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Air Hygiene Foundation,
4400 Fifth Avenue,
Pittsburgh, Pa.
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NOTE TO MEMBERS:

Enclosed is another bulletin in the series prepared by the Preventive Engineering Committee of Air Hygiene Foundation. The new bulletin deals with "Routine Sampling for Control of Atmospheric Impurities" and gives methods for determining some 40 substances more or less commonly found in industrial atmospheres. Extra copies, in addition to the regular membership allotment, are available at fifty cents each.

H. B. Meller
Managing Director

Air Hygiene Foundation of America, Inc.
4400 Fifth Avenue,
Pittsburgh, Pa.
February 23, 1939.

REFERENCES TO RECENT LITERATURE ON INDUSTRIAL DISEASES

(A) News Items

84 BOOK REVIEW -- DESIGN OF INDUSTRIAL EXHAUST VENTILATION. John L. Alden. Published by Industrial Press, 148 Lafayette St., New York, N.Y. 220 pp. $3.00. This book, published recently, includes the articles in Heating and Ventilating and which have been abstracted in this Bulletin. No reprints of the articles have been available to date. It is well known that the literature on exhaust ventilation has been scanty and the author attempts to dispel the mystery surrounding the subject and to describe it in straightforward engineering terms. The book covers the following subjects: flow of fluids; hood forms; air flow through hoods; pipe resistance; piping design; dust separators; low pressure conveyors; centrifugal exhaust fans; structural details and system planning; and field measurements and their interpretation. One purpose of the book is to tell the plant engineer how to design or how to buy an exhaust system that will adequately and economically operate.

85 THE KNUDSEN AWARD. Ind. Med. 8, 44, (January 1939).
The Knudsen Award, open to members of the American Association of Industrial Physicians and Surgeons, is awarded annually for "the most outstanding contribution to industrial medicine". Members desiring to be considered should notify the committee by March 1, 1939. The award is made on the basis of the best original contribution to medicine as it applies to industry.

86 FOR MORE LIBERAL COMPENSATION. Labor Standards, U. S. Dept. Labor, 2, 6, (January 1939).
Another attempt will be made in New York State to liberalize the restricted schedule of compensation for silicosis and to terminate the restrictions entirely at the end of a 5-year period. The 1936 law provided medical benefits for 90 days only and compensation for total disability not to exceed $500 in the first month after the bill became effective, the amount increasing $50 a month until a maximum of $3000 was reached. The proposed amendment would remove the limitation on medical benefits, would step up the rate of monthly increases and would remove the ultimate maximum of $3000. A similar bill introduced last year, passed both houses, but was reconsidered and killed in the assembly.

87 LABOR LAWS OF THE STATE OF WISCONSIN AND ORDERS OF THE INDUSTRIAL COMMISSION. Industrial Commission of Wisconsin, Madison. 222 pp. (1938).
In this volume are published all the labor laws of the State. Under "Safety and Sanitation" are listed rules for the control of dust, fumes, vapors and gases, spray coatings, mines and caisson work. Other divisions include injuries and compensation, employment of children, hours and wages, labor relations and special laws for women in industry.

88 COMPENSABLE OCCUPATIONAL DISEASE CASES SETTLED IN WISCONSIN IN 1937. Industrial Commission of Wisconsin, Madison. December 3, 1938.
A total of 753 claims were settled in the State for $272,503. Of this total, 707 were for temporary disability, 20 were permanent-partial and 26 were for total disability or death. Twenty-eight types of disease are listed, the more prominent among them being: dermatitis, 286 cases; plant poisoning, 180; carbon monoxide, 48; lead poisoning, 12; silicosis, 22; heat prostration, 56; freezing, 26; synovitis and teno-synovitis, 55; and tuberculosis, 6. The most noticeable disease on the list is silicosis, which, although it comprised only 3 per cent of the cases, accounted for 60 per cent of the indemnity paid. Eighteen of the 22 silicosis cases were for total disability. Next in line are heat prostration, about 10 per cent of the total indemnity, and tuberculosis, about 8 per cent. The silicosis cases occurred in the following industries: iron mining, 6; stone cutting and polishing, 3; iron foundries, 9; steel foundries, 1; foundry and machine shop products, 2; and agate and enamel ware, 1.

89 MASSACHUSETTS OCCUPATIONAL DISEASE COVERAGE PROPOSALS, Labor Standards, U. S. Dept. of Labor, 2, 6, (January 1939). Labor Standards is a monthly publication, for sale by Supt. of Documents, Washington, D.C., 10 cents per copy, 75 cents per year.
Several plans have been presented to the special Massachusetts legislative recess commission studying problems of silicosis and other pulmonary disease coverages under the workmen's compensation act. One provides for a compulsory pool to take care of silicosis and dust cases, with provision for assignment of risks rejected by three insurance companies at rates approved by the commissioner of insurance; provision for apportionment of risks among compensation carriers; and a provision permitting carriers to pool their excess losses from assigned risks. Another plan would set up a State fund, in the custody of the State treasurer, for extra hazardous employments. This fund would be established and maintained by contributions from all insurance carriers, and from it carriers of assigned risks would be repaid the losses in excess of 70 per cent of the premiums of such risks. Still another plan legalizes self-insurance under certain circumstances. A fourth plan separates occupational disease and accident claims, and limits occupational disease claims to total disability.

90 NOMOGRAMS FOR THE COMPUTATION OF DATA OF FREQUENT OCCURRENCE IN INDUSTRIAL HYGIENE. J.M. Dalla Valle. Div. Ind. Hyg., U.S. Public Health Service, Washington, D. C.
A useful set of nomograms covering (1) dilution of impinger samples, (2) computation of dust concentration, (3) conversion of mg. per liter to parts per million, (4) rate of particle fall by Stokes' law, (5) computation of relative humidity, (6) friction loss in round pipes, (7) computation of airflow from pitot readings, (8) velocity exterior of an opening under suction, (9) height, age, and weight relationship of adult men and women.

91 REDESIGN OF WORKING BOOTHS TO REDUCE DUST COUNTS. Cer. Ind., 32, 60, (Jan.1939).
A redesigning of the working booths in the porcelain department of the General Electric Company has produced some surprisingly low dust counts in these booths where unfired ware is trimmed on lathes. A stream of air is made to pass downward in front of the operator, not striking him directly, and then out through openings in two staggered baffle plates in the rear of the booth. Dust counts in the operators exposure zone were approximately the same as the general plant atmosphere.

92 LABOR PROTECTION AS LECTURE MATERIAL FOR TECHNICAL SCHOOL DIRECTORS. St. Folkhard. Arbeitsschutz, pp. 201-3 (1938) (German).
The author advocates the establishment of courses in the technical schools for instruction in labor laws, applied physiology, labor psychology and labor protection. Short courses could be arranged for safety engineers.

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

93 PHYSIOLOGYFOR ENGINEERS. H. W. Haggard. Mech. Eng., 61, 8-12, (Jan. 1939).
Robert Henry Thurston Lecture at Annual Meeting Am. Soc. Mech. Engrs. Dec. 1938.
Physiology for engineers is a much more important subject than is apparent on first consideration. Numerous engineering achievements in the past have greatly changed human environment and the resultant effects on human physiology should be known and appreciated. Dr. Haggard does not attempt to give a course in physiology, but merely stresses the importance of this element in the engineer's problems. The study of the human body is a complicated subject. It is emphasized that the body acts as a whole unit and that a disturbance in the operations of one part will affect to some extent the whole unit. To illustrate, two examples of engineering progress are cited: modern artifical lighting and air conditioning. It is possible that, because of the lack of proper light and the attendant eyestrain, a fair proportion of men and women suffer physiological disturbances that interfere with their work, their digestion or their disposition. Likewise, other abnormal conditions may cause similar disturbances in a normal operation of the unit. An almost opposite picture is presented in air conditioning. The human body responds only to stimulation and in the perfectly controlled atmospheres of air conditioned rooms is the possibility that the temperature regulating mechanism of the body may become sluggish and stagnate, to precipitate other functional disturbances. These numerous physiological factors should be given consideration by engineers in problems of which man is a part.

94 DO GOOD WORKING CONDITIONS PAY? Victor G. Heiser. National Assoc. Manufacturers, Report of Committee on Healthful Working Conditions. December 1938. Obtainable from Division of Publications, National Association of Manufacturers, 19 W. 44 Street, New York City, at 5 cents a copy -- free to Association members.
This publication includes a preliminary report of the Committee together with the address of Dr. Heiser, Chairman, at the Congress of American Industry. Dr. Heiser points out some of the reasons why healthful working conditions are desirable in a factory and how every manufacturer can compare conditions in his own factory with that in others of similar nature. Emphasis is being placed by the Committee on the smaller companies. More support should be given to existing industrial, medical and engineering research laboratories for further investigation and assistance on the problems that exist.

95 THE EFFECTS OF OCCUPATION AND OF ITS ACCOMPANYING ENVIRONMENT ON MORTALITY. P. Stocks. J. Roy Statistical Soc. 101, 669-96 (1938) (British).
Some occupations have given the statistical impression of being intrinsically unhealthy, whereas their unfavorable mortality might arise from their particular localization, whereby the workers and their families share the higher death-rates which predominate in that locality. This fact may be a factor in certain industries only carried on in larger cities, and, though well distributed over the country, high mortality may be due, not entirely to the industry itself, but to the urban conditions. Cases are cited in England, where, if these facts are overlooked, certain erroneous conclusions might be drawn. Conclusions drawn from a survey of the general population show that higher death rates can be correlated with higher latitudes, housing facilities and ratio of unskilled workers. A ratio of the standardized mortality of males to that of married women has been used to indicate whether a high mortality among employed men represents a true occupational risk or is one inherent in the environment.

96 EIGHTEENTH ANNUAL REPORT OF THE INDUSTRIAL RESEARCH BOARD TO JUNE 30, 1938. H.M. Stationery Office, London, 1938. Obtainable from the British Library of Information, 270 Madison Ave., New York, N.Y. Price 1s.
Part I of this Report contains a summary of the work in the past 20 years. Much of the earlier studies were devoted to hours of labor, fatigue, efficiency and other general subjects. Part II deals with the work of the past year during which time the studies on illumination have been given much attention. The toxicity of industrial solvents has been investigated and it is intended later, if possible, to check the toxic effects of all solvents before they are issued commercially. No extensive discussion is given of dust and pulmonary disease, as the comprehensive survey of silicosis in the South Wales Coalfields is still uncompleted.

97 SIXTEENTH ANNUAL REPORT OF THE SAFETY IN MINES RESEARCH BOARD, 1937. H.M. Stationery Office, London, (1938) (British).
A large part of the report is devoted to progress reports on the studies of coal dust and firedamp explosions, flameproofing of electrical mining machinery, mine lighting, explosives, safety lamps, and other miscellaneous safety factors. Considerable work is being done on those subjects. A group of reports classed as health researches includes the study of mine temperatures, silicosis, and protection against dust. One set of experiments showed no ill effects of exposure to an air velocity of 1,000 f.p.m. of dry air at a temperature above that of the body, a temperature which was found in one of the mines. It was concluded, in studies of the excretion of silica in urine, that this type of test cannot be used as a reliable method in the diagnosis of silicosis. Dust inhalation experiments are still being carried out in South Wales and it is hoped that guinea-pig lung pictures will be obtained corresponding to: (1) anthracite dust alone; (2) anthracite dust, stone dust, and varying quantities of nitrous fumes; and (3) stone dust with nitrous fumes. Certain other tests have shown that the employment of a plant embodying the "Hay" mist projector principle reduces dust by 90 per cent.

98 PUBLIC HEALTH SERVICES AND INDUSTRIAL HYGIENE. D. Stewart. Public Health, 51, 165-8, (March 1938) (British).
The criticism is made that the public health official does not appear to be aware of the industrial community as an entity or to consider administrative problems in their bearing on industrial workers. The author makes a plea for full cooperation between these public health officials and those concerned now with industrial hygiene matters. The bulk of the present day services in industrial hygiene is done by the more enlightened companies and by full cooperation these services could be given wider application.

99 THE TREND OF OCCUPATIONAL DISEASE LEGISLATION. H. D. Sayer. Text of address at the National Safety Congress, Chicago, October, 1938. Reprints obtainable from the Association of Casualty and Surety Executives, 60 John St. New York City
Compensation for occupational disease and accidental injury is similar basically and logically, but their causes and effects are so dissimilar that they require almost entirely different treatment. Accidents occur at a specific moment, in point of time, but this is not true of most occupational diseases, and it makes difficult the fixing of liability. Another problem is in the terms of coverage as prescribed by law. Some states have "all inclusive" statutes which make the coverage indefinite and impossible to keep within the bounds originally intended. No new legislation of this type has been enacted within the past three years. The trend has been towards specific schedules of compensable diseases, which limit the liability of the employer, reduce litigation, and make the administration much simpler. A brief description is given of the "graduated" method of compensation of silicosis cases which have accrued in the past, but which have only recently been made compensable. Liability starts at only a

nominal amount (some are $500) and increases monthly to a maximum in two or three years. It is not ideal, but prevents the employer from having to pay, out of current income, for liability accrued during past years.

100 SICKNESS ABSENTEEISM. M. L. Dobbie-Bateman. Ind. Welfare, 20, 403-8, (October 1938) (British)
The author is full-time physician to a large store having about 6000 employees. Attendances at the clinic are as voluntary as possible, but are obligatory for (1) preliminary examination for appointment, (2) reporting accidents incurred at work, and (3) before return to duty after illness. In over 3000 preliminary examinations in 3 years, 80.5 per cent were classed as fit, 14.5 per cent as partially fit, and 5 per cent as unfit. From sickness records it appears that women take more time off than men and that those engaged in selling have higher sickness rates than others. Sickness is higher in winter months, particularly in latter part of the season. About 45 to 50 per cent of time lost was due to respiratory diseases. Digestive diseases accounted for about 10 per cent.

101 ALUMINUM AND SILICOSIS. R. C. Emmons and Carl Fries. American Mineralogist, 23, 654-60, (October 1938).
In the study of "protector" dusts, Denny, Robson and Irwin (Abstract No. 39, 1937, this Bulletin) contended that the action of alumina was to reduce the amount of silica in solution; that the toxic action of silica depended on the amount in solution. The authors agree that alumina is a protector dust but disagree on the explanation of its action. First they state that it is the particulate (undissolved) silica which is held to be the cause of fibrosis and not the dissolved silica which is easily transported by the blood and excreted. The action of the alumina is to hydrolyze to the insoluble hydroxide which flocculates the smaller silica particles not yet in solution into masses large enough to be removed by phagocytosis. In beaker experiments where the pH of the water was kept below 5.0 to prevent the alumina from hydrolyzing to the hydroxide, there was no flocculation or reduction of the amount of particulate silica in suspension. In alkaline solutions, however, large reductions of suspended silica were noted. Other substances such as carbon black, iron oxide (hematite) and the alkaline earth carbonates produce the same reactions that are well known in clarification in water treatment.

102 DIFFERENTIAL DIAGNOSIS BETWEEN THE PNEUMOCONIOSES (PARTICULARLY SILICOSIS) AND TUBERCULOSIS. E. Gonzalez Ancira. Arch.des malad. profes., 1, 379-88, (November 1938) (French)
The differential diagnosis of tuberculosis and the pneumoconioses is not difficult if the following points are given consideration: (1) exposure to dust and its composition, (2) complete laboratory examination, and (3) correct use of the x-ray. Under (1), the details cannot be too exact. Under (2), certain laboratory tests may be carried out, which, if done correctly, will help differentiate between the two. Characteristics of x-rays are described, which, if followed through in detail, will further aid in the diagnosis. By the use of the combined signs and symptoms covered under these three main considerations a correct diagnosis should not be difficult.

103 FIGHT AGAINST SILICOSIS IN THE METAL INDUSTRY. Anon. Oberflackentech., 15, 189-1, (1938).
Silicosis develops in men sandblasting or grinding metals more rapidly than in minors. Means for preventing inhalation of the fine dust, adequate equipment and clinical aspects are briefly discussed. Grinding wheels of artificial stone, as carborundum, are more sanitary, as the dust does not contain any free silica which is the cause of silicosis. Wherever possible artificial stones should be used.

104 SILICOSIS AMONG GRINDERS. J.L.A. Grout. Brit. Jour. Radiol. 11, 366-70, (June 1938).
The author gives an interesting report of the work of Sheffield grinders in sharpening knives, forks and needles and their working conditions during the 18th and 19 centuries. The grinding was all done with sandstone wheels, the grinding of knives being done wet and that of forks dry. Fork grinders seldom lived beyond the age of 32, while the knife grinders occasionally lived to 50 years. In 1833, out of 2500 grinders, not 35 had lived to be 50; of 80 fork grinders, exclusive of boys, not a single worker of 36 years was alive. Although some attempts were made to alleviate these conditions, they remained much the same for generations, until recently. In 1834 a dust control program, much the same as those in effect today, was proposed but was apparently never enforced. During more recent years the replacement of the sandstones by artificial abrasives has almost eliminated silicosis from this industry.

105 DETERMINATION OF ACID INSOLUBLE MATTER IN THE SPUTA OF SILICOTICS. H. Civin, I. A. Schreier, B. Martello and J.D. Hardy. J. Ind. Hyg & Toxicol., 21, 1-4, (January 1939).
The determination of mineral residue in the sputum of silicotics is a comparatively recent study, and no thorough investigation of the subject has as yet been made. Burke (see Abstract No. 873, Dec. 1938) made a microscopic study of the sputum of silicotics and non-silicotics, but the technic available made it difficult to distinguish particles accurately. In the present study the authors determined the weight of the total acid-insoluble solids in 100 cc of sputum. Their method is completely described in the paper. The average free silica content of the solid matter, determined with hydrofluoric acid after ignition, was 71 per cent. They found some solid matter in the lungs of all examined, but noted that the sputum of proved silicotics showed distinctively higher values than that of non-silicotics. The sputum of 83 non-silicotics contained from 0.2 to 2.5 mg. residue per 100 cc while 84 per cent of 32 silicotic cases contained over 2.5 mg. per 100 cc, and some values were as high as 20 mg. Many silicotics gave high results even after years of absence from a dusty trade. It is suggested that these determinations may prove to be of value in the diagnosis of silicosis.

106 VARYING ANATOMIC BEHAVIOR OF THE RIGHT HEART IN SEVERE SILICOSIS. M. Letterer, Verhandl. d. deutsch Gesell. f. Kreislauf. 11th session, pp. 400-5, (1938)(German).
Of 13 cases of severe simple silicosis the author found that 11 had hypertrophy of the right heart with a 6-10 mm. thick wall of the conus pulmonalis. Of 22 cases with severe silicosis complicated by tuberculosis there were only 9 cases with this condition. It seems possible therefore that tuberculosis hinders the development of hypertrophy of the right heart and can perhaps even bring about a diminution of it.

107 THE DANGER OF SILICOSIS AND PRACTICAL SAFETY MEASURES. Derdack. Zbl.f.Gewerbehyg. 25, 167-70 (1938) (German).
The author discusses the dust produced in the manufacture of fireproof bricks and deals briefly with means for preventing its dissemination.

108 THE EXPERIMENTAL REPRODUCTION OF THE SO-CALLED SILICOTIC NODULE. A. Policard. Bull. Histol. appl. physiol. path. tech. microscop. 15, 67-76 (1938) (French).
Histologic and histo-chemical studies were made of pathologic tissue from the lungs of guinea pigs, rats and rabbits which had inhaled quartz or chalcedony dust for 8-25 months. The fibrous changes produced in the lungs of these animals differed markedly from the fibro-hyalin nodules found in human silicosis patients. Conclusion: the origin of human silicotic nodules cannot as yet be definitely ascribed to silica itself.
Note: See abstracts Nos. 15 and 16 in January, 1939, Bulletin.

109 ASBESTOSIS. J. V. Sparks. Brit. J. Radiol. 11, 371-7, (June 1938) (British)
The paper describes the clinical and radiological signs of asbestosis. The chief complications are (1) purulent bronchitis, (2) broncho-pneumonia, (3) pulmonary tuberculosis, and (4) carcinoma.

110 THE ADSORPTION EFFECTS OF VARIOUS DUSTS ON DILUTED "OLD"TUBERCULIN.
S.L. Cummins and E.M. Williams. J. Hyg., 38, 638-46 (1938).
The adsorption power of various types of finely-divided dusts for the active part of tuberculin was studied by shaking 1 gram samples of such dusts with 10 ml. of a 0.1 per cent solution of tuberculin for 5 minutes, incubating at 37° for 30 minutes and keeping them overnight at room temperature. The clear liquid was removed, centrifuged, sterilized and tested. It was found that the adsorption power increased in the inversed ratio of particle size, that anthracite and fusian dust of comparable particle size have the same adsorption power, and that sandstone from different locations and shale dust, sericite, chalcedony and quartz dust also adsorb the active principle of tuberculin to different extents. It is suggested that the relatively low morbidity, toxicity and mortality from tuberculosis noted in coal miners exposed to siliceous dust are due to the adsorption of tuberculous toxin by finely-divided coal dust inhaled with the dust from hard stone.

111 THE PHYSIOLOGIC RESPONSE OF PLEURAL SURFACES TO IMPLANTED DUSTS. W.R. Bradley and M.W. First. J. Lab. and Clin. Med., 24, 44-52, (1938).
Forty rabbits were subjected to intra-pleural implantation of dust and, with 10 additional rabbits as controls, were autopsied after 15, 30, 45, 60, and 90 days. Typically inert, absorptive and proliferative reactions were produced by the pleura in response to various dusts. These responses were essentially the same as those produced in serous cavities elsewhere in the body by other workers. The injection of dusts into the pleural cavities, especially because of its proximity to lung tissue, was found to be suitable in both results and economy.

112 RADIOLOGICAL DEMONSTRATION OF PATHOLOGICAL CHANGES INDUCED BY CERTAIN INDUSTRIAL PROCESSES. J.F. Brailsford Brit. J. Radiol., 11, 393-400 (1938) (British).
The author summarizes Roholm's study of fluorine intoxication contracted by those handling cryolite. Eighty-four per cent of the workers examined had bone changes -- a diffuse osteosclerosis, which was on the whole proportional to the period of employment. Half of the workers showed radiographic evidences of pulmonary fibrosis similar to that seen in silicosis but more innocent in nature, but it was undecided as to whether the fluorine or the associated quartz had caused the fibrosis. Against this, an examination of 49 workers in Scotland exposed to alumina and cryolite dusts failed to establish the existence of osteosclerosis or of pulmonary fibrosis in spite of long exposure. Other examples of the radiograph as a diagnostic tool are cited.

113 TESTS OF RESPIRATORY EFFICIENCY AND THEIR CORRELATION WITH RADIOLOGICAL APPEARANCES IN THE LUNGS. E.M. Killick. Brit. J. Radiol., 11, 401-4, (June 1938 (British)
The tests of respiratory efficiency used were: (1) vital capacity of the lungs; (2) ventilation equivalent for oxygen (vol. of air breathed per 100 cc. oxygen absorbed); (3) volume of dead space; and (4) exercise tolerance tests. Seven men whose pulmonary lesions had been diagnosed as silicosis or asbestosis, all showed well-defined functional impairment on the basis of one or more of the above tests. Eleven arc welders were examined and five of the number, having signs of early pneumoconiosis, gave, on the whole, poorer performances than the other six. It is concluded that tests of respiratory efficiency should help to distinguish between early fibrosis and the deposition of dust in the lungs without marked fibrous tissue reaction.

114 PNEUMONIA IN INDUSTRY. George F. Obrien. Ind. Med., 8, 39-42, (January 1939).
Industry has made great strides in reducing mortality from injuries, but much time is lost and many deaths still occur from respiratory diseases. Industry furnishes many of the predisposing factors in pneumonia and should interest itself in the problem and in spreading the modern concepts of pneumonia and its treatment. The symptoms of pneumonia arise from infection and anoxia; serum therapy is directed against the infection, and oxygen therapy against the anoxia, and control of the two factors will control pneumonia.

115 OCCUPATIONAL DISEASES OF THE LUNGS IN AGRICULTURAL WORKERS. R. Fawcitt. Brit. J. Radiol., 11, 373-92, (June 1938) (British).
Agricultural workers are liable to infection by organic matter, micro-fungi, bacteria and parasites from vegetable matter and animal excreta. Various types of mycotic infection of the lungs are described, and the radiological appearances illustrated. The author is of the opinion that the common micro-fungi, though usually innocuous, may become pathogenic under certain conditions and that the incidence of harmful infection is more common and widespread than is generally realized. Certain types of bacterial and parasitic pulmonary disease are also described.

116 SYPHILIS CONTROL IN INDUSTRY. R.R. Sayers. Supp. No. 140, Public Health Reports (1938).
More than 1 million years of life expectancy are lost every year by syphilitic deaths in this country, and in institutional care the disease costs us between 40 and 50 million dollars annually. As a purely economic problem, industry should be interested in wiping out the disease, but comparatively few companies have done much on the problem. The question of whether or not industry should hire a syphilitic is discussed. Except as food handlers, barbers, etc., it is stated that they should be kept at their jobs and given close medical supervision. A doctor of one large company advocates a certain amount of medical care by industry and at least cooperation with State officials who can supply free antisyphilitic drugs and offer consultation on problems of control.

117 STATE LABOR LAWS FOR WOMEN. PART 1, SUMMARY. Part 2, ANALYSIS OF HOUR LAWS FOR WOMEN WORKERS. F.P. Smith. U.S. Dept. Labor, Women's Bureau. Bull. No. 156, Parts 1 and 2, (1938).
These bulletins summarize the State laws regarding work hours, meal time, rest periods, night work, seating, and other items. All but 4 States have some sort of law regulating the hours women may work, 16 States having a maximum of 8 hours a day. It is significant that 17 States prohibit women working in mines, and other States prohibit them in coke ovens and quarries. Only 17 have laws governing home work, and only 22 have minimum wage laws. Part 2 of the bulletin is devoted entirely to presenting in tabular form the points covered by various State laws for women as of March 31, 1938.

118 FORWARDING HEALTH AND SAFETY IN COAL MINING BY USE OF WATERING METHODS. D. Harrington & J.J. Forbes. U.S. Bur. Mines Inf. Circ. No 7041,11 pp.(Dec.1938).
It is well known that coal dust, even in absence of gas, is explosive and can initiate or propagate an explosion in a mine. It is also believed by many persons that all atmospheric dusts may be harmful if breathed in large quantities for long periods of time. For these reasons the authors stress the importance of dust control in coal mines. This paper enumerates the principal sources of dust and describes practical methods of employing water as one of the most effective of the known methods to allay dust in coal mines. Most dust in mines originates at the face and the amount of water necessary, if applied efficiently, is not excessive. In some mines the water is supplied by special tanks on mining

machines, but most mines now using water for dust control have installed complete pipe line systems. Several typical installations are described in the circular together with pictures which illustrate the methods now in use.

119 EXAMPLE OF AN INSTALLATION FOR THE CONTROL OF THE HYGIENIC EXPOSURE ARISING FROM THE APPLICATION OF POTTERY GLAZES. S. C. Rothmann. Ind. Med., 8, 8-12, (January 1939).
The author describes some of the problems in connection with the dust and lead hazards in the glazing department of a "dinnerware" pottery plant. The lead hazard is probably the most important, although in recent years the increased use of "fritted" glazes has reduced the hazard because of the formation of insoluble lead compounds by pre-fusing. Hand dipping of ware is not in itself dangerous; most dust is caused by stirring up of accumulated dried glaze on floors, boards, tubs and clothing. An automatic spray glazing machine and the necessary exhaust booth in connection with it are described.

120 ELECTRICAL DUST PRECIPITATION. J. Wuyckens. Mem. univ. Bruxelles, 95 pp. (1937)(Belgian).
Details are given of a laboratory investigation relating to the electric precipitation of dust from a stream of air. The apparatus consisted in: a device for making regular and uniform the distribution of the dust in the air stream, a small Cottrell type of precipitator and an oil filter for removing dust from the effluent stream of air. Among the factors studied were: effect of dust concentration on efficiency; effect of electromotive force employed within the range 7300-12000 volts; effect of the velocity of the air stream and the relation between electromotive force and current in the discharge. A high degree of purification is more readily obtained by a reduction of velocity of the stream than by an increase of electromotive force. The scale effect controlling the possibility of applying laboratory results to large-scale plants is discussed.

121 FRICTION LOSS IN PIPING. E. A. Windham. Heating, Piping, and Air Cond. 11, 6-8, (January 1939).
The author has developed in the course of his work two charts of friction loss in pipes which are reproduced. Most empirical formulae apply over only a limited range of temperatures and it is frequently necessary, particularly in air duct work, to compute friction losses when the temperature varies considerably from the standard conditions. The author has made use of the Fanning equation, and has simplified its application for general use.

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

122 HEALTH HAZARDS AND THEIR CONTROL IN THE ELECTROPLATING INDUSTRY. H.G. Dyktor and John Buxell. Bulletin, Dept. Public Welfare, Industrial Hygiene Div., City of St. Louis, Mo., 33 pp. (1938).
In a study of the electroplating industry in St. Louis, the authors found no health hazard which necessitated drastic action. Most plants were provided with means of controlling the hazards encountered and present control methods could be perfected with only minor changes or by proper maintenance of present equipment. In the cases where deficiencies occurred, they were due to lack of proper information or to the use of erroneous information, and this Bulletin is published to fill that lack. It covers the hazards of dusts, acid mists and vapors, trichlorethylene and carbon tetrachloride, chromium, lacquers, skin diseases and other miscellaneous items of personal hygiene, sanitation and general safety. No one subject is covered completely, but the Bulletin is a valuable guide to those operating electroplating plants.

123 A SURVEY OF INDUSTRIAL HYGIENE CONDITIONS IN THE JEWELRY INDUSTRY OF RHODE ISLAND. J. Wuraftic and C.V. Hickey. Div. of Indust. Hyg., State Dept. of Public Health, Providence (1938).
The jewelry industry in Rhode Island comprises 289 plants employing 10,315 workers, about one-half of whom are women. More than half of the plants employ less than 10 workers. It was found that 8912 or 88 per cent of the number were not exposed to any hazardous material or process in any manner and the percentage of those exposed to any degree at all was very small (0.28 per cent). A few (436 or 4.8 per cent) were engaged in electroplating work and the seriousness of their exposure is questioned pending further investigation.

124 SEVERAL TOXIC VOLATILE INDUSTRIAL SOLVENTS. D. Glibert. Bruxelles-Med., 18, 1189 (July 19, 1938) (Belgian).
Because physicians are likely to encounter some of the growing number of toxic industrial solvents, the author discusses a few of them in this paper and lists others which are either not discussed at length or are otherwise generally well known. Attention is especially called to the chlorinated hydrocarbon group. He stresses particularly that the solvents as used are rarely pure and that this fact should be taken into consideration along with other factors such as the origin of the solvent, its instability, and the particular conditions of its use in the plants.

125 SOLVENTS AND THEIR DANGERS. Wenzel. Zentr.Gewerbehyg.Unfall., 25, 217-24, (1938) (German).
Industrial solvents are classified as to their general use, e.g., viscosity changers, plasticizers, azeotropic mixtures, extractants, degreasers, solvents for solids, impregnators, pharmaceuticals, and carriers for other materials. Many examples are given. The flammability, physiological action, origin and industrial use of many solvents are discussed. Special attention is given to spray booth design and exhaust, paints and lacquers, and solvents used in the rubber and textile industries. The most important phase of worker protection is adequate education as to the danger and proper handling of the solvent in question.

126 EVALUATION OF THE ODOR NUISANCE IN THE MANUFACTURE OF KRAFT PAPER. J.M. Dalla-Valle and H.C. Dudley. U.S. Pub. Health Reports, 54, 35-43, (Jan. 13, 1939).
Kraft paper is the brown paper used in retail stores for wrapping packages; heavier grades are used in shipping carton and containers. The authors outline the method used in evaluating the odor nuisance generated in the manufacture of this type of paper by the sodium sulfide - sodium hydroxide process. The odors of hydrogen sulfide, organic sulfur compounds, carbon gases and a chemical smoke containing large quantities of sodium sulfate and sodium sulfide are given off during nearly all processes and pass out through the stacks to be classed as a nuisance in the neighborhood. The human nose is remarkably sensitive to minute traces of these substances in the atmosphere, even in those concentrations that are well below the toxic limit. It is concluded that in the neighborhood of the plants the concentrations of toxic gases are of no consequence. The major contributing factor in the obnoxious conditions is due to the large amounts of solid chemical materials, mostly sodium sulfate, which are blown out through the stacks and soon settle to the ground. The possibility of electrical precipitation for prevention and economical recovery is stressed.

127 THE DANGERS OF ARC WELDING. N. Pozzi. Arch. des malad. profes., 1, 389-414, (November 1938) (French).
The author reviews the materials entering into the arc as well as the metals usually welded. He considers the dangers as due to (1) burns, (2) glare, and its effects on the eye and (3) fumes. The injury in the case of glare may be due to both ultraviolet or infrared rays. The effect of the fumes, if the exposure is severe, is to produce an acute broncho-pneumonia of which the prognosis is unfavorable. If the exposure is moderate but prolonged, symptoms of pneumoconiosis develop: a feeling of constriction of the chest, dyspnea, and persistent cough. Occasionally metal fume fever occurs but more often a general malaise combined with severe headaches and insomnia. No mention is made of possible nitrous fumes in the gases from the arc. Measures of protection are: welder's goggles, partitioning off of the welding spaces to protect other workers from the glare, removal of fumes by local exhausts, and good general ventilation.

128 STANDARDIZATION OF GAS MASKS AND RESPIRATORY APPARATUS. K. Quasebart. U.D.I. Ztschr., 82, 147-8, (1938) (German).
To enable interchange of parts and apparatus of respiratory equipment, regardless of make, manufacturers and officials have cooperated in establishing codes of standardization of such equipment. Ten codes are planned. It is also proposed to define uniform names for all apparatus and parts.

129 THE ABSORPTION OF IRRITANT GASES IN THE RESPIRATORY TRACT. I.D. Gadaskina J. Physiol. (U.S.S.R.) 23, 782-90, (1937) (Russian).
The inhalation of irritant gases by rabbits and the analysis of the exhaled gases showed that nearly all was absorbed in the upper respiratory passages. A non-irritating gas, like nitrogen dioxide, is absorbed largely in the lower respiratory tract, none in the upper.

130 THE REACTION OF THE CLOTHED HUMAN BODY TO VARIATIONS IN ATMOSPHERIC HUMIDITY. C.-E.A. Winslow, L.P. Herrington and A.P. Gagge. Am. J. Physiol., 124, 692-703, (December 1938).
Below 25°C (77°F), the zone of body cooling, relative humidity has no appreciable influence on physiological reactions. Above this temperature the relative humidity begins to take effect and with higher temperatures and high humidities the nude body adjusts itself much better than the clothed body. With higher temperatures and low humidity the clothed subject can tolerate a slightly higher operative temperature. During summer months the mechanism of sweat secretion is in better working order and consequently the response to higher temperatures is better during those months.

131 THE VENTILATION OF FLUELESS ROOMS. NOTE FROM THE BUILDING RESEARCH STATION. J. Instn. Heat. & Vent. Engrs. (London) 6, 428-34, (October 1938) (British).
Observations were made in an experimental house to determine the ventilation provided by an open ventilator in a room not provided with a flue or chimney. It was found that in an average room over a wide range of temperature differences and wind velocities, the ventilator provided approximately the same ventilation as did an unheated flue of normal type. It was observed that in a heated flueless room, with an ordinary wall type ventilator, the air-change may fall as low as 0.3 per hour or less.

132 FIRST CHANGES OF THE WHITE BLOOD IN PERSONS EXPOSED TO LEAD. A.H. Muller. Klin. Wchnschr. 17, 1183-6, (1938) (German).
The author reports on results of periodic examinations (over a 1 year period) of street car and bus lacquerers. He notes that with great regularity he found high lymphocyte counts, without other signs of lead absorption or lead injury. It is considered that this lymphocytosis can justify an especially careful medical supervision in the absence of other signs of lead poisoning.

133 LEAD AND HIGH BLOOD PRESSURE. G.W. Gunther. Deutsch. med. Wchnschr. 64, 1146-7, (1938) (German).
Description is given of the illness of a 45-year old linotype setter who died of a cardiac infarct and coronary thrombosis. For many years he had had high blood pressure, and in recent years was employed only occasionally as a type setter. Examination of the organs showed 0.115 per cent lead in the liver and spleen and 0.58 per cent in the bone. Since there was no familial disposition to premature high blood pressure and in view of the long exposure to lead, a causal relationship between industrial lead injury and high blood pressure was assumed. The recent lack of exposure was taken into consideration.

134 NEW SOURCES OF LEAD POISONING. Mornac. Ann. d'hyg. pp. 362-4, (1938)(French).
The author describes the use of great quantities of lead arsenic in insecticides used by farmers and the complete carelessness in the handling of it. He found cases of lead poisoning by users of the insecticide and recommends the substitution of aluminum arsenates.

135 LEAD POISONING? L. Schwartz. Samm. v. Vergiftungsf. 9, 41-6, (1938) (German).
A 31-year old cable layer fell ill with ocular motor paralysis. Since the lead hazard to cable layers seemed slight, and no other signs of lead poisoning could be proven with certainty, the referee on the case rejected the possibility of lead poisoning, suggested observation in a hospital. At the clinic, small quantities of lead were found in the blood, urine and feces, but the quantities were within normal limits.

136 A METHOD FOR THE QUANTITATIVE SPECTRO-CHEMICAL ANALYSIS OF VERY SMALL AMOUNTS OF BIOLOGICAL MATERIALS FOR SODIUM, POTASSIUM, CALCIUM, MAGNESIUM AND LEAD. O.S. Duffendack, K.B. Thomson, W.C. Lee, and O.G. Koppius. J. Biol. Chem. 126, 1-7, (1938).
A detailed description is given for the method used. Lead was determined in urine and by the method described, it is possible with extreme caution to measure accurately 0.1 mg. lead per liter.

137 DETECTION OF LEAD IN ETHYL LEAD AND OBSERVATIONS ON THE VOLATILITY OF TETRAETHYL LEAD. H. Siebeneck. Chem-Ztg., 62, 188-189, (1938) (German).
This question was studied in connection with the detection of lead in the waste liquor from ethylizing apparatus. The use of dithizone was shown to be not altogether trustworthy for lead detection, as lead-free benzine gave color reactions. The use of a 1 per cent dimercaptol-thiodiazol solution is recommended. Experiments showed that tetraethyl lead is volatile in normal temperatures when mixed with hydrocarbons.

138 JUDGING HEART MUSCLE INJURIES AFTER CARBON MONOXIDE POISONING. H. Symanski. Aerztl. Sachverstandig.-Ztg., 44, 183-204, (1938) (German).
The author discusses first, on the basis of the literature, the possibility and occurrence of cardiac muscle injuries in acute and chronic carbon monoxide poisoning. He then presents eight detailed and instructive cases of heart trouble which had come before him as a referee. The question to be decided was whether the disease was caused by carbon monoxide or hastened by it. In some, this question was affirmed. in some denied.

139 CARBON MONOXIDE AND EPILEPSY. H. Symanski. Samm. v. Vergiftungsf., 9, 23-40, (1938) (German).
A blacksmith in a gas works was exposed occasionally to carbon monoxide and at the age of 35 he fell ill with epileptiform attacks. The expert (in a court case) considered this as genuine epilepsy, denying any relationship to carbon monoxide inhalation, since the signs were not present.

140 LATE EPILEPSY IN THE COURSE OF CARBON MONOXIDE POISONING. O. Schiersmann. Ztsch. ges. Neurol. u. Psychiat., 163, 656-69, (October 1938) (German).
True epileptic seizures occurred in a war veteran, 60 years old, 14 years after carbon monoxide poisoning from exhaust gases of a benzol engine during the war. The seizures, which developed rapidly, were characterized by convulsions, torso-like and athetoid movements, loss of the reaction of pupils to light, and unconsciousness. Minor seizures had occurred six months after exposure and at infrequent intervals following. Mentally, the patient showed disturbed sleep, apathy, emotional flattening, lack of initiative, weakness of memory, hysterical trends and generally demented behavior.

141 TESTIS AND HYPOPHYSIS IN GASSED MALE RATS. C.A. Patterson, E. Smith, and A.D. Pickett. Proc. Soc. Exp. Biol. Med., 38, 455-60 (1938) (British).
Male rats were exposed for 1 hour daily for 50 or more days to an atmosphere containing 0.34 per cent carbon monoxide. The testis and epididymus weight was reduced by 50 per cent and their spermatozoa were reduced in number and motility. The hypophysis became basophilic, with many vacuolated cells, but the gonadotropic hormone content was increased.

142 CARBON MONOXIDE POISONING. Howard A. Martin. Ohio State Med. J., 34, 1251-3 (1938).
The author reviews the literature on carbon monoxide poisoning. Symptoms of both acute and chronic poisonings are described and the important ones especially noted. He reviews the various items in the treatment of both types of poisonings and the paper should be of interest to all physicians.

143 THE HALOGENATED HYDROCARBONS OF THE FATTY SERIES AS SOLVENTS AND THEIR SIGNIFICANCE TO THE MEDICAL PRACTICE. W. Gueffroy and W. Ehrhardt. Zentr. Gewerbehyg. Unfall., 25, 224-30, (1938) (German).
These solvents as a class are toxic, capable of producing acute poisonings and occasionally blood changes. While the lungs are the chief portal of entry into the body, skin absorption is also possible. The specific properties of some of the compounds are discussed in detail, and they should all be regarded as active toxic agents. No specific medical prophylaxis for chronic poisonings of this class is known.

144 CARBON TETRACHLORIDE POISONING. T.M. Perry. Arch. Path. 26, 923-41 (Nov. 1938).
A description is given of hepatic (liver) damage and repair in man based on three cases of accidental poisoning studied clinically and at autopsy. Three negroes had ingested a roach poison, a mixture of carbon tetrachloride and ethylene dichloride, which they had mistaken for an intoxicant. Two of the men died too early (6 to 11 hours and 65-70 hours) for evidences of regeneration, but the third who died in 150 hours showed definite tendencies along these lines. There is a complete account of the clinical findings and a good review of the literature.

145 DANGERS FROM PYRENE FIRE EXTINGUISHERS. J. Am. Med. Assoc. (Queries and minor notes) 111, 2326, (Dec. 17, 1938).
A patient put out a fire in a poorly ventilated hall. Immediately afterward he had difficulty in breathing, became cyanotic and had gastro-intestinal disturbances. These symptoms became worse in 10 days, but after about 2 months he had fairly well recovered. The author says it is probable that phosgene was formed from the carbon tetrachloride as the symptoms resemble those of phosgene. This type of poisoning usually is prone to provoke neuroses, but where it is known that complete recovery is possible, this danger is much reduced.

146 THE PHOSGENE CONTENT OF SMOKE FROM THE BERGER MIXTURE. J. Esser. Gasschutz. u.luftschutz., 8, 297-8 (1938) (German)., (also pp. 266-9)
The Berger mixture consists essentially of powdered zinc and highly chlorinated organic compounds such as carbon tetrachloride. When this mixture was burned or heated it was found that phosgene was formed as one of the products of combustion. Care should be exercised in using carbon tetrachloride or other chlorinated hydrocarbons in closed spaces as phosgene is much more highly poisonous than the original compounds.

147 BLOOD PLASMA PROTEINS AS INFLUENCED BY LIVER INJURY INDUCED BY CARBON TETRACHLORIDE AND GUM ACACIA. G.C. Erickson, G.P. Heckel and R.E. Knutti. Am.J.Path., 14, 537-56 (September 1938).
Oral administration of carbon tetrachloride to dogs induces liver changes and a reduced plasma protein concentration, due chiefly to loss of albumin. Injection of acacia injures the liver and reduces the plasma protein concentration, especially the globulin. The results of these and other types of liver injury suggest that albumin, globulin, and fibrinogen may be produced by the liver independently of each other.

148 EXPERIMENTS WITH AN "ANTINECROTIC" MATERIAL PREPARED FROM LIVER. H.M. Barrett, D.L. McLean and E.W. McHenry. J. Pharmacol. Exp. Ther., 64, 131-7 (1938).
Rats injected with 100 mg. of the liver extract prepared by Forbes (Forbes, Neale, Scherer, J. Pharm. Exp. Ther., 58, 402, (1936)), and with the same corresponding doses of sodium xanthine and saline, were exposed 24 hours later to controlled concentrations of carbon tetrachloride. It was found that the fat content of the livers of animals premedicated with Forbes' liver extract or with sodium xanthine was significantly less than that of animals premedicated with saline or without any treatment. The experiments seem to indicate that the premedication with sodium xanthine promotes the healing of liver damage and in addition, offers a certain protection against the toxic effects of exposure to concentrations not greater than 10,000 p.p.m.

149 POISONING BY HYDROCARBONS. COMPENSATION ACCORDING TO THE FRENCH LAW ON INDUSTRIAL DISEASES (1919-1931). E. Martin. Med. du travail, 10, 151-69, (1938) (French)
The author reports on the discussion that took place in the Commission for Industrial Hygiene of the Ministry of Labor regarding the inclusion of poisoning by hydrocarbons in the compensation law. Certain other authorities have said that since 1931 the hydrocarbons have been produced in a much purer form and that the poisonings have been due to the impurities. The author takes issue with them and gives reasons for the inclusion of these materials in the compensation laws.

150 BENZENE AND BENZINE. L. Teleky. Med. du trav., 10, 125-137 (1938) (French)
The author comments on the need for more sharp differentiation between these two entirely different substances. The characteristic symptoms of poisoning by each is described: in benzene poisoning severe blood changes occur, while neuritis is especially prominent in benzine poisoning. French and Italian compensation laws are unsuited to cover these poisonings adequately.

151 A STUDY, CLINICAL AND HAEMOTOLOGICAL, OF NINE CASES OF OCCUPATIONAL BENZOL POISONING. M. Lamy, P. Kissel, and L. Pierquin. Bull. et Mem. Soc. Med. Hopit. Paris, pp. 1116-27, (June 27, 1938) (French).
Full details are given of nine cases of benzol poisoning among employees of a shoe factory where benzol was used as a rubber solvent. Four of the cases were fatal. In the severe cases true medullary aplasia was present, and purpura was present in all. The most valuable treatment was blood transfusion together with injections of liver extract, and the results were good except in the most severe cases.

152 TOXICOLOGICAL DETECTION OF THALLIUM. H. Kluge. Z. Unters. Lebemsm 76, 165-9, (1938) (German)
The method is based on the solubility of thallium chloride in ether and the insolubility of thallium iodide in water and alcohol. Larger amounts are determined by weighing the iodide, smaller amounts by colorimetric determination of the iodine liberated therefrom.

153 THE COMPOSITION O F HUMAN BONE IN CHRONIC FLUORINE POISONING. W.A. Wolff and E.G. Kerr. Am. J. Med. Sci., 195, 493-7, (1938).
A man, 48 years old, had been exposed for 18 years to finely ground phosphate rock dust containing 3.88 per cent fluorine. The present paper deals only with the distribution of bone fluorine, as the x-ray, clinical and autopsy findings have been reported earlier. Normal amounts of ash, calcium, phosphorus, and carbon dioxide were found in the bones, but the fluorine content of some bones was 20 times the normal values. Its distribution was uneven, the greatest amounts being found in the vertebra, the least in the long bones.

154 ACUTE METHYL ALCOHOL POISONING. F.R. Menne. Arch. Path., 26, 77-92, (1938).
In 22 cases of fatal poisoning from pure methanol the pathological changes consisted of marked edema, hyperemia, and necrosis of the stomach, intestine, liver, brain and retina. Clinically the victims showed intense nerve excitability, evidenced by abdominal pain, muscle twitchings, rapid pulse and respiration with final paralysis and death from respiratory failure. Although these addicts had taken small quantities of methanol over a long period of time, there were no gross chronic pathological changes present.

155 THE SPECIAL HAZARDS IN THE WORKING OF MAGNESIUM ALLOYS AND PREVENTIVE MEASURES. H. Ruhe. Arbeitsschutz, pp. 195-210, (1938) (German).
Magnesium alloys are being used more and more because of their low specific gravity and their tensile strength. Under certain conditions, however, magnesium has a great tendency to unite with oxygen, and in fine particles it can explode. Wet magnesium dust tends toward spontaneous combustion. In the presence of heat, magnesium can reduce oxides, partly by explosive mechanisms. Water is disintegrated by fine magnesium dust with the formation of hydrogen. To guard against these dangers, the Reich Minister of Labor has issued codes and safety directions.

156 THE AUTOMATIC ESTIMATION OF SULFUR DIOXIDE IN INDUSTRIAL GASES. W. Francis, M.C.Morley and E.W.F. Gillham. J. Soc. Chem. Ind., 57, 419-24, (December 1938) (British).
A description is given of a method and apparatus for estimating the amount of sulfur, as sulfur dioxide or trioxide, in washed flue gases of a power plant. The gas is scrubbed in a neutral solution of hydrogen peroxide which oxidizes the sulfur gases to sulfuric acid, decreasing the electrical resistance of the solution. The change is measured on a recording milliameter and indicates the total amount of sulfur over a period or at any moment. The method, except for minor differences, is similar to that developed in this country by Thomas (Ind. & Eng. Chem. 1, 14-17, Jan. 1929). It is possible, by changes in rate of air flow, voltage of current, volume of absorbing liquid and other factors, to measure accurately almost any concentration of sulfur gases in the atmosphere.

157 DANGERS OF GRAIN SILOS. H. Tiege. Zb.f. Gewerbehyg., 25, 170-1, (1938) (German)
Two men were killed climbing up a silo that contained 2 tons of corn. Examination of the air later showed 3 per cent carbon dioxide and 13.6 per cent oxygen, and at the time of accident the carbon dioxide was probably still higher. Autopsies showed death was from suffocation.

158 TUMORS AND PRECANCEROUS LESIONS OF THE BLADDER DUE TO AMINES OR NITRO-DERIVATIVES. (ANILINE DYE TUMORS.) G. di Maio. Arch. ital. d. i. urol., 14, 283-385 (1937) (Italian)
This paper contains an analysis of the precancerous and neoplastic changes that may occur in the bladder in aniline dye workers. Among 86 workers examined, 26 had changes that were considered as precancerous, 7 had benign tumors, and 4 had malignant growths. The changes were revealed by crystoscopic examination rather than by specific methods. Duration of employment varied from 2 to 6 years for the precancer group, 3 to 9 years for the papilloma group, and 6 to 15 years in the cancer cases. The dyes occurring most frequently were benzidine, betanaphthol amine, and aniline. These substances are absorbed through the respiratory tract and the skin, and are eliminated in the urin unchanged or with a modified chemical structure. Treatment consists primarily of measures to impede the absorption of the dyes.

159 ARSINE POISONING: REPORT OF TWO CASES. K.D. Smith and T.E. Rardin.
Ohio State Med. J. 35, 157-9, February 1939.
Arsine and arsine poisoning are discussed and a description is given of the processes where the poisoning may be encountered. Arsenic is an impurity in many metals and arsine, hydrogen arsenide, the most poisonous of the inorganic arsenic compounds, is given off whenever these metals are acted upon by acids. The stripping of galvanizing with hydrochloric acid is a common procedure and it was in this manner that the two cases reported by the authors occurred. Complete descriptions are given of the two cases. The authors stress the importance of occupational histories, in addition to past illnesses and family history, as an aid in the diagnosis of vague or unknown cases.

160 A RESPIRATORY PROTECTIVE REFLEX IN IRRITATION OF THE NASAL MUCOSA DURING THE INHALATION OF ACETONE. PNEUMOGRAPHIC CHANGES IN EXPERIMENTAL ACETONE NARCOSIS. L. Prisco. Folia med., 24, 669-77, (1938) (italian)
Because of the increasing industrial use of acetone, the author studied its action on rabbits. He found in them a nasal reflex which consists of a temporary cessation of breathing and also a lung reflex in the form of a polypnea when acetone vapor is introduced intratracheally.

161 DIAZOMETHANE POISONING, FIRST CLINICAL CASE REPORT. F.W. Sundermann, R.Connor and H. Fields. Am. J. Med. Sci., 195, 469-73, (1938).
A chemistry studen undertook to prepare trimethylbarbituric acid by allowing diazomethane to react with barbituric acid. He did not work under a hood and while stirring the mixture, suddenly began to choke, became dyspneic and had a violent cough. A description is given of the symptoms which persisted for three weeks, when he was released from the hospital. The gas appears to have a direct irritant action.

162 THE TOXICOLOGY OF CYANIDE. A.O. Gettler and J.O. Baine. Am. J. Med. Sci., 195, 182-98 (1938).
The authors give their analytical methods in detail and discuss the hydrogen cyanide content of normal organs and the distribution of it in body tissues after fatal poisonings, both experimental and human. The sensitivity of the analytical method is 0.005 mg. per 100 gm. tissue and by this test no hydrogen cyanide was found in normal tissues. The minimum lethal dose seems to be about 1.4 mg. per kilogram of body weight. Treatment with methylene blue seems to prolong life for an hour or more; it should be supplemented with stomach lavage, artificial respiration, stimulants, and a second injection if necessary.

163 LIPEMIA IN EXPERIMENTAL CARBON DISULFIDE POISONING. E. Bianchi. Med. del lavoro, 29, 213-20, (1938) (Italian).
Acute and chronic carbon disulfide poisonings were produced in rabbits and the content of blood in fats and phosphorus was studied. There was found in both types of poisoning an increase of the phosphate and cholesterin ether. Free cholesterin decreased in acute poisoning, increased in chronic.

164 PHYSIOLOGIC STUDIES OF HELIUM. A. R. Behnke and O. D. Yarbrough. U.S. Naval Med. Bull., 36, 542-58 (1938).
The solubility coefficients of helium in water and in olive oil compared with the coefficients for nitrogen are in the ratio 2:3 for water and 1:4.5 for oil. Therefore, the helium content of the body should be about 45 per cent as high as the nitrogen content when the same tension of each gas is breathed. The time of elimination of helium from body tissues after absorption is about one-half that of nitrogen. It is for these reasons that helium-oxygen mixtures are being used in place of the normal nitrogen-oxygen mixtures in deep sea diving.