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REFERENCES TO RECENT LITERATURE ON INDUSTRIAL DISEASES

(A) News Items

- 1 STANDARDS FOR ANALYZING DUST CONCENTRATION. Labor Standards, U.S. Dept. of Labor 1, 5 (November 1938).
The American Standards Association has recently authorized its committee on standards of permissible atmospheric contamination in work places to develop standards for safe limits of concentration for toxic dusts and gases. This technical committee, comprising eminent toxicologists, pathologists and industrial engineers, and set up at the request of the International Association of Industrial Accident Boards and Commissions, is to review the work of other organizations, to set up specific standards on toxic materials and to furnish physicians and engineers interested with information on injurious exposure. Dr. Roy R. Jones of the U. S. Public Health Service, is to act as technical secretary of the committee.
- 2 COUNCIL ON INDUSTRIAL HEALTH. J. Am. Med. Assoc. 111, 2128 (December 3, 1938).
The first Annual Congress on Industrial Health sponsored by the American Medical Association was held January 9 and 10, 1939 at the Palmer House in Chicago. On the program were articles and papers which will be of interest and which will be abstracted in this Bulletin as they are published.
- 3 NOMENCLATURE IN INDUSTRIAL HEALTH. J. Am. Med. Assoc. 111, 2117-8 (December 3, 1938).
The language of industrial health is at present incapable of full expression within the strict confines of scientific terminology. Variations in source and derivation of the usages and idioms has resulted in wide confusion and there is a need, according to the Council on Industrial Health of the American Medical Association, for a definition of the terms used. To this end the Council proposes to publish a compendium which will define and explain the various terms now in use.
- 4 SILICOSIS PRIOR TO OCCUPATIONAL DISEASE ACT. Labor Standards, U.S. Dept. of Labor 1, 8 (Sept.-Oct. 1938).
Affirming a decision in the circuit court, the Supreme Court of Michigan recently dismissed a damage suit for deaths from silicosis prior to October 29, 1937, when the State occupational disease law went into effect. The suit, involving eight cases of death from silicosis, claimed negligence on the part of the employer in failing to provide proper ventilation and exhaust systems to remove the silica dust. Both plaintiffs and the defendant were under the State compensation act at the time the silicosis was contracted.
- 5 ENFORCING THE SILICA DUST CODE. Labor Standards, U.S. Dept. of Labor, 1, 13 (December 1938).
A procedure designed to expedite enforcement of the code for control of silica dust in rock drilling has been authorized by the New York State Industrial Commissioner. Contractors will be allowed 10 days to comply with the first order to

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provide and use dust control equipment. If the contractor fails to comply and to continue compliance with the order, the Labor Department will take a sample of the dust at drilling as evidence, and will prohibit further use of the drills involved, identifying them with a red tag and will begin prosecution. Where drilling contracts are of short duration, arrangements are made for prompt analysis of dust samples. For further details on this code see Abstract No. 19, this bulletin.

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

- 6 INDUSTRIAL MEDICINE AND THE MANUFACTURER. D.M. Schafer. Ind. Med. 7, 662-4 (November 1938).

In this short article, the author outlines the work being done by the Committee on Healthful Working Conditions of the National Association of Manufacturers. Their object is to promote better health measures not only in the larger companies where much has already been done but also to disseminate this information to the smaller industries which do not in many cases have access to it. Their plan is one of coordination in which they will gather the essential facts from the scientific side of industrial hygiene and prepare them so that the industrialist can see what they mean and what they can do for his factory.

- 7 DEVELOPMENT OF INDUSTRIAL HYGIENE IN THE UNITED STATES. J.J. Bloomfield. Am.J. Pub. Health, 28, 1388-97 (December 1938).

Industrial hygiene activities have increased tremendously in the past two or three years and there are now 26 states having industrial hygiene departments, with 6 others making surveys to determine their needs. The health of industrial employees, however, is not entirely one of industrial exposure but is closely bound up with a comprehensive program of general adult health. The author suggests as a health program a strong industrial hygiene department which can guide and coordinate existing public health activities along adult hygiene lines.

- 8 ANNUAL REPORT OF THE CHIEF INSPECTOR OF FACTORIES AND WORKSHOPS FOR THE YEAR 1937. H.M. Stationery Office, London (1938). (British).

The contents of this report, particularly of the chapter on "Health," should be of special interest. Under a new act, the hours of employment of young persons is further restricted and it is considered that more frequent periodic physical examinations should be made of the younger employees. The number of cases of lead poisoning was the lowest since the disease became notifiable but five cases of mercurial poisoning were recorded and the symptoms are mentioned in the report because of their dissimilarity from classical signs. There was an increase in the number of cases of epitheliomatous ulceration particularly in tar distilling and cotton mule spinning. In the section dealing with dust, it is noted that the substitution of non-siliceous abrasive for sand continues to increase. In the steel industry, because of recently increased production, there was an increased risk of silicosis to men who break down and rebuild Siemens's furnaces. In some plants permanent gangs of men do such work, where exhaust ventilation is difficult to apply, and, because of the heat, respirators are inconvenient to wear. It would appear that the only applicable preventive measure would be in the substitution of some harmless material for the silica.

- 9 REDUCING COST OF WORKMEN'S COMPENSATION IN INDUSTRY. D. Harrington. U.S. Bur. Mines, Inf. Circ. No. 7020 (June 1938). Obtainable from Supt. of Documents, Washington, D. C.

In many states the cost of workmen's compensation has risen during the past year and proposals to increase benefits to employees are before the legislatures of many states, which will cause further sharp rises. Also, occupational disease

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compensation will probably soon be accorded practically as wide recognition as accident compensation. Industry, therefore, is confronted with the problem of materially higher compensation rates than those of the past or present. Although present day compensation laws are not ideal from the standpoint of all concerned, the relation between employer and injured employee is far more satisfactory than in the past. The only feasible method open to industrialists to combat this trend appears to be a rigorous program of accident control. Differential rates favoring employers with low accident records are endorsed as is an administration of the laws to enable employees to receive practically all of the premiums paid.

- 10 MECHANIZED SAFETY. S. Walton-Brown. Trans. Instn. Min. Engrs. (London) 95, 202-300 (June 1938).
The progress of machine mining during the periods 1924-29, 1930-34 and 1935-36 is shown by the percentages of coal cut by machine during those periods (23, 59, and 53 per cent respectively) and by the percentages conveyed during those periods (0, 26 and 45 per cent respectively). Based on tons of coal mined, there has been a reduction of accidents from 1924-29 to 1935-36, but based on man-shifts the figures show an increase of accident rate. More coal is mined with less men, but the accident rate is higher.
- 11 WORKING IN THE DARK. Warren A. Cook. Nat. Safety News 39, 24-5 (January 1939).
Toxic concentrations of nearly all hazardous gases, dusts and vapors are undetectable without the use of some specific method of determination. A brief outline is given of the latest methods in use on the determination of the various impurities of the atmosphere which are hazardous and it is urged, in cases of doubt as to the concentration, that accurate methods be used to measure them.
- 12 PROCEDURE IN MAKING A SCIENTIFIC INVESTIGATION OF DUST INJURY. L. Teleky. Folia med. 23, 23-4 (1937). (Italian).
The investigation must always be taken up from the clinical and industrial hygien point of view. In dust studies it is necessary to examine thoroughly all the employees, including x-rays where possible. There are a number of methods of detecting quartz in lung tissue and also for the analysis of dusts for free silica. Dust counts should be made with the recognized instruments. In allergic dust studies it is necessary to list the materials used and the conditions of their application.
- 13 AIR CONDITIONING AND INDUSTRIAL HEALTH.. L.D. Bristol. J.Am.Med. Assoc. 110, 2142-3 (1938).
In a comparison of collected data on diagnosed illnesses, lasting seven days or more, among 1000 women working in air conditioned rooms, it was found that the average monthly incidence was slightly higher than that in a control group working in mechanically ventilated rooms. The average days' duration per case was also slightly higher in the air conditioned rooms.
- 14 DISABLING SICKNESS AMONG MALE INDUSTRIAL EMPLOYEES DURING THE SECOND QUARTER AND THE FIRST HALF OF 1938. W.M. Gafafer and E.S. Frasier. U.S. Public Health Reports 53, 1910-11 (October 20, 1938).
Reports from sick-benefit organizations including 168,233 male employees showed that rates for illnesses lasting more than a week were 28% lower in the first half of 1938 than in the same period of 1937 and 13% below the same periods of the years 1933-7. Non-industrial injuries remained about the same. All respiratory disease rates were far lower except that new cases of tuberculosis showed a slight gain.

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- 15 REGARDING THE BOOK "LUNG FIBROSIS OF MINERS" BY L. CROZIER, E. MARTIN AND A. POLICARD. Magnin. Med. du travail 10, 97-118 (1938). (French).
The three authors who collaborated on the book belong to a group of French physicians who hold that silicosis can be diagnosed roentgenologically only with great difficulty and that it can only develop on a preexistent tuberculosis. In France it has still not been included as a compensable disease. Magnin, in an open letter, criticizes the book and says it only serves to strengthen the views of experts in all other countries. It is stated that the authors have done violence to their own facts to strengthen their own views, and it is emphasized how beneficially the recognition of silicosis as an industrial disease in other countries has effected prevention itself as is shown by the record in the South African mines.

- 16 SILICOSIS; THE PATIENTS. M. Conrozier and I. Magnin. Med. du travail. 10, 173-248 (1938). (French).
The authors have observed 130 patients, of whom they have 300 x-rays. They publish numerous case histories and only a few in the group have been complicated by tuberculosis. They present very exact reports and excellent descriptions, all to prove that silicosis is a separate disease entity caused by dust, which is not necessarily complicated with tuberculosis. Such an argument is necessary in France, where certain physicians (see preceding abstract) oppose this view which is accepted elsewhere throughout the world.

- 17 THE SILICOSIS RISK IN THE POTTERY INDUSTRY. D.F.W. Bishop. Ceramic Age 32, 146-7 (November 1938). (Reprinted from an article in a British publication.)
The author emphasizes the importance of the silicosis risk in the pottery industry and says that although it has only recently been made a compensable disease (England, 1929) it has been well known in the past as "potter's asthma" and "potter's rot." He discusses the results of trials in the chinaware section in replacing flint by alumina as a bedding material, and reports that one firm found definite advantages. It has been shown that workers exposed to alumina dust, in some cases for as long as 39 years, experienced no lung changes. The author reviews ten items to be stressed in maintaining good dust control and makes a plea for observance of the rules in spirit as well as in the letter.

- 18 SILICOSIS IN THE MONUMENT MANUFACTURING INDUSTRY IN VIRGINIA. Bureau of Industrial Hygiene, Virginia State Department of Health Bulletin, 23 pp. (1938).
Following a preliminary survey of dusty trades in Virginia, a more detailed study of the monument industry was conducted. This industry in Virginia consists in a small number of plants which process granite monuments, mostly in open-air plants. The survey included the determination of dust concentrations and the examination of about one-half of the workers by X-ray. The dust concentrations found dispelled the idea that out-of-doors work involved no hazard, as they were well above the limits in nearly all cases. The total dust exposures of the workers was difficult to estimate however, because of the irregularity of their duties and variability of the types of work. The X-ray examinations disclosed that about 25 per cent of the 45 workers examined had involvement of the lungs from the silica dust; 8 of the men were diagnosed as having silicosis and 3 as having silicosis complicated with infection. On the basis of these findings, recommendations (which are listed in the bulletin) were made to the industry on control measures to reduce the dust concentrations to safe limits.

- 19 SILICA DUST EXPOSURE OF ROCK DRILLERS IN NEW YORK QUARRIES. L.Greenburg, C.B. Ford, W.J. Burke and B.H. Dolin. Ind. Bull. 17, 575-7 (December 1938).
Under the New York rock drilling codes, the rock formations are divided into two classes with regulations as follows: Class I--rock with less than 10% free silica, and Class II--rock with more than 10% free silica. Maximum allowable dust

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concentrations are: Class I--up to 100 million particles per cu. ft.; Class II--10 million particles per cu. ft. Because of wide variation in limits for the two classes, careful representative sampling of the rock must be made by the Department. In numerous dust counts made in the industry in both Class I and Class II rocks, the average dust concentrations found were below 100 million particles per cu. ft. and above 10 million. From this it is concluded that dust control methods are unnecessary in Class I rock, but are required, according to the code, in Class II rock formations.

- 20 SILICOSIS IN A NORWEGIAN STEEL FOUNDRY. K. Evang. Nord. Med. Tid. 16, 1085-92 (1938). (Norwegian).
The author examined 29 employees who had worked in a small foundry for more than three years. Of them, 13 showed definite radiological evidence of silicosis and in two others it was suspected. The cases were distributed throughout the foundry in all of the occupations. The author points out that the results are indeed alarming and warrant studies in other similar foundries.
- 21 FINDINGS OF A MEDICAL EXAMINATION OF A GROUP OF FETTLERS. J. Chalmagne. Arch. Med. Soc. et Hyg. 1, 527-32 (1938). (Belgian).
Fettlers are those who use pneumatic tools to clean sand from castings before they are sent to the sandblast. Fifty-one of these men from four foundries were examined. The results are not reported clearly, and although x-rays were taken on 12, no reports are given of them. Most prominent symptoms found were dyspnea on exertion, cough, and pulmonary trouble which were more noticeable in the older men.
- 22 THE RESPIRATORY AND CIRCULATORY ADAPTATION TO ACUTE ANOXIA IN SILICOSIS AND CARDIOVASCULAR DISEASE. M.H. SeEVERS, Norbert Enzer, and T.J. Becker. J. Ind. Hyg. & Toxicol. 20, 593-634 (December 1938).
In spite of advances made in the past in reducing exposures to dust concentrations which rapidly produce the disabling pulmonary lesions, most workers will, over long periods of time, inhale enough dust to produce a detectable degree of pulmonary fibrosis. It is important then to know whether these minimal fibrotic changes cause any appreciable or measurable pulmonary disfunction. That the changes can cause a disfunction in terms of maximum capacity is granted but the important question is to know whether they can reduce his capacity to perform ordinary daily tasks. At the present time, no satisfactory methods are available which can rate the individual's ability or capacity to perform a given task and therefore rate his degree of disability. All depend on his cooperation which in many cases is unreliable. In the tests here reported the authors examined patients subjected to atmospheres of reduced oxygen content to study their reactions. Comparatively little has been done on this type of experiment, particularly in the older age groups, and many more tests are necessary in order to correlate results. Although the experiments serve as a method of studying the sensitivity of those mechanisms (heart, circulatory system, etc.) that compensate for the stress of reduced oxygen, it was found that there was no evidence of latent cardiac incompetence, over and above that occurring with age, in individuals with varying degrees of pulmonary fibrosis until the fibrosis was quite far advanced.
- 23 THE HEART IN PNEUMOCONIOSIS. C.B. Coggin, D.E. Griggs and W.L. Stilson. Am. Heart J. 16, 411 (1938).
The basis for this work is the study of 205 cases of pneumoconiosis over a period of 20 years. Of these cases 102 came to post mortem while 103 provided only clinical studies; 146 were classified as third stage and 55 as second stage pneumoconiosis. Cardiac enlargement was detected by clinical examination in

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23.8%. Accentuation of the pulmonic second sound and the presence of marked cyanosis suggest cardiac involvement in pneumoconiosis. In 43 cases examined by electro-cardiograms, 37.2 per cent showed right axis deviation which paralleled the autopsy evidence of right ventricular hypertrophy. Congestive heart failure was a common cause of death in third stage silicotics, more common in this series of cases than tuberculosis, and the findings are in disagreement with the popular concept.

- 24 SILICOSIS AND SILICO-TUBERCULOSIS. F. Domenici. *Folia med.* 24, 289-305 (1938). (Italian).

The author presents the clinical picture and autopsy findings of a powder factory worker who died of silico-tuberculosis. On the basis of the literature he concludes that silicosis and tuberculosis are separate diseases but that they appear together quite frequently.

- 25 THE ENVIRONMENT FACTOR IN RELATION TO HIGH NEGRO TUBERCULOSIS RATES. R.B. Roth. *Am. Rev. Tuberc.* 38, 187-204 (August 1938).

The author reviews the difference in mortality rates between whites and negroes and discusses the views of several authors on the explanation. It is held by some that environment and mental attitude are the determinative factors while others have the opposite view that negroes are more susceptible to the disease. In this discussion, the author presents a study of groups of negroes and whites living in comparable conditions in American enlisted forces. He believes that the environmental factors are minimized because most of the whites come from the lower economic brackets and the medical entrance examinations are the same. A great disparity in rates was found: 0.24 per 1000 for whites and 0.99 per 1000 for negroes or about 1 to 4, which he says, could not be explained except by differences in susceptibility. At the same time, he does not wish to minimize the environmental factor.

- 26 INCIDENCE OF PULMONARY TUBERCULOSIS IN MINERS. *J. Am. Med. Assoc.* (Paris Letter 111, 1482 (1938).

Two doctors report on a study of tuberculosis among coal miners from 1923-37. Among patients in a coal mine company-owned hospital, often one-half of the patients were suffering from pulmonary tuberculosis. In the years 1923-37, 23.6 per cent of the hospital deaths were caused by this disease compared to 16.5 per cent for a group of controls of the same age. The 1936 mortality rate for the same district for all non-mining males was 2.4 per 1000 and for coal miners was 3.4 per 1000.

- 27 TUBERCULOSIS IN RELATION TO THE PNEUMOCONIOSES. J.V. Sparks. *J. Roy. Inst. Publ. Health & Hyg.* 1, 790-7 (October 1938). (British).

The paper discusses the radiological aspects of the subject. It is nearly impossible to recognize with certainty the ante-primary stage of silicosis without the aid of the preliminary film of the same patient. It is difficult to express an opinion on the question of superimposed tuberculosis in the pneumoconioses from radiologic studies. The new method of tomography may yield further help to the clinician in defining the presence and extent of nodulation in silicosis.

- 28 THE CONTROL AND CALIBRATION OF ROENTGENOGRAPHIC APPARATUS. Charles Weyl, S. Reid Warren, Jr., and D.B. O'Neill. *Am. J. Roentg. & Rad. Ther.* 40, 741-58 (November 1938).

The problem of standardizing roentgenographic technique involves the accurate specification and reproduction of technique. Methods for the fulfillment of these requirements are: (1) Precise control of apparatus and procedure, (2) accurate calibration of technical factors, and (3) use of an aluminum ladder to

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obtain exact reproduction of density and contrast, and all are described in this paper in some detail.

- 29 BASIC FACTORS IN INDUSTRIAL RESPIRATORY PROTECTION. L. Teleky. Mitteil. Volksgesundheitsamt. Nos. 1-3, pp. 3-7, 20-4, 27-34 (1938). (Austrian).
The author thinks of industrial respiratory protection as including more than simply exhaust systems and respirators. Often the most effective means of protection is provided by abandoning the use of dangerous substances or by changing the process and methods to eliminate a hazardous gas or dust. In preventive work a prompt recognition of the danger is imperative. Dust preventive measures are described, such as enclosure of dusty processes, wet methods, etc., together with their effects and limitations.
- 30 RESPIRATOR FOR USE IN DUST-LADEN ATMOSPHERES. THE MARK IV DUST RESPIRATOR. S.A. Sadd, H.L. Green, G. Davies, U.S. Nicholson, A.S.G. Hill and H.H. Watson. Chem. & Ind. 57, 781-91 (August 20, 1938). (British).
The requirements for a dust respirator are stated and the development of a new respirator is given in detail. The filter material of the latter is made of 20 per cent by weight of chrysotile asbestos fibers and 80 per cent merino wool and they are held in place much the same as in several American models. Most of the tests for filtration efficiency were made with carbonaceous smoke of 0.16 micron size, although some tests were made with a fine flint dust. The authors feel that its efficiency exceeds that required by the U.S. Bureau of Mines, whose methods of testing are somewhat different.
- 31 GRANITE WORKERS' NASAL RESISTANCE IN BREATHING. E.C.J. Urban. J. Ind. Hyg. & Toxicol. 20, 635-40 (December 1938).
The filtering or protective action of the nose is considered important enough by some to justify selection of workers on the basis of nasal condition and by others as not of sufficient magnitude to act as an efficient filter. The author describes a series of tests on 139 Vermont granite workers, selected at random, in which the nasal resistance was measured with a special type of apparatus that pulled varying amounts of air outward through the nose. The results showed that nasal resistances do vary for different individuals but that the variation is slight, and would be apparent only over a period of years. At best, it is only one of the factors in silicosis and because of the possible tuberculous infection, other factors as personal habits, physical condition, and infection contacts, are more important.
- 32 DUST: ITS HAZARD, CONTROL, AND COLLECTION WITH ESPECIAL REFERENCE TO SURFACE PLANTS. G.E. Lynch. Min. & Metall. 19, 516-20 (December 1938).
The author summarizes the dust hazard from the plant engineers' standpoint and discusses in some detail certain principles of dust control. Dangerous dusts are those almost invisible particles below 10 microns in size, as particles above that size rarely reach the lungs; it is the particles below 10 microns which do not settle out of the atmosphere rapidly according to the laws of free settling. After particles of these small sizes are dispersed into the air it is almost impossible to collect or control them, so it is obvious that control must be applied at the source of the dispersion. A discussion is then given of the principal methods of control and collection which are available to engineers in their problems. The costs are described as being comparatively low and there is a possible salvage value in collected dusts, in addition to the other benefits.

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- 33 THE COMPARATIVE RESISTANCE TO VENTILATION OF MINE ROADWAYS, INCLUDING THE WORKING FACE. R. Clive. Trans. Instn. Min. Engrs. (London) 95, 325-33 (July 1938). (British).

The coefficient of friction for a straight and uniform arched-girder roadway, lined with brickwork to the springline of the arch, is low and approaches that for a smooth-lined airway. A slight variation from the straight appreciably increases resistance, as does variation in cross-sectional area. The resistance caused by tubs (or cars) is considerable and may increase the coefficient for a particular roadway by as much as 100 per cent. The resistance along the working face is very high compared with that for a normal roadway.

- 34 SOME NOTES ON NATURAL VENTILATION. B.R. Lawton. J. Chem. Metal. Min. Soc. So. Africa 34, 61-4 (August 1938).

Some interesting observations were made on the seasonal variation of natural ventilation in a mine about 2,200 ft. deep at the pit bottoms and approximately 3,300 ft. deep at the workings. Airflow by gravity varied from a maximum of 150,000 c.f.m. in February, when the surface air temperature was 31°F, to a minimum of 77,000 c.f.m. in August with a surface temperature of 57°. This inherent variability of airflow, and the difficulty in ventilating new development ends are held to be a drawback to general adoption of natural ventilation. Nevertheless, every effort should be made in planning out workings so as to take full advantage of the gravity effect.

- 35 THE DETERMINATION OF THE SPECIFIC SURFACE OF POWDERS. P.C. Carman. Jour. Soc. Chem. Ind. 57, 225-34 (July 1938). (British).

A new method is suggested for obtaining the specific surface of sands and of fine powders. Briefly the procedure is to measure the permeability of a small sample to a liquid of known viscosity and, from this, to calculate the specific surface, using an equation given in the paper. The equation has been tested over a wide range of conditions and results are accurate even if the particle size distribution is irregular, so the new method might well have application in an industrial laboratory.

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

- 36 HAZARDS FROM GASES IN METAL MINES AND PROTECTIONS AGAINST THEM. E.H. Denny. Mining Tech. Tech. Paper No. 984, 10 pp. (November 1938).

In the past few years a number of men have been asphyxiated in mines, tunnels and wells where these occurrences might have been prevented by a few relatively simple precautions. The author gives typical examples taken from the files of the Bureau of Mines. Probably most accidents occur in oxygen deficient atmospheres, in locations where ventilation is poor and where nitrogen and carbon dioxide gases issue from the rock formations. A common mistake is to forget that gas masks cannot make up oxygen deficiency and that special oxygen-breathing apparatus is necessary. Other causes of asphyxiation are nitrogen fumes from dynamite; the highly poisonous hydrogen sulfide gases which are present in many underground operations, chiefly tunnel and caisson work; and carbon monoxide. Good ventilation is the best precaution and should be supplemented with the proper respiratory equipment properly used.

- 37 FLUE GASES LAUNDERED TO PREVENT AIR POLLUTION. R.V. Kleinschmitt. Power Plant Eng. 42, 393-6 (1938).

A scrubber is described that combines atomized spray with centrifugal separation and removes dust as well as sulfur dioxide gases. It is thought that gas elimination as well as dust removal should be considered in air conditioning.

- 38 CAISSON DISEASE -- CLINICAL AND STATISTICAL STUDY. G. Pancheri. Med. del. Lavoro 29, 193-212 (1938). (Italian).
The author reports on a series of cases of caisson disease. In the first of two series recorded there were 45 cases during 70,500 work hours and in the second series, during which there was more stringent regulation of the time of decompression, there were 33 cases in 153,000 work hours. This value is still quite high for well regulated diving operations and was due possibly to the fact that there was no safety apparatus which enforced longer decompression periods.

- 39 CUTANEOUS HAZARDS IN THE FUR INDUSTRY. O.L. Levin and H.T. Behrman. Ind. Med. 7, 673-3 (November 1938).
The health hazards in the fur industry together with a brief description of the processes and materials used are presented. By far the most common hazard is dermatitis although other diseases that are encountered are anthrax, catarrh and asthma. The diseases are caused by contact with the skins themselves, with the acids and other chemicals used, and with the numerous synthetic and organic dyes. The action of some of the substances is a purely chemical one but in many cases it is anaphylactoid, where the individual is allergic to the material. Prevention is best accomplished by personal cleanliness and by good sanitary measures within the plant.

- 40 BURNS FROM ACETYLENE WELDING. J. Am. Med. Assoc. (Queries and minor notes) 111, 469 (1938).
A doctor writes that many cases of burns from acetylene welding become infected although immediate treatment is provided. It is probably not the flux that causes the infection but more likely the dust and small metal particles present on the skin. For this reason very thorough cleansing of the wound is necessary.

- 41 LEAD IN THE PRINTING INDUSTRY. J.M. Hapler, P.F. Rezin and R.W. Colina. J. Ind. Hyg. & Toxicol. 20, 641-5 (December 1938).
Evidences obtained in a preliminary survey of the printing industry in Michigan, by the Bureau of Industrial Hygiene, indicated, contrary to contention, that sufficient lead fumes were present in the air to constitute a hazard. They then made tests in 14 representative printing establishments to determine the actual concentrations present. Most of the previous work on lead in printing shops had been done before exact methods of lead determination were in use and were thought to be inaccurate in many cases. The results of the present tests indicate that the former contentions are entirely unfounded and that considerable lead fumes can be given off from the lead melting pots when heated above the melting point even though the metal is not agitated. They found that lead fumes are more important than lead dust and that the film of oxide on the surfaces of the melting pots had no appreciable effect on the concentrations of the fumes.

- 42 HYGIENIC CONDITIONS IN BOOK PRINTING PLANTS IN NAPLES. R. Tecce and C. Bessero. Folia med. 24, 117-33 (1938). (Italian).
In an investigation of the hygienic conditions in 15 Neapolitan printing shops, measurements were made of the height and cubic content of rooms, dust concentration and temperature and humidity of the working spaces. The plants were divided into good ones having 15.7-70.0 cubic meters per worker, 150-190 particles per cc (Owens counter) 5.4-6.0 dry kata value and 14.7-17.2 wet; the medium and poor plants had 4.3-42.6 cu.m. per worker, 270-300 particles per cc. and dry and wet kata values of 4.0-4.7 and 12.3-15.8. The lighting was poor in most shops. The lead content of deposited dust varied from 5.5 to 15 per cent. Examination of workers showed 80 per cent to have lead lines and 23 per cent to have stippled erythrocytes.

- 43 LEAD POISONING. SECTION II. 51 FATAL CASES OF SUSPECTED LEAD POISONING; AND 46 OF NON-FATAL LEAD POISONING; DIAGNOSIS; TREATMENT; SUMMARY. V.A. Gant. Ind. Med. 7, 679-99 (November 1938). For Section I see Abstract No. 845, November 1938 bulletin.
In the second section of his paper the author devotes considerable space to case histories of patients which are classified as lead poisoning among children, as chronic industrial cases, as doubtful and unjustified cases, and as acute cases, with discussions in each instance. In the concluding sections of the paper, the author repeats that since there are no symptoms pathognomonic of lead alone, diagnosis without chemical findings (determination of lead in blood or urine) is incomplete. Disodium phosphate is proposed as the best therapeutic agent in the treatment and should be used in conjunction with a normal calcium diet.
- 44 SOME OBSERVATIONS UPON THE EXAMINATION OF MEN EXPOSED TO A LEAD HAZARD AT MOUNT ISA, INCLUDING AN ORIGINAL METHOD FOR THE EXAMINATION OF BLOOD FOR POLYCHROMASIA. L.A. Windsor-McLean. Med. J. Australia 2, 367 (September 3, 1938). (Australian). During 1937, only 6 of the 1231 men employed in all departments of the Mount Isa Mines in Australia were adjudged to be incapacitated by plumbism. In connection with his own examinations of 115 of these workers for lead poisoning, the author found only 1 worker suffering from the positive symptoms, the remainder of the workers presenting various symptoms not attributable to any action of lead. A conclusion is drawn that hemoglobin percentage provides no indication of lead absorption and that the ratio between the large and small lymphocytes is of little or no value. The technic for estimating the number of polychromatophilic cells per million erythrocytes is explained in detail but no conclusion is drawn as to the significance of the results.
- 45 DETECTION OF LEAD POISONING IN A MOTOR CAR FACTORY. P. Molitor, M. Arnoldson and G. Hausser. Arch. Mal. Profes. 1, 124-8 (1938). (French).
A solder containing 30 per cent lead was used on assembled automobile parts in a French factory. When two workers who came under notice were found to have lead poisoning, the remaining workers were examined. It was found that 10 out of 39 men examined had clear cases of lead poisoning with an additional 4 classed as doubtful. The men were employed in smoothing and rubbing down soldered parts. In another factory this work was being done in separate compartments where the men wore respirators, rubber gloves and impermeable clothing and upon examination no cases of poisoning were found in this group.
- 46 STABILITY OF ANEMIC CONDITIONS IN EXPERIMENTAL LEAD POISONING. Loureau, G.S. deSacy and A. Arthus. Compt. rend. Soc. de biol. 128, 512-4 (1938). (French).
In some tests on rabbits subjected to experimental lead poisoning, variations in individual susceptibility to the poisoning and response to treatment were found to be a predominant factor. Marked differences were noted in red cell blood count and in power of recovery of the animals.
- 47 DISTRIBUTION OF LEAD IN THE CAT AFTER INTRAVENOUS INJECTION OF A COLLOIDAL LEAD PREPARATION, AND THE EFFECT OF IRRADIATION ON THIS DISTRIBUTION. B.L. Crawford, H.L. Stewart, C.F. Willoughby and F.L. Smith. Am. J. Cancer 33, 401-22 (1938).
Cats receiving intravenous injections of a colloidal lead preparation generally remained in good clinical condition without loss of weight or anemia, and the organs of these animals showed slight, if any, structural changes. When, however, roentgen irradiation was given in addition, toxic manifestations ensued and pronounced structural changes in the organs occurred. These were of the same nature as were observed in animals treated by irradiation alone, but were more marked and are attributed to the combined toxic effects of the two agents. The lead injection brought about significant increase in the lead concentration of most

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- organs and tissues examined. The lead distribution in animals treated with both lead and roentgen ray was essentially the same as that following the administration of lead only, although changes in lead concentration were found in certain organs.
- 48 EFFECT OF S-HYDRIL IN LEAD POISONING. F. Schmitt and H. Lossie. Arch. f. klin. Med. 182, 200-3 (1938). (German).
A report is given of one case of lead poisoning which was treated with S-Hydril (stabilized sodium thiosulphate) given intravenously. After giving 2 ampoules daily (it is not stated for how long) the clinical symptoms receded. After 8 days there was a significant decrease in blood lead and after 14 days the values were normal.
- 49 MICROCHEMICAL DETECTION AND DETERMINATION OF LEAD. N.D. Costeanu. Mikrochim. acta 3, 236-8 (1938). (Austrian).
A drop of hydrogen iodide solution, prepared by introducing hydrogen sulfide into a mixture of iodine and water, is placed on filter paper which has been drenched with the solution to be tested and dried in an oven. The resulting yellow spot of lead iodide is compared with spots similarly obtained with known concentrations of lead solution. The method applied to the analysis of 0.4 g. of brass showed the probable presence of 0.025 per cent of lead.
- 50 QUANTITATIVE DETERMINATION OF LEAD IN BIOLOGICAL MATERIAL: MODIFIED DITHIZONE METHOD. F. Schmitt and W. Basse. Arch. f. exp. Path. u. Pharmacol. 189, 169-71 (1938). (German).
A description is given of a modification of Seelkopf and Taeger's dithizone method. The hydrogen sulfide precipitation is eliminated from the process. Instead, the ash residue is dissolved in hydrochloric acid and the iron is removed from the hydrochloric acid solution by shaking with ether.
- 51 MICROCHEMICAL METHODS FOR DETERMINATING LEAD ELECTROLYTICALLY AND BY MEANS OF DITHIZONE. H. Muller. Z. Anal. Chem. 113, 161-82 (1938). (German).
Numerous experiments are described in a review of 22 papers published since 1928, in which the electrolytic and dithizone methods were subjected to vigorous testing. Both require cleanliness in apparatus and purity of reagents. The weakness of the dithizone method lies in the reactivity of the dithizone with other cation and the fact that the reagent is expensive and does not keep well. Although the electrolytic method also has its drawbacks it seems best for lead determination in organic materials. Full details for both determination are described.
- 52 EXPERIMENTS ON THE EFFECT ON THE THYROID OF CARBON MONOXIDE INHALATION. H. Reploh. Arch. f. Hyg. 120, 244-57 (1938). (German).
In experiments on guinea pigs and rabbits, the author induced acute, "sub-acute" (repeated) and chronic poisonings, the latter by small amounts daily for several hours, for as long as 12 months. The effect on the thyroid was most marked in the chronically poisoned animals. The experiments support the view that there is a chronic carbon monoxide poisoning, and tend to dispute the theory that the poisoning is only a matter of anoxemia.
- 53 A CASE OF OCULAR DISTURBANCE CAUSED BY GAS FROM A MOTOR. B. Koslowski. Klin. Oczna 16, 176 (1938). (Polish).
The driver of a closed motor car was asphyxiated by products of combustion which had no exit to the outside. When he regained consciousness 9 hours later, he could not see and upon examination after 6 days he was found to have a left homonymous hemianopsia which touched the fixation points. He recovered spontaneously within 2 weeks. The carbon monoxide may have produced an angiospasm, or a hemorrhage which compressed the visual pathways.

- 54 THE TRAVELERS CARBON MONOXIDE DETECTOR. Travelers Standard 26, 164-6 (September 1938).
A carbon monoxide detector which is inexpensive and easily assembled has been developed by the Travelers Insurance Company. The method consists in converting the carbon monoxide in the sample to carbon dioxide by means of a cigar lighter coil and absorbing the converted carbon dioxide in a strontium hydroxide solution. The sample is first cleared of carbon dioxide and any hydrocarbons by passing it through calcium oxide and silica gel. A 10 inch bicycle pump is used as the source of suction.
- 55 ACUTE LEUCOSIS FROM BENZENE. M. Perrin, P. Kissel and L. Pierquin. Paris med. 28, 533-8 (1958). (French).
The authors report in detail the case of a shoe factory worker, a 44 year old woman, who had repeatedly suffered symptoms of acute rheumatism of the joints then fell ill with fever, very severe anemic condition, skin hemorrhages, dyspnea and weakness. The blood count showed 1.56 million red cells, 1800 white cells, 16 per cent polynuclear cells, 16 per cent polynuclear neutrophils, 1 per cent polynuclear basophilic cells, 9 per cent large mononuclears, 17 per cent leucoblasts and many streptococci in the blood. At autopsy the bone marrow was seen to be in marked proliferation but the white blood cells of the myelogram were exclusively leucoblasts. It was an acute leukemia which was hidden by a hypogranulocytosis and there thus existed not a true aplasia of the bone marrow but a metaplastic proliferation. Benzene poisoning, which in its classic form causes an aplastic myelosis, is under certain conditions (according to exposure and sensitivity) also an irritant of the hemopoietic tissues, causing a leucemic symptom complex, acute or chronic. This latter would be seen more often, no doubt, if systematic myelograms were made.
- 56 BENZENE POISONING IN A PREGNANT WOMAN. J. Leronge. Progres. med. 66, 901 (1938) (French).
A woman rubber worker suffered fatigue and anemia (2.1 million red cells, 11,000 white cells) from benzene poisoning. After a few weeks away from her work the red cell count rose to 3.6 million. The delivery of her child was normal but the child weighed only 2.8 kilograms (6.2 lbs.)
- 57 MERCURY POISONING IN MINING. J. Am. Med. Assoc. (Queries and minor notes) 111, 467 (1938).
The inquiry concerns the possibility of being acutely poisoned by mercury vapor in a day's work in a gold mine, and the determination of mercury or lead poisoning several months later. The reply states that, with high concentrations, mercury poisoning can take place in a few hours, although hard rock mining seldom offers a hazard. Stomatitis is the chief symptom in acute poisoning from the compounds. In poisoning from the vapor, the symptoms are ~~thor~~ central nervous system signs, diarrhea and nausea; and some of the muscular and nervous symptoms may persist. Mercury does not always appear in the urine of poisoned persons. References are made to methods of determination in urine and in air.
- 58 A SIMPLIFIED PROCEDURE FOR THE DETERMINATION OF MERCURY IN URINE. A.O. Gettler and R.A. Lehman. Am. J. Clin. Path. Tech. Supplement 8, 161-4 (1938).
A 50 cc. portion of the urine is ashed in a 500 cc. Kjeldahl by means of potassium permanganate and sulfuric acid. The mercury is ~~determined~~ determined by means of the color compared with that of known standards. The ordinary chemically pure reagents were found to be satisfactory. The time required for a series of five determinations is about three hours. The procedure is more rapid than the Winkler method and equally accurate.

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- 59 CAUTION IN THE USE OF ARSENIOS CORROSIVES WITH LIGHT METALS. E. Beintker. Arbeitsschutz, pp. 150 (1938). (German).
A short description is given of two cases of illness caused by pickling metal plates in a corrosive consisting of 33 per cent hydrochloric acid and 2 per cent arsenic.
- 60 UVEITIS CAUSED BY ARSENIC POISONING. B.S. Brodskii. Viestnik Ophth. 11, 898 (1938). (German).
A bilateral chronic iridocyclitis (an inflammation of the middle coating of the eye) developed in a farmer from careless handling of an arsenic disinfectant. The diagnosis was made by finding traces of arsenic in the aqueous humor (eye fluid).
- 61 DANGERS FROM GALVANIZING SHEET METAL. J. Am. Med. Assoc. (Queries and minor notes) 111, 865 (1938).
The question concerns pulmonary disease from fumes and acids in galvanizing metal. The reply discusses metal fume fever and then sulfuric acid, sulfur dioxide and zinc sulfate. Although several occupational hazards may be present in this industrial operation, "involvement of the respiratory tract does not stand out as pre-eminent."
- 62 POISONING BY MANGANESE. E.W. Baader. Arch. Mal. Profes. 1, 104-8 (1938). (French).
Cases of manganese poisoning by those inhaling its dust are comparatively rare, only about 130 having been reported in the literature, with a possibility that some have passed unrecognized. Some predisposition to the poisoning seems to be necessary and the symptoms appear generally during the first two years of exposure. The illness begins rapidly and progresses in a few months to a typical and incurable condition. Symptoms usually are: the patient is easily tired and falls to sleep easily; unsteady gait; difficulty in ascending a slope; little control over facial muscles or expression; both speech and writing are protracted and slurred; swallowing may be difficult; and there are sometimes violent pains with cramps in the muscles.
- 63 EXPERIMENTAL RESEARCH INTO THE TOXICOLOGY OF MANGANESE. A.C. Lemos. Arch. Mal. Profes. 1, 119-23 (1938). (French).
Experiments are described on rabbits exposed to doses of manganese administered subcutaneously, in their food, by stomach tube, and by inhalation of dust over long periods. The metal, when administered in large doses proved rapidly fatal, but no immediate effects followed upon inhalation, although details of the latter are not given. The metal was found in all organs of the body, particularly in the brain. A high concentration in the bile indicated its path of elimination. An analytical method to determine manganese in the tissues is also described.
- 64 CHRONIC NICKEL POISONING AND PRODUCTIVE MILIARY TUBERCULOSIS. REPORT OF A CASE. R. Pomeranz. Am. Rev. Tuberc. 38, 252-61 (August 1938).
The toxic effects of nickel, although they occur rarely, have been definitely recognized. A case is reported here with autopsy findings, which was attributed to nickel poisoning and productive miliary tuberculosis. The patient was a male age 22, who had been working as an industrial chemist 6 years and whose work included exposure to nickel and carbon tetrachloride solutions. Symptoms of shortness of breath, loss of weight and appetite, nonproductive cough, and transient pains in the chest first appeared and roentgen findings at that time showed fine nodular lesions, millet in size, throughout both lungs but for 8 months they were undiagnosed. Because the lesion was thought to be a lymphoblastoma, the patient received 13 x-ray treatments and his symptoms at first improved, but later they became worse and he finally died. The autopsy disclosed evidences of nickel in

the lungs together with the tubercular lesions, and the author hypothecated that the chemical irritant had reactivated a latent tuberculosis. This might be a good warning to chemists and those who work with irritant substances to have yearly roentgen examinations of the chest.

- 65 INJURIES TO HEALTH CAUSED BY ALUMINUM AND PARTICULARLY THE EFFECT OF ALUMINUM DUST ON THE LUNGS. M. Doese. Arch. Gewerbepath. u. Gewerbehyg. 8, 501-30 (1938). (German).
In an investigation to decide whether aluminum dust caused a characteristic disease of the lungs, data was collected from examinations of 86 aluminum smelter workers. It was found that silicosis did not occur among the men, which agreed with the British investigations. It was found, however, that there was damage to the upper respiratory tract in the form of catarrh, irritation or atrophy of the nasal mucus membrane and perforation of the septum. Whether these were due to the aluminum specifically or to a general effect of dust was not concluded because of the small number examined. The comparative harmlessness of aluminum in the stages of production is in marked contrast to the dangers of spraying with aluminum paint, as in the latter case it seems there is a noticeable effect on the lungs which is regarded as specific.
- 66 THALLIUM POISONING. F. Kunkeler. Chem. Ztg. 62, 49-51 (1938). (German).
The author gives a short history of thallium poisoning and describes the detection and determination of the substance in parts of the body at autopsy. He reports on 2 cases of death from thallium which he had examined.
- 67 FLUORINE POISONING. J. Am. Med. Assoc. (Queries and minor notes) 111, 273 (1938).
Pulmonary edema is the outstanding characteristic of acute fluorine poisoning and as little as 0.2 mg. per kilogram of body weight may cause trouble when inhaled. In chronic cases overgrowth of bone, calcification of ligaments and bone fragility are common, but tend to disappear when exposure is stopped. In acute cases, oxygen inhalation, bronchial sedatives and antispasmodics, and intravenous calcium gluconate are suggested. Ten references are cited.
- 68 A PORTABLE INSTRUMENT FOR THE ANALYSIS OF HYDROCYANIC ACID GAS-AIR MIXTURES. R.J. Wilnot and T.N. Gautier. J. Agr. Research 56, 283-90 (1938).
An instrument is described which analyzes hydrogen cyanide gas-air mixtures by physical apparatus. The sample is drawn, by means of a small motor driven pump contained in the instrument, over a hot platinum filament. The change in resistance of the filament is then measured by means of a wheatstone bridge and is translated into percentage of hydrogen cyanide by volume. It is accurate to within 0.02 per cent.
- 69 PRINTERS' SPRAY AND METHYL ALCOHOL. J. Am. Med. Assoc. (Queries and minor notes) 111, 85 (1938).
A spray used widely in printing contains methyl alcohol, gum arabic and gum tragacanth. One printer is known to have developed asthma which was traced to the gum arabic and which was overcome by substituting starch. Most of the complaints concerned not the spray but the dust left when the alcohol evaporates. Exhaust ventilation may be suggested and methyl alcohol should not be used.
- 70 EFFECT OF SULFUR CHLORIDES ON EYES. J. Am. Med. Assoc. (Queries and minor notes) 111, 1492 (1938).
Sulfur chloride is thought to be non-toxic by Hamilton and Lehmann. Since it is frequently used along with carbon disulfide, any injury is thought to be caused by the latter substance. Kober and Hayhurst consider the decomposition products to be harmful and Adler-Herzmark has reported general poisoning by sulfur-monochloride in the absence of carbon disulfide. Injury to the eye would probably be accompanied by other, more characteristic, injuries.

References to Recent Literature - 15

- 71 A SIMPLIFIED COLORIMETRIC DETERMINATION OF SULFUR DIOXIDE IN THE AIR. S.M. Chumanov and M.E. Aksel'rod. J. Applied Chem. 11, 720 (1938). (Russian).
A small amount of dilute potassium ferricyanide solution added to a solution of tri-valent iron can be used as an indicator for the determination of sulfur dioxide in the absence of other reducing agents. The blue coloration is intensive enough to detect 0.02 mg. of sulfur dioxide in a liter of air.
- 72 DETERMINATION OF SMALL QUANTITIES OF METHYL BROMIDE IN AIR. R.L. Busbey and N.L. Drake. Ind. & Eng. Chem. Anal. Ed. 10, 390-2 (July 15, 1938).
A method is proposed for the determination of methyl bromide in the air of fumigated spaces. The procedure involves saponification of the methyl bromide by alcoholic potassium hydroxide, removal of the alcohol, oxidation of the bromide to bromate by sodium hypochlorite, and iodimetric titration of the bromate. Results are reported of analyses of 13 samples ranging from 0.0480 to 0.0065 g. The average error is plus or minus 1.7%; the greatest, plus or minus 3.5%.
- 73 CARCINOGENIC ACTIVITY, STRUCTURE, AND CHEMICAL REACTIVITY OF POLYNUCLEAR AROMATIC HYDROCARBONS. L.F. Fieser. Am. J. Cancer 34, 37-124 (September 1938).
The author presents a long review of the subject which includes: (1) a critical evaluation and comparison of the methods for determining carcinogenic activity; (2) information concerning the preparation and purification and the commercial sources of the carcinogenic hydrocarbons; (3) a summary of the work on correlation of chemical structure and carcinogenic activity, and (4) a summary of investigations on the metabolic fate of various active hydrocarbons. A very extensive bibliography is included.
- 74 THE PRODUCTION OF EXPERIMENTAL CANCER OF THE LUNG IN MICE. M.G. Seelig and E.L. Benignus. Am. J. Cancer 33, 549-555 (August 1938).
Although there is no thoroughly satisfactory method of applying tar to the lungs in experimental work, the method here described by the authors is simple. The bottoms of the cages were covered with fluffy coal soot or tar-free lamp black to which known carcinogenic hydrocarbons were added. The movements of the animals raise sufficient dust to cause black particles in the smaller intrapulmonary bronchii within 6 days and in 5 weeks' time these are widespread throughout the lungs.
- 75 SENSITIZATION TO JUTE. F.A. Stevens and L. Jordani. J. Allergy 9, 610-2 (September 1938).
Jute, a vegetable fiber grown in India, is widely used in the form of burlap for packing and transporting articles of merchandise. Because it is cheap, it is used also in place of more expensive and durable fibers in inexpensive upholstered furniture and in cheaper domestic rugs and carpets. Inasmuch as its use is so common, contact with jute is almost universal not only industrial but domestic as well. Five case histories are given demonstrating conclusively the allergenic properties of jute.
- 76 DANGERS OF PARAFFIN. J. Am. Med. Assoc. (Queries and minor notes) 110, 2102 (1938).
Paraffin, when melted and sprayed under pressure, comes out as a powder. The worker wears a mask but it is not satisfactory. Is there a health hazard?
Answer: Pure paraffin should be harmless, but paraffin oils and petroleum derivatives might cause acne, and possibly tar cancer. The best solution is a good exhaust system. Ordinary respirators are not suitable and a supplied-air mask is necessary.

- 77 THE EMPLOYMENT OF DIABETICS. R.D. Lawrence and K. Madders. Brit. Med. J. pp. 1076-7 (November 26, 1938). (British).
An appeal from diabetics and the Diabetic Association that there was a prejudice against them by employers because of their diabetes led the authors to believe that this prejudice was unfair, unjust and a survival of the pre-insulin period, and they began a survey of the time-lost record of diabetic patients. Their report covers the record of 100 employed diabetics, selected at random, who were taking regular insulin treatments. The number interviewed was too small to draw definite conclusions, but the authors form the opinion that most treated diabetics are good employes from the health point of view, and hope that the widespread prejudice against their employment may be removed.
- 78 AIR JET VENTILATION IN HOT WEATHER. T.C. Angus. Heat. & Vent. Eng. 12, 2-5 (July 1938). (British).
The jet fan consists of a small centrifugal fan (1/2 h.p. to 1-3/4 h.p.) delivering through a jet tube so as to discharge a horizontal, flat, wide stream just above head level. Although the main air current passes overhead, the high velocity (up to 4000 f.p.m. at the jet) induces secondary air currents, and the result is that in the neighborhood influenced by the jet fan, air currents are variable instead of monotonous, and thus are more refreshing. Air velocities as high as 160 f.p.m. have been recorded at shoulder level 60 ft. or so from the jet. In shops where hot processes are carried on, or in hot weather, such air movement is most welcome. Jet fans have been used to dissipate local clouds of disagreeable fumes or vapors to reduce their concentrations to negligible levels. They will not solve all summer factory ventilation problems, but along with good natural or simple exhaust ventilation they will form a useful and cheap auxiliary.
- 79 METABOLISM OF MAN AT WORK UNDER DIFFERENT CLIMATIC CONDITIONS. O. Ehrismann. Ztschr. f. Hyg. u. Infektionskr. 120, 319-40 (1938). (German).
At higher temperatures and humidities the increase in metabolism accompanying work is approximately the same as under ordinary conditions. The recovery time may be delayed and in some cases the respiratory quotient is lowered. The body weight may increase in spite of the less favorable conditions. No evidence was forthcoming that nitrogenous metabolism is disturbed when work is done in environments of lower cooling power.
- 80 HEAT REGULATION AND MUSCULAR WORK. W. Liberson. Trav. humain 6, 41-51 (1938). (French).
The author discusses the effect of temperatures on the energy yield of muscular work, about which there are various views. He states that the energy yield remains practically constant in temperatures between 9-40°C. but the technical yield (mechanical efficiency) of work rises with a decrease in temperature, at least between 9-45°C.
- 81 THE INFLUENCE OF CLOTHING ON THE PHYSIOLOGICAL REACTIONS OF THE HUMAN BODY TO VARYING ENVIRONMENTAL TEMPERATURES. A.P. Gagge, C.E.A. Winslow and L.P. Herrington. Am. J. Physiol. 124, 30-50 (October 1938).
The partition of heat loss from a normally clothed subject shows that he is able to tolerate a difference of 8°C between skin and environmental temperatures before cooling sets in at 25°C (as compared with 29°C for the nude subject.) Between 25°C and 29°C, thermal equilibrium of the clothed body is maintained by vasomotor regulation. Above 29°C evaporation regulation sets in. It was shown, by plotting various physiological factors against calorie demand, that the gross physiological responses of the body are about the same nude as when clothed except for the temperature at which the response takes place.

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- 82 HEAT STROKE: CLINICAL AND CHEMICAL OBSERVATIONS ON 44 CASES. E.B. Ferris, Jr., M.A. Blankenhorn, H.W. Robinson and G.E. Cullen. J.Clin.Invest. 17, 249-62 (1938).

The incidence of heat stroke was relatively higher among white men than colored. Physical exertion was not a factor. There was a characteristically high body temperature, a moderate acidosis and hemo-concentration but no consistent change in the chloride of blood serum. The most effective treatment was ice-water tubing with massage.

- 83 EXPERIMENTAL INVESTIGATIONS (HISTOLOGIC, HEMATOLOGIC, HISTOCHEMICAL) OF DEATH FROM HYPERTHERMIA (HEAT STROKE). G. Lacroix. -Folia med. 24, 21-30 (1938). (Italian).

A report of some heat stroke experiments on guinea pigs. At autopsy, macroscopic and microscopic evidences of congestion were predominant. In a study of the cell metabolism, according to Lipschitz's method, the dehydrogenizing ability was significantly lowered in the brain, liver and skin; less so in other organs. The sugar content of the liver was decreased.