Air Hygiene Foundation of America, Inc.,
4400 Fifth Avenue,
Pittsburgh, Pa.
March 21, 1938

REFERENCES TO RECENT LITERATURE ON INDUSTRIAL DISEASES

(A) NEWS ITEMS

184. MID-EAST CONFERENCE. Ind. Med. 7, 8 (Jan. 1938)
The Mid-East Conference on Occupational Diseases will be held in Chicago in June of this year, in conjunction with the 43rd Annual Meeting of the American Association of Industrial Physicians and Surgeons. For the first time in the history of the Association, its convention will feature scientific and commercial exhibits.

185. INDUSTRIAL HEALTH COUNCIL. FIRST MEETING. Ind. Med. 7, 90-2 (Feb. 1938).
The Industrial Health Council has been formed by the American Medical Association for the study of occupational diseases from the medical standpoint. Its first meeting was held in Chicago on December 10. Several phases of occupational hygiene were discussed, with reference to the scope of the program, and it is realized that the organization has a great task and a long program before it. Another meeting was planned for February.

186. SILICOSIS FILM. Surv. Labor Law Admin., 8 (Jan. 1938), also notice from U.S. Dept. of Labor.
The U.S. Department of Labor will shortly release a motion picture on the harmful effects of silicosis and the methods of prevention, to enlist workers, employers and the general public in the battle against this industrial disease. The narrator presents the history and importance of the disease. The film then describes where silica dust originates and how workers are exposed. An animated cross-section of the upper half of the human lung shows how dust particles enter and are carried to the terminal air spaces, and how breathing is impeded when lungs are clogged. Scenes in dusty plants without proper safeguards are contrasted with others where adequate dust control methods are used. Preventive measures, including safeguards and adequate State legislation, are described. Exhibit copies of the film will be available to interested organizations late in March. Requests for booking should be made to the Division of Labor Standards, U.S. Department of Labor, Washington, D.C.

187. I.L.O. Study of WORKMEN'S COMPENSATION FOR SILICOSIS. Reviewed in Surv. Labor Law Admin., 10 (Jan. 1938). The original publication is issued as International Labor Office Study - Series F (Industrial Hygiene) No. 16 and is obtainable from the American Headquarters of International Labor Office, 734 Jackson Place, Washington, D.C. Price not given.
This study presents three typical systems of compensation for silicosis - through special legislation in South Africa, through special schemes in Great Britain, and through special coverage in Germany. The application of blanket coverage to silicosis is considered in an appendix. Details of each plan are discussed. Prevention is stressed in the laws of each country.

188 A CRUISING LABORATORY TO FIGHT SILICOSIS. Ind. Bull. 17, 27-30 (Jan. 1938).
The New York State Department of Labor has recently developed a portable laboratory, in an especially built body on a school bus chassis, containing full x-ray equipment that can operate on ordinary industrial plant electric power, and with quarters for medical and x-ray examination. This equipment should facilitate study of moderate as well as of extreme dust hazards and should enable the work to be done more quickly than hitherto possible.

189 FORD'S STANDARDS FOR AIR CONDITIONING. J.J.Floreth. Heating, Piping, & Air Cond. 10, 109-13 (Feb. 1938).
The author's account of air conditioning in Ford plants (our abstract No. 483, 1937) is supplemented by a more complete description of the system in operation at the Twin City branch, at St. Paul, Minn.

190 DUSTFOE RESPIRATOR. Mine Safety Appliance Co., Pittsburgh, Pa. Literature available on request.
The Dustfoe respirator has been approved by the U.S. Bureau of Mines and is marketed by the above Company. Its advantages are stated as light weight (under 3½ ounces), comfort, full vision, non-interference with goggles or head covering, and replaceability of parts. It includes an outer felt screen for coarser particles and a specially-designed cellulose filter for the finer particles.

191 DUST COLLECTOR. Abrasives 19, 55 (Feb. 1938).
A new wet type dust collector is announced by Stevenson and Smith Co., Detroit. The main body of the unit consists of two steel tanks; an outside tank built around an inner one, and a semi-circular steel hood bolted to the top of the inner tank. The latter is lined with a system of steel drain shelves or louvers and has a hopper at the bottom with a gate for dumping sludge after draining. A series of circular screens, mounted on a driven shaft rotate inside the hood, and, with a spray system, constitute the collecting arrangement. The air is first washed by the sprays and then more thoroughly by the screens which rotate half in water. Collected dust settles in the inner tank, displacing water which overflows into the outer tank, until the water in the inner tank contains much dust and is ready for dumping.

192 OCCUPATIONAL DISEASE EXPERIENCE: RETROSPECT 1937 - PROSPECT 1938. C.O.Sappington. Ind. Med. 7, 23-6 (Jan. 1938).
Objectives relating to occupational diseases in this country, especially in regard to the study and control of occupational diseases, have reached a high point in their achievement during 1937. As evidences of this progress, the author lists the most important meetings in which occupational disease was an important part of the program; and several reports and publications. In compensation experience, dermatitis has continued as the leading reportable disease. Court decisions increased in total number and in number of states participating. Decisions on cases of tuberculosis and lead poisoning increased especially, and on silicosis cases in Wisconsin. Lack of common law remedy was held valid in Illinois. Compensation for partial disability due to silicosis was denied in Ohio, Michigan and Pennsylvania, and the general tendency is in that direction. The author considers the following to be the year's outstanding achievements: (1) the trend to develop devices which will give direct readings of concentrations and types of air pollutants; (2) the research initiated by Air Hygiene Foundation at the Moore Engineering School in Philadelphia, which will permit chest roentgenography standards to be brought under an improved scientific classification; (3) the establishment of 2 Fellowships each year by the Air Hygiene Foundation at Harvard for research in engineering methods for occupational disease prevention; and (4) recognition by the legal profession and organized labor of the fact that pre-employment, periodic and post-employment examinations are necessary to the proper administration of compensation laws.

The author predicts the following developments in 1938: (1) an increase in the number and (2) in the variety, of occupational disease claims; (3) more liberal constructions of laws as reflected in court and commission decisions; (4) a relative increase in the number of claims, in addition to dermatitis; (5) more frequent statutory provisions for the use of medical examinations; (6) the increased use of industrial hygiene surveys and correlation of engineering and medical data; and (7) further clarification of the definition of occupational disease.

193 THE NATIONAL HEALTH SURVEY, 1935-1936. Survey Labor Law Admin., 9 (Jan. 1938) Preliminary, mimeographed reports of the Survey are available from the U.S. Public Health Service, Washington, D.C.
Illness, injury or gross physical impairment in the United States prevent 6 million people a day during the winter months from working, attending school or pursuing other usual activities and cause an annual loss of 1/4 billion days of work, according to estimates made in this Survey. A heavy toll from respiratory and chronic diseases and from accidents is indicated. The greater prevalence of illness among those in the lower income groups is also shown.

(B) Papers on Dust, Dust Diseases and General Industrial Hygiene.

194 METHODS FOR THE DETERMINATION OF QUARTZ IN INDUSTRIAL DUSTS. F.H.Goldman. U.S. Pub. Health Repts. 52, 1703-12 (Nov. 26, 1937). Obtainable from Supt. of Documents, Washington, D.C. 5 cents, cash.
In view of the present interest in the determination of quartz in dusts, this paper and others following are very timely. The recent methods for the determination of free silica are critically reviewed. The method of Knopf. involved the treatment of the sample with hydrofluosilicic acid, which theoretically dissolves silicates and leaves free silica untouched. In connection with well known methods for determination of total silica and elimination of other substances, this procedure should give the free silica content. However, it has been shown that the more finely divided is quartz, the more soluble it is in hydrofluosilicic acid, and its solubility is sufficient to interfere seriously with the accuracy of the method. The fluoboric acid method of Line and Aradine is similar and has some advantages, but here again, the finest free silica is soluble in the fluoboric acid, and some silicates are not completely dissolved. Shaw's method, which is described briefly, is applicable only to special kinds of silicates - the coal measures and shales. Among petrographic methods, the general method of observing a number of properties under the petrographic microscope, is not useful for particles under 10 microns. The method of Ross and Sehl is an application of the Becke line principle and involves measurement of the refractive index only. One objection is that quartz cannot be distinguished from some other substances having approximately the same refractive index. (Another objection is indicated in the next paper.)
Having shown that none of the methods for free silica determination is free from objection, the author recommends a combination of methods. Samples must be obtained judiciously, with the fullest information about each. Samples of all the raw material from which the dust may have arisen should be obtained. A complete chemical examination and a petrographic examination should always be made. From a knowledge of the substances that are present, the choice of final quantitative method may be made.

195 REVIEW AND DISCUSSION OF METHODS OF ANALYZING INDUSTRIAL DUSTS. (REPORT OF SUBCOMMITTEE ON DUST PROCEDURES IN AIR ANALYSIS) J.J.Bloomfield, Chairman. Am. Pub Health Assoc. Year Book, 85-90 (1937-38).
The methods of analysis of dusts, with special reference to silica determination are reviewed to about the same extent, and with the same general conclusions, as in the preceding paper. The x-ray diffraction and spectroscopic methods are

also discussed briefly. The principal objection to these methods at present are high cost of apparatus and limited applicability on account of lack of data. An additional petrographic method is mentioned, that of Udluft and Hellmers, which involves photographing Zeiss konimeter samples, introducing an index liquid and photographing again. A combined method is recommended, and directions are given for collection of the sample, size fractionation, petrographic and chemical examination and presentation of results.

196 PETROGRAPHIC IDENTIFICATION OF ATMOSPHERIC DUST PARTICLES. Wilder D. Foster and H. H. Schrenk. U.S. Bur. Mines, Rept. of Investigations no. 3368 (Jan. 1938). Obtainable free from Division of Information, U.S.Bureau of Mines, Washington, D.C.
The use and limitations of the petrographic microscope and of methods for ascertaining maximum free silica content of dust by that means are described. The petrographic methods for examination of minerals in mass or in fairly large particles, including observation of index of refraction, birefringence, crystal axes, etc. are exact, but cannot be applied to particles under 10 microns, which are of most interest in dust counting. The Becke method is generally used for dust. The dust is immersed in oils of refractive indices near that of quartz, and the change of appearance under lightfield illumination when the body tube of the microscope is shifted slightly indicates the presence and roughly the content of quartz in the sample.
The authors have made a critical examination of this method, with charts showing its applicability and its limitations. They show that for the finer particles a considerable difference between the refractive index of the quartz and the liquid is necessary, the difference increasing inversely with the particle size. A darkfield method which they also use and describe does not require so great a difference, but also has its limitations. Examples of its application to samples of known and unknown composition are given. References to the pertinent literature are included. For a number of details that may be of interest, the original paper must be consulted.

197 MICROPROJECTION METHOD FOR COUNTING IMPINGER DUST SAMPLES. Carlton E. Brown, Lester A.H.Baum, William P. Yant and Helmuth H. Schrenk. U.S.Bur. Mines, Rept. Investigations no. 3373 (Jan. 1938) Obtainable free from Division of Information, U.S.Bureau of Mines, Washington, D.C.
A microscope is ordinarily used in counting impinger samples under lightfield illumination. Continued dust counting is conducive to eyestrain, especially because the smallest particles have an apparent diameter of 0.1 mm. A microprojection method has been used by the Bureau of Mines for some time, and was described in a bulletin in 1935. Since that time a simpler and smaller apparatus has been developed. In this method, the image magnified 1000 times is thrown on a screen, where both eyes may be used in observing the particles. Other advantages are that more concentrated samples may be counted and that greater precision is obtained. The necessary apparatus, in addition to the microscope, includes an automatic-feed arc lamp, a heat filter, a suitable eyepiece, a right-angle projection prism, a suitable translucent screen, and light baffles. These accessories are described in full. Tabulated comparisons of results obtained with the microscopical and microprojector methods show good agreements between the two. The microprojection method has been used in counting more than 1,000 impinger samples collected in copper mines and many samples collected in other mines and in the course of the work of the Bureau.

198 DETERMINATION OF THE SIZE OF FINE ABRASIVE POWDERS. A COMPARATIVE STUDY OF MICROPROJECTION AND SEDIMENTATION METHODS. Frank L. Jones. Ind. Eng. Chem., Anal. Ed. 10, 45-7 (Jan. 1938). Reprints obtainable from this office.
This paper reports the results of the application of the microprojector method to the size determination of abrasive powders with a size range of 5 to 70 microns. The method was substantially the same as that described in the preceding abstract. The results were compared with those obtained by sedimentation methods. The values for the average diameter obtained by the two methods agreed within the experimental error, but a larger proportion of the smaller particles were found by the microprojection method, probably because they have a greater tendency to adhere to larger particles when suspended in a liquid.

199 THE EFFECT OF WATER ON THE PRODUCTION OF INDUSTRIAL DUSTS. H.H.Watson. J. Ind. Hyg. and Toxicol. 20, 155-60 (Feb. 1937).
Experiments were undertaken to determine the effect of water on hand chiseling of sandstone. A block of the stone was supported in a dust chamber, the air of which could be cleaned by circulation through filters, and the stone was worked by a mason under constant conditions. Samples of the dust were taken with the thermal precipitator, and in a few cases by a pump on ashless filter paper for weighing. The wetness of the stone was varied as follows: (a) stone quite dry; (b) a beaker of water poured over the surface just before working, (approximating a common wet summer condition); (c) stone wet, with some water lying in the irregularities of the surface; (d) stone wet throughout, but no water lying on the surface, (a typical wet winter condition); and (e) stone thoroughly wet, with a 1/2 in. layer of water on its surface. In making the dust counts, aggregates were always counted as single particles. In condition (e) the dust count was decidedly lowered by wetting, but the condition is not a practical one. In conditions (b), (c) and (d) the counts were higher than in (a), although in the only weight comparison, the dust weight from (d) was lower than (a). The median size of the particles was always lower in the wet methods, being 0.33 micron for (d) against 0.95 for (a). The explanation lies in the comparative absence of aggregation when the dust is wet. It is known that water prevents the escape of the larger particles; the author also suggests that the cooling effect of the water and adsorption due to condensation of supersaturated vapor also tend to prevent coagulation. A similar effect of wetting on size distribution is found in rock drilling and grinding tests. In the author's words, "it must not be concluded from the results obtained that water is useless in suppressing dust, but it is evident that when water is used careful check dust samples must be taken from time to time to insure that the apparent absence of dust is real."

200 RELATION OF DUST CONCENTRATION TO DEPTH OF HOLE DURING WET DRILLING. U.S. ** Bur. Mines, Rept. Investigations No. 3369 (Jan. 1938). Obtainable free from Division of Information, U.S.Bureau of Mines, Washington, D.C.
Information on the production of dust is of fundamental importance in the control of air dustiness, and since drilling is one of the main sources of air dustiness, an understanding of the fundamental factors underlying the making of dust is essential in attempting to control or limit air dustiness in mines. The data presented in this report are the results of a relatively short study conducted to ascertain the amount of dust thrown into the air of a mine working place during a complete cycle of wet drilling of horizontal holes. In the first [illegible] series of tests, the first hold was drilled to a depth of 65 inches, with sharp bits, i.e. a fresh bit was inserted each minute; the second with the same drills after 1 minute's use of each; and the third with the same drills after 2 minutes' use. The time of the test was the same in each case, but the total depth naturally decreased as the drills became duller. Konimeter tests were taken each minute, and an impinger sample was

**J. B. Littlefield and H. H. Schrenk.

taken during each entire test. Additional tests were made in a similar manner, but only impinger samples were taken for a few minutes each, three being taken in each test. The results show definitely that in the tests as conducted the greatest amount of dust was thrown into the air of the working place in drilling the first 2 feet, and that the subsequent amounts continued to decrease gradually as the depth of the hole increased. Although collaring is generally accepted as the dustiest portion of the operation when wet methods are used, the test showed that making the entrance or collaring is not entirely responsible, but that the first few inches, at least up to 2 feet contribute heavily to the dustiness. Possible reasons for this phenomenon are discussed. Increasing the water, reducing the air, spraying the hole with a water blast, the use of water without air pressure, or the use of an exhaust hood are suggested as possible remedies.

201 A NEW METER FOR CLAYS AND MINERAL DUSTS AND ITS APPLICATIONS. E.G.Richardson. Sands, Clays and Minerals. 3, 129-31 (Sept. 1937).
The apparatus is used to determine the relative number of particles in a solid system such as a mineral dust consisting of a heterogeneous collection of substances of varying diameters, from several mm. to 1 micron. The glass tank for a sedimentation method is blackened except for a small space where the beam of light passes horizontally from a lamp to a photoelectric cell. The intensity of the beam changes according to the state of the liquid, i.e. to the amount of suspended matter at the plane of the beam, so that a continuous curve is recorded. This curve, according to Stokes' law, indicates the number of particles below a given diameter, corresponding to a point on the time axis. The number of particles of a given size can be determined from the slope of the curve. The time taken by silica particles to fall through 1 ft. at 60°F. was as follows: 10 microns; in air, 32 sec., in water, 20 min.; 1 micron; in air, 54 min., in water 33.3 hr.; 0.1 micron; in air, 90 hr., in water, infinity. The settling is too slow for most dusts studied in air hygiene.

202 ACUTE SILICOSIS IN LEAD MINERS. R.W.Thomas and S.L.Cummins. Lancet 233, 1481-4 (Dec. 25, 1937).
The cases described occurred in dry pneumatic drilling through a hard quartzite rock high in silica, without means to abate the dust hazard, and consequently in very high silica dust concentrations. After a number of deaths had occurred, 5 miners still at work were studied. They were taken ill within a short time of each other, after an average exposure of 31 months. Death ensued in 18 months, on the average, after ceasing work. The short period at risks resembles that found in cases of makers of abrasive soaps, tunnel workers and sandblasters, and is far shorter than is usual for silicosis in other occupations. Dyspnea predominated in the symptoms; fibrotic nodulation had not reached the final stage. Tuberculosis was present in 2 cases, and may have hastened the process of fibrosis in other cases in which it was not detected. The particular interest in these cases lies in the intensity of the dust hazard, and in the rapidity of the development of silicosis and of its fatal termination.

203 SILICOSIS IN ONTARIO MINES. C.S.Gibson. Trans. Can. Min. Met. Inst. 40, 649-62, and Bull. No. 307 (Nov. 1937).
The paper is an account of the measures taken at mines in Ontario to combat silicosis. A committee was appointed by the Ontario Mining Association to study the subject, and research at Banting Institute was supported. One result of that research is a definite conclusion that sericite does not give rise to fibrosis. In the engineering research, the question of minimizing

the effects of varying air conditions is receiving the greatest amount of attention. The alkalinity, acidity and toxicity of mine atmospheres is being studied. In connection with drilling operations and blasting, no basis is found for a general statement fixing permissible amounts of dustiness. Extensive use of water is considered good practice in dealing with the dusting from blasting. The wearing of respirators is common, as well as the use of water blasts. With regard to ventilation, the use of auxiliary fans and piping, heavier pipe and flexible lines is growing. The Ontario act requires annual x-ray examinations, and tuberculosis is considered the most serious factor in silicotic conditions. Tubercular employees are not allowed to work underground. A distressing incidence in silicosis is suggested by the number of new cases during the past 5 years, but the period of exposure necessary for development of the disease has lengthened from 10 to 18 years. Special emphasis is laid upon the value of measures to counteract tuberculosis. (From abst. in Colliery Guardian, Jan. 14, 1938. p. 75).

204 SOME PHYSICAL ASPECTS OF THE SILICOSIS PROBLEM. A.J.Lanza. Am. Inst. Min. Met. Engrs., Tech. Publ. No. 856 (Nov. 1937). Reprints probably obtainable from Dr. Lanza, Metropolitan Insurance Co., New York City.
This is a brief but pointed review of the present state of silicosis prevention. One point emphasized is that authorities most in touch with the problem in this country believe that there is little appreciable disability connected with silicosis in the absence of infection, and that tubercular infection in silicosis is the crux of the compensation problem. When silicosis came to the front in the U.S., it did so on the crest of a wave of litigation never paralleled in medico-legal annals, and legislation has been enacted in the midst of the furor aroused. It is greatly to the credit of the various legislative bodies that they dealt with the problem as well as they did. The difficulty with silicosis is essentially its chronic nature, and the problem of compensation for previously existing or developing silicosis has been met in various ways by different states, and it remains to be seen how they work out.
In the mining industry, much has been accomplished in silicosis prevention in the absence of specific codes or regulations. Safe concentrations have not been absolutely determined, but there is evidence that a concentration of more than 5 million particles per cubic foot of highly siliceous dust is dangerous. Anthracite dust, containing less than 5% free silica, has been found not to cause disabling silicosis (anthracosis) in concentrations of less than 50 million particles per cubic foot. Some progress is being made in establishing tentative standards in the mining industry, and more should be done in that line by mining companies with the cooperation of governmental authorities. The effect of other dusts in modifying the action of silica should be further studied. Intelligent handling of the medical control problem, especially in dealing with silicotics who are not disabled, is stressed.

205 A STUDY OF DUST CONTROL METHODS IN AN ASBESTOS FABRICATING PLANT. Richard T. Page and J.J.Bloomfield. U.S.Pub. Health Repts. 52, 1713-27 (Nov. 26, 1937) Obtainable from Supt. of Documents, Washington, D.C., for 5 cents, cash.
This paper presents a detailed study of the dust control methods used in an asbestos fabricating plant, and supplements an extensive medical and engineering study of the health of asbestos workers, as yet unpublished. The plant studied has partly completed an extensive dust control program, and the results are not to be interpreted as representing the maximum possible efficiency in asbestos dust control, but simply indicate actual conditions which are probably representative of the best practice in this country at this time. The entire process is described, with the dust control systems in use with the various processes in each department. An occupational analysis of

employees is presented, with a comparison of the atmospheric dust concentrations associated with controlled and similar uncontrolled processes. Impinger counts ranged from 0.3 to 11.0 million particles per cubic foot when they were stopped. Adequate data have not been presented to justify the determination of threshold limits of dustiness that will produce asbestosis in any definite period of time, and therefore it is impossible to determine permissible limits of dustiness on a medical basis. Nevertheless, any appreciable decrease in asbestos dust will decrease the incidence and severity of the resulting asbestosis. Since total elimination of dust is impracticable, actual conditions resulting from application of practical dust control methods can be used as temporary standards by that industry.

206 INDUSTRIAL EXHAUST VENTILATION. EXHAUST HOOD ENTRY COEFFICIENTS. John L. Alden Heat. & Vent. 35, 47-50 (Feb. 1938).
This paper continues the author's series on industrial exhaust ventilation. The technical treatment of rate of air flow in entries, contraction, entry coefficients, etc., begun in the December paper, is continued. Diagrams of hoods of different types are given with the appropriate entry coefficient, entry loss and nearest simple orifice. The methods of increasing flow through hoods are discussed.
(We have had several inquiries regarding the original papers. Our latest information is that they will continue for 6 or 7 months more, and that the combined papers, with additions, may be published in book form if the publishers feel justified as a commercial venture. Otherwise the papers are obtainable only by purchasing or subscribing to Heating and Ventilating, published by The Industrial Press, 148 Lafayette St., New York City.)

207 EXHAUST REQUIREMENTS FOR FOUNDRY DUST CONTROL. John M. Kane. Foundry 66, 31, 72, 74 (Feb. 1938).
Exhaust requirements for tumbling mills, blast-cleaning apparatus and grinding wheels are discussed, in continuation of the previous paper, with tables.

208 DUST COLLECTION. H.R.M.Davies. J. Inst. Heating Vent. Engrs. (British) 5, 317-36 (1937).
A general description of dust-collecting methods, including exhaust systems and dust separators.

GOOD HOUSEKEEPING AND SAFETY IN THE FOUNDRY, INDUSTRIAL CODES AND OCCUPATIONAL DISEASE LEGISLATION. Reprint No. 37-30, American Foundrymen's Association, 222 W. Adams St., Chicago, Ill. Obtainable at that address, price $1.50. The papers presented at the Annual Meeting of the A.F.A., Milwaukee, May 5 and 6, 1937 are included in this reprint and are not obtainable separately. Abstracts of the papers follow.

209 FOOT AND LEG PROTECTION IN THE FOUNDRY. M. Walter Dundore. A.F.A. Reprint No. 37-30, 9-14 (1937). Obtainable as above.
The paper discusses the need of protection for feet and legs in the foundry, the need of comfort as well as safety, and standards that are expected in the manufacture of safety footwear.

210 THE USE OF EYE AND RESPIRATORY PROTECTION IN THE FOUNDRY INDUSTRY. John H. Holzbog. A.F.A. Reprint 37-30, 15-23 (1937). Obtainable as above.
Goggles and respirators are discussed. The fundamental points to be kept in mind in selecting either equipment are protection, comfort, durability and cost. Goggles are available for all types of work and the needs for the particular operation must be considered. The cup type offers the most complete

protection. High grade lenses must be used. Care in the selection of respirators for the particular type of work is equally important. Air-line respirators are necessary in sandblasting, and the source of air is an important factor. The filter type of respirator is discussed briefly. More important than the selection of type of goggles or respirators is instruction in their use, explanation of why they are needed, and continual guarding against carelessness. In giving proper education in safety, the shop committee plan has been tried in the author's factory for some years and has proved very efficient.

211 A CONSIDERATION OF THE PROBLEM OF HUMAN SILICOSIS. Norbert Enzer. A.F.A. Reprint 37-30, 24-33 (1937). Obtainable as in note preceding abstract 209.
A general paper on silicosis, including history, nature and prevention by engineering and medical control.

212 GOOD HOUSEKEEPING IN THE FOUNDRY. E.G.Meiter. A.F.A.Reprint 37-30, 34-8, (1937)
Obtainable as in note preceding abstract No. 209.
"Order and cleanliness are important factors in dust control. The best equipment available will not control dust conditions if superintendents, foremen, and workmen are careless, dirty, and disorderly in their work...Good housekeeping without a doubt is the cheapest single method of dust control." With this introduction, the author discusses the various steps in installing good housekeeping: teaching the workmen, securing of order and introduction of a clean-up program, including housecleaning of the foundry interior, removal of dust by use of water under pressure, combination of air and water, vacuum cleaning and brushing, and finally elimination of dust at its source. The last item includes maintenance of equipment, care of floors, elimination of bad practices, and proper supervision.

213 MAINTENANCE OF SAFEGUARDS IN THE FOUNDRY. James Thomson. A.F.A. Reprint 37-30, 39-42 (1937).
Obtainable as in note preceding abstract No. 209.
This paper briefly discusses mechanical hazards and maintenance of mechanical safeguards.

214 INDUSTRIAL CODES AND THEIR APPLICATION. Jas. R. Allan. A.F.A. Reprint 37-30, 52-4 (1937). Obtainable as in note preceding abstract No. 209.
Workable industrial codes are as much as necessity to industry as equitable occupational disease legislation. To the two factors must be added experienced administrative supervision to complete a system that is fair to all concerned. Safety codes for accident prevention are well established, but knowledge of the necessity for adopting sanitation and hygiene rules is of later origin, and much progress is yet to be made in that direction. The hygienic phase of industrial codes is difficult to prescribe because many of the requirements must cover items not so tangibly present and discernable as in the case of safety protection. With increasing knowledge of occupational diseases and their prevention, it is the duty of industry to codify the best preventive methods in use as minimum standards and to pass them on to legislative and administrative authorities with recommendations for their adoption. The A.F.A. has an Industrial Hygiene Codes Committee (of which the author is chairman) which has published two codes (our abstracts Nos. 223 and 224); and a third, on fundamentals of design, construction, operation, and maintenance of exhaust systems, will be issued soon. Every attempt is being made to write these codes in such a manner that they will be understood by anyone not well versed in the more technical details involved. Application of the provisions of these codes will enable industrial establishments to comply with any reasonable State requirement that may be enacted.

215 THE ESSENTIALS OF OCCUPATIONAL DISEASES LEGISLATION. O.E.Mount. A.P.A. Reprint 37-30, 55-61 (1937). Obtainable as in note preceding abstract No. 209.
The essential features of properly drawn occupational disease laws are presented. The main essentials are fairness to employer and employee, insurability, validity, liability, definition of terms, amount of compensation, time limitations, distribution of liability among employers, observation of exposed employees, examination of claimant, separation of occupational disease liability from accidental injury liability, and determination of contested cases. Other subjects considered briefly are exemptions of particular industries and the question of all-inclusive vs. elective compensation. An occupational disease law should be distinct from accident compensation acts. Under the heading of validity, the author advocates inclusion of lawyers as well as representatives of employees, employers and insurance carriers, so as to have reasonable assurance that the law will be valid. Under liability, the question of the manner of listing the compensable diseases is discussed with the conclusion that there should be included a drafted statement of the principles and tests which must be applied and fulfilled before a particular disease may be deemed occupational in a particular employment. Such a statement should be fortified by a specific exclusion from compensation of ordinary diseases to which the public is exposed outside of employment. Regarding the question of what employer shall be liable for compensation, the author believes that the only workable test is that of the last exposure. Such a test works no hardship on employers for the reason that it may be determined before employment whether an applicant has an occupational disease. Otherwise there would be no end to litigation to determine the responsibility of different employers.

216 FUNDAMENTALS IN DUSTPROOFING COAL. H.R.Fife and P.W.Edeburn. Am. Inst. Min. Met. Engrs., Tech. Pub. No. 866 (Nov. 1937), 14 pp. Obtainable from Dr. Fife, Mellon Institute, Pittsburgh, Pa.
Data are presented to illustrate the extent of surface area represented by coal particles of mixed sizes and distribution of the dustproofing agent as a function of this surface when applied in commercial practice. When coal containing widely varied sizes is treated, a limited quantity of dustproofing agent should be applied to prevent overtreating of smaller sizes; domestic sizes should be given supplementary treatment. Pretipple treatment of mine-run coal is advocated as an economical method of dust control. A dustproofing agent should be selected that is properly balanced with porosity and grindability of each type of coal. The method of application of the dustproofing agent (various types of spraying being considered) is advantageously chosen with regard to the point of application and the market for which the coal is prepared.

217 ABSOLUTE COLOR DETERMINATIONS IN CHEMICAL TOXICOLOGY. I. DETERMINATION OF SILICIC ACID IN ORGANS. H. Kaiser and E. Wetzel. Agnew. Chem. 50, 865-6 (1937) (German)
The yellow shade imparted to the solution of the blue silicomolybdic acid complex by the presence of the complex phosphomolybdic acid is eliminated by a suitable filter. The absolute color is determined by means of a step photometer. The procedure, comparisons of solutions and experimental results are given. The micromethod has a accuracy of 3-10%.

218 SAFETY IN MINING. D. Harrington. Mining Cong. J. 24, 59-61 (Feb. 1938).
This is a brief review of progress in safety in mining for 1937. The figures at hand indicate that the business "recession" has been accompanied by a similar recession in safety in mining, especially in coal mining. There were 1245 fatalities in the bituminous coal mines in the U.S., as compared with 1076 in 1936 and 903 in 1935. On the other hand, progress in safety and health has been advanced, both by legislation, by unofficial organizations and by the cooperation of mine owners, much more than the fatality record would indicate.

219 THE MODERN CONCEPT OF INDUSTRIAL MEDICINE. M.N.Newquist. Nat. Safety News 37, 15-6, 82-3 (February 1938).
The industrial medical problem has been and always will be fundamentally the same, namely, the adequate care of the health of the industrial worker. However, the defensive type of industrial medical service designed mostly to protect the employer and the curative type of service are fading out of the picture, and many employers are adopting the broader viewpoint of the whole subject and are manifesting more of a protective interest in the health and working conditions of their employees. The author discusses the following phases of organization and scope of plant medical service: personnel, facilities, preemployment physical examinations, periodic health examinations, prevention and care of all industrial injuries and occupational diseases, first aid and advice for employees suffering from non-industrial injuries and illnesses while on duty, and medical supervision of plant sanitation and of all industrial health measures. A survey of medical and compensation costs was made by the American College of Surgeons. The total of medical and compensation cost per capita in 1936 varied from $8.42 in establishments with over 1,000 employees to $13.52 in those with under 500 employees.

220 HEALTHY, WEALTHY - IF WISE - INDUSTRY. Alice Hamilton. American Scholar 7, (Winter, 1938); Ind. Med. 7, 46-54 (Jan. 1938).
The author traces the history of industrial hygiene in this country from 30 years ago, when it was non-existent, to the present. The first occupational disease to which any attention was paid was "phossy jaw" in the match industry, which had existed since 1851 without recognition until Andrews' report in 1900. Lead poisoning in the enamel industry was next given attention. The great development of new industries during the world war brought many new hazards to which little attention was paid, until the cessation of the rush of activity, when medical interest was aroused in those hazards and the U.S. Public Health Service began its activities. The newer hazards - carbon disulfide, hydrogen sulfide, organic solvents, tetraethyl lead, radium in watch dials, and silicosis are mentioned - and the steps taken to combat them are discussed, with appreciation of the progress made. The author then considers fatigue as a problem that increases in importance with the increase in mechanized industry. She notes that even in the most modern factories that make the most provision for the welfare of their employees, this fatigue is noticeable. It arises from monotonous work, with every movement timed by the speed of the machine and the experiments of the efficiency expert. It differs from the fatigue experienced by the craftsman, the farmer or the housewife, because the weariness is emotional as well as physical. The author has no remedy to suggest except to slow up the speed of production.

221 HARMFUL INDUSTRIAL DUSTS. R.R.Sayers. U.S.Pub Health Repts., 53, 217-28 (Feb. 11, 1938).
This paper was abstracted last month under the title "Dusts that Harm". (No. 112). This reference is the full original paper and is obtainable from Supt. of Documents, Washington, D.C., for 5 cents, cash.

222 ORGANIZED INDUSTRIAL MEDICINE. WHAT HAS IT TO OFFER TO INDUSTRY AND INSURANCE CARRIERS? Aaron Samuel Leven. Ind. Med. 7, 36-8 (Jan. 1938).
The author calls attention to the higher requirements and greater responsibility demanded of the industrial surgeon, as compared with the ordinary practicing physician and surgeon. His contacts are not only with employees but with officials of the industrial concerns, with industrial engineers, with insurance companies and with the judiciary, and he must have a knowledge of medico-legal, medico-engineering and socio-economic problems. Though he meets with uncertainties, he must make definite decisions on compensation problems, to an extent

which does not fall to the ordinary physician. The designation "industrial medicine and surgery" does not mean a specialty of medical practice, but rather a manifestation of all specialties, the application of all medical and surgical principles, specific to, and inherent in the nature of the problems of the special field created by the contract of employment. Today, industrial medicine and surgery are organized to foster study and discussion of problems peculiar to industry, to develop methods for conservation of the health of workers, and to promote general understanding and disseminate accurate knowledge in reference to diagnosis and treatment of industrial diseases.

223 ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES FOR THE YEAR ENDED JUNE 30, 1937. U.S.Pub. Health Service (1937).
The report of the Division of Industrial Hygiene, on pages 43-6, gives a brief catalogue of the investigations and reports for the year.

224 INDUSTRIAL MEDICINE AND COMPENSATION IN MEXICO. Leopold Brahdy. Ind. Med. 7, 17-21 (Jan. 1938).
Mexico has had an effective Federal compensation law for 6 years. Though still undergoing modification it is now comprehensive and well administered. As Mexico's industries are less diversified than ours, their health problems are simpler. The author compares the Mexican law with the New York law in a number of respects, but points out that for a strict parallel it should be compared with those of our predominantly agricultural States. There are a number of good features in Mexican law and practice that are worthy of our consideration, including the greater time devoted to industrial medicine in the medical schools, the safety and hygiene committees with representation of both employers and employees, a central pathological laboratory for study of post-mortem specimens, the equipment of Labor Department offices with x-ray and clinical laboratories, periodic and pre-employment examinations, and radio lectures on industrial medicine. On the other hand, the Mexican law provides lower death payments and shorter periods for disability compensation, and insurance is not compulsory. In general, there is now satisfactory cooperation among employers, employees and others in carrying out the provisions of the law.

225 INDUSTRIAL ACCIDENTS IN STATISTICAL TABLES. Revista del Trabajo 1, 125-9 (1937). (Spanish.)
In Mexico in 1936, 1717 workers affected with occupational diseases received a total of $1,689,207 indemnity. Of this number, 1695 were miners and of them 1365 were suffering from silicosis.

226 SAFETY AND HYGIENE IN THE SUGAR INDUSTRY. A.E.Nogueira. Revista del Trabajo 1, 113-25 (1937). (Spanish).
The paper describes in detail sugar manufacture in Mexico, with the hazards involved. The hazards are (1) lack of pure water and sewage, (2) insufficient mechanical safeguards, (3) insufficient lighting for night work, (4) lack of medical care and supplies in a few of the "centrals", and (5) dusty atmosphere where the animals charcoal is reactivated. The author suggests the formation of a committee to draft adequate safety and hygiene rules.

227 ACCIDENT PREVENTION AND HEALTH PROTECTION IN ROCK AND MINING INDUSTRIES. Laemmert. Arbeitsschutz, 267-72 (1937). (German).
Accident hazards in rock crushing and allied industries are described. Other health hazards are merely mentioned.

228 SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES DURING THE THIRD QUARTER AND THE FIRST NINE MONTHS OF 1937. D.K.Brundage. U.S.Pub. Health Repts. 53, 37-9 (Jan. 14, 1938). Obtainable from Supt. of Documents, Washington, D.C., 5 cents, cash.
The sickness rate for male employees rose from 82.3 per 1000 men for the first 9 months of 1936 to 104.4 for the corresponding period in 1937, only illnesses of 8 days and over being considered. Influenza was responsible for most of the increase. The pneumonia rate also increased, and was 3.5 per 1000 among steel and iron workers, against 2.2 per 1000 for workers in other industries.

229 INCIDENCE OF UPPER RESPIRATORY TRACT DISEASES AMONG WORKERS OF THE ELECTROLYTIC PLANT OF THE ALUMINUM INDUSTRY. M.T.Doroschenko. Gig. truda (Russian) No. 3, 71-3 (1937).
In the department where aluminum is produced by electrolysis, the atmosphere contains much fine dust (cryolite) and some gaseous fluorine compounds. Observations on 234 workers show that nose bleeds and upper respiratory tract and ear diseases are of frequent occurrence. Systematic examination of new workers has shown that within 1 to 3 months respiratory tract mucosa may be affected. First there is an acute reaction and then a chronic one. Suggested improvements include better ventilation, closed transportation of cryolite and wetting of the cryolite during its preparation. - From the author's English summary.

280 A PHOTO-ELECTRIC SMOKE PENETROMETER. A.S.G.Hill. J. Sci. Insts. 14, 296-303 (Sept. 1937).
After a brief review of the literature the author describes a photoelectric photometric method for estimating the concentration of various material suspended in air or other gases. The method is used for determination of the efficiency of filtering devices. The test cloud consists of carbon particles from a continuous luminous smoky flame adjusted to give a reasonably constant amount of smoke with an average particle size of 0.16 micron. The density of the cloud is compared before and after filtration. The photocell is illuminated by a beam of light passing through the cloud in the penetrometer tube. The photoelectric current is amplified and estimated by a standard method. The galvanometer deflection from the balanced zero position has been found experimentally to be linearly proportional to the mass concentration of the carbon cloud for concentrations up to 100 mg. per cu. m. The method is sufficiently sensitive to permit measuring the density of a cloud containing as little as 0.005 mg. per cu. m. A filter test requires only 10 seconds.

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

231 TOXIC ENCEPHALOPATHY AND "GRANULOPENIC ANEMIA" DUE TO VOLATILE SOLVENTS IN INDUSTRY: REPORT OF TWO CASES. Charles Edward Parsons and Malvina E. Moore Parsons. J. Ind. Hyg. & Toxicol. 20, 124-33 (Feb. 1938).
The authors report 2 cases presenting symptoms of encephalopathy, accompanied by evidence of a profound depression of the bone marrow. The patients were young men who had dipped shirt collars in methyl "cellosolve", in making the new "fused" collars, and consequently had been in close contact with that substance for a number of months, and their symptoms became progressively more serious as their exposure continued. Among the symptoms pointing to toxic encephalopathy were sleepiness, loss of interest in normal activities, dizzy and faint spells, hypertoxicity of all skeletal muscles, hyperactivity of all reflexes, transitory right ankle clonus, persistent dilation of pupils and moderate ataxia. Anemia associated with granulopenia and disturbances of metabolism were also in evidence. Removal of the patients from exposure to the toxic solvent, with appropriate treatment for anemia, resulted in recovery from the poisonous effects upon the central nervous system and the blood forming organs with apparently no permanent damage.

232 HEALTH HAZARDS IN THE MANUFACTURE OF "FUSED COLLARS." I. EXPOSURE TO ETHYLENE GLYCOL MONOMETHYL ETHER. Leonard Greenburg, May R. Mayers, Leonard J. Goldwater, William J. Burke and Samuel Moskowitz. J. Ind. Hyg. & Toxicol. 20, 134-47 (Feb. 1938). Reprints obtainable from Div. of Industrial Hygiene, N.Y. State Dept. of Labor, 80 Centre St., New York City.
The two cases described in the preceding paper and reports of others, led to an investigation in which clinical and hematological studies were made on 19 employees in the fusing department of a shirt factory where ethylene glycol monomethyl ether (methyl cellosolve) was used in conjunction with denatured alcohol as a solvent for cellulose acetate. The 3 patients mentioned in the preceding paper and another who had left the plant the year before, suffering from "multiple neuritis", were included in those examined. The remaining 16 were working at the time of the investigation, and were boys and young men 16 to 26 years of age. The work consisted of dipping the collars in a tank containing the mixture of methyl cellosolve, alcohol and other substances, and pressing them. Under summer conditions, 70 parts per million of alcohol, 25 ppm. of the glycol compound, and much smaller quantities of methyl alcohol, ethyl acetate and petroleum naphtha were found in the air. With the windows closed, the ethyl alcohol content was 215 ppm. and the glycol compound 76 ppm. An exhaust was provided on the press, but as it became clogged unless watched carefully, actual exposure may have exceeded the figures given.
All the boys examined had abnormal blood pictures. Clinically, however, there were three main groups: (1) those with a negative clinical picture; (2) those with abnormal neurological findings on physical examinations but no symptoms; and (3) those with the abnormal findings and symptoms of fatigue and drowsiness. The blood picture, described in detail, is believed as a whole to suggest a macrocytic anemia associated with a reduction in the platelets and a relatively large number of young granulocytes. Individual differences in susceptibility are in evidence. The responsibility of ethylene glycol monomethyl ether for these changes is not proved, but strongly suggested. It is recommended that the concentration of this substance in the air be kept below 25 parts per million.

233 HEALTH HAZARDS IN THE MANUFACTURE OF "FUSED COLLARS." II. EXPOSURE TO ACETONE-METHANOL. Leonard Greenburg, May R. Mayers, Leonard J. Goldwater and William J. Burke. J. Ind. Hyg. & Toxicol. 20, 148-54 (Feb. 1938). Reprints obtainable as above.
A mixture of acetone and methanol is more commonly used for "fusing" collars than is ethylene glycol monomethyl ether, and an investigation similar to the preceding was made in a factory where only the acetone-methanol mixture was used. Better provisions for removal of vapors were made in this factory, but a strong odor of the solvents was noticeable, and a characteristic test showed 25 p.p.m. of methyl alcohol and 45 p.p.m. of acetone in the air. The 19 employees, young men between 18 and 28, were all examined. No abnormalities were found, either by physical examinations or by blood studies. Acetone was always found in the urine. Although both substances are known to be toxic under sufficient exposure, it is apparent that in the workroom atmosphere the concentrations were not high enough to cause pathological changes. This study serves as a control for studies on exposure to ethylene glycol monomethyl ether used in the manufacture of "fused" collars.

234 NOXIOUS GASES IN THE VISCOSE INDUSTRY; THEIR INVESTIGATION AND ELIMINATION. . Wehrung. Chem. App. 24, 218-23 (1937). (German).
A discussion of the amounts of hydrogen sulfide and carbon disulfide evolved in various parts of a viscose-rayon plant, is followed by a description of a ventilating system for their removal.

235 MISUSE OF TRICHLORETHYLENE FOR HYPNOSIS. EXPERIMENTS IN A SECONDARY SCHOOL. A. Jordi. Schweiz. med. Wchnschr. 67, 1238-40 (1937). (German).
Cases of intoxication among students by inhalation of trichlorethylene mixed with Duco thinner are described. The author urges prohibition of free sale of trichlorethylene, its use only in closed processes, exclusion of young people from exposure, and compulsory declaration of solvent composition.

236 AIR VEILS FOR REMOVING NOXIOUS GASES AND VAPORS IN INDUSTRIES DEALING WITH NITRIC DERIVATIVES OF BENZENE AND HOMOLOGOUS PRODUCTS. V.K.Navrosky. Gig. truda (Russian) No. 3, 18-29 (1937).
The author describes laboratory experiments in which he tried different types of nozzles for supplying air veils; some were semicircular, others were rectangular, all of different dimensions. By employing these with varying air velocities, the author arrives at basic principles for producing adequate air veils in the chemical industry. - From the author's English summary.

237 DROPLET PRECIPITATION ON THE CORNEAL SURFACE IN FURNITURE WORKERS. M. Bueckler. Klin. Mtsbl. f. Augenhlk, 99, 676-81 (1937).
In varnishers and polishers in the furniture industry, fine and apparently solid droplets are found adhering to the epithelium, evidently precipitated by the solvent. The droplets are found only under high magnification. They disappear if the patients' exposure is discontinued.

238 METHODS OF ANALYZING TECHNICAL SOLVENTS. VII. H.H.Weber. Arb. a. d. Reichgesundheitsamt 72, 241-3 (1937). (German.)
In earlier papers, specific color reactions of various aliphatic chlorinated hydrocarbons were listed, especially those that could be mixed with benzene, since they are the ones most frequently used in technical solvents. The reactions studied have proved to be of practical use. Only the further differentiation of the easily recognizable group, methylene chloride, chloroform and carbon tetrachloride, proved difficult. The author now presents color reactions for distinguishing these substances from one another, even in mixtures.

239 MORPHOLOGICAL CHANGES IN THE LIVERS OF RATS RESULTING FROM EXPOSURE TO CERTAIN CHLORINATED HYDROCARBONS. Granville A. Bennett, Cecil K. Drinker and Madeleine Field Warren. J. Ind. Hyg. & Toxicol. 20, 97-123 (Feb. 1938). Reprints obtainable from Harvard School of Public Health, Boston, Mass.
Mixtures of various chlornaphthalenes and chlorinated diphenyl were fed to rats and sometimes administered by inhalation. The effects of each mixture varied with its concentration, but in all cases macroscopic and microscopic examination showed that the liver was the only organ affected. The liver changes are described in detail, with numerous illustrations. The toxicity increases with increasing degrees of chlorination. Chlorinated diphenyl appears to be the most injurious compound of those tested. Administration of small sublethal doses of carbon tetrachloride and ethyl alcohol to rats whose livers have already been injured by the compounds under consideration is highly fatal and produces massive necrosis of the liver. The significance of this study in relation to the industrial problem involved is discussed.

240 SOME PERTINENT INFORMATION ABOUT MINE GASES. U.S.Bur. Mines, Inf. Circ. 6983 (Jan. 1938). Obtainable free from Division of Information, U.S.Bureau of Mines, Washington, D.C.
A list of the gases found in mines, harmless and injurious, and from natural and artificial sources, is first given in a table, with the essential properties and hazards of each, with textual elaboration, which includes tables showing the effect of increasing the carbon dioxide content and of reducing

the oxygen content on the explosibility of methane-air mixtures, and a table giving the explosive limits of mixtures of combustible gases with air. The physiological effects of each gas are then discussed, and brief directions for reviving a person overcome by gas follow. Methods of sampling and analysis of mine gases are discussed in some detail.

241 DETECTION AND TREATMENT OF CARBON MONOXIDE POISONING. Robert T. Legge. Rocky Mtn. Med. J. (Jan. 1938); Ind. Med. 7, 108-9 (Feb. 1938).
This is a general review of carbon monoxide poisoning, and its methods of detection and treatment. The greatest hazard is that of exposure to exhaust automobile gases in enclosed spaces but exposure often occurs in industry. The maximum exposure should not exceed 1 part in 10,000 parts of air, and all possible precautions should be taken to avoid undue concentrations. Small animals and birds are often used for detection in air, but chemical detectors, such as that developed by the Bureau of Mines, are best. The pyrotannic detector devised by Sayers and Yant for carbon monoxide in blood, is simple, usable without technical skill, and accurate. The symptoms in the first and second stages and permanent effects are described briefly. Artificial respiration and administration of oxygen are the best methods of treatment.

242 A SIMPLE AND SENSITIVE METHOD FOR DETERMINING CARBON MONOXIDE IN BLOOD. A. Gigon and M. Noverraz. Schweiz. med. Wchnschr. 67, 1154-6 (1937) (German.)
The authors present an involved method by which the portion of the hemoglobin that has been converted to carbon monoxide hemoglobin, can be estimated from color changes noticeable with a stage photometer. The method is based upon the fact that the color of blood changes with addition of sodium thiosulfate, but that the change is not very marked if a portion of the hemoglobin has been converted into carbon monoxide hemoglobin.

243 NEW AUER COMPANY HIGH-CAPACITY CARTRIDGES FOR MINE OXYGEN RESPIRATORS. C. v. Hoff. Gasmaske (German) 9, 110-4 (1937).
Tests of the new cartridges are described. Compared with previously used alkali cartridges they show considerably increased absorption of carbon dioxide, a better utilization of oxygen and consequently a longer active life. Although the temperature of the respired air is no higher than when the older cartridges are used, in spite of the greater efficiency of the new cartridges, the requirement of the industry for a reduction of this temperature has not been met.

244 FIXATION OF CARBON DIOXIDE IN OXYGEN RESPIRATORS. Walter Lemcke. Gasmaske (German) 9, 107-9 (1937).
This is a discussion of the function of the absorbent in a closed-circuit oxygen respirator and compares the properties of caustic soda and soda lime as a cartridge filling. Caustic soda performs satisfactorily but requires too much space. Ordinary soda lime utilizes the space more efficiently but is less effective as an absorbent and so saturates the air with moisture that the wearer is very uncomfortable. The Auer Co. in Germany has found a way to combine the advantages of these 2 absorbents and their new high-capacity cartridges have successfully passed their first practical tests.

245 ?OX RESPIRATORS FOR PROTECTION AGAINST CHLORINE. N.A. Poliakof. Gig. truda (Russian) No. 3, 41-6 (1937).
The principle of the respirators devised by the author is the transformation of chlorine into hydrogen chloride by means of the reaction between chlorine and potassium polysulfide on activated charcoal. They are intended to be worn in high concentrations of chlorine, where the ordinary activated charcoal respirator is insufficient. Two respirators of this type have been constructed, one for accidents and a smaller one for general use.

246 LEAD DISEASES AMONG RIVETERS. Neumann. Arbeitsschutz (German) 292-4 (1937).
The author has taken numerous samples of air in the vicinity of riveters, using Owens counters, including one with a capacity of 250 cc. instead of the usual 50 cc. He has also developed a method for qualitative and quantitative determination of lead on the cover glass on which the sample is obtained. His results very widely, as does also the incidence of lead poisoning in different plants and locations. The author explains the differences by the varying amount of riveting done and the different number of riveters working in a given space.

247 EPILATING ACTION OF ETHYL GASOLINE. H.J.Templeton, G. Michael and J.M.Key. Arch. Dermatol. and Syphilol. 37, 35-42 (Jan. 1938).
Loss of hair was the result of atomizing tetraethyl lead gasoline with a spray gun for 4 days. No symptoms of lead poisoning were discovered, and there was no thallium in the gasoline. Animal experiments showed that loss of hair occurs at the point of application when gasoline containing tetraethyl is applied, but not when pure gasoline or kerosene is used.

248 THE LEAD HAZARD IN MAKING BUSHINGS OF LEAD BRONZE. H.H.Weber. Arbeitsschutz, 294-5 (1937) (German.)
Lead bronze has come into use recently for coating steel bearings for high speed motors. It consists of one-third lead and two-thirds copper, heated to 1350°. No lead poisoning was found in the plant where the alloy was made, and 0.016 microgram of lead was found per liter of air. Lead poisoning occurred in 2 other plants in which centrifugal casting was employed, and in which the lead near the breathing level was found to be 1.9 and 0.55 micrograms, respectively, per liter of air.

249 THE LEAD AND ARSENIC CONTENT OF CANADIAN DOMESTIC TOBACCOS. F.A.J.Zeidler and W.J.Wagner. Can. Pub. Health J. 28, 582-6 (Dec. 1937).
Canadian tobaccos showed an average of 22 parts per million of lead, against 2.5 p.p.m. for oriental tobaccos. The arsenic content of the former is estimated to be about one-half the lead content. The authors conclude: "the lead and arsenic content of Canadian tobaccos is far in excess of that which would be tolerated in foods. In view of the possible ill effects from unlimited use of arsenate of lead on the tobacco plant, it seems logical that there should be government control of some kind, whether through the development of less toxic sprays or through the establishing of a safe contamination tolerance."

250 NORMAL ARSENIC CONTENT OF HUMAN HAIR. J. Wuehrer. Biochem. Ztschr. (German) 294, 401-6 (1937).
In the hair of persons unexposed to arsenic, a colorimetric method showed 5 to 53 micrograms of arsenic per 100 g. of hair. In persons with symptoms of arsenic poisoning, 245 to 1110 micrograms per 100 g. were found.

251 MERCURY VAPOR DETECTION. L.R.Biggs, Construction Eng. Dept., General Electric Co. Schenectady, N.Y. J. Ind. Hyg. & Toxicol. 20, 161-8 (Feb. 1938). Reprints probably obtainable from author.
The development of the Emmett mercury vapor process for producing electrical power led to the necessity of a suitable sensitive detector for mercury vapor in the air. Various types of detector are described and illustrated. Selenium sulfide coated paper turns black when exposed to mercury vapor, and several of the methods described depend upon that principle. Two types of photoelectric detectors are also mentioned, depending upon the permeability of mercury vapor to ultraviolet light. The air for either test must be dust free, dry and cool, and a method of filtering, cooling and drying is described.

252 TESTING MERCURY IN AIR BY POLEJAEV'S METHOD. G.A.Gorodezky. Gig. truda (Russian) No. 3, 82-3 (1937).
The author has developed a modified method by which samples may be taken more quickly: 150 liters per hour as compared with 15 to 20 liters per hour by Polejaev's original method.

253 INDUSTRIAL MERCURY POISONING. E. Holstein. Zbl. f. Gewerbehyg. 14, 249-58 (1937). (German).
This paper describes the mercury hazards in certain industries, the clinical symptoms of poisoning, therapy, and the necessary hygienic measures. In a plant constructed in 1934-35, the lessons of experience in older plants led to many modifications. A German scientist has developed a substitute for mercury in the carroting process.

254 CHRONIC MERCURIALISM IN THE HATTERS' FUR CUTTING INDUSTRY. Paul A. Neal and R. R. Jones. J.A.M.A. 110, 337-42 (Jan. 29, 1937).
The authors review their work which was presented fully in Public Health Bulletin 234 (our abstract 75).

255 HEALTH HAZARDS IN THE PLATING INDUSTRY. F.N.Carlson. Monthly Labor Rev., (Aug. 1937); Metal Ind. 35, 610-3 (Dec. 1937.)
The author briefly discusses the hazards of the plating industry, including skin irritation from alkaline spray, "nickel itch", chromic acid, lead and cyanide poisoning. Cleanliness, ventilation and use of respirators are advocated as remedies for all these hazards. Also the addition of beeswax or stearic acid to cleaning solutions is recommended. Resistance to "nickel itch" is increased by the plentiful use of fruits in the diet. Wearing rubber gloves greatly reduces the hazard involved in cyanide plating. The treatment of lead poisoning is discussed briefly. Silicosis also is briefly discussed.

256 TOXICITY OF SELENIUM. V. TOXIC AND VESICANT PROPERTIES OF SELENIUM OXYCHLORIDE. H.C.Dudley. U.S.Pub. Health Repts. 53, 94-8 (Jan. 21, 1938). Obtainable from Supt. of Documents, Washington, D.C., for 5 cents, cash.
Selenium oxychloride, used as a solvent and plasticizer, is a powerful chlorinating and oxidizing agent. Small quantities were painted on the clipped skin of rabbits, and 0.01 cc. or 7 mg. per kg. body weight, was found fatal. When mixed with anhydrous carbon tetrachloride, death did not result, but moderately severe burns were produced. When 0.005 cc. of selenium oxychloride was dropped on the arm of a man a burn appeared almost immediately and required 30 days to heal. No harm resulted, however, when the arm was washed with water immediately after application. Quantities of the substances found in the blood and liver of treated animals are given.

257 PROTECTING THE WORKER AND NEIGHBORHOOD IN THE PRODUCTION OF ZINC OXIDE IN THE ROLLING MILLS OF UPPER SILESIA. Kappe. Arbeitsschutz, 296-8 (1937)(German).
The author describes an evaporation process by which zinc, with lead, cadmium and thallium associated with it, can be extracted from low grade zinc ore. The escape of these metals constitutes a hazard, and the author shows how the dangers can be overcome by proper equipment.

258 INDUSTRIAL HYGIENE IN THE ELECTROLYSIS OF ZINC. A.A. Mezatunian and D.N. Finkelstein. Gig truda (Russian) No. 3, 35-40 (1937).
On the basis of special investigations carried out in the electrolytical department of the zinc plant in Cheliabinsk, including air analysis and study of morbidity among workers, the authors point out that the greatest harm is done by the combined action of sulfuric acid and zinc sulfate. These cause respiratory diseases and dental trouble. Prophylactic measures are suggested. - From the authors' English summary.

259 THE DANGER OF OXYGEN. G. Pflesser. Arch. f. exper. Pathol. u. Pharmakol. 187, 472-8 (1937). (German).
White mice, cats and dogs allowed to breathe as much pure oxygen as possible died within 2 to 4 days. Autopsy showed massive lung emphysema, stasis of the organs, heart and vessels almost bloodless and the heart almost flaccid. The cause of death, therefore, appeared to be weakness of the heart and circulation.

260 OXYGEN DEFICIENCY IN A WATER TANK. F.R.Holden. Nat. Safety News 37, 51, 70-1 (Feb. 1938).
Three workmen collapsed on entering a tank 8 or 9 feet in diameter and 30 feet in length, for the purpose of cleaning out the residue from water that had been stored under pressure in the tank. The water had been forced out by the air pressure already in the tank which was then reduced to atmospheric. The men were rescued soon. Two suffered headache and nausea but no permanent effect. On repetition of the same conditions at the next cleaning period, no carbon monoxide and 0.1% carbon dioxide were found, but the oxygen content varied from 5.4 to 10.4%. Similar values were obtained on a later recheck. The lack of oxygen was evidently due to its selective solubility in the water. Life lines should be worn during work in such tanks, and outside air should be admitted during draining.

261 REPORT OF SUB-COMMITTEE ON CHEMICAL PROCEDURES IN AIR ANALYSIS. W.A.Cook, Chairman. A.P.H.A. Year Book, 83-4 (1937-38).
As the first steps toward the publication of approved chemical methods of air analysis for organic and inorganic impurities, a questionnaire was sent to a number of laboratories believed to be conducting air analyses for industrial hygiene purposes. Including some state and municipal laboratories that will soon begin work, there will be a total of 54 available for conducting analyses as a part of occupational disease control. The next step will be the submission of a few methods for approval and subsequent publication.

262 CLINICAL AND EXPERIMENTAL INVESTIGATION ON GAS COAL DUST EXPLOSION INJURIES IN COAL MINES WITH A SHORT REPORT ON THE CLINICAL PICTURE OF THESE INJURIES. S. Ishinishi. Arch. f. klin. Chir. 190, 693-713 (1937). (German).
On the basis of animal experiments and observations on 252 workers, the author concludes that in these accidents the effects of high temperature and high air pressures on the respiratory tract are of greater significance than burns. The important factor of carbon monoxide poisoning is not given much consideration.

263 ALLERGIC DISEASES IN RELATION TO OCCUPATION. May R. Mayers. Ind. Bull. 16, 503 (Dec. 1937); Ind. Med. 7, 109-10 (Feb. 1938). Obtainable from Div. of Hygiene, N.Y.State Dept. of Labor. 80 Centre St., New York, N.Y.
Allergy in general is first briefly discussed. In relation to occupation, if it can be shown that sensitization has occurred in the course of an occupation, and was actually due to substances with which the patient came in contact there, causal relation is established. The practice in cases of dermatitis venenata is to make patch tests with all suspected substances in order to determine which one, if any, appears to be responsible. In asthma, other tests such as intradural or scratch tests are available. In many cases of asthma it can be shown that there is no possible relationship between the patient's asthma and his work. A difficult medical aspect of dermatitis is polyvalent sensitivity: that is, once a person has become sensitized to a given substance, he may then more readily than before become hypersensitive to other substances. In such cases, very careful study of the particular case is necessary in order to determine whether the allergic response is due to the person's work.

From the standpoint of prevention, it is clear that allergic individuals who have become sensitized to certain substances should not go on working with them. There are exceptions in cases of dermatitis venenata, in which immunity is developed but most persons tend to become more sensitive if exposure continues.

264 DETOXIFYING AND ANTIALLERGIC ACTION OF SODIUM THIOSULFATE ($Na_2S_2O_3 \cdot 5H_2O$) H. Wendt. Dtsch. med. Wchnschr. 63, 1832-5 (1937). (German).
The author attributes three effects to this chemical: "one apparently like that of phosphorus in statu nascendi", evidently that of a reducing agent, that of a chemical antidote and that of an antiallergic. The substance has proved useful in industrial eczema and also as a prophylactic in factory work. In the literature are found reports on its detoxifying action in poisoning from carbon monoxide, cyanide, heavy metals and other substances. The author reports favorable results in the treatment of allergic skin diseases, one of which was evidently of industrial origin. He recommends further testing of the effectiveness of this substance.

265 ARTIFICIAL FERTILIZERS AND SECONDARY INFECTIONS. H. Kliewe and W. Hass. Ztschr. f. Hyg. u. Infect. 120, 198-208 (1937). (German).
Many artificial fertilizers, including calcium cyanamide and calcium nitrate, cause skin erosions, often in the form of a prolonged ulcerating process upon which secondary infections develop. It was shown that pathogenic bacteria were absent and that many fertilizers have a weak bactericidal action. The authors believe that infiltration of the calcium cyanamide or nitrate following a skin abrasion produces swelling, loosening and tissue damage, and the acid protection of the skin is also weakened by loss of serum. Thus the stage is set for the infiltration and growth of bacteria.

266 PULMONARY TUMORS IN MICE. V. FURTHER STUDIES ON THE INFLUENCE OF HEREDITY UPON SPONTANEOUS AND INDUCED LUNG TUMORS. H.B.Andervont. U.S.Pub. Health Repts., 53, 232-7 (Feb. 11, 1938).
Susceptibility to tumors caused by dibenzanthracene follows the laws of heredity, as far as can be established by the experiments.

267 THE PRODUCTION OF TUMORS IN MICE OF STRAINS C$_3$H AND Y BY DIBENZANTHRACENE AND METHYLCHOLANTHRENE. H.B.Andervont. U.S.Pub. Health Repts. 53, 229-32, (Feb. 11, 1938).
This paper, supplementary to the series on lung tumors, shows that one strain of mice (Y) is much more resistant to tumors than the other.

268 DOES TAR REQUIRE ULTRAVIOLET LIGHT TO PRODUCE SKIN CANCER? O. Tueschlaender. Klin. Wchnschr. 16, 1284-5 (1937). (German.)
White mice painted with tar developed cancer whether exposed to ultraviolet radiation or kept in the dark.

269 COMPRESSED AIR ILLNESS. C.W.Shilling. U.S.Naval Med. Bull. 36, 9-17 (Jan.1938).
This is a very brief review of the subject in 2 sections, on history and cause respectively. A good bibliography is included.

270 CARDIO-VASCULAR DISEASE IN INDUSTRY. W. Ehrhardt. Ztsch. f. aerztl. Fortblg. 34, 714-6 (1937). (German).
Persons having cardiac and vascular diseases should not have work involving alcohol or dust. Vascular disease is caused by many industrial poisons, such as lead, phosphorus, arsenic, carbon disulfide and cyanides.

271 PHYSICAL THERAPY IN RELATION TO INDUSTRIAL MEDICINE. F.H.Krusen. Minnesota Med. 21, 30-3 (Jan. 1938); Ind. Med. 7, 100-4 (Feb. 1938).
Physical therapy is one of the means that can be used to get an injured worker back to normal, especially in the treatment of bone, joint, muscle, nerve or skin traumas. The useful forms of physical therapy include a reflecting lamp, paraffin bath, alternating hot and cold baths, short wave diathermy, massage and manipulation. In case of the patients' inability to resume his ordinary work, occupational therapy should be employed simultaneously with physical therapy.

IN RE: ABRAMS November 1992