbo" type; (2) lobular emphysema, the "honey comb"type and (3) emphysematous blebs and bullae. In the first two types, some connection with the outer air apparently remains, but in the blebs and bullae, it is completely shut off. Blebs are thin-walled bladder-like prominences found on the surface of the lung, but situated within the pleura, while bullae, of similar nature, are in the lung tissue itself. The present paper summarizes the observations of others on emphysema in its various stages, as found in pneumoconiotic miners, preliminary to a thorough experimental study. Emphysema may arise from other causes, such as asthma and bronchitis. It is found especially in young children and aged persons. The term "congenital" properly applies to the former, and the possibility is suggested that when emphysema results from pneumoconiosis, the varying resistance of individuals may not be due so much to specific resistance to the effect of dusts as to varying susceptibility to emphysema. However, he finds a definite relation between dust accumulation and emphysema, with the distinction that fibrosis occurs in the less active portions of the lungs, while emphysema is more frequent where the lungs have the best exercise. The loss of elasticity of the lungs is not due to change in the fibers, but to their breaking and destruction, found to the greatest extent in the blebs and bullae. The principal factor in the development of emphysema is probably overcompensation in increasing the amount of surface for air contact. Where miners live a long time with both emphysema and fibrosis, their sustaining factor is probably enlargement of the blood vessels, which is noticed in lungs so affected. Emphysema of a limited nature is also found with accumulations of dust apparently unconnected with silicosis.

03117820

NIOSH-0007969

117 PATHOLOGICAL ANATOMY OF ASBESTOSIS. W. di Biasi. Arch. f. Gewerbepathol. u. Gewerbehyg. (German) 8, 139-55 (1937).
The author presents an exhaustive description of a fatal case of asbestosis, with macroscopic and microscopic findings. A diffuse fibrosis was seen spreading from the top toward the bottom. In asbestosis the x-ray indications are slight, with very noticeable lung symptoms, while the reverse conditions are true in silicosis, and the anatomical and histological findings in the two diseases differ throughout. The conditions in asbestosis may be explained by the mechanical action of the asbestos needles. Asbestosis cannot be used as a support for the existence of a silicatosis.

118 SEVERE PNEUMOCONIOSIS AND ITS RECOGNITION. V. Reichmann. Med. Welt (German) 11, 1518-22 (1937).
The author considers simple silicosis to be "severe" only when the x-ray shows flaky and tumor-like shadows. Honeycomb patterns are signs of an earlier stage, which is followed by the nodule stage and finally the one first mentioned. Details of the x-ray and clinical pictures are discussed, and the diagnostic value of spirometry, electrocardiograms and sphygmograms is emphasized.

119 SILICOSIS AMONG METAL MINERS IN WESTERN AUSTRALIA. K.R.Moore. Med. J. Australia 2, 764-5 (Oct. 30, 1937).
Since 1925 pre-employment and annual radiographic examinations of metal miners ha been compulsory in Western Australia, and new employees must be free of tuberculosis, industrial pulmonary disease and certain other conditions. At present 93.7% of the employees are normal, compared with 80% in 1925-6, and silicosis has fallen from 16.1% to 6%. The annual incidence of silicosis with tuberculosis and tuberculosis alone has fallen from 3.5 to 0.2% and from 0.3 to 0.1% respectively Two forms of the ante-primary stage of silicosis have been found, characterized by fine and coarse mottling, respectively, with a ratio of 4:1. In advanced cas the frequency becomes about even, and in cases with tuberculosis the ratio of fine to coarse is 2:1. These findings led the author to believe that pure silicosis presents the fine mottling. Of a group of new employees studied over 1[illegible] years, 25% of all workers and 40% of those employed underground showed progressio to at least the primary stage of silicosis, and 1.3% of the total developed tuberculosis. Of miners suffering ante-primary silicosis in 1925-6, over 25% developed silicosis within 10 years, and 4.2% silicosis with tuberculosis. These results show that although silicosis is still being contracted, a pronounced reduction has been brought about by the law.

120 EXHAUST REQUIREMENTS FOR FOUNDRY DUST CONTROL. John M. Kane, American Air Filte Co., Louisville, Ky. Foundry 66, 30-2, 74 (Jan. 1938). Reprints or general information obtainable from the author.
This paper was prepared under the auspices of the Engineering committee of the Dust Control Equipment Association, and the data presented are intended to be used only as a guide for average requirements, to be modified as particular conditions require. The largest amount of exhaust air required for dust control will be applied to the operations incidental to the shaking out of the casting, and the hooding or enclosing of that operation requires more careful study than any other dust-producing process. An overhead hood is advisable where possible. Another solution involves side hoods, but they require larger air volumes. An air curtain system confines the dust with moderate air volumes more effectively than side or downdraft hoods. Exhaust hoods should be provided at all transfer points, and sand screens should be enclosed where possible. Storage bins for some also require exhaust connections. An enclosure should be provided at mixer or mullers. All the suggested types of equipment for dust control are described briefly, with tabulated specifications, and illustrated by diagrams.

03117821

HWGB-0007910

121 NEW COMPRESSED AIR FILTER. E. Smolczyk. Gasmaske 9, 122-7 (1937) (German).
This is an illustrated description of the new Auer compressed air filter which removes oil fumes from the compressed air used in masks and helmets. It is adapted to pressures up to 8 atmospheres and can supply 120 liters (4 plus cubic feet) of air per minute to 3 persons simultaneously.

122 DRAEGER FINE DUST FILTER DF 90. E. Naujoks. Draegerheft, no. 192, 3647-51 (1937). (German).
The author describes the use of this filter for dust and metal fumes, introduced commercially some time ago. Illustrations are included.

123 NOTES ON THE CHOICE OF ROENTGENOLOGICAL DIAGNOSTIC METHODS. Charles Weyl, S. Reid Warren, Jr., and Dallett B. O'Neill, Moore School X-Ray Lab., Univ. of Pennsylvania, Philadelphia, Pa. Am. Rev. Tubere. 37, 1-13 (Jan. 1938). Reprints obtainable at above address.
A comparison was made of the most important methods for the diagnosis of tuberculosis and pneumoconiosis, including: (1) stereoscopic postero-anterior, single posteroanterior, oblique and lateral roentgenograms on films made with full-rectified roentgen ray apparatus with exposures of 0.1 second or less; (2) posteroanterior roentgenograms on films made with portable self-rectified apparatus, usually requiring exposure times of 0.25 second to 1.0 second; (3) posteroanterior roentgenograms on paper, and (4) fluoroscopic examination. The following conclusions were obtained from the authors' observations: (1) four-valve roentgenographic apparatus with suitable films and auxiliaries is necessary to obtain chest roentgenograms of the highest quality; (2) portable apparatus gives less sharp definition on account of chest motion during the longer exposure; (3) the fluoroscope gives greatly inferior contrast and brightness compared with that of film or paper roentgenograms; and (4) roentgenograms on paper are technically inferior to those produced on film. The cost of the first type is about $3,500; the second, $1,500; and the fluoroscope, $1,200. A questionnaire was sent to a number of roentgenologists to determine the methods most satisfactorily used in routine work. Most of the replies indicated preference for the more thorough method of stereoscopic roentgenograms in diagnosis of pneumoconiosis, although many considered the single exposure method sufficient for less exacting purposes, such as the examination of school children. The use of paper did not find much support among those questioned. The Powers paper roll method is used much more than cut paper, and this suggests that a film roll method is a possible improvement. Additional work and additional questions will be necessary to solve the problems of the value of paper roentgenograms and possibilities of improvement of portable apparatus.

124 THE TOXICITY OF SILICON. Carey P. McCord, William G. Frederick and Stanley Stol J. Lab. Clin. Med. 23, 278-9 (Dec. 1937).
The injurious properties of silica and some silicates are well known, and organic silicon compounds are known to be toxic, but the question of toxicity of elementary silicon has arisen. That point was tested by injecting silicon dust into animals, intraperitoneally, subcutaneously and intramuscularly, and evidence was sought for immediate toxicity and for known effects of dust. No toxic effect was found and the changes over long periods were those of dusts classified as inert.

125 PRESIDENTIAL ADDRESS TO THE HEALTH CONGRESS AT BIRMINGHAM; SECTION OF HYGIENE. E. E. Collier. J. Roy. San. Inst. 58, 265-70. (Nov. 1937).
This address was a plea for greater cooperation between science and industry for health promotion. In the discussion, an industrial health service was suggested with health officers, welfare personnel, industrial nurses and factory inspector who would work in close cooperation with public health and school medical servic

03117822

126 EVALUATION OF THE INDUSTRIAL HYGIENE PROBLEMS OF A STATE. J. J. Bloomfield and Mary F. Peyton. Public Health Bull. No. 236 (June, 1937). 126 pages. Obtainable from Supt. of Documents, Washington, D. C. for 15 cents, cash.
This Bulletin reports the results of an extensive industrial hygiene survey of the State of Maryland, to be used as the basis for an industrial hygiene program. The survey comprises a study of industrial establishments employing 136,000 persons as representative samples of the total of approximately 3 times that number, excluding occupations recognized as generally non-hazardous. Several bureaus of the State and Baltimore City Department of Health cooperated with the U.S.Public Health Service in the survey. Numerous tables list the various hazards, classified according to industries and occupations. A complete summary cannot be provided in the space available, but the most important hazards with the estimate of the total number of workers exposed in the State are as follows: carbon monoxide, 41,000; organic dusts, 32,000; metallic mineral dusts, 32,000; oils, 28,000; other substances capable of producing dermatitis, 24,000; silica dust, 8,000; and lead, 16,000. Detailed information on exposure to specific materials is not presented in the report, but is available in the records of the State agencies which cooperated.

127 THE PRACTICAL APPLICATION OF PHYSIOLOGY TO HYGIENE IN INDUSTRY. J. Roy. San. Inst. 58, 281-93 (Nov. 1937).
Numerous examples of the application of the results of physiological research to industry are given, and it is shown that there is now available a mass of knowledge the proper use of which would have a beneficial effect on the health of industrial workers. The author emphasizes that the present need is not so much for new research as for the distribution of the available knowledge and its application in industry. Before material progress can be made in this direction it will be necessary to create a (British) national industrial health service. Such a service would at least enable this generation to make use of work done 20 or more years ago.

128 INTERNATIONAL LABOR OFFICE AND WORLD LEGISLATION ON INDUSTRIAL DISEASES. L. Carozzi. Presse med., 1227-8 (1937). (French).
A short report on the work of that Office on the theory, practice and teaching of industrial hygiene and compensation for industrial disease.

129 HEALTH OF THE NATION'S WORKERS. Josephine Roche. Personnel J. 16, 159-64 (Nov. 1937).
The author discusses the relationship between income and disease, showing that the tuberculosis death rate is 7 times as high in unskilled workers as in professional people; the pneumonia rate is correspondingly 3½ times as high and that from cancer 50% higher. Infant mortality rates decrease almost in a straight line as income increases.

130 FACTORIES ACT, 1937. (Great Britain). H.M.Stationery Office. Copies of the law obtainable from British Library of Information, 270 Madison Ave., New York City. An extensive abstract of this law fills several pages of J. Ind. Hyg. & Toxicol. Feb. 1938. A brief summary of the main features is presented here. In this act, recently passed by the British Parliament, the old distinctions between "factories" and "workshops" and between "textile" and "non-textile" factories are abolished, and they are all to be known as "factories" and considered alike. The act contains many new provisions as to health, safety and welfare generally. The general headings are health, safety, welfare, investigations of accidents and industrial diseases, employment of women and young persons, and duties of employed persons. Of particular interest to our group are the requirements for the removal of dust and fumes. Exhaust appliances must be provided as near as possible to the source. No meals are to be eaten where dangerous dusts or fumes ar

HWBB-0007911
INDUSTRIAL HYGIENE ABSTRACTS
03117823

HWBB-0007912

given off. A formal investigation into any accident or case of disease contracted or suspected to be contracted in a factory may be made by order of the Secretary of State. The examining surgeon must investigate and report on cases of death or injury caused by exposure in a factory to fumes, etc., or cases referred to him by the Factory Inspector. Safety provisions are specified for work in closed spaces which may contain dangerous fumes. All steps must be taken to prevent explosion of inflammable dusts. Other provisions relate to cleanliness, overcrowding, heating, ventilation, lighting, medical supervision, new machinery, vessels containing dangerous liquids, safe access to workplaces, fire escapes, drinking water, washing facilities, clothing accomodations, eye protection, lifting of excessive weights, and overtime.

131 THE SPOTLIGHT ON OCCUPATIONAL DISEASES. J. W. Randall. Safety Eng. 74, 75-7 (Oct.), 49-50 (Nov.), 49-52 (Dec. 1937).
This is a general paper on occupational diseases from the insurance standpoint, including a brief history of occupational disease legislation, definition of occupational disease, and compensation problems.. The definition of an occupational disease as "one arising from conditions that are characteristic of and peculiar to the particular trade, process, occupation or employment" is stressed, as opposed to the definition assumed in "all-inclusive" coverage in favor in some quarters. The problem of accrued liability for silicosis is also discussed, with reference to the North Carolina law, which requires proof of 2 years' exposure to silica dust in the state before compensation can be awarded. That law also contains a provision for an Advisory Medical Committee, which is urged as a necessary factor in proper compensation programs. Any legislation must be fair to employer and employee; the "all-inclusive" plan cannot last. Labor will have to be convinced that the plan finally adopted is not prejudicial to its interests. Several unusual cases of compensation suits are described, which show the need of full compensation laws. The program of the Travelers Insurance Co. (very similar to others) is described. It includes complete engineering surveys, recommendation of suitable changes in equipment, physical examinations, special precaution against industrial poisoning, and careful selection of personnel.

132 SILICOSIS COMPENSATION IN NEW YORK - AN APPALLING RECORD. Am. Lab. Legis. Rev. 27, 149-51 (1937).
This short article, written from the labor standpoint, contrasts the silicosis laws in New York and Wisconsin. In the original New York law, protection was given to all victims of occupational diseases. A panic was thereby created among insurance companies, employers and even employees, leading to an amendment which drastically limits payments and makes no allowance for partial disability. In the first year, 6 victims were compensated at a total cost of $4,535. In Wisconsin the original law still prevails, and although a high point of $429,000 in benefits was reached, the total compensation has since fallen to a reasonable figure and the worker is well protected. The author considers that in New York "the principle of compensation is violated after depriving the worker of his right to sue."

POLLUTION

133 AEROSOLS. DUST, SMOKE, FOG, CLOUDS AND AIR/AS PROBLEMS RELATING SCIENCE, ECONOMICS AND HEALTH. H.W.Lefax. Can. Chem. & Met. 21, 340-2 (Oct. 1937).
An aerosol is a system consisting of finely-divided matter - solid or fluid, dispersed or suspended in a gaseous medium. Studies of aerosols have been made along mathematical, physical and engineering lines, but little has been learned about their colloid chemistry. The present paper reviews some of the newer developments in the study of aerosols, and emphasizes their importance in the economics of our daily activity. Reference is made to the symposium of the Faraday Society in 1936, at which some papers were presented that have been abstracted in our Bulletins. Aerosols include dust clouds, smoke, fog, clouds

03117824

MW68-0007913

and haze. Dusts consist of solid particles produced by disintegration or dispersion, and range down to 0.1 micron in size; smokes are produced by condensation, and range down from 1.0 micron. Clouds and fogs are formed by condensation of water on solid particles (nuclei). Near the coast the nuclei consist of salts from sea-water, and in industrial sections to some extent sulfuric acid and other acids. Industrial fogs may also be non-aqueous, e.g. tar and oils. Instability is an essential feature of aerosols; they are eventually settled, dissolved or evaporated. The formula for rate of settling of dust clouds is given, with size-frequencies of some common mineral dusts. Explosibility is a hazard in all combustible dusts, and the electrical charge which they readily acquire may cause explosions without the presence of flames. Several methods have been proposed for the dissipation of fogs, but have not been markedly successful. Aerosols may be coagulated by electrical precipitation, thermal precipitation, or supersonic wave or may be removed by filtration. Only electrical precipitation and filtration are used at present on a commercial scale. The extent of atmospheric pollution in some British cities is given; in Liverpool, for instance, 683 tons of solids, including 6 tons of tar, were deposited per square mile per year. Air pollution is closely connected with fuel economy, as well as general health. Instances of progress in elimination of air pollution are given.

(3) Papers on Industrial Poisons, Cancer, Dermatitis, etc.

134 TOXICITY OF INDUSTRIAL ORGANIC SOLVENTS; SUMMARIES OF PUBLISHED WORK. E. Browning Ind. Health Research Board. 396 pages. H.M.Stationery Office, London, 1937. Obtainable from British Library of Information, 270 Madison Ave., New York City. Price not given.
The number of volatile substances in use, chiefly as solvents, is constantly increasing, and little is known of the toxicity of many of them. The acute effects of some of the most widely used substances is known, but their chronic toxicity has not been investigated. As a first step in thorough study of these materials authorized by the Medical Research Council, the author has made a survey of the literature on nearly 100 volatile substances, and the results are presented in this paper. The following classes are treated in separate chapters: (1) hydrocarbons; (2) chloro compounds; (3) alcohols; (4) esters; (5) cyclohexane derivatives; (6) ketones; (7) glycols and their derivatives; and (8) a miscellaneous group, including carbon disulfide, pyridene, ethyl ether and isopropyl ether. The properties, uses and toxic effects of each compound are listed, and the appropriate references to the literature come at the end of each section.

135 DIAGNOSIS AND THERAPY OF CHRONIC BENZENE POISONING. G. Bormann. Arch. f. Gewerbepath. u. Gewerbehyg. 8, 194-205 (1937) (German).
In 6 injured workers in a photoengraving plant using a mixture of benzene, toluene and xylene, there was a decrease in blood ascorbic acid, and the author believes that there is a relation between the ascorbic acid content and the extent of injury. However, there was no decrease of vitamin C excretion. Administration of a vitamin complex improved the symptoms of benzene poisoning in one worker. Resistance of rabbits to benzene poisoning was increased by vitamin C. The author states in his introduction that no case is known which proved that expert and regular blood tests would not make it possible to prevent the development of severe symptoms.

03117825

HWBB-0007914

136 CARBON DISULFID INJURIES IN OLIVE OIL MANUFACTURE IN ANDALUSIA. J.D.Gallego. Arch. f. Gewerbepath u. Gewerbehyg. (German) 8, 124-38 (1937).
Carbon disulfide is used in extracting oil from the residues of olive mills, and slight symptoms (dizziness, headache, feeling of oppression, intoxication and decrease of visual acuity) are occasionally found in workers. Animal experiments gave similar effects. The frequent appearance of lymphocytosis is noticeable, both in men and in animals.

137 BANANA OIL OR AMYL ACETATE. J.A.M.A. (Queries and minor notes) 109, 2159 (Dec. 25, 1937).
A question was asked concerning the hazards of using banana oil in lacquers and spray painting. Banana oil is secondary or iso-amyl acetate and is generally used in combination with other solvents. In sufficiently high concentrations it causes narcosis and death, and in smaller amounts it irritates the eyes and nasal mucosa. However, it is on the whole one of the safest of several lacquer solvent that have been studied.

138 EFFECT OF RADIUM AND BENZENE ON THE BLOOD AND BLOOD FORMING ORGANS WITH SPECIAL REFERENCE TO LEUCOCYTES. A. Feller. Strahlentherap. 60, 393-400 (1937)(German).
The remarkable similarity of injuries to the blood-forming system from radium and from benzene led the author to compare the two by experiments on rats. Changes in total and differential leucocyte counts and histological findings were very similar, but regeneration developed much earlier after benzene poisoning than after radium exposure. Small differences also, in the blood pictures suggest that the effects of the two kinds of injury have important differences.

139 TREATMENT OF HYDROCYANIC ACID POISONING. W. Wirth. Zbl. f. Gewerbehyg. u. Unfall 14, 258-61 (Nov. 1937) (German).
When hydrocyanic acid enters into the digestive tract, it can be treated with chemical antidotes which either destroy or combine with it, forming less poisonous compounds. The best of such antidotes, administered intravenously, were found to be sodium thiosulfate, sodium tetrathionate, sodium nitrate, dioxyacetic alkaline carbonate and bicarbonate. These substances are of little value in poisoning by inhalation, because fatal concentrations are reached before the remedy can be employed. In such cases, artificial respiration with pure oxygen is the best remedy. The addition of 7% of carbon dioxide gave about the same result in the early stages only, and the mixture is not advised for first aid treatment. Lobeline should be used to stimulate the respiratory centrum.

140 PULMONARY TUMORS IN MICE. IV. LUNG TUMORS INDUCED BY 1:2:5:6 DIBENZANTHRACENE IN DIFFERENT MEDIA AND BY ITS DIRECT CONTACT WITH LUNG TISSUES. H.B.Andervont. U.S.Pub. Health Reprts. 52, 1584-9 (Nov. 5, 1937). Obtainable from Supt. of Documents, Washington, D.C., 5 cents, cash.
The 1:2:5:6 dibenzanthracene was injected subcutaneously into mice in different media, including dispersion in horse serum, solution in lard, suspension in glycerin, and a solid solution in cholesterol. It was found that the horse serum dispersion induced the most pulmonary growths. Lung tumors were also induced in several strains of mice by inserting the substance directly into the lungs.

03117826

NWDB-0007915

141 DIBENZANTHRACENE TUMORS IN MICE. H.B. Andervont and Egon Lorenz. U. S. Pub. Health Repts. 52, 1931-40 (December 31, 1937.) Obtainable from Supt. of Documents Washington, D.C. for 5 cents, cash.
It is known that 1:2:5:6- dibenzanthracene, injected subcutaneously, produces lung tumors in susceptible strains of mice. In the experiments reported, the dibenzanthracene was first absorbed on specially prepared charcoal, which was then injected subcutaneously. Tumors were produced at the injection site, more frequently than when the dibenzanthracene was suspended in horse serum without charcoal, but no lung tumors were found when charcoal was used. In a more resistant strain of mice, only a few tumors were caused by injection of the dibenzanthracene charcoal. When this treated charcoal was introduced intravenously into the latter strain of mice, fewer lung tumors were induced than when the dibenzanthracene suspended in serum was similarly introduced. These experiments demonstrate that carcinogenic action of dibenzanthracene can be localized by absorption on charcoal.

142 CAUSATIVE AGENTS AND PROTECTIVE MEASURES IN ANILIN TUMOR OF THE BLADDER. E.E. Evans. J. Urol. 38, 212-5 (Aug. 1937).
The possible causes of tumors in anilin workers are discussed. Anilin alone has not been responsible for these tumors, but other substances such as alpha- and beta-naphthylamines, benzidene and other nitro and amino compounds are known to produce them. Proper methods of control of fumes in the plant are important in the prevention of this hazard. The importance of routine cystoscopic examination in study and treatment is stressed.

143 ROUTINE CYSTOSCOPIC EXAMINATION AS A CONTROL MEASURE IN ANILIN TUMORS OF THE BLADDER. E.D.Wolfe. J. Urol. 38, 216-20 (Aug. 1937).
This paper stresses the necessity of such examinations and of consideration of all factors affecting the patients' mental and physical state in making case histories. The difficulties in correlating the findings by cystoscopic examination with the report of tissue study are pointed out.

144 PATHOLOGY OF ANILIN TUMOR OF THE BLADDER. D.M. Gay. J. Urol. 38, 221-31 (August 1937).
The pathology of anilin tumors in their various stages is discussed, with a comparative analysis of cases reported from different sources. The lesion which the author feels to be the precursor of the tumor is in the nature of a vascular increase, known as"spider vessels."

145 THE TREATMENT OF ANILIN TUMORS OF THE URINARY BLADDER. V.D.Washburn. J. Urol. 38, 232-42 (Aug. 1937).
The author reports successful treatment of 62% of 86 cases of anilin tumors, by various methods, including fulguration, operation, the use of radon and x-ray, and combinations of methods. Routine cystoscopic examination is an important diagnostic procedure and has saved many lives.

146 CLINICAL SIGNIFICANCE OF THE ANILIN TUMORS OF THE BLADDER. R. S. Ferguson. J. Urol. 38, 243-50 (Aug. 1937).
This is a review of the literature, with correlation of clinical experience and observation with pathological findings. The author believes that the carcinogenic substance is circulated by the blood to the bladder epithelium, and that the entire bladder, in cases of multiple papillomatosis, should be treated by divided doses of roentgen rays. He has found that treatment successful in practice.

0311782?

HWBB-0007916

NOVEMBER 1938

147 EXPERIMENTAL PRODUCTION OF BLADDER TUMORS IN DOGS BY ADMINISTRATION OF BETA-NAPHTHYLAMINE. W. C. Hueper, F.H.Wiley and H.D.Wolfe, Haskell Lab. of Industria Toxicology, Wilmington, De. J. Ind. Hyg. & Toxicol. 20, 46-84 (Jan. 1938) Reprints obtainable at above address.
The paper is an extensive report of the first successful attempt to produce "anilin tumors" experimentally. Beta-naphthylamine was chosen for the experiments because it is the one aromatic substance agreed to be definitely involved in the production of neoplasm , and because it has been used in similar experiments. Results are described in detail, with many illustrations. By way of brief summary, it can be said that preneoplastic and neoplastic foundations (papillomas and carcinomas) were obtained in 13 out of 16 female dogs treated for a period of 20 to 26 months with subcutaneous injections and oral feeding of commercial beta-naphthylamine. The localization of the tumors in the dependent parts of the bladder and the histologic findings support strongly the urogenous origin of "anilin tumors." Other effects of large doses are blood destruction and degenerative changes in the kidneys and liver. A careful study of effects on the blood was also made with the hope that changes might be found which would be correlated with tumor production, but no change was observed in the pH or in the blood content of glutathione, glucose, cholesterol, or phospholipid phosphorus.

148 EXPERIMENTAL INVESTIGATION ON THE ETIOLOGY OF ANILIN TUMORS. W.E.Heuper, F.A. Briggs and H.D.Wolfe. J. Ind. Hyg. & Toxicol. 20, 85-91 (Jan. 1938). Reprints obtainable as in preceding abstract.
Various tests were made to determine whether there are chemospecific immune reactions in man, dogs, rats and rabbits exposed for occupational or experimental reasons to aromatic amines with suspected carcinogenic properties. They included serologic and anaphylaxis tests and active and passive skin sensitizations. No immunologic response was obtained. Beta-naphthylamine hydrochloride did not develop bladder tumors in rabbits when injected peritoneally.

149 THE EFFECT OF BETA-NAPHTHYLAMINE ON TISSUE RESPIRATION. Frank H. Wiley. J. Ind. Hyg. & Toxicol. 20, 92-3 (Jan. 1938). Reprints obtainable as in preceding abstract.
Since it has been shown that malignant tissue differs from normal tissue in producing more lactic acid than it can oxidize, the question has arisen whether the action of pure carcinogenic agents on the enzyme systems of normal tissue might have a role in the development of the malignancies following the administration of these materials. Such experiments were therefore made in connection with the investigations summarized in the preceding abstracts. In a brief paper the author shows that the presence of beta-naphthylamine in the media surrounding kidney and liver slices does not influence the oxygen consumption or respiratory quotients of these tissues in vitro.

150 ASTHMA FOLLOWING PROLONGED EXPOSURE TO SULFUR DIOXIDE: REPORT OF A CASE. H.F. Dowling. Med. Ann. Dist. Columbia 6, 229 (October 1937).
A case is described in which asthma that had been latent for 17 years was reactivated by exposure to sulfur dioxide in the repair of refrigerators.

03117828

NWBB-0007917

INDUSTRIAL HYGIENE ABSTRACTS

151 HEMORRHAGES INTO THE FLOOR OF THE FOURTH VENTRICLE IN INTOXICATIONS AND INFLAMMATIONS OF THE BRAIN. O.Berner. Virchows Arch. f. Path. Anat. 296, 636 (1936). (German).
Hemorrhages in the floor of the fourth ventricle of the brain were found in cases of acute methyl alcohol intoxication, one of carbon monoxide poisoning and one of acute polyomyelitis. The results appear to settle a controversy about the nature of these hemorrhages, which had been previously found only in cases of trauma, as the results indicate that the hemorrhages are due to diapedesis rather than trauma.

152 TISSUE METABOLISM UNDER THE INFLUENCE OF CARBON MONOXIDE. H. Laser. Biochem. J. 31, 1677-82 (Sept. 1937).
The influence of carbon monoxide on the metabolism of a variety of tissues has been studied manometrically. The respiration was the same in mixtures of oxygen and carbon monoxide as in mixtures of oxygen and nitrogen. On the other hand, replacement of nitrogen by carbon monoxide increases aerobic glycolysis to the level of anaerobic glycolysis, thus indicating a complete inhibition of the Pasteur effect. This inhibition is partly or totally reversible under the influence of light; in other words, aerobic glycolysis decreases in light to its level under low oxygen pressure.

153 SENSITIVITY OF CARBON MONOXIDE DETECTION WITH THE DRAEGER CO. INDICATOR. Hetzel. Draegerhefte no. 192, 3644-7 (1937). (German.)
The Draeger apparatus for detecting traces of carbon monoxide is small and registers the carbon monoxide content of the air by means of a simple colorimetric method. It can be handled by an untrained person. By tests of its sensitivity with a more complicated indicator it was shown that concentrations of 0.05% carbon monoxide by volume can be detected by the color change.

154 WELDING IN CLOSED SPACES. Menslage. Arbeitsschutz, 188-91 (1937) (German).
The author discusses the dangers inherent in welding operations in closed spaces including explosions and poisoning by carbon monoxide and nitrogen oxides. Suitable instruments for detection of explosive gases are mentioned. The necessary preventive measures are fresh air apparatus and powerful ventilation, but not the use of oxygen, since it renders the gases more inflammable.

155 HARMFULNESS OF THE AIR AND THE HARMFUL EFFECT OF MOTOR TESTING ON THE EARS OF WORKERS. R. de Gaulejac. Ann. d' hyg. publ., 544-59 (1937).
When the testing of airplane motors is conducted under a protective roof, carbon monoxide to the extent of 5.5 parts per 10,000 has been found. In the open, only a trace occurs. The hazard may be eliminated by exhausting the gas at a distance. Another hazard is defective hearing which may occur in a few years of such work, from the continuous noise of the motors. The remedy is to wear protective apparatus or to work in a closed cabin to which the instruments are brought.

156 SURFACE AND DEEP CORNEAL INFLAMMATION (DISC SHAPED) CAUSED BY HYDROGEN SULFIDE IN CAISSON WORKERS ON THE NORTH SEA COAST. K. Hartmann. Klin. Monatsbl. f. Augenheilk. (German) 99, 456-8 (1937).
Caisson workers at a depth of 8-13 meters repeatedly suffered from eye inflammation, most frequently at levels where hydrogen sulfide was escaping from the soil. The symptoms were the occurrence of very fine diffuse vesicles and spotted epithelial defects, which healed in a few days. Prolonged eye inflammations result from hydrogen sulfide concentrations of 0.01 to 0.02 mg. per liter. A review of the literature is included.

03117829

NWBB-0007918

157 EXPERIMENTS WITH NEW DRAEGER ALKALI CARTRIDGES. Fritz Bangert. Draeger Hefte no. 192, 3652-4 (1937). (German).
The cartridges are used in the closed system type of gas mask where oxygen is supplied and carbon dioxide is absorbed in an alkali cartridge. Experiments to improve the alkali cartridge were directed toward better absorption of carbon dioxide, reduction of the heat produced, and avoiding liquefaction at high temperatures. Improvements have been obtained, but further work is necessary before the new cartridge is put on the market.

158 SPECTROANALYTICAL DETECTION OF METALS IN TISSUE. W. Schwarzmacher. Wien. klin. Wchschr. 50, 1321-3 (1937). (German).
The author describes briefly the basic technical spectroanalytical methods of research and their application in special fields of medical research. The work of Klostermann on lead and that of Gerlach on manganese and silicon are mentioned.

159 NEW MATERIAL ON LEAD POISONING. K. Koetzing. Aertzl. Sachverstand.-Ztg. (German) 43, 247-8 (1937).
This is a brief paper on the results of several new experiments in the field of lead poisoning, especially lead absorption, distribution, detection, effect on various organs and treatment.

160 CALCIUM THERAPY IN LEAD POISONING. H. Taeger. Klin. Wchnschr. 16, 1613-5 (1937). (German).
The author disagrees with the calcium therapy advocated by Aub, Fairhall and others for depositing lead in the organism and believes that sudden changes in diet will mobilize rather than deposit the lead. In his own method, further exposure is first prevented, and the treatment is symptomatic at first. Since each change of the mineral balance causes mobilization, the diet must be changed very gradually. Each change in acidity must be offset by a more alkaline diet. After the first acute symptoms have passed, the calcium should be increased, first by gradually increasing amounts of milk, then by calcium preparations. This treatment, carefully conducted, induces lead excretion rather than fixation. Only after a long time can the patient return to his normal diet.

161 NEPHROTIC CONTRACTED KIDNEY AFTER ACUTE MERCURY POISONING. W. Koch. Med. Klin. (German) 33, 1559-63 (1937).
A worker died some time after an attack of mercury poisoning, but had not worked with mercury in the meantime. An autopsy disclosed a condition of the kidneys corresponding to necrotizing nephrosis. Widespread calcareous and numerous other casts were present. The immediate cause of death was pneumonia, but otherwise the only significant findings were in the kidney changes. "Nephrotic contracted kidney" was evidently the proper term to apply, although no similar case due to mercury poisoning has been reported.

03117830

NWBB-0007919

INDUSTRIAL HYGIENE ABSTRACTS

162 HEALTH INJURIES FROM ORGANIC MERCURY COMPOUNDS. F. Koelsch. Arch. f. Gewerbepath. u. Gewerbehyg. 8, 113-6 (1937) (German).
Mercury poisoning has been found in workers engaged in the production of mercury compounds used increasingly as seed disinfectants. Local irritations of the skin and mucosa and general symptoms with special effect on the nervous system are frequent. Improvement sets in only after a few months.

163 PHOSPHORISM. M. Courbis-Suffit. Gaz. des hop. 110, 1665-8 (1937). (French).
When the author was health supervisor in a government match factory a number of years ago, he sent back to work many persons excluded because of false diagnoses of phosphorism, the real complaints being gum affections or general troubles. Long after white phosphorus had disappeared from match factories, many even well-known physicians diagnosed phosphorism simply because the person had worked in a match factory. Much has been accomplished by health and dental supervision, even when phosphorus was an actual hazard. The author emphasizes the need of cooperation between the physician and the technical director.

164 FATAL ARSINE POISONING IN GALVANIZING. F. Künkele and H. Saar. Samm. v. Vergift. (German) 8, 185-8 (1937).
One death and one illness resulting from experiments with a galvanic zinc bath were investigated and found to be due to arsine poisoning. The bath contained 1% arsenic. When zinc electrodes were inserted, the nascent hydrogen acted as a reducing agent on the arsenious compounds, producing arsine. About 40 mg. was thus produced in 5 minutes.

165 INDUSTRIAL CADMIUM POISONING. G. Pancheri. Securitas 24, 61 (1937) (Italian.)
Cadmium may be fatal even in small doses. It causes powerful local irritation, tends to paralyze the central nervous system, and if inhaled, may lead to pneumonia. In the gastro-intestinal tract it has a violent emetic action and causes degeneration of the kidneys and liver and other chronic disturbances. Cadmium vapors can also cause metal fume fever.

166 RADIATION CANCER IN RADIOLOGISTS. A. Beclere. Strahlentherap. 60, 9-15 (1937) (German).
On the whole there is no relation between the severity of skin damage and the appearance or absence of cancer, which usually develops from a local necrosis or a small wart. Before local treatment is tried, the lymph glands and bones must be examined for evidence of cancer. A radiologist now over 80 has had to have several fingers amputated at various times.

167 EXPERIMENT ON OSTEOGENIC SARCOMA WITH LUNG METASTASES CAUSED BY RADIUM EMANATION. H. Hellner. Arch. f. Klin. Chir. 189, 705-6 (1937). (German).
A rabbit irradiated monthly at the knee, outside and inside, with 45-90 mg. hr. of radium developed the first signs of tumor in 2 years, and died later of lung metastases.

168 HAZARDS IN THE RADIUM AND MESOTHORIUM REFINING PLANT AT THE UNIVERSITY OF MISSOURI. John Paul Morris. J. Ind. Hyg. & Toxicol. 20, 36-45 (Jan. 1938).
This plant has been operating since 1930, and although the workers handled a relatively large amount of radioactive materials, precautions taken by the workers and protection provided in the plant were such that only minor injuries, such as burns, occurred. X-ray films showed that workers were exposed to considerable irradiation when working near high grade material. The films also showed that workers were exposed to greater gamma ray irradiation when working with mesothorium than when working with radium in the refining plant. Numerous

03117831

HWBB-0007920

tests for alpha particles in expired air were made on all workers. They showed that the active material in the body was of a transient nature. The ultimate effect of the alpha ray bombardment of the lung tissues presents a problem for future investigation. Another problem is that of personal susceptibility, variation in which was seen in the experiments.

169 INVESTIGATION OF ECZEMA IN INDUSTRIAL DERMATOSES. G. Miescher. Schweiz. Med. Wchnschr. 67, 833-4 (1937). (German).
The author and his colleagues have studied the question of disposition to eczema and the ease of sensitization. Marked individual differences were found in threshold values for many toxic substances. Some people neutralize alkali on the skin very quickly, others very slowly. A delayed neutralization signifies greater sensitivity, and that state is found in persons with industrial eczema. Such persons should not be hired in industries where they will be exposed to alkalies and other substances that produce eczema. A similar relation cannot be demonstrated for acids.

170 INDUSTRIAL INJURY TO SKIN FROM OILS. G. Hopf. Aertzl. Sachverstand.-Ztg. 53, 229-41 (1937). (German)
Skin injuries from many different oils are considered, with reports of experiments on a number of the oils. Most cases of oil acne occur in the industries employing mineral oil, but vegetable oil often has similar effects. No bacteria of interest were found in cutting and boring oils, and patch and rubbing tests gave negative results. Further investigations led to the conclusion that the cause of oil acne is to be found chiefly in certain hydrocarbons, especially in the viscous oils. Often mechanical injury and irritation caused by the work process plays a part, since the disease appears to a greater extent in metal industries than in oil refineries. Persons with oily skin (seborrhea) apparently have a disposition to oil acne. Prevention, then, seems to involve personal hygiene, cleanliness, defatting the skin and avoidance of mechanical irritation The use of protective salves containing waxes gives a certain amount of protection.

171 SO-CALLED PHYSICAL ALLERGY AS AN OCCUPATIONAL DISEASE THAT SHOULD BE COMPENSABLE. F. Luce. Arch. f. Gewerbepathol. u. Gewerbehyg. 8, 206-22 (1937). (German).
The author reports a case of "heat allergy", in which various skin effects, with weakness and rise of temperature, were produced in a ceramic worker exposed to heat from an oven. The literature on "physical allergies" is discussed.

172 INDUSTRIAL SKIN DISEASES. A Sezary. Presse med., 1326-7 (1937). (French).
The author classifies industrial skin diseases as those that appear without predisposition and those that occur only with predisposition. Among the former are those caused by heat, cold, chemical irritants and bacteria; the latter include the remaining industrial eczemas. Neoplasms are not included in either category.

173 ECZEMATOUS SKIN DISEASES IN CALICO PRINTING AND EXPERIMENTS ON AN INDUSTRIAL CROSS SECTION WITH "FUNCTIONAL SKIN TESTS." W. Heinze. Arch. f. Gewerbepathol. u. Gewerbehyg. 8, 156-93 (1937) (German).
This paper describes an investigation of 226 workers in a calico printing establishment using predominantly azo dyes. Eczema was found to various degrees in different departments. The fast red salts were found most harmful, and sodium chromate caused some reactions. The "skin function tests" are of value, but an exhaustive history is necessary in doubtful cases. Signs of anilin poisoning may appear after a few hours' work with anilin black.

03117832

NWBB-0007921

174 IMPORTANCE OF ANAMNESIS IN A LASTING CURE OF ECZEMA. L. Hauch. Med. Klin. 33, 1321-4 (1937). (German).
The author reports a series of cases of allergic eczema, the causes of which were very difficult to determine. One was traced to a furniture polish, another to "transpulmin" and a third to a washing powder.

175 SPIROCHETAL JAUNDICE AS AN OCCUPATIONAL DISEASE. J.A.M.A. (Paris letter) 109, 1825-6 (Nov. 27, 1937).
An abstract of a paper by Jambon on spirachaetosis icterohaemorrhagica in 23 miner None had been bitten by rats but frequently the men drank water from the mine galleries and their food was often contaminated.

176 INFECTIOUS DISEASES IN INDUSTRY. W. Schultz. Aertzl. Sachverstandl. Ztg. 53, 257-61 (1937). (German).
The author describes some industrial infections diseases in connection with German compensation laws. The cases cited occurred mostly in industrial nurses, but a case of anthrax in a tanner is also described.

177 PATHOGENESIS OF COAL MINERS' NYSTAGMUS. L. Rubiera and A.G.Miranda. Monatsbl. f. Augenheilk. 99, 491-3 (1937). (German).
The authors have found nystagmus prevailing especially where ventilation is poor. Their observations do not settle the question whether nystagmus is caused by gas from the coal, as Zeiss believes, or whether it is the effect of decreased illumination from the presence of dust. In either case, proper air renewal is important.

178 DISEASES OF THE MUSCLES, BONES AND JOINTS FROM WORK WITH COMPRESSED AIR TOOLS. H.B. de la Camp. Med. Welt (German) 11, 1348-51 (1937).
This paper is a brief but comprehensive account of work with compressed air tools in mining, injuries caused by it, treatment and compensation. The author states that he has seen a progression of the disease after cessation of work. The compensation in German cases has varied between 20 and 100%.

179 DISABILITY OF WORKERS USING PNEUMATIC DRILLS. J. McLaren. Lancet 2, 1296-9 (Dec. 4, 1937).
A condition of Raynaud's phenomenon was found in 3 groups of workers who had used pneumatic machines of varying types for 2 years or more. Machines having a periodicity of 2,300 strokes a minute affected all the workers using them; other frequencies caused fewer cases. Radiological examinations disclosed bone changes, especially "bone cysts" or areas of localized absorption of bone in the carpal and metacarpal bones.

180 SIGNIFICANCE OF FLUIDS AND CHLORIDE IN THE EFFICIENCY OF WORKERS IN HOT TRADES. G. Lehmann and A. Szakall. Arbeitsphysiol. 9, 630-52 (1937) (German).
Experiments were made with a young worker accustomed to hot work; in part of the experiments he was given all the liquids he could drink. Water consumption increased ability, to the greatest degree at 36°C. room temperature. At 46°C the beneficial effect disappeared. Salt water had less effect than plain water. Liquid intake had no adverse effect on heart and circulation, up to 31°C., but at higher temperatures only a part of the water is excreted, so that the excess causes an additional burden on the circulation. Dilution with salt water is less unfavorable than with plain water. Increase of sweating was parallel with increased ability to work resulting from taking liquids.

03117833

NWBB-0007922

181 CHLORIDE METABOLISM OF WORKERS IN HOT INDUSTRIES. G. Lehmann and A. Szakall. Arbeitsphysiol. 9, 653-77 (1937). (German).
Experiments similar to the preceding were made on a worker unaccustomed to heat, at a temperature of 37°C. In the training period, the increased ability to work caused by dumping water or salt water was very slight. Rather, an adaptation to hot work in the nature of an alteration of the chloride metabolism was apparently taking place. Other experiments showed that a notable chloride depletion does not cause any decrease in ability; also the amount of sweat and of chloride excreted is scarcely affected. However, the chloride depletion causes a slight injury to circulation, shown by an increase in body temperature. In other experiments it was found that the body supply of chloride seems less decisive than chloride balance, as far as the chloride excreted in sweat is concerned.

182 ADAPTATION TO HEAT IN INDUSTRY. G. Lehmann and A. Szakall. Arbeitsphysiol. 9, 678-705 (1937) (German).
Experiments were made on a young worker unaccustomed to heat. After a preparatory training period he received only 4 grams of chloride daily. Several trials repeatedly gave similar results, including a general decline of health, increase in pulse rate, headaches and a feeling of weakness. After a gradual increase of salt he did good work on 10-11 g. of salt daily. The authors attribute this increase primarily to the effect of training rather than to increased chloride intake. Additional experiments, together with those in the preceding papers, made it possible to separate the symptoms caused by heat training from those due to lack of chloride. Impoverishing the chloride concentration affects the muscles rather favorably and increases work capacity. In untrained persons, however, the falling concentration of blood causes damage to the stimulating system of the heart, as well as severe general symptoms. Drinking salt water is therefore recommended and may prevent serious injuries when unexpectedly high performances of the non-adapted organism are required. Salt has a good effect on any heart injury that appears. Salt intake is not necessary in a training period. Drinks taken during work should be in small portions and the quantity taken should not exceed half the amount of sweat lost.

183 VACCINES AGAINST THE COMMON COLD: ARE THEY OF VALUE IN INDUSTRIAL HEALTH PROGRAM? L. D. Bristol. Am. J. Public Health 27, 987-90 (Oct. 1937).
Six groups of industrial workers, totalling over 19,000, were treated with vaccines. The treatment was available over a number of years. There was little reduction in the incidence of colds, but their severity and duration were reduced. A program of prevention, especially among those most susceptible, should be encouraged.

03117834