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REFERENCES TO RECENT LITERATURE ON INDUSTRIAL DISEASES

(A) News Items

165 OCCUPATION AND HEALTH, Supplement. International Labor Office, Geneva, 96 pp., (September, 1938). Obtainable from International Labor Office, 734 Jackson Place, Washington, D.C. Price $5.00 per 500 pages. Supplements to the two volumes "Occupation and Health" are issued biannually. The present work, the second supplement of 1938, contains eleven brochures on various subjects. Abstracts of nine of the important papers are included in this Bulletin.

166 INCREASE IN NUMBER OF OCCUPATIONAL DISEASE CLAIMS IN OHIO DURING 1937. Anonymous. Ohio State Med. Journal, 35, 329, (March, 1939). The number of claims increased from 1,388 in 1936 to 1,694 in 1937. As usual, skin diseases were responsible for a large percentage of the claims filed. There was an increase of 95 claims for lead poisoning, largely from 3 plants manufacturing automobile bodies, where ground lead was used to fill cracks and seams in the bodies. Six claims for silicosis (made compensable on July 31, 1937) were considered as within the provisions of the law; an unstated number were classed as non-compensable for various reasons.

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

167 OCCUPATIONAL DISEASE SYMPOSIUM. Northwestern University Medical School, Department of Industrial Medicine, Chicago, Ill., September 26-27, 1938. Proceedings published January, 1939, Price $3.00. The following items are abstracts of the papers presented at the symposium which are published in one volume obtainable from the above address:

THE PRESENT STATUS OF INDUSTRIAL MEDICAL EDUCATION. Carl M. Peterson. The number of industrial physicians has almost doubled in the past 10 years and the number of graduates coming in contact with industrial phases of medicine is increasing annually. In reviewing the present status of occupational disease education in the medical schools, it is noted that this type of instruction is on the increase.

THE SCOPE OF THE OCCUPATIONAL DISEASE RESEARCH PROBLEM. Philip Drinker. Research is needed as a guide towards regularly obtaining better statistics and better reporting of industrial disabilities of all kinds. Industrial processes are not eliminated because a process is in some way harmful to the workmen; prevention, based on research, must be practiced, and this prevention always takes a little time to catch up with toxicology.

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TRAUMATIC NEUROSIS. Lewis J. Pollock.
Traumatic neuroses are those forms of disability caused, not by any real injury, but by shocks or by certain repeated processes. It is a type of hysteria, not always imaginary, which has significance in industrial hygiene practice. Diagnosis, treatment and compensation of cases of this type are discussed.

THE PLACE OF PHYSICAL EXAMINATION IN INDUSTRY AND THE PLACEMENT OF THE EMPLOYEE IN RELATION TO HIS PHYSICAL STATUS. C. D. Selby.
Physical examinations, if worth doing at all, are worth doing completely. The industrial physician should be entirely familiar with all processes in his plant so that he may be able to advise the employment department in placing men especially adapted, or particularly unfit, for certain positions. By doing his work well and completely the industrial physician can be of great benefit to his employer and to the men in the plant.

INDUSTRIAL MEDICAL SURVEYS. J. G. Cunningham.
A very good general description is given of the procedure and methods usually followed in these surveys. They are the first essential step in an efficient program of industrial health improvement.

INDUSTRIAL HEALTH AND SAFETY AND THE PRACTICING PHYSICIAN. Stanley J. Seeger.
The practicing physician should attempt to orient himself in the vast, comparatively new field of industrial medicine so that he understands the viewpoint of those more closely connected with it. The industrial physician must also admit his dependence upon the practicing physician.

PERIPHERAL VASCULAR DISEASE IN INDUSTRY. Edgar V. Allen.
Peripheral vascular diseases are defined as the diseases of the blood vessels other than those of the heart itself. Most of the discussion is devoted to hypertension (high blood pressure) and its prominence as a major cause of death in this country. Very little has been done to study the particular causes or the significant incidence in the past and present. The discussion is more or less philosophical regarding its connection with industry and modern industrial life.

CARDIAC DISEASE IN INDUSTRY. James G. Carr.
The degrees of disability of those persons afflicted with heart disease is difficult to define. This paper, together with the discussion which follows, discusses the employment of these persons in industry. In certain cases their work may be so changed that they are able to continue without serious effect, to the benefit of both employee and employer.

168 STUDIES ON THE SOLUBILITY OF QUARTZ AND SILICATES. C.C. Lucas and M.E. Dolan. Can. Med. Assoc. Journal, 40, 126-34, (February, 1939) (Canadian).
This paper deals only with the chemical side of the solubility problem of quartz and silicates. Water, salt solutions, urine and blood serum all dissolve small amounts of silica from quartz. The "apparent solubility" of quartz is usually much greater than its real solubility, because of the presence in the native quartz mineral of impurities which are either more soluble in themselves or render the quartz more soluble. This was the conclusion reached by resuspending some of the quartz dusts. The action of water, and aqueous solutions in general, upon silicates, is not one of simple solution but of differential leaching; removal of the base, leaving a residue richer in silica is the usual result.

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169 THE PREVENTION OF SILICOSIS BY METALLIC ALUMINUM. II. J.J. Denny, W.D. Robson and D.A. Irwin. Can. Med. Assoc. Journal, 40, 213-28, (March, 1939) (Canadian). The article will also be published in Industrial Medicine in April, 1939, issue. Reprints of the article are being obtained by Air Hygiene Foundation and will be enclosed with the Abstract Bulletin in the near future.
In their first paper on the subject (see Abstract 390, 1937), the authors showed that the addition of small quantities of aluminum almost completely inhibited the solubility of siliceous material in a beaker and that animals dusted with quartz plus 1 per cent aluminum powder did not develop silicosis, while those dusted with the same quartz alone did develop silicosis. The present paper reports on the further progress of this investigation. It has been found that the aluminum, on being converted to hydrated alumina in solution, reduces the toxicity of quartz in three ways, (a) by flocculation; (b) by adsorbing silica from solution; but (c) chiefly by coating the quartz particle with an insoluble and impermeable coating. This coating is a gelatinous hydrated alumina and has been definitely identified as such. The amount of aluminum dust necessary to form this coating and to prevent fibrosis has been found to be about 1 per cent of the total dust in suspension. It may, in addition, be inhaled independently of the siliceous dust. Investigations as to the industrial application of aluminum dust in the prevention of silicosis are being carried out.

170 EFFECT OF CERTAIN IMPINGEMENT DUST SAMPLING INSTRUMENTS ON THE DUST PARTICLES. E.L. Anderson. Journal Ind. Hyg. & Tox., 21, 39-47, (February, 1939).
It had been suggested in the past that the impingement of dust particles in certain dust counting methods fractured the larger particles giving higher counts than actually existed. Certain experiments had tended to prove that this was true. The author here reports on a series of carefully conducted tests which prove that there is fracturing of particles by at least three common types of instruments -- the Greenburg-Smith impinger, the Bausch and Lomb sampler and the Owens jet counter. Simultaneous samples were taken of an artificially generated dust and particle size distribution graphs made for each of the three in addition to the original dust and a settled sample. Median sizes of the three "counted" samples were significantly less than those of the dust or of the settled sample.

171 DUST INVESTIGATIONS IN THE CERAMIC INDUSTRY. PART I, EARTHENWARE POTTERS' SHOPS. W.A. Bloor, K.L. Goodall and H.W. Webb. Trans. Brit. Cer. Soc., 38, 1-25, (January, 1939) (British).
This paper describes a series of dust counts made in three earthenware pottery shops selected to represent those in which the cleanliness, ventilation, lay-out, etc., were respectively good, moderate, and poor. The method selected for counting was the thermal precipitator, which is briefly described. The concentrations found by this method are expressed in particles per cc., and because of this, together with other differences, it is impossible to correlate the results with those of the Greenburg-Smith impinger counts used almost exclusively in America. In the present survey the counts taken are those of the general room air and not those in the immediate vicinity of the workers. The values found were: a maximum of 70 particles per cc. in the good shop; 90 particles per cc. in the average shop and about 200 per cc. in the poor shop. Particle size distribution was studied closely and was found to vary from 0.3 to 1.6 microns. During intervals for rest periods the median particle size tended to be less as the larger particles settled out more rapidly. It was found that the value of ventilation lies in reducing the concentrations, not in merely reducing the concentration of those particles below the dangerous size (5 to 10 microns). It is thought that a threshold limit of 100 particles per cc. can be reasonably attained in this type of shop, but it is not known whether or not this concentration is safe from a health point of view.

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172. DUST INVESTIGATIONS IN THE CERAMIC INDUSTRY. PART II, EARTHENWARE WHITE TILE MAKING SHOPS AND DUST PREPARATION. K.L. Goodall, and W.A. Bloor. Trans. Brit. Cer. Soc., 38, 26-65, (January, 1939) (British).
The earthenware white tile shops present a greater dust problem than the shops where general earthenware pottery is made. (See preceding abstract). In the latter, the ware is made from a plastic body while in the white tile shops the ware is made directly from a finely ground dust. The survey described in Part II is similar to that in Part I in that three plants were studied, representing good, moderate, and poor dust control. The method of counting was the same. In this survey, however, the concentrations shown are those near the operators themselves, not those of the general room air. In the one shop which was classed as being good, the pressers and fettlers worked under well designed exhaust hoods and the concentrations in their vicinity, and even in the general room air, were comparatively low (51 to 77 particles per cc.). Similar concentrations in the other two shops were much higher and emphasized the necessity of working in properly designed hoods. Low general atmosphere concentrations in the "good" shop emphasize the value of good housekeeping, adequate space and general arrangement. All processes in the storage bins and crushing room areas were extremely dusty in all the plants visited.

173 DUST INVESTIGATIONS IN THE CERAMIC INDUSTRY. PART III, SOME CHEMICAL AND PHYSICAL PROPERTIES OF CERTAIN CERAMIC DUSTS. W.A. Bloor and H.W. Webb. Trans. Brit. Cer. Soc., 38, 66-74, (January, 1939) (British).
Some dust from one of the plants described in Part II (preceding abstract) was collected on a filter bed of finely crystallized salicylic acid for chemical and petrographic analyses. Chemically, the composition of the total dust was found to be approximately the same as that of the body of the tile from which the dust arises, indicating that there was no preferential air flotation of silica. In an arrangement of two filters in series, the first caught the larger particles plus a few of the smaller ones and the second caught only those below 2 microns in size. Chemical analyses of the two samples disclosed less silica (free and combined) on the second filter, suggesting that a large part of the silica, probably the flint or quartz, is coarser than the other constituents (clays and feldspar). It was impossible, petrographically, to determine between free and combined silica in those particles less than 5 microns in size. The results suggest that the most dangerous dusts are those between 2 and 5 microns, and it is significant that some 70-80 per cent, by number, of the particles in the total dust, are below 2 microns.

174 PROGRESS IN DUST CONTROL IN ONTARIO MINES. Clifford S. Gibson. Trans. Can. Inst. Min. & Metal., 42, 18-28, (1939) (Canadian).
This paper reports on the progress of the work being done by the Technical Silicosis Research Committee of the Ontario Mining Association (see Abstract 203, 1938). There is no doubt that the mining industry as a whole is becoming more conscious of the necessity for controlling dust dispersal. Marked progress is evident at both old and new mines, and the early consideration of the problem by the latter will undoubtedly play an important part in future reductions in the incidence of silicosis. Many of the improvements which have been effected are simple in nature and have entailed little expenditure, and companies are beginning to get away from the idea that they cannot afford to control the dust. Brief descriptions are given of the methods in use and those being investigated. Most notable are: increase of wet drilling methods, restriction of all blasting until the end of an 8-hour shift, and the increase in the use of artifical ventilation fans. Another major activity of mine management is in thorough education of employees regarding significance of dust and its control.

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175 ANTHRACO-SILICOSIS OF ANTHRACITE MINERS. R.R. Sayers. Occupation and Health, Supplement No. 2, 12 pp., International Labor Office, (September, 1938).
This brochure contains most of the data published in U.S. Public Health Bulletin No. 221, of which Dr. Sayers is senior author. It describes the survey made among anthracite miners in Pennsylvania several years ago. The study included complete physical examinations, concentration and composition of the dust exposure and a correlation between exposure and pulmonary changes. Definite and distinc pulmonary changes were found among the various classes of anthracite miners. Prevention is best accomplished by reduction of dust concentrations, the degree of reduction depending upon the percentage of free silica in the dust.

176 SILICO-TUBERCULOSIS. H.C. Sweany. Ill. Med. Journal, 74, 520-5 (December, 1938).
Silico-tuberculosis is treated in this paper not as a disease entity but as a "blend" of the two diseases. The author discusses the development of tuberculosis in silicotic individuals. Two types of cases, with case histories, are described: one in which tuberculosis is contracted after exposure to silica, the other in which silicosis is superimposed upon tuberculosis. Clinically the former case was diagnosed as tuberculosis, pathologically it was found to be silico-tuberculosis. A history of sufficient exposure to silica was questionable. In the other cases, tuberculosis was supposedly present before the patient was exposed to silica.

177 REPORT ON TUBERCULOSIS SURVEY OF 480 TEACHERS AND CAFETERIA WORKERS IN ROANOKE CITY PUBLIC SCHOOLS. K.D. Graves. Virginia Med. Monthly, 65, 738-9 (December 1938).
Tuberculin tests were positive in 51.7 per cent of the white workers and in 69.5 per cent of the colored. Three active tuberculosis cases were found. An earlier test in 1937 of the school children showed 23 per cent as positive.

178 INFLUENCE OF BODILY WORK ON THE MINUTE VOLUME IN HEALTHY PERSONS AND IN SILICOTICS. A. Bohme. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 22-42, (1938) (German).
Healthy and silicotic persons performing certain standard types of work (knee-bending, stair climbing, bicycle riding) show differences in the volume of air inspired per minute during and after work. Severe silicotics show a higher minute volume during and after 1-2 minutes' knee-bending, but still higher values are obtained from normal excited subjects with tachypnea, voluntary or otherwise. The differences between the normal and silicotic subjects are variable and the number of subjects used is too small to warrant employment of means and deviations. Severe silicotics sometimes require twice the volume of air while doing the same work as a normal individual; mild cases of silicotics sometimes show no differences. The important source of error is the voluntary or involuntary tachypnea (extremely rapid breathing).

179 SLATE. E. Streignart. Occupation and Health, Supplement No. 2.
International Labor Office, 8 pp., (September, 1938).
Slate is a sedimentary rock formed of clay which has undergone considerable change due to extreme heat and pressure. It is largely aluminum silicate. Underground mining is more common than open mining, now abandoned in most countries. The free silica content of slate varies greatly, most results being from 5 to 20 per cent, with an occasional value nearly 40 per cent. Clinical and x-ray examinations have shown a high incidence of tuberculosis and silicosis, not as high, however, as in certain other trades. The tuberculosis of slate workers is of a silicotic type tending to occur at more advanced ages. It is pointed out that all slate has some free silica content and that dust control in slate industries is essential.

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180 SILICOSIS FROM DIATOMACEOUS EARTH. SUMMARY OF THE LITERATURE. W. Estler. Arbeitsschutz, pp. 229-31 (1938) (German).
The author gives a survey of the use of diatomaceous earth in industry. Research shows that this dust has many particles under 10 microns and some under 5 microns. Some authors report that they do not find silicosis in exposed workers, but Adler-Herzmark, Legge and Rosencrantz have found serious cases of silicosis.

181 INDUSTRIAL HYGIENE PROGRAM IN A STATE HEALTH DEPARTMENT. Carl A. Nau. Journal Amer. Public Health Assoc., 29, 151-7, (February, 1939).
The author discusses the general aspects of a program for an Industrial Hygiene Division of a State Health Department. He considers it not only from the aspect of the prevention of the well-known occupational diseases, but also with the idea in mind of improving the health of industrial workers generally. He favors regular medical examinations and use of the collected data in outlining a broad public health program.

182 A REVIEW OF THE MEDICAL SUPERVISION OF INDUSTRY BY THE STATE. J.C. Bridge. Journal Royal Inst. Public Health & Hyg., 1, 911-22, (December,1938) (British).
In this short interesting paper the author tells the story of factory legislation in Great Britain. Starting with the first Factory Act of 1833 he traces the development of State supervision of working conditions and concludes by giving a short summary of the Factories Act of 1937. The paper cannot be adequately abstracted; those interested in the history of industrial hygiene should read the original.

183 REHABILITATION OF THE PHYSICALLY HANDICAPPED. H.H. Kessler. Arch. Phys.Therap., 19, 753-6, (December, 1938).
Crippled and handicapped persons can be made useful and happy by intelligent treatment. Where surgery is necessary, the ultimate object must always be kept in mind -- restoration of employability. Wherever it is possible, every effort should be made to return a man to his usual trade; new work usually involves a lower economic status and in every way puts a severe strain on the worker's morale.

184 CONSTITUTIONAL FACTOR AND OCCUPATION. G. Pieraccini. Occupation and Health, Supplement No. 2. International Labor Office, 9 pp., (September, 1938).
The paper is a theoretical discussion of vocational selection of workers on the basis of morphological, humoral, physiological, and mental criteria, that would direct them to work in trades which would not be harmful to their health. The author has in mind an extensive application of the theory but admits that it is impossible under present conditions. It may be applied, however, in certain special cases that are more prominent in industrial hygiene work. An evidence of this is the increasing application of physical examinations in industry.

185 TO WHAT EXTENT IS THE HEALTH OF INDUSTRIAL WORKERS DEPENDENT ON OCCUPATION? H.M. Vernon. Occupational Physcology, 13, 10-24, (January, 1939) (British).
The recently published Registrar General's Occupational Mortality Supplement for England and Wales shows that the mortality rates of men employed in different occupations differ widely. While the figures suggest that occupation has much influence on health, the Registrar General considers that this may be more indirect than direct, that it is "influenced more by the conditions of life implied by various occupations than by the direct occupational risks entailed". Taking into account all cases of silicosis, asbestosis, lead poisoning, accidents, and other occupational hazards, he attempts to evaluate the relative importance of heredity, direct occupational effects, and the social environment (including nutrition) as

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regards their effect on health. Assuming that everyone possesses one average degree of intelligence he puts the importance of heredity at 10%, occupation at 20% to 30%, and social environment at 60% to 70%; while when he takes into account the indirect effects of intelligence he puts heredity at 40%, occupation at 10% to 20%, and social environment at 40% to 50%.

186 EVALUATION OF THE INDUSTRIAL HYGIENE PROBLEM IN THE STATE OF TEXAS. Division of Industrial Hygiene, Texas State Department of Health, Austin, 46 pp., (1939).
This Bulletin presents the results of a preliminary investigation, similar to those made in other states, to determine what hazards, if any, exist in industrial plants in the State of Texas. The survey included the study of 1700 plants selected at random from a list of 12,000 companies employing 5 or more persons. It was found that large numbers of employees were exposed to organic dusts, silica dust, lead, acids and alkalies and other potentially dangerous substances. The results indicate that compensation for occupational diseases is anticipated. Although most of the large companies had full time or part time medical service, the physicians treat only cases of traumatic surgery and do not practice industrial hygiene in a broad sense.

187 PHYSICIANS DUTIES AND RELATIONSHIPS IN INDUSTRY. A.J. Tronstein. Ohio State Medical Journal, 35, 281-7, (March, 1939).
The physicians duties and relationships in industry are discussed under the following headings: pre-employment examinations, ambulatory illness, accidents, sanitation and hygiene, group insurance, and patients common to private and industrial practice. The major problems of the doctor are pointed out. These doctors should not allow their medical judgment to be subjugated by economic, political, social or legal pressure, nor should they attempt to extend their fields of activity to such a point that they compete with private practice.

188 MAN AND LABOR. P. Gorens. Ztschr. d. Ver. deutsch. Ingen., 82, 1037-42, (1938) (German).
The author writes of the interactions between work and workers, stresses the necessity of adapting the work to the man, also, the man to the work. He emphasizes the importance of the right vocation and good professional instruction, which can be best given in the workshop.

189 INFLUENCE OF DUST ON THE TEETH OF GEM POLISHERS. H. Schmittner. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 123-40, (1938) (German).
The study covered 243 men engaged in the grinding of precious and semi-precious stones, and 250 men of the same age groups, not engaged in this work, all living in the same community. The grinders showed a greater wearing down of the front teeth but fewer paradental changes in that region; also less wearing down of the side teeth and fewer paradental changes in that region. The same incidence of dental caries was seen in both groups.

190 MEASUREMENT OF QUARTZ BY DIFFERENTIAL THERMAL ANALYSIS. F.M. Trombe.
Compte. rend. de l'Acad. des Sci., 207, 1111-3 (December 5, 1938) (French).
A method is described for determining percentages of quartz in mixtures of quartz and vitreous silica by measuring the temperature differentials when the mixture is heated to the conversion temperature for quartz (573°C).

191 SOME BASIC ASPECTS IN THE RECOGNITION OF FLOW AND DEPOSIT OF DUSTS. O. Brandt.
Kolloid Ztsch., 85, 24-32, (October, 1938),(German).
It is claimed that dust particles do not have an adherent air layer and that this fact is demonstrated by actual experiment. The author sets up the conditions governing the suspension, settling, and flow of dust. The behavior of dust is reproduced by simple experiments, and gas pressure is shown not to affect its charac-

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teristics. The article is highly theoretical. The real relationship of particle size to the behavior of the particles in a gas is not mentioned.

192 COLLECTING AND EXAMINING DANGEROUS DUST WITH SPECIAL REFERENCE TO SILICOSIS. J.H. Matthews. Oster. Chem.-Ztg., 41, 174-9, (1938) (German).
Two instruments for collecting dust are described: in one, salicylic acid is used as the filtering medium, the other is the labyrinth. Both are probably less suitable than either the Owens jet counter or the impinger. Methods for chemical analysis are then described. The author concludes that "dust is dangerous when it liberates silicic acid and that the simultaneous presence of alkali intensifies the damage done to the lung."

193 NEW REGISTERING KONIMETER FOR CONTINUOUS COLLECTION OF SMALL AMOUNTS OF INDUSTRIAL DUST. F. Lowe. Chem.-Ztg., 62, 537, (1938) (German).
The author describes very briefly a new apparatus which withdraws dust continuously from the intake air and precipitates it on the ordinary Konimeter disc. It can be used in any position and is independent of a source of electricity or compressed air.

194 DRAGER FINE DUST RESPIRATOR K2B AND THE QUESTION OF RESISTANCE TO AIRFLOW. E. Naujoks and K. Thiel. Dragerheft, 197, 3892-3, (1938) (German).
A recently improved German respirator is described, the filtering efficiency of which is stated to be 99 per cent for dust below 3 microns. Its resistance to 150 l.p.m. is less than 50 mm of water and resistance to expiration is less. The mask can be fitted closely to the face. The authors point out that resistance to expiration must be less than resistance to inhalation and should, of course, be as low as possible. (*Note: the maximum resistance as allowed by the U.S. Bureau of Mines for 85 l.p.m. is 50 mm. water on inspiration, 25 mm. on expiration).*

195 THE FLOW OF AIR AND ITS DISTRIBUTION THROUGH DUCTS. Part 1. Frictionless Flow and Velocity Head. J.R. Swickl. Heating & Ventilating, 36, 15-17, (February 1939).
The first of a series of six articles by the author which are to appear in Heating and Ventilating.
In the first paper the equation of flow is developed and certain elements of it discussed. Then the theory and development of required air horsepower is followed through. The equations discussed are basic in the hydraulics of air and a thorough knowledge of them is essential in understanding the theory of pipe design.

196 MAIN FAN INSTALLATIONS AT COAL MINES. Mine Safety Board Recommendations. U.S. Bureau of Mines, Inf. Circ. No. 7050, 2 pp., (January, 1939).
It is recommended that all active underground coal mines, whether working or idle, have one or more fans in continuous operation. The capacity and the installation should be such that the entire mine workings are adequately ventilated at all times. They should be located at the surface in fireproof buildings offset from the line of the main opening. For mines that liberate gas, the fan should have two independent sources of power immediately applicable. In the absence of continuous attendance, automatic warning devices that operate when the air flow is reduced should be installed. In general, it is preferable to operate the fan exhausting, although reversing fans are recommended.

197 MINE VENTILATION. D. Harrington. U.S. Bureau of Mines, Information Circular No. 7047, 16 pp. (January, 1939). Obtainable free from Supt. of Documents, Washington.
Ventilation in mines is the most important factor in fire protection and prevention, health, safety, and efficiency. Fifteen to twenty years ago much was learned about mine ventilation, but tendencies in the recent past have indicated that some of the lessons learned have been forgotten. One dangerous trend is the placing of the main fans underground in coal mines, or in placing them on the surface

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in direct line with the opening. They should be placed on the surface, but offset at least 25 feet in a fireproof housing, to prevent damage in case of an explosion. Another trend is to use the working shafts as the return air shafts, a practice that would be extremely hazardous in case of a fire or explosion.

198 DEAD ENDS. Robert B. Northrup. Ind. Bull., 18, 16-7, (January, 1939). Industrial Bulletin is a monthly publication of the New York State Department of Labor, Albany, Price $1.00 per year.
In designing an exhaust system for dust control, it is not good practice to connect two branches at the end of a system into a main pipe of uniform diameter. A balanced system, with changes in the size of the main for every branch connection, on the other hand, insures a uniform high velocity with a minimum of eddies and turbulence. This means less danger of clogging, less friction, lower power cost and better operating efficiency generally.

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

199 FLUORINE COMPOUNDS. K. Roholm. Occupation and Health, Supplement No. 2. International Labor Office, 7 pp. (September, 1938).
Free fluorine seldom plays a part in toxicology, because the element immediately reacts with water forming hydrogen fluoride. From a practical toxicological point of view fluorine compounds are divided into four groups: (1) gaseous fluorine compounds, very toxic; (2) solutions of hydrofluoric acid and hydrofluosilicic acid, extremely toxic; (3) relatively easily soluble fluorides and fluosilicates, fairly toxic; and (4) almost insoluble fluorine compounds, as cryolite and calcium fluoride which are only moderately toxic. There are three forms of poisoning: (a) local corrosion of the skin or mucous membranes; (b) acute poisoning through ingestion of the easily soluble compounds; and (c) chronic poisoning as demonstrated by degenerative changes in teeth and bones. Fluorine compounds occur quite extensively in industry: in the mining of fluorspar and cryolite; in the manufacture of aluminum and copper; in the iron and steel industries, as a flux; in certain brick works, in glass and enamel works; and in certain chemical plants. Fluorine compounds are used extensively in the preservation of food. Damage to vegetation in the vicinity of certain industrial plants has been reported. Extreme care should be exercised in the use of any of the compounds of fluorine.

200 SELENIUM. A. Stassens. Occupation and Health, Supplement No. 2. International Labor Office, 6 pp. (September, 1938).
The author presents a good review of the properties and pathology of selenium and its compounds. The degree of toxicity is one of controversy. Certain of its compounds, particularly those of organic origin, are highly toxic. Most cases of death from selenium or selenium compounds are probably accidental. Its presence has been detected in urine (where it is normally absent) in workers with no extreme symptoms. The use of any of the compounds, however, requires extreme care.

201 NICKEL CARBONYL. A.J. Amor. Occupation and Health, Supplement No. 2. International Labor Office, 5 pp., (September, 1938).
Nickel carbonyl is formed by passing cold carbon monoxide over the finely divided metal in the process of its extraction from ores. Investigations as to its toxicity are rendered difficult because of its tendency to be decomposed readily into the metal and carbon monoxide and under conditions of its manufacture carbon monoxide is always present. Nickel carbonyl has been shown to be five times as toxic as carbon monoxide. Pathologically, nickel carbonyl when inhaled as a gas passes into the blood stream unchanged, with little or no dissociation in the lungs. Microscopic examination of the lungs in fatal cases discloses an acute vascular congestion with marked capillary engorgement. In non-fatal cases the

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symptoms are divided into two groups -- immediate and remote, separated by a period of 12-18 hours when recovery seems complete. Symptoms are dyspnoea, cyanosis, and severe soreness in the chest. Complete recovery is possible in all but the most severe exposures.

202 PNEUMATIC TOOLS. L. Teleky. Occupation and Health, Supplement No. 2. International Labor Office, 12 pp., (September, 1938).
The author presents a review of the literature on the hazards in the use of pneumatic tools. The most noticeable symptom is a vascular disturbance in the blood vessels where the tool is held, causing a restriction of the blood flow at that point. Injuries to the bone joints are common and are demonstrable by x-ray. Other more minor injuries have been demonstrated. In certain European countries injuries from the use of compressed air tools are compensable.

203 TOXIC GAS: INDIVIDUAL PROTECTION AGAINST. L. Dautrebaude. Occupation and Health, Supplement No. 2. International Labor Office, 12 pp., (September, 1938).
This article is devoted to an account of the principles which should be observed in the construction of gas masks. Most masks are efficient neutralizers of any gas that may be encountered, but their characteristics from a respiration and physiological aspect are generally inadequate. The three main elements of the disadvantages to overcome are: discomfort, dead space within the mask where carbon dioxide may accumulate, and resistance to respiration. Most manufacturers of masks have standardized on methods for removing each gas. The difficult problem is to procure efficient chemical removal and still maintain low resistance to breathing.

204 INDUSTRIAL NOISE. R. Causse. Occupation and Health, Supplement No. 2. International Labor Office, 10 pp., (September, 1938).
The influence of noise on the system is discussed. It has been shown that efficiency of employees has been increased greatly by noise reduction. The incidence of occupational deafness in certain industries is extremely high, and is compensable in some countries. The simplest type of prophylaxis is the use of vaselined cotton wool or some plastic substance in the ears. Other elements of noise reduction, most of them recent developments, are discussed.

205 ACTION OF INDUSTRIAL POISONS ON THE ENDOCRINE GLANDS. E. Gonzalez. Rev. del Trabajo, 3, 55-70, (September, 1938) (Mexico) (Spanish).
This is a review article, dealing chiefly with the detoxifying ability of the suprarenals. Effects of fatigue and of various poisons such as lead, arsenic, mercury, phosphorus, etc., are described. Much of the work already done gives such contradictory results that the author pleads that basic experiments be made to clarify the complex problems involved.

206 DERMATITIS -- A GUIDE IN REPORTING. Occupational Disease Prevention Division, Dept. of Labor and Industry, Pennsylvania, Safe Practice Bulletin No. 12, 12 pp., (January, 1939).
This bulletin comprises the text of an address before one of the "Safe Practices" conferences held for safety engineers of Pennsylvania industries. Dermatitis cases comprise a very large percentage of all occupational diseases and it is important that an accurate knowledge be obtained of their incidence. Much of the reporting of cases is done by safety engineers or other non-medical persons and this bulletin was devised to aid them in providing more accurate descriptions. A brief discussion is given of the various agents causing dermatitis and the principal items used in diagnosis. A standard form for use in reporting is suggested.

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207 FUNGUS INFECTION OF LUNGS SIMULATES TUBERCULOSIS CLOSELY. Adelaide R. Smith. Industrial Bulletin, 18, 15-6, (January, 1939).
The molds, including fungi and yeasts, are simple filamentous plants of simple structure, which, having no chlorophyl, cannot synthesize food from carbon dioxide, must obtain it from other organisms, living or dead. They have wide distribution and are found largely in decayed or slightly decayed vegetable matter and in the dust from such material; certain susceptible individuals working in these dusts may become infected with them in various parts of the body. A description is given of a few cases of proved pulmonary infection from fungus, which in this form produces changes much the same as those in tuberculosis, detectable only by cultural methods. The inference is drawn that infections of this type may be much more common than is generally suspected.

208 REPORT OF THE USE OF BIOPHOTOMETER AND VITAMIN A THERAPY IN INDUSTRY. O.H. Schettler, R.F. Bisbee and B.H. Goodenough. Jounal Industrial Hygiene & Toxicology, 21, 53-5, (February, 1939).
For many years workers matching whiteness of porcelain were unable to do so with reasonable accuracy. After many experiments to improve results had failed it was found possible by the use of a biophotometer to measure the patient's ability to see light and his response to dark adaptation. Therapy with vitamin A, known to be essential for good vision, was begun and the result has been a decrease of 75 per cent in number of rejections of matched white porcelain over a period of a few months.

209 THE FEET OF THE INDUSTRIAL WORKER. SYMPOSIUM. E.P. Cathcart, C. Lombrinudi, W.S. Creer, W. Blood and H. Bradley. Lancet, pp. 1480-6, (Dec.24,1938) (British)
Flat-foot is one of the troubles that most concern industrial workers. Footwear worn at work is much more important than that worn in leisure hours. Some of the defects of modern shoes are pointed out by the authors and remedies to correct them are suggested. It is true that the shoe manufacturers are becoming more alert to the problem and are beginning to give more cooperation to industrial medical officers.

210 OCCUPATIONAL CANCER. L. Teleky. Acta d. intern. Ver.f.Krebs., 3, 253-75, (1938) (German).
The author discusses the main industries in which lung cancer is found or expected. The silicosis literature points to the fact that lung cancer is seldom found among silicotics. The high incidence of lung cancer among Schneeberg miners (radioactive mines) is no basis for assuming that other miners are similarly endangered. Among metal grinders carcinoma is two and one half times as great as in the general population. Exposure to asbestos, perhaps because it irritates the lungs, may be conducive to lung cancer -- at least the incidence is fairly high. Exposure to chromate dust seems to favor lung cancer as well as cancer in other organs. There are isolated cases of lung cancer among generator workers, among workers exposed to coal dust, tar and tar distillates, nickel workers, but the numbers are not large. Exposure to radium emanations and radioactive substances is very dangerous.

211 DOES WORK WITH COMPRESSED AIR TOOLS RESULT IN ENDANGITIS OBLITERANS? A. Fikentscher. Arch.f.Gewerbepath. u. Gewerbehyg., 9, 65-79 (1938) (German.)
The study described covered 250 workers in the iron industry who had used pneumatic tools from 2 to 40 years. The chief signs and symptoms of endangitis obliterans (threatened or actual gangrene, absent pulses, intermittent claudication, trophic disturbances, alarming pains, pigmentation of limbs) could not be demonstrated in any of the subjects. The circulatory disturbances so often observed in workers with compressed air riveters, hammers, etc., are therefore of other origin than an endangitis obliterans.

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212 JAUNDICE IN THE TIN WORKS OF WILHELMSBURG, AN EPIDEMIC HEPATITIS. K. Holm. Arbeitsschutz., pp. 257-8, (1938) (German).
Seventy-four cases of jaundice were found among 512 employees of a certain plant during the summer of 1937. Further investigations to determine the occupational origin showed that 20 per cent of a group of school children were affected and that in certain other schools about 10 per cent were afflicted. The disease occurred in all groups at about the same time, and it was concluded that the cause of the jaundice was not occupational.

213 INFECTION. M.R. Mayers. Industrial Bulletin, 17, 577-8 (December, 1938).
The author points out the possible extreme danger of small cuts, abrasives or puncture wounds and cites a few cases of workers who suffered partial incapacity because of small cuts. Workers should be taught the value of prompt treatment for even the most minor wounds.

214 A NEW SURGICAL MASK: A BACTERIOLOGIC AIR FILTER. L. Arnold. Arch. of Surg., 37, 1008-16, (December, 1938).
The study of bacterial respirators has attracted the attention of many investigators but is still in an undeveloped state. The author has tested with the Wells centrifuge various materials and thicknesses of material for the transmission of bacteria. It was found that a suitable mask must contain the proper filtering material and must fit tightly against the face, since bacteria escape above the mesh on each side of the nose. The material suggested is cellucotton. It was also stated that a moist material is less efficient than a dry one, which seems erroneous because a moist material generally has greater resistance. This article is the first of a series on bacterial masks.

215 MASON'S ECZEMA. W. Burckhardt. Arch. f. Dermat. u. Syphil., 178, 1-44, (1938) (German).
This is a very complete work based on numerous cases, experiments, and clinical experiences. Patients suffering from mason's eczema showed a diminished skin resistance to lye which paralleled the hypersensivity to the alkaline substances. Calcium oxide is considered as the chief toxic agent in ordinary lime, and it acts also in cement where the calcium and aluminum oxides offer most damage to the skin. The diminished resistance to the alkalies seemed to be the predisposing factor in all cases, based on the retarded neutralization of these substances. The disease arises usually after contact with large quantities of the materials and after repeated exposures a chronic eczema sometimes prevails.

216 OBSERVATIONS ON WEIL'S DISEASE IN SAAR MINES. E. Krauss. Dtsch. Arch. f. klin. Med., 183, 39-53, (1938) (German).
Weil's disease is an acute infectious disease characterized by jaundice, fever, muscular pain and enlargement of the liver and spleen. It is usually of 10 days to two weeks duration, although fatal cases are quite common. It is well known that miners in Scotland, Japan and elsewhere have become infected. Description is given here of the contraction of eight cases of the disease in the Saar mines in Germany where the disease is recognized as a compensable accident. No other mines in Germany were effected during this period except the Saar mines. The method of contraction is not known.

217 THE DEVELOPMENT OF INDUSTRIAL SPRAY BOOTHS. Carleton Cleveland. Metal Industry, 37, 63-7, (February, 1939).
The author presents an interesting account of the development of spray booths from the small wooden cabinets to the efficient water wash booths of the present day. The new spray booths are highly efficient, reduce fire hazards, permit reclaiming of pigments, and remove objectionable and sometimes poisonous fumes.

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218 MEANING OF BLOOD CHANGES IN SPRAY PAINTERS. G. Lind. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 141-66, (1938) (German).
In a survey to study the blood changes in paint sprayers, blood samples from 230 paint sprayers and 200 controls from other industries were taken. In both groups the same incidence of relatively low hemoglobin levels, leucopenia, leucocytosis, eosinophilia, lymphocytosis and shift to the left was seen. More than 35 per cent lymphocytes were present in 48 per cent of the control group. The substances to which the sprayers were exposed, according to the supply firms, are ethyl, butyl, and amyl acetates; ethyl and butyl alcohols; ethylene glycol; acetone; toluene; xylene; benzine; solvent naphtha and mineral turpentine. Benzene is no longer use

219 INFLUENCE ON BLOOD ALCOHOL CONTENT OF INHALING VOLATILE SUBSTANCES IN SPRAY PAINTING. B. Siegmund. Deutsch. Ztschr. f. d. ges. ger. Med., 30, 151-5 (1938) Germa
After an automobile accident, the driver's blood showed 1.79 per cent alcohol. He was a spray painter by trade and said he had taken no alcohol, but blamed the blood change on the volatile substances he inhaled during work. Tests were made at his place of work and at other spray painting establishments (without ventilation), but no increase of reducing substances could be detected in the blood by Widmark's method.

220 INDUSTRIAL ARSENIC POISONING IN VINEYARD WORKERS. W. Frohn. Much. med. Wchnschr., 95, 1630-5,(1938) (German).
Some cases of arsenic dermatosis in a clinic gave rise to an inquiry in certain villages near the vineyards and 23 cases of poisoning were found. Uranium green, silesia green and arsenic carbonate are the most commonly used arsenic compounds. The greatest danger comes in May and June and in the autumn when the vines are sprayed. Absorption through the respiratory tract seems the most important method of entry. The first symptoms are nausea, throat pains, smarting of the eyes, melanosis. The leuconychia arsenicalis on fingers and toes is important for diagnosis. Prevention consists in substitution of a non-toxic spray, instruction of the workers and good medical supervision.

221 ARSENIC PARALYSIS OF ARMS AND LEGS WITH A RARE LATE SYMPTOM. Duncker. Ztschr. f. Orthop. u. Grenzgeb., 68, 300-8, (1938) (German).
In a suicide attempt with 5 g. of arsenious oxide the following symptoms were noted: flaccid paralysis with shrinkage of the muscles of legs and arms, hyperalgesia of soles and palms, and gastrointestinal symptoms (which soon disappeared) Symmetrical whitish stripes on all fingernails were striking.

222 A CASE OF FATAL GAS POISONING IN WELDING IN A CLOSED TANK. R.J. Wright-Smith. Journal Industrial Hygiene & Toxicology, 21, 24-26, (January, 1939).
Description is given of a case of fatal poisoning which occurred following welding in a closed tank. After one day's work in the tank the man complained of sickness, about an hour later he began to cough, vomit and gasp for breath. He was taken to the hospital and died the next morning. Postmortem showed death by a poisonous gas, the nature of which was not exactly determined. although the symptoms indicated that it was most likely nitrous fumes. The tank had formerly contained salt water and the decomposition of the sodium chloride together with any carbon monoxide present might cause the formation of phosgene and the possibility of death from this substance cannot be excluded.

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223 SMOKE, FUMES, AND GASES WHICH OCCUR IN ELECTRIC WELDING, ESPECIALLY IF MANTLED ELECTRODES ARE USED. H.J. Weber and G. Jende. Arbeitsschutz, pp. 224-9, (1938) (German).
The German government has instituted investigations into the problem of gases, fumes, and smoke from electric welding processes, and this is the first report. Plain and mantled electrodes were analyzed, wire and mantle separately. While electrodes were welded, the ensuing fumes were caught and analyzed by especially developed methods. The greater part of the fume was iron oxide (69- 5%), and most of the rest was free silica (18-21%). There were also small amounts of manganese and calcium oxides. Statements in the literature that oxides of nitrogen are not formed were found to be false. Further research will follow.

224 PENUMONITIS CAUSED BY GASEOUS NITROGEN OXIDES. G. Cramer. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 1-2, (1938) (German).
The breathing of nitrogen oxides results in a pneumonitis which in severe cases goes on to pulmonary edema and death. In others, a miliary broncho-pneumonia develops, characterized by varying quantities of fibrin, red and white cells in the alveoli, as well as by large syncytial cells which are regenoration forms of the alveolar epithelium. This miliary pneumonitis may, but not always, end fatally. It is detectable by x-ray at any stage. The author considers it possible that these gases may give rise to lobar pneumonia as well. The pneumonitis is due chiefly to nitrogen dioxide.

225 INJURY TO THE LIVER AND THYROID FUNCTION AS A SIGN OF WELDERS' DISEASE. H. Wanick. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 113-22, (1938) (German).
The material studied includes the observation of 80 subjects, examined for the first time in 1936, again in 1937-8, with the addition of 23 new subjects. The men were engaged in autogenous or electro welding or both. The examinations were on the basis of urinary excretion of galactose over a 4 hour period following galactose ingestion. On the basis of the results, no significant relation between "welders" disease and liver and thyroid function exists.

226 THE SYSTEMIC EFFECTS RESULTING FROM EXPOSURE TO CERTAIN CHLORINATED HYDROCARBONS. L. Greenburg, M.R. Mayers, and A.R. Smith. Journal Industrial Hygiene & Toxicology, 21, 29-38, (February, 1939).
Chlorinated naphthalenes and diphenyls, because of their electrical, heat and moisture-resisting properties, and because they are non-inflammable, are used extensively for insulating wire and in the manufacture of electrical condensers. On the whole their toxicity increases the higher the chlorination. The action of the materials is usually on the liver, with skin eruptions usually proceding serious involvement. Three fatal cases are described and it is hoped that they will help acquaint physicians with the symptoms so that proper diagnosis and handling of the cases may be accomplished.

227 METAL DEGREASING BY SOLVENT PROCESSES. A.L. Brooks. National Safety News, 39, 34-6, (February, 1939).
The author discusses the hazards in connection with the extensive use of degreasers in industry. Extreme care should be practiced in their use and the properties of each should be known. In recent years the use of more powerful degreasers as benzol, carbon tetrachloride and other chlorinated hydrocarbons has increased the dangers in connection with these processes.

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228 FATAL POISONING FROM TRICHLORETHYLENE. A.M. Marx and H. Langecker. Samm. v. Vergift., 9, 49-56, (1938) (German).
A worker was employed making a paint with rubber dissolved in trichlorethylene in a cylindrical tank. He was found dead after having been alone in the tank for between 30 and 60 minutes. The autopsy excluded illness of any other kind. Although chemical analysis of lungs and blood did not detect trichlorethylene, the expert nevertheless assumes death from that substance. He regrets that the brain was not sent for analysis since trichlorethylene would be more likely to be found in the brain than in the lungs or blood.

229 A MODIFIED METHOD FOR THE DETERMINATION OF BENZOL IN AIR. J. Siegel and Wm. J. Burke. Industrial Bulletin 18, 17, (January, 1939). Industrial Bulletin is a monthly publication of the New York State Department of Labor, Albany. Price $1.00 per year.
A modification is described of the microcolorimetric method of benzol determination developed at the Bureau of Mines by Schrenk, Pearce and Yant. The modification was found necessary in permitting larger numbers of samples to be taken in one day and experience with it has proved satisfactory. Instead of bubbling the sample through nitrating mixtures at the point of sampling or in the laboratory, the samples are collected in separatory funnels of varying sizes depending on the expected concentration, then taken to the laboratory for analyses. All subsequent operations with each sample are conducted in the funnel and the chance for errors is then reduced. The nitrating mixture is introduced into the funnel, mixed well, left overnight, and analyzed the following morning by the same method as that followed by Schrenk and his colleagues. By this improvement it was possible to analyze simultaneously 15 to 20 samples.

230 DIAGNOSIS AND PATHOLOGY OF EARLY STAGES OF CHRONIC INDUSTRIAL BENZENE POISONING. K. Fellinger. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 88-96, (1938) (German).
Early detection of chronic mild benzene poisoning is best accomplished by depending upon the granulopenia which has regularly been found to appear as the first sign. Bone marrow biopsies on 5 patients with benzene poisoning showed a decrease in total white cells, a great increase in early forms of the myelcytic series, a decrease in the mature granulocytes, no change in mono- and lymphocytes, no or slight changes in the erythropoietic series. Cells of the myelocytic series often showed degenerative changes, the "toxic granulations", as well as vaculization of the protoplasm and disproportions between the stages of development of the nucleus and the cytoplasm.

231 CLINICAL EVALUATION OF MARROW AND BLOOD CONDITIONS. IV. THE MARROW AND BLOOD PICTURE IN CHRONIC OCCUPATIONAL BENZENE POISONING. R. Stodtmeister. Deutsch. Arch. f. klin. Med., 182, 459-66, (1938) (German).
A man, now 38 years old, contracted chronic benzene poisoning in 1935 when working in benzene-containing dyes. The blood changes are still serious at the present time and in 1937 there was a relapse. The blood shows: 25 per cent hemoglobin, erythrocytes 760,000, leucocytes 2600, bleeding time 7 minutes. The patient is not supposed to have worked with benzene since 1935, but the relapse might have been due to minor exposures from other processes near him.

232 BENZENE AND GONADS. I. Hett and H. Maak. Klin. Wchnschr. 17, 1376, (1938)(German
In mice to which the authors have given injections and inhalations of benzene in relatively large amounts, they have seen degeneration of the germinal epithelium in the testicle and greatly augmented atresia, especially of the larger follicles of the ovary. These changes were seen before any alteration in body weight or general well-being were noticed.

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233 *ACUTE BENZENE POISONING AND ITS PREVENTION.* H. Symanski. Med. Welt., 12, 1248-9, (1938) (German).
The author describes 3 cases of benzene poisoning which occurred in cleaning out boilers in an iron works. He emphasizes the fact that the drunkenness and euphoria can delude the endangered person and that vapors can escape from the falling crusts for several days after a boiler has been blown out by compressed air. Abundant fresh air must be introduced during the work and other precautionary measures taken.

234 THE OCCURRENCE OF AN EPITHELIOMA IN MAN AFTER EXPERIMENTAL WORK WITH BENZPYRENE. E. Klar. Klin. Wchnschr. 17, 1279-80 (1938) (German).
On the dorsal side of the left forearm of the author, there developed an epithelioma 3 months after he performed animal experiments with benzpyrene. Although this experience may be accidental, it should serve as a warning to others.

235 CRIMINAL THALLIUM POISONING. K. Bohmer. Deutsch. Ztschr. f. d. ges. ger. Med., 30, 146-50, (1938) (German).
A man died after having been given (homicide) small amounts of thallium (1.241 g. altogether) in his food over a period of 4 weeks. Arsenic poisoning was suspected but arsenic was not found in the tests and the final diagnosis was brain tumor. His early symptoms were vomiting, severe stomach aches and pain in the legs. Joint pains and toothache developed, along with numb fingers, loss of hair and dull kidney pains. The fatal course as it developed in 4 weeks' hospitalization, is described.

236 THE EFFECT OF SODIUM FLUORIDE ON EXPERIMENTAL OSTEODISTROPHY AND ATROPHY FROM INACTIVITY. I. Marx. Bruns. Beitrage z. klin. Chir., 168, 261-6,(1938) (German).
The author, as a result of experience with cryolite workers, attempted to find out if skeletal changes could be produced by administering sodium fluoride and if development of atrophy from inactivity could be prevented. The results were entirely negative and produced only serious ulcerative gastritis.

237 AN UNUSUAL CASE OF CYANIDE POISONING DURING FUMIGATION. C.L. Williams. U.S. Public Health Reports, 53, 2094-5, (November 25, 1938).
In most cases of cyanide poisoning by inhalation, the individual dies promptly or recovers rapidly and completely. The case described is unusual because of its prolonged duration and treatment. The fumigator was overcome in the usual manner and given artificial respiration and oxygen. At the hospital, the antidotes advised by Chen were administered: 20 cc. of solution containing 0.6 g. sodium nitrite, followed immediatoly by 100 cc. of solution containing 50 g. sodium thiosulfate. The patient remained unconscious for 3 days and over this period oxygen was administered. During treatment the patient was irrational and sometimes violent. He was reported 25 days after the accident as much improved but still showing mental symptoms. A still more recent report tells that he is now fully recovered and has resumed his full-time duties.

238 DANGERS IN THE ELECTROLYTIC PRODUCTION OF CHLORINE BY THE AMALGAM PROCESS. I. Brachmann. Arbeitsschutz, pp. 255-7, (1938) (German).
The electrolytic method of producing chlorine is based on the decomposition of sodium chloride by means of an electric current. Mercury is used for the cathode, where it combines with the sodium, liberating chlorine. The author investigated two plants, and in one, in which every precaution against poisoning was taken, there were no signs of mercury poisoning or chlor acne. In the other plant nearly all workers showed signs of mercury poisoning as well as the skin trouble.

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239 RESPIRATORY PROTECTION AGAINST MERCURY. K. Grosskopf. Dragerheft, 197, 3895-6, (1938) (German).
In testing different gas masks for their efficiency against mercury it was found that one gas filter which is used on war gases, ammonia and hydrogen sulfide, also gives complete protection from mercury.

240 THE BASOPHILIC AGGREGATION TEST APPLIED TO CEMENT WORKERS. F.B. Holden and C.E. Ralston. Journal Industrial Hygiene & Toxicology, 21, 3-6, (February,1939).
Claims have been made in the past by foreign authors that exposure to cement dust caused an increase in the stippled blood cell count, similar to that produced in lead poisoning. The interpretation may be made also that the basophilic aggregation test of McCord, used widely in the estimation of lead absorption, would be similarly affected, thus reducing the value of these tests in the diagnosis of lead poisoning. The authors here report on a series of examinations of 63 men who were exposed for an average of 10 years to cement, limestone and shale dust. As controls they also examined 73 men who had had no record of dust exposures. They found no evidence to indicate that the increased stippled cell counts obtained by the foreign authors is paralleled by a similar increase in basophilic aggregation counts made on cement workers in the United States. No cell pathology suggestive of the picture obtained in lead poisoning was found; the average basophilic aggregation of the cement workers was the same as that of the workers in non-dusty areas.

241 THE METABOLISM AND RETENTION OF LEAD IN GROWING AND ADULT RATS. J.B. Shields, H.H. Mitchell, and W.A. Ruth. Journal Industrial Hyg. & Tox., 21, 7-23, (Jan.,1939
An extensive series of experiments was conducted with albino rats to determine rates of absorption and retention of lead at different stages of maturity. During periods of rapid growth, lead is absorbed readily at very low levels of intake and increases about proportionally with increased intake. It is retained largely, in the skeleton. Mature animals will not accumulate lead in the body until certain critical concentration of lead in the food is reached (between 32 and 48 mg. per kg. of dry food). The concentration of lead in the body of mature rats could not be raised above 9.0 or 9.5 p.p.m., while that in young animals could be raised to two or three times this value, and the latter is in a much more stable condition than that of the mature animals. Lead is not absorbed from the stomach, but largely through the small intestines, cecum and colon. Excretion is 90 per cent through the feces, 10 per cent through the urine.

242 CORRELATION STUDIES OF BASOPHILIC AGGREGATION AND RETICULOCYTES IN VARIOUS CLINICAL CONDITIONS. M.D. Pearlman and L.R. Limarzi. Am. J. Clin. Path. 8, 608-17, (November, 1938).
A study of the basophilic aggregation test (used in the diagnosis of lead poisoning) resulted in the following conclusions: (1) the basophilic aggregation test is unreliable as a routine laboratory procedure; (2) it is apparently another method for staining reticulocytes and shows a strong correlation with counts made according to a "vital" staining method; (3) the basophilic aggregation test is not uniquely diagnostic of lead absorption or intoxication. It is the index of marrow response; and (4) the basophilic aggregation test should be abandoned in favor of the "vital" method for staining reticulocytes.

243 THE LEAD HAZARD OF SOLDERING AND GRINDING IN AUTOMOBILE BODY PLANTS. K.Humperdinck Arch. f. Gewerbepath. u. Gewerbehyg., 9, 13-21,(1938) (German).
Of 400 employees in an automobile body plant who were engaged in soldering and grinding off solder, 20 were suspected of lead poisoning and were studied in detail. Two had a typical subacute lead poisoning, eight had a high blood lead content and low hemoglobin and red cell count. Lead fumes were not a factor in

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these poisonings since the solder is never heated beyond the consistency of dough. Dust samples taken near the work showed high lead contents, but these were due to coarse particles rather than fine lead dust. Intake of lead in these cases appeared, however, to be chiefly through the respiratory tract, secondarily by ingestion from dirty hands. Cases were more numerous where sanitary arrangements were poor.

244 LEAD HAZARDS AMONG AUTOMOBILE BODY WORKERS AND ITS PREVENTION. E. Truby. Arbeitsschutz. pp. 253-4, (1938) (German).
The solder used on sheet metal and joints in automobile bodies contains 75 per cent lead. After it hardens, it is polished by hand or by power driven wheels. Hand filing produces coarse dust, the machine grinding produces a dangerous fine dust. The solder should be heated only until it has a paste-like consistency, not to the point where it becomes volatile, and grinding wheels should not be used. The danger could be avoided by replacing the solder by a coat of cement-like material.

245 THE RELATION OF LEAD POISONING AND PARATHYROID. K. Reinhart. Arch. f. Gewerbepath. u. Gewerbehyg., 9, 80-7, (1938) (German).
The changes in the blood in chronic lead poisoning, as exhibited by 15 patients exposed to lead for from 2 months to 12 years, resemble those resulting from adenomata of the parathyroid: the serum shows increased calcium and decreased inorganic phosphate levels. The most severe case of lead poisoning did not show any alteration in mineral metabolism. The author thinks that in this case the presence of a great amount of lead checked the parathyroid's action.

246 LEAD GOUT. L. Ramond. Presse med., pp. 1231-2, (1938) (French).
An Italian, 37 years old, worked for 12 years at boiler cleaning. He has had 3 attacks similar to lead colic and for some years has suffered from typical gout attacks in the joints of the big toes. He does not show other signs of lead poisoning or lead absorption. The author states in a long but not convincing explanation that this is a case of lead gout.

247 MEDICO-LEGAL ASPECT OF CARBON MONOXIDE POISONING WITH SPECIAL REFERENCE TO ITS EFFECT ON THE HEART. H.G. Beck. Am. Journal Med. Jurisprudence 1, 177-81, (November, 1938).
The author maintains that there is such a condition as chronic carbon monoxide poisoning and that its non-recognition gives rise to many injustices. Vascular changes are listed. Encephalitic symptoms are caused by brain lesions and frequently develop into a chronic Parkinsonian type. Persons who survive an acute poisoning develop secondary symptoms and eventually may die of cerebral or cardiac trouble. Literature on chronic carbon monoxide poisoning, especially the effects on the heart, is discussed and a few cases are described.

248 VASCULAR REFLEXES IN CARBON MONOXIDE POISONING. H.W. Kayser. Arch. f. exp. Path. u. Pharm., 190, 219-20, (1938) (German).
By squeezing the carotids, pressure in the sinuses falls and as a reflex the blood pressure and pulse rate rise. This reflex did not occur in cats poisoned with carbon monoxide. The author, supported by additional experiments, supposed that this lack of reflex is caused by an augmented irritability of the vagus center. Squeezing the carotid lessens the blood supply to the brain and this loss can, in control animals, be compensated by rise of blood pressure and pulse increase.

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249 PARKINSONISM FROM CARBON MONOXIDE POISONING. TREATMENT WITH HOMBURG 680. W. Plath. Deutsch. med. Wchnschr., 64, 1543-4, (1938) (German).
Description is given of a case report of a fire brigade captain, age 53, who was frequently exposed to carbon monoxide in the course of his work. Slight symptoms began in 1920 with a pain on the ulnar side of the forearm, sensations of anxiety, disturbances of sensitivity. Improvement took place gradually except for short intervals when the symptoms increased slightly In 1937, after an acute exposure very severe disturbances of will, thinking, and speaking, and fever were noticed. Treatment with Homburg 680 was successful. The author believes the disease to be a "chronic carbon monoxide poisoning interrupted and aggravated by an acute accident".

250 SYMPTOMS OF POISONING IN BUS DRIVERS. G. Castrovilli. Med. del lav., 29, 235-46, 269-83, (1939) (Italian).
Cases of the poisoning are quite frequent among workers in the bus garages, but are rare among the men in other services. The general characteristics of the poisonings are: general indisposition, weakness, loss of appetite, headache, pallor, light cyanosis, hyperacidity, slight irritation of the respiratory tract, slight increase of blood sugar and hyperglobulia. Carbon monoxide is the chief cause of these symptoms but carbon dioxide may also play a part.

251 MASS POISONING WITH CARBON MONOXIDE. H. Ottel. Samm. v. Vergift., 9, 77-80, (1938) (German).
Fourteen persons were poisoned by illuminating gas on entering a house. On their arrival at the hospital, four, of whom three were children, were dead. No red color of the skin or mucous membranes was seen and diagnosis was made by blood analysis. Since the amount of oxygen available was insufficient, treatment consisted chiefly in giving injections of cardiazol and lobeline. Speed of recovery varied widely and did not depend upon the blood carbon monoxide concentration. Two patients with more than 20 per cent carbon monoxide hemoglobin could be dismissed, while others with 11--16 per cent lay in deep coma. The speed of recovery seemed to depend chiefly on the duration of the preceding anoxemia.

252 THE EFFECT OF THE INHALATION OF GASES WITH A LOW OXYGEN AND AN INCREASED CARBON DIOXIDE TENSION ON THE PERIPHERAL BLOOD FLOW IN MAN. E. Gellhorn and I.E. Steck. Am. J. Physiol., 124, 735-41, (December 1, 1938).
The authors studied the effects of inhaling excessive carbon dioxide or oxygen-poor air mixtures on the central nervous system, by observing blood flow changes in the human hand kept at constant temperature in a water bath. Rich carbon dioxide mixtures (4-5.4%) decreased the blood flow through the hand by as much as 50 per cent in some instances and there was no compensatory increase of flow on reverting to air inhalation. With oxygen-poor mixtures the results were variable and were usually followed by a compensatory phase on reverting to normal air. It is concluded that a study of peripheral blood flow under the influence of a high carbon dioxide tension in the blood is a more suitable test for the presence or absence of sympathetic impulses, than studies involving oxygen lack.

253 THE INSENSIVITY OF DIVING ANIMALS TO CARBON DIOXIDE. L. Irving. American Jour. Physiol., 124, 729-34, (December 1, 1938).
In contrast to mammals, the respiration, heart action and peripheral blood circulation in the beaver and muskrat are shown to be relatively unaffected by inhalation of air containing 10 per cent carbon dioxide. Yet the respiratory adjustments of these diving animals to sudden asphyxia are prompt and effective. On these premises, the role of carbon dioxide as the most important stimulus of respiration is questioned, and the mechanism of action in response to sudden asphyxia is discussed by comparison of diving animals and land animals.

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254 INCREASE OF RESISTANCE TO OXYGEN WANT IN ANIMALS ON CERTAIN DIETS. J.A. Campbell. Quart. J. Exp. Physiol., 28, 231-41, (1938).
Compared with the normal diet, a pure carrot diet gives definite protection against oxygen want, in the case of the animals tested (rats,mice). A synthetic non-protein diet with almost no fat and containing rice-starch 70 per cent, yeast 3 per cent, salts 1.5 per cent, and cellulose 25 per cent, gives similar protection. If the cellulose is replaced by a similar percentage of kaolin or agar no protection is gained. Proteins enhance the effects of oxygen want, opposing the action of carrots. It is possible that a detoxicating action in the intestine or elsewhere may play some part in the protection, and the anaerobic fermentation of cellulose may also be indirectly concerned.

255 GAS EXCHANGE WHILE TRAVELING IN HIGH ALTITUDES. W. Wilbrandt, R. Wilbrandt and B. Steinmann. Pfluger's Arch. f. d. ges. Physiol., 240, 698-707,(1938)(German).
The oxygen consumption and carbon dioxide production were measured in several men and women while subjected to pressure changes in a chamber and during the rail journey up and down the Jungfrau. In the chamber experiments little change in oxygen consumption was noted until the pressure dropped to an equivalent of that at 4000 meters altitude. With further decrease oxygen consumption increased; the average at 5,000 to 7,250 m. was 21 per cent. On the rail journey (from 2000 m. to 3450 m.) an average increase of 18 per cent was noted and this is thought to be extremely high for such moderate altitude. It is possible that the method of analysis (interferometer) might not have been accurate.

256 THE THERMAL INSULATION OF BUILDINGS. I. GENERAL PRINCIPLES. NOTE FROM THE INFORMATION BUREAU OF THE BUILDING RESEARCH STATION. Journal Inst. Heat. & Vent. Engrs. Lond., 6, 485-92 (November, 1938) (British).
The thermal insulation value of a structure is measured by the amount of heat that will pass from the air on one side to the air on the other side of the structure. It is expressed in terms of B.t.u.'s of heat that will pass under steady conditions in one hour across an area of 1 sq. ft. in a direction perpendicular to the area, when the difference between the air temperatures is 1°F. This value is the air-to-air thermal transmission coefficient. Adequate insulation reduces heating or cooling costs, but the increased cost of building entailed by providing additional insulation must be weighed against the economics in fuel or power to be anticipated. Apart from the saving which results from insulation, condensation trouble may be minimized, since good insulation lessens surface cooling.

257 THE CONTROL OF INDOOR ENVIRONMENT BY AIR CONDITIONING WITH SPECIAL REFERENCE TO THE TROPICS. G.P. Crowden and T.C. Angus. Journal Inst. Heat. & Vent. Engrs. Lond., 6, 442-68, (November, 1938) (British).
The paper describes experimental work on air-conditioned cubicles designed to furnish a comfortable indoor climate for residents in the tropics at an economic cost. In a discussion of the physiology of the problem, stress is given to the relative influence of radiation in the dissipation of body heat and on the consequent need for controlling wall temperatures when air-cooling is resorted to. Tests were conducted in a small cubicle 10 ft. x 7 ft. x 6 ft. 2 in., with walls of a double thickness of pressed wood and so constructed that the parts could be shipped and assembled without tools. It was assumed to reduce the temperature from 100°dry bulb, 90° wet bulb to 92° dry and 77° wet (50% relative humidity). Under these conditions the total heat to be removed is 2900 b.t.u. per hour, allowing, for two persons, a fresh air supply of 1200 cu. ft. per hour.