Industrial Hygiene Digest
(Ind. Hygiene Foundation)
(Initial & Forward)

~~T. Lyle Hazlett, M.D.~~
~~Dr. Walker~~
E. C. Barnes
~~E. M. Cover, M.D.~~
~~H. W. Speicher~~
~~Miss Bell (Kellaw)~~
T. Lyle Hazlett, M.D. (file)

INDUSTRIAL HYGIENE DIGEST

Literature Abstracts

- MEDICAL
- ENGINEERING
- LEGAL . . . decisions and trends

Industrial Health News

Issued Monthly By
INDUSTRIAL HYGIENE FOUNDATION
4400 FIFTH AVENUE
PITTSBURGH, PA.

FOUNDATION FACTS

INDUSTRIAL HYGIENE FOUNDATION

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a combined research and service institution to protect the health of workers in industry.

Vol. 5. May, 1943 No. 5.

Some Facts and Figures on Absenteeism

An OWI survey finds that "plants without systematic plans for reducing the causes of absenteeism have nearly twice the rate of job absences as those which have such programs." As the Foundation has insisted for years (before absenteeism was a headline) the first step in reducing lost time is to keep adequate records -- audit your absences. Another important fact-finding measure is the plant hygiene survey. It is no more possible to maintain healthful working conditions without a periodic survey, than it is to maintain the quality of a product without periodic inspections. To combat sick absenteeism, get the facts on absences, through proper records, and on healthful working conditions through plant hygiene surveys. Otherwise, systematic procedure is ignored in favor of hit-or-miss methods. Speaking of figures, one member company reports the following experience for a group of [illegible] workers for the first half of April: 273 workdays lost from all causes -- 190 from sickness and non-industrial injuries, 68 from personal causes, and 15 days from injuries.

Guard Against Increase in Tuberculosis

Tuberculosis rates tend to rise in wartime. The alert Medical Department of Westinghouse Electric & Manufacturing Co., has been directing a health education campaign among its employees stressing TB prevention. Meanwhile, the Public Health Service has made X-ray examinations of nearly a quarter of a million persons for tuberculosis, including more than 150,000 workers in war industries. Results show that "slightly more than one in every 100 persons examined have significant tuberculosis."

Red Cross Comment

Commenting on the Foundation's report, "What About Blood Banks for War Workers?" which was sent to Members recently, an official of the Blood Donor Service of the American Red Cross writes: "...Again, may I express my own appreciation and that of the entire Service for the great help you have been to us in accumulating this data for your Member companies. Thoughtful support such as this is going to do much to insure the success of what I think we all agree is a worthwhile project."

Annual Meeting Notes

"...A war contractor was much surprised to learn that his 25 per cent labor turnover was largely due to the uncontrolled fumes of a poisonous solvent"...."It has been our feeling that if we can satisfactorily control the use of materials in the plant, and then prove that control is satisfactory by periodic physical examinations, we will not have cases of occupational disease develop. It has proved to be such over the years."...."All too frequently, the first knowledge the medical or safety department has of a new process, machine or material is when it is in operation. Forethought will prevent dangerous exposure. The cost is higher for placing makeshift safeguards or exhaust equipment on a machine after it is in use."

New Book: Essentials of Industrial Health, by Dr. C.O. Sappington, an outstanding work, has just been published by J. B. Lippincott Co., Philadelphia.

-- Keep War Workers Well --

.943.
.II.
5.

Industrial Hygiene Foundation,
4400 Fifth Avenue,
Pittsburgh, Pa.

INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

404 Color in Industry.
"The best and newest way to promote good housekeeping," according to R.A. Massey, Du Pont color expert, "is by a new scientifically developed use of bright paint colors on all industrial interior surfaces, including even floors and machines."
The national production scene was described as going technicolor in this manner with remarkable results. The up-to-date trend is row upon row of machine tools painted in carnival colors with here and there touches of brilliant red to emphasize danger points. Many factory interiors already display the new scientific color system. They include government arsenals, naval shore stations and major war plants. Worked out in a three-year Du Pont research program to improve seeing conditions in industry, the most favored color scheme for machinery has proved to be light gray and light buff. Floors often are painted white, stippled with brown, while walls are finished in two high light-reflecting colors.

405 Special Warning Bulletin -- Epidemic Kerato-Conjunctivitis.
A statement has been prepared jointly by the United States Public Health Service, Bethesda, Maryland and the Committee on Industrial Ophthalmology of the American Medical Association, 535 N. Dearborn St., Chicago, Illinois, for distribution to all physicians.

406 Absent Treatment.
Two ingenious methods of combatting the growing absentee problem have been devised by the New Britain (Connecticut) Machine Company and the Bell Aircraft Company, Buffalo, N. Y. The former awards a weekly "Hitler Plaque" inscribed with a swastika, to the department with the poorest record. The latter designates workers absent without permission as "AWOL," and replaces their time cards with "AWOL" cards. The foreman's approval is required before regular cards may be restored. -- Forbes Mag., 51, (March, 1943).

407 Wartime Vacations.
A statement by Chairman Donald M. Nelson of the War Production Board on the subject of vacations says in part: "I believe that the granting of vacations to industrial workers this year will be helpful to war production. Experience has shown that the volume of production is increased if the workers can restore their energies through periods of physical and mental rest, change and relaxation. After a brief vacation a worker should be in better shape to contribute to the

increased effort which our war program makes necessary. But it must be realized that our war production goals this year are nearly twice the size of last year's. Wartime vacations must be planned so as to avoid interruption of working schedules. Management and labor can and should plan the release of workers for vacations by working ahead in some departments, by arranging for staggered vaction schedules, by training substitutes and, where necessary, by working additional overtime."

Book Reviews

408 Occupational Tumors and Allied Diseases. W.C. Hueper. Charles C. Thomas, 220 Monroe St., Springfield, Ill. $8.00. 896 pp. (1942).
This book collates in detail the subject of tumors and their relation to occupation. The material is presented from the view of tumor location with eight organ systems receiving the major consideration. The fourteen chapters cover: Concept and significance of occupational tumors, tumors of the skin and its appendages, the alimentary system tumors, cancers of the respiratory system, urogenous organ malignant growths, hemoplastic and neoplastic diseases of the blood forming organs, mesenchymatous tumors, tumors of the eye and its adnexae, the nervous system tumors, endocrine glandular malignant growths, sex organ tumors, special aspects of occupational tumors, the relation of occupational neoplasia to theories of cancerigenesis, and medicolegal and public health aspects. The attention given to the extensive literature has been thorough and excellent bibliographies are provided for each section. Occupational tumors have received more attention in the foreign literature than in American. This work will be a valuable reference book for industrial physicians.

Legal Developments

409 Occupational Diseases. Pneumoconiosis Contracted by Employment in Gypsum Mine. As Creating Liability Within Statute and Not Negligence. Statute of Limitations.
The defendant appeals from a judgment in an action to recover for injuries suffered by the plaintiff while in its employ. Plaintiff had worked in the defendant's gypsum mine, for sixteen years, as a "loader" or "driller." The drifts and headings where he worked were constantly filled with clouds of dust caused by the pulverization of rock by drills and other machinery; and being forced to breathe such atmospheres, he suffered a disease of the lungs, known as pneumoconiosis, which was the injury for which he sued. The defendant had set up a large fan at the mouth of the mine, designed to blow the dust out of the galleries and headings, but according to the testimony of the plaintiff's witnesses, it did not do so. The action was brought five years after the plaintiff left the defendant's employment. The New York Practice Act makes three years the period of limitation for "an action to recover damages for * * * a personal injury, resulting from negligence"; and sub. 2 of Sec. 48 makes six years the period for "an action to recover upon a liability created by statute.

except a penalty or forfeiture." The statute provides that "an air current sufficient to remove smoke and noxious gases and to insure the safety of every employee shall be conducted along every passageway and working place." Air, filled with the dust of powdered rock, is within this language. The New York Labor Law required "all machinery creating dust or impurities" to "be equipped with proper hoods and pipes connected to an exhaust fan of sufficient * * * power to remove such dust"; and that "suction devices shall be provided which shall remove * * * impurities *** by means of proper hoods connected to conduits and exhaust fans." The court held that these enactments were for the benefit of those employees who might be exposed to the danger of breathing dust, and that they "created" a "liability" within sub. 2 of Sec. 48 of the Civil Practice Act, as distinguished from giving support to a finding that the employer had failed to exercise the care that he should have: i.e., been guilty of "negligence." How far that lung disease was caused by breathing dust for sixteen years and how much of the damage was done in the last year, were indeed debatable; but no one could say that reasonable people must deny all connection between them. The jury was already entitled to find that during the year in question he had suffered some injury. Judgment affirmed. Stornelli v. U. S. Gypsum Co., U.S.C.C.A. 2nd Cir. Decided March 16, 1943. (CCH).

410 Dermatitis Venenata. Report of Medical Commission as Being Final and Conclusive. Plaintiff appeals from an order which affirmed the commissioner's award denying plaintiff compensation. Plaintiff was employed by defendant in the removal of bulk cement from box cars. Plaintiff noticed a breaking out on his skin, which spread over his body. He was obliged to quit work. Doctors diagnosed his condition as cement dermatitis or dermatitis venenata. Plaintiff filed application for adjustment of claim under the occupational disease amendment, (Comp. Laws Supp. 1940, Sec. 8428-1 et seq., Stat. Ann. 1942 Cum. Supp. Sec. 17.220 et seq.) He alleged that he was suffering from dermatitis venenata, a disease resulting from the nature of his employment, and which is scheduled as an occupational disease. A medical commission who examined plaintiff, about 9 months after he quit work, found that plaintiff was suffering from dermatitis herpetiformis, which is not compensable under that Act. Defendants contend that plaintiff was suffering from the same disease from September 1940, when he was obliged to quit work, until the hearing October, 1941, and that the report of the medical commission, who examined him in July, 1941, is final and conclusive.

The report of the medical commission case was final and conclusive only as to plaintiff's condition when the commission examined him. The department erred in determining, in effect, that the report of the medical commission was, as a matter of law, final and conclusive as to plaintiff's condition during the entire period from 1940 to 1941. The department's order is vacated and set aside, and the case is remanded. Walker v. Loselle Construction Company et al. Mich. Supreme Ct. Decided April 6, 1943. (CCH).

411 Gradual Suffocation by Gas Causing Death of Miner. Notice of Motion for Judgment Failing to Show Remedy Under Act.

Plaintiff filed in the court below a notice of motion for judgment, seeking to recover damages for the wrongful death of plaintiff's decedent. She alleged that the defendant owed its employees the duty of furnishing them a reasonably safe place in which to work, and to that end should have installed in the mine where decedent worked the necessary devices to ventilate it properly. The defendant filed a demurrer to the notice of motion for judgment alleging that by virtue of the provisions of the Workmen's Compensation Act the lower court was deprived of jurisdiction of the subject-matter of the suit. To a judgment sustaining a demurrer plaintiff obtained this writ of error. The plaintiff's contention is that the notice of motion shows on its face that her cause of

action is not compensable under the Workmen's Compensation Act and that hence she has the right to pursue her action at law. Since the notice of motion does not affirmatively show on its face that the lower court has been deprived of jurisdiction of the subject-matter of the suit by the provisions of the Workmen's Compensation Act, as alleged in the demurrer, the demurrer should have been overruled. Whether plaintiff has a good cause of action at law or whether the matter is governed by the Workmen's Compensation Act will depend upon the application of the principles stated, to the facts and circumstances to be developed at the hearing. All that has been decided is that the plaintiff's notice of motion for judgment does not show on its face that her remedy is under the Workmen's Compensation Act and is not in the present common-law action. For these reasons the judgment complained of is reversed and the case remanded for further proceedings. Reversed and remanded. Aistrop v. Blue Diamond Coal Company, Inc. Va. Supreme Ct. of App. Decided March 8, 1943. (CCH).

412 Disability Attributed to Inhalation of Carbon Monoxide. Casual Relation Between Employment and Disability.

This is a claim for compensation in which plaintiff sought judgment on the ground of total, permanent disability, against Travelers Insurance Company and plaintiff's employer. An exception of no cause and no right of action by the defendants, interposed to the alternative demand, was sustained, and the alternative demand dismissed. Gardner was employed by Crumley, a dealer in automobiles, in the parts department. Plaintiff alleged that his disability was due to inhaling fumes from the exhausts of automobiles being tested and repaired in immediate proximity to the parts room of the establishment in which plaintiff performed his duties; that it was the inhalation of carbon monoxide and other fumes and gases from the automobile exhausts that brought about plaintiff's collapse.

An attempt was made to show on behalf of plaintiff that he suffered from a disease of the spinal system. Since no infection was located, his doctors accepted the possibility of toxemia as the cause of the disease, and since a toxic condition fitted in with the theory of carbon monoxide poisoning, they inclined to a correlation of carbon monoxide with the disease. The testimony on the part of the defense attributes plaintiff's condition to a nerve disease of the spinal system and fixes the cause as infection, entirely eliminating the toxic effects of carbon monoxide, since no evidence of carbon monoxide was apparent upon examination. Any relation between plaintiff's employment and the disability from which he is suffering remain solely a possibility. Since there was a clear duty and burden upon plaintiff to establish a definite casual relation between his employment and his disability, in the assumption of which duty and burden he has failed and since this point is finally decisive of the case, plaintiff's demands were properly rejected. Judgment affirmed. Gardner v. Travelers Insurance Company et al. La. Court of Appeal. 2nd Circuit. Decided March 1. 1943. (CCH).

413 Death from Carbon-Tetrachloride Used as Cleaning Fluid. Reliance Upon Contributions for Household Expenses as Establishing Partial Dependency.

Schweitzer died from poisoning from carbon-tetrachloride which was being used as a cleaning solvent while he was employed on the yacht of appellant, Wendo. Decedent, 18 years of age, and received $90 a month and "found," amounting to $50 per month. Until his employment on the yacht, he had been living at home with his father and mother. All the children who were able to do so contributed to a common family pool which was expended by the mother to cover all expenditures. The decedent contributed approximately $101 to the family budget; all his contributions were expended by the mother for the table or for the purchase of things for the home. While employed on the yacht, decedent lived aboard it.

An award was made to decedent's parents as partial dependents. Suit was brought to enjoin enforcement of the award, from an order denying the injunction,

appellants appeal. There was substantial evidence to support appellee's finding of such dependency, taking into account the ages of the father and mother, the earnings of the father and of the other children and the fact that decedent had been contributing to the parents more than what he cost them. Parents are dependent if their own resources are not sufficient to support them, even if they receive help from their other children. The test is whether his contribution was in whole or in part a means of maintaining them in the manner in which they had been living and whether they looked forward to and relied upon the continuance of decedent's contributions to that end. Affirmed. Wende, et al v. McManigal, et al. U.S.C.C.A., 2nd Cir. Decided April 30, 1943. (CCH)

Industrial Health Hazards and Their Effects

414 The Symptomatology of Aluminum Pneumoconiosis. G. Goralewski. Arch. f. Gewerbepath. u. Gewerbehyg., 10, 384-408 (December 30, 1940). (German).
This paper reports a fuller survey of "aluminum pneumoconiosis" than those reported in the March Digest (Abstracts No. 269 and 271). It included 125 workers at the Frankfort Bronze and Aluminum Factory, of whom 96 were directly exposed. Clinical examinations showed a high incidence of inflammatory respiratory disorders, especially repeated attacks of bronchitis, sometimes accompanied by gastro-intestinal disturbances. No correlation was observed between symptoms and duration of exposure but most workers stated that onset had occurred within the last two years. Blood sedimentation tests and lung function tests were inconclusive. X-ray examination showed "significant" changes in 39, "marked" changes in 17, "well-developed" in 4 and "intense" in 3, out of the 125 subjects. Most of the "significant" cases and all the others had had exposure of 1 to 20 years. Clinical signs did not correspond in severity with radiographical appearance. In only a few cases were prolonged expiration and bronchitis rales noted. The discrepancy between these results, showing a high incidence (19.2% conclusive, 31.2% significant) of "aluminum lung" and the negative findings reported by earlier investigations is explained on the basis of an alteration in the process during the last two years, involving the production of a greater amount of dust, the particles of which are much finer and are no longer protected by a film of aluminum stearate caused by the former addition of stearine during the stamping process. (Also, as pointed out in Abstract No. 270, March Digest, blackout conditions greatly reduce ventilation and correspondingly increase dustiness.)

415 Danger to the Lungs from Aluminum Dust. K.W. Joetten and W. Eickhoff. Arch.f. Hyg. & Bakt., 127, 344-367 (1942).
The authors review the literature on "aluminosis" with especial reference to the material covered in the preceding abstract and Nos. 269-272 (March Digest). A survey of the earlier literature emphasizes the difference between "aluminosis" and silicosis. The former is characterized by the symptoms of bronchial catarrh, inflammatory cell proliferation, and x-ray evidence of diffuse fine stippling, but no fibrosis, as demonstrated by Joetten and by Ehrismann in 1939 in animal experiments in an atmosphere containing 50-100 mg. of aluminum bronze dust per cubic meter of air. There were no significant pathological changes. However, Goralewski has revealed a high incidence of symptoms of respiratory and gastro-intestinal disturbance among aluminum workers. Clinical findings were slight in comparison with the severity of subjective symptoms, which also have no relation

to the duration of work. The reasons for the increase are given as in the preceding abstract. The authors advocate a chemical theory somewhat similar to that of Koelsch (Abstract No. 272, March Digest).

416 The Isolation of B. Anthracis From Industrial Material, with Special Reference to the Resistance of the Spores of Heat. E.R. Jones. J. Path. & Bact., 54, 307-314 (July, 1942).
The author describes the isolation of Bacillus anthracis from industrial material and makes special reference to the resistance of the spores to heat. He shows quite clearly that of three strains tested, spore suspensions showed a diminution of the viable count after exposure to a temperature of 80°C. for as short a period of time as two minutes. He quotes the investigation of 14 samples of bone meal in which heating had been carried out at 80°C. and all results were negative. He evolved a technique in which the material was heated to 65°C. for five minutes only and 13 isolations of Bacillus anthracis were made and verified by animal inoculation. The method of demonstrating capsules on the true anthrax bacillus by incubation overnight of a broth suspension to which two or three drops of fresh human blood have been added, and staining films with polychrome methylene blue, is also described as being useful, but always to be used in conjunction with the animal test.

417 Liver Injury, Especially Cirrhosis, in Arsenic Poisoning. P. Roessing. Arch. f. Gewerbepath. u. Gewerbehyg., 12, 13-43 (December 31, 1941) (German).
A review of the literature on arsenic poisoning with special reference to liver injury leads to the conclusion that the liver is frequently affected, but that the nature of the injury varies. Clinical, pathological and histological investigations have shown great variability in acute poisoning, injury of the reticulo-endothelial system, desquamation and necrosis of the liver cells, various stages of acute yellow atrophy; in chronic poisoning, disappearance of glycogen, fatty infiltration and necrosis, reparative and regenerative changes, congestion of the bile ducts, periportal hyperplasia. From these findings it seems unlikely that true cirrhosis is a result of pure arsenic poisonings. In most of the cases reported, arsenic has not been the sole toxic agent; also involved are alcohol, nicotine, lead, copper, caffeine, metabolic and intestinal disturbances. Animal experiments are not entirely reliable, since in many animals latent liver injury, such as coccidiosis in rabbits, causes a predisposition to experimental lesions by toxic agents. Cirrhosis of the liver is considered essentially a chronic progressive hepatitis, affecting the liver cells and produced by toxic agents, in small doses over long periods. A typical case of cirrhosis, caused by a combination of factors, with arsenic and lead predominating, is that of a worker engaged in the manufacture of lead and calcium arsenate, with some exposure also to dinitro-ortho-cresol. He developed symptoms which were first diagnosed as lead poisoning, later as cirrhosis with ascites. The opinion that arsenic was the chief toxic agent was based on the presence of melanosis, hyperkeratosis, intestinal symptoms and a greatly increased content of arsenic in the hair. Lead, and to a slighter degree, dinitro-ortho-cresol were considered contributory factors. The author believes that the combined cumulative effect of several toxic agents on the liver is greater than that of any single agent and that arsenic alone, especially in the cirrhosis often found in wine dressers, cannot be considered a primary cirrhosis-producing agent.

418 The Toxicity of Beryllium. F. Hyslop, L.T. Fairhall and others. Bull. No. 181, National Institute of Health, U.S. Public Health Service, 56 pp. (1943). For sale by Supt. of Documents, Washington, D. C. 15 cents.
The increased production and use of beryllium in industry has caused concern about exposure of workmen to dust and fumes arising from the processing of this

metal. "The purpose of the investigation," as stated in the introduction, "was to measure and define the toxicity of beryllium and to indicate, so far as is feasible by animal experiments, the maximum permissible concentration of dust or fumes from the metal or its compounds which workmen should be permitted to breathe." Animal experiments were made in which a number of beryllium compounds at various concentration were injected intraperitoneally into guinea pigs; beryllium compounds were administered orally to both young rats and guinea pigs, and finally guinea pigs were exposed to the dust of these compounds in high concentrations and over long intervals of time with no indication that beryllium is inherently toxic. Exposure of guinea pigs and rats to the fumes arising from the electrolysis of molten fluorides containing beryllium fluoride or oxyfluoride show that these fumes are decidedly toxic. There was very little storage of beryllium in the various organs and tissues of the experimental animals, following exposure to large amounts, whether by mouth, by inhalation or by intraperitoneal injection. More beryllium was found to be stored in the liver than in the kidneys, and still more in the bone tissue. No significant change in hemoglobin values was obtained, nor any evidence of polycythemia, or other dyscrasia. Certain salts of beryllium which hydralyze easily, such as the fluoride and sulfate had an irritant effect on the skin, but this effect was absent in the case of the neutral salts. Recovery experiments indicated that beryllium is absorbed only slightly in the alimentary tract and is excreted mainly in the feces. The absorption of beryllium carbonate from the lungs is also very slight. None of the beryllium compounds investigated was dissolved appreciably by serum, while the greatest dilution at which precipitation of protein occurs is one part of beryllium nitrate to 50 of water. A comparison of the relative toxicities of beryllium, magnesium, and zinc by intraperitoneal injection showed beryllium to be least and zinc most toxic. Microscopic as well as x-ray examination of the tissues of animals exposed to beryllium showed no indication of rickets and no consistent pathological change in whatever form the beryllium was given and by whatever method. Since no particular toxicity was established for beryllium, it appears that whatever toxicity has been found to occur with the beryllium salts is due to the toxicity of the acid radical such as the fluoride or oxyfluoride, or to an objectionable condition brought about by the hydrolysis of certain of its salts, such as the chloride and sulfate. No safe permissible working standards should be based on beryllium itself.

13 Health Aspects of Fiberglas Materials. Owens-Corning Fiberglas Corp., Toledo, O. Pamphlet, 8 pp. (1943).

This publication presents answers to questions which have arisen concerning the possibility of health hazards in connection with the manufacture and handling of Fiberglas. It is based largely upon investigations conducted by or for the Owens-Corning Fiberglas Corporation. Tests made by Dr. L.U. Gardner of the Trudeau Foundation have demonstrated that Fiberglas has no injurious effect upon the lungs. W.J. Siebert conducted investigations which include: an exhaustive study of world medical literature for references to possible health hazards in the handling of Fiberglas; observations and dust counts in the Newark, Ohio, factories; examination of several hundred stereoscopic x-ray plates of the chests of employees in the same plants. His conclusion is that there is no silicosis, fibrosis or dust hazard connected with working with Fiberglas. In general agreement with this opinion are the Chief of the Bureau of Industrial Hygiene of the National Institute of Health, and the Aetna Casualty and Insurance Co., which underwrites insurance covering any ill effects upon the health of Owens-Corning employees caused by the handling of Fiberglas products. Effects on the skin are made a subject of investigation because of a mechanical irritation of the skin sometimes experienced by newly employed workers. This effect comprised a phase of Dr. Siebert's investigation. He summarizes his conclusions as follows.

"The author believes the following generalization is warranted by the evidence: Contact with glass wool may cause ephermeral discomfort among workers inexperienced in handling the material. The skin irritation, however, cannot be regarded as a progressive dermatitis, for it is non-toxic, and usually disappears in a few days. In extremely rare instances, where a worker may be predisposed to secondary effects of mechanical skin irritation because of idiosyncrasy allergy or the presence of foci of infection elsewhere in his body and otherwise dissociated from the effects of mechanical irritation, lesions may persist. But those cases are encountered with such rarity that they do not justify incriminating glass fiber as a causative factor." Reports of investigations by Sulzberger and Baer, the Navy Department Bureau of Ships and Bureau of Medicine and Surgery, Schwartz and Botvinick of the U.S. Public Health Service do not differ materially from the summary quoted above. Wearing of protective clothing and washing with soap containing a wetting agent are recommended. Regarding general health effects the fact is given that, "No claim for workers compensation based on a pulmonary industrial disease or disability resulting from an occupational skin disorder attributed to Fiberglas"... has ever been validated in the state of Ohio. The Aetna Life Insurance Company regards the health of Fiberglas workers as better than average. Three uses of Fiberglas in surgery are described. A brief dicussion of the Physical and Chemical Properties of Fiberglas concludes the paper. (Copies of the report available upon request from the company.)

420 <u>Iron Dust Lung</u>. K. Humperdinck. Deut. Med. Woch., <u>68</u>, 16-17, (January 2, 1942). (German).
The author describes a case of deposition of iron dust in the lungs of an electro-welder, employed in welding iron joists and plate rails for 10 years. Similar observations have been made by Koelsch and others; among 40 welders investigated Koelsch found 18 with slight deposition of iron in the lungs, three with changes similar to those of silicosis Grades 1 and 2, and one with marked deposition. In the author's case, x-ray examination showed widespread stippling of the lungs, except for the apices which were completely free. The shadows varied in size from a pinhead to a lentil. A few calcified nodules were present in the hilus glands. No disturbance of health conformable with tuberculous infection was found, and there was no history of former exposure to silica-containing dust. Smoke and fumes, containing particles of finely-divided iron oxide, less than 1 mu in diameter, arise from the welding site; these enter the alveoli, are carried in the peribronchial and perivascular lymph channels and deposited in the lymphoid nodules and glands, the finest particles pass through the alveolar walls into the interstitial tissue. Koelsch found 97% of iron oxide in the dust; if covered electrodes are used only 65-75% of iron oxide would be liberated, with up to 20% of silicic acid and a variable amount of manganic oxide. It is not known whether such admixtures increase the danger. The connective tissue of the lung is apparently capable of absorbing the iron oxide, so that there is no progressive fibrosis, as in silicosis. Mass radiography will detect at least the most marked lesions and will show the advisability of improvement in working conditions and the importance of medical supervision.

421 <u>Systematic Investigations on Dust Lungs. Part IV. Upon the Iron Content of the Lungs of 131 Workers in Dusty Trades, Together with a Consideration of the Reciprocal Effect of the Components of Dust Mixtures.</u> G. Gerstel. Arch.f.Gewerbepath. u. Gewerbepath., <u>10</u>, 616-673 (June 11, 1941). (German).
Parts I, II and III of this investigation, published in earlier numbers of the Archiv, were concerned with an analysis of lungs for silicic acid, aluminum oxide and titanium oxide respectively. Part IV relates to the iron content. The article consists of a very large number of tables and graphs of 1,000 chemical analyses which cannot be readily abstracted or reproduced, giving the iron content, etc., of the lungs obtained from 131 workers in various dusty trades, and comparing the figures with those obtained for silica.

422 The Possible Toxicity of Lead Alloys. I. Experiments on the Rat with Solder. G.R. Cowgill and K. Salomon. J. Ind. Hyg. & Tox., 25, 81-89 (March, 1943).
The investigation reported was concerned with the effects of metallic lead and its alloys on animals, on which very little is known. Young rats received 300 parts of lead per million of diet in the form of solder pellets containing 55.57% of lead. They proved to be quite similar to the control group fed an identical diet but no lead, with respect to growth, concentration of blood hemoglobin and the appearance of stippled cells, and amount of lead stored in their bodies. Rats fed an identical amount of lead in the form of lead acetate exhibited all the usual signs of lead poisoning, and their carcasses contained large amounts of lead. It is therefore concluded that ingested solder of the composition used is non-toxic for the young rat.

423 The Possible Toxicity of Lead Alloys. II. Experiments on the Dog with Solder. K. Salomon and G.R. Cowgill. J. Ind. Hyg. & Tox., 25, 91-97 (March, 1943).
Solder in pellet form had been found non-toxic to rats (see preceding abstract), but since rodents are known to be relatively resistant to lead it was desirable to work with animals whose sensitivity to lead is more nearly comparable to that of man. Accordingly puppies were used in this study. They were fed an artificial diet with a low calcium content, favoring the absorption of lead. One group of puppies was housed in stainless steel cages and the intake of the diet was equalized. The animals were compared with respect to gains in body weight, concentrations of hemoglobin and lead in the blood, number of stippled cells, and polychromatic staining erythrocytes, and amount of lead present in the entire body as well as in a representative bone. On the basis of the data obtained the authors conclude that the lead present in the form of solder is only moderately absorbed by the puppy, although to a greater extent than in rats. No signs of lead poisoning could be elicited in the animals receiving such pellets.

424 Lead Poisoning in Scrap Recovery Plants. Ill. Lab. Bull., 3, 8-9 (December 31, 1942).
Mishandling of lead scrap in recovery plants has caused a number of lead poisoning cases. Causes are carelessness, lack of local exhaust, and poor housekeeping. Air analysis often show concentrations ranging from 2.5 to 760 mgs. per 10 cu. m. With adequate control these concentrations are brought within safe limits. The ineffectiveness of respirators and biological preventive measures is emphasized.

425 Danger of Lead Poisoning Through the Addition of Lead Tetraethyl to Motor Fuel. H. Wanick. Arch. f. Gewerbepath. u. Gewerbehyg., 11, 165-169 (December 31, 1941). (German).
The purpose of the article is to differentiate between lead poisoning due to tetraethyl and classical lead poisoning, though the author admits that the toxic action of tetraethyl is a function of its lead content. Neurological symptoms, due to the fat-soluble effect of tetraethyl on central nervous tissue may be accompanied and even obscured by the more usual symptoms of lead poisoning in workers exposed to the carbonized residue of lead tetraethyl, which has lost its fat solvent capacity. The case is described of a worker exposed not only to tetraethyl lead added to benzine but also to the carbonized residue. Symptoms, called subjective, and including headache, weakness, loss of sleep, etc. were regarded as evidence of chronic tetraethyl lead poisoning; others, such as a blue line on the gums, punctate basophilia, coproporphyrinuria, and colic as evidence of true lead poisoning caused by inhalation of the lead containing dust of the carbonized residue.

426 Danger of Lead Benzine. H. Kraut and G. Lehmann. Arch. f.Gewerbepath. u. Gewerbehyg., 11, 256-295 (December 31, 1941). (German).
A series of animal experiments was undertaken in order to estimate how far and under what conditions danger to health is to be apprehended from the use of benzine containing lead tetraethyl. Previous investigation by Kehoe have shown that 1 cc. of pure lead tetraethyl applied to the shaven skin of a rabbit is lethal. In the present investigation, dilute solutions in gasoline were applied to the skin of rabbits and guinea pigs. Some loss in body weight was obtained with rabbits as the subjects; the results with guinea pigs were inconclusive. In experiments, in which the animals inhaled lead tetraethyl vapor and exhaust gases, the results were completely negative, in spontaneous death rate blood picture, nervous reactions and muscle chronaxia. Chemical analysis of the ashed animals showed a measurable accumulation only with the application to the skin of the 1% solution and no sign of true lead poisoning. The author concludes that there is in man no danger of lead poisoning to be apprehended from exposure to exhaust gases; that the danger to persons employed in normal garages and tank factories is inconsiderable (the cleaning of tanks is not dealt with); and that it is doubtful if any practical danger to health from lowered resistance is likely with the relatively low concentrations actually in use.

427 Health Aspect of the Magnesium Industry. H.E. Cox. Iron Age, (December 3,1942). This article records the experience of the Dow Chemical Company in caring for men engaged in handling magnesium and magnesium alloys and gives a review of the world literature that is readily available. In many processes the handling of magnesium and its alloys is no more dangerous than other commercial metals. Potential health hazards peculiar to magnesium are shown to have no practical significance. As a foreign body, magnesium is no more harmful than foreign bodies of other materials, unless bacterial contamination, due to the use of cutting oils, is present. The inflammable nature of magnesium is well known and the circumstances are so well understood and managed that burns are no more frequent than in iron and steel plants. The presence of sulfur dioxide in some of the operations, and of magnesium dust, are potential hazards, but these materials and conditions are familiar to industry and under proper control can be circumvented. (Copies of report are available upon request from the Dow Chemical Company.)

428 The Effects of Ascorbic Acid in Relation to Lead Absorption. E.E. Evans, W.D. Norwood, R.A. Kehoe and W. Machle. J.A.M.A., 121, 501-504 (February 13, 1943). Ascorbic acid nutrition in workers in a large plant was found to be poor in general, but mostly so in lead workers. Careful study of a large group of lead workers to whose diet 100 mg. of ascorbic was added daily revealed no effect on the lead concentration in the blood, elimination in feces or urine, physical condition of the men, number and severity of complaints, numbers of erythrocytes or stippled erythrocytes, or in the hemoglobin. Therefore no reason has been found for recommending the use of ascorbic acid to counteract the effects of lead absorption.

429 Action of Finely Divided Magnesium upon the Lungs. L.U. Gardner and A.B. Delehant. Am. J. Pub. Health, 33, 153-156 (February, 1943). (A report on this investigation was presented by Dr. Gardner at the Foundation's Seventh Annual Meeting and is printed in the Proceedings of that meeting.)
In a series of experiments on cats and guinea pigs, it was shown that finely divided metallic magnesium did not have any serious effect upon the lungs. It was also shown that "gaseous tumor" formation was absent primarily because the lungs freely communicate with external air. It is stated that if manufacturing processes did permit inhalation of appreciable amounts of magnesium, it is highly improbable that serious injury to the lungs would ensue.

430 Possible Chronic Intoxication by Manganese. M. Kaffman and S. Donoso. Revista Medica de Chile. 70, 708 (September, 1942). (Spanish).
The authors report a case which appeared to be one of manganese poisoning and state that the incidence of manganese poisoning is now comparatively high among mine workers, since activity has greatly increased on account of the war. In one mine 15 out of a total of 200 working without masks in an atmosphere densely charged with manganese dust, had become completely incapacitated. In other mines no cases of poisoning were apparent. Nearly all the miners with manganese poisoning presented the typical disturbances in their walk. Next in importance are the psychic symptoms in the form of attacks of excitation, depression, unmotivated laughter and even true demented states. In the particular case described, the extent of exposure to manganese was uncertain, and microscopic study of the brain suggested either a type of noninflammatory vascular cerebral syphilis or chronic intoxication by lead or manganese, which are very similar in their effect on microscopic brain structure.

431 Handwriting Test as a Reflection of Industrial Mercury Poisoning. E. Holstein. Deut. Med. Wschr., 68, 170-172 (February 13, 1942). (German).
Apart from, or in the absence of, oral manifestations, mercury poisoning may show itself as "erethism," characterised by psychic disturbances such as excitability, failure of concentration, defects of intelligence, etc., sometimes accompanied by intention tremor of the fingers, hands, arms, and finally of the whole body. A handwriting test is a useful means of arousing this intention tremor and therefore of indicating the existence and severity of mercury poisoning. Examples of the written signatures of workers in the hair-felt-hat industry, where the macerating fluid consisted of a solution of mercury in dilute nitric acid, show varying grades of illegibility, up to indecipherable scribble, or in one severe case, merely a blot. The same variability is sometimes found in successive tests within a short time in the same individual. An early sign of disturbance when true intention tremor is not perceptible, is the omission of a letter at the beginning or end of the signature, or the substitution of a letter, similar in sound, for the correct one, e.g., in the signature "Charlotte Schmeger" both names were commenced with the letter "S". The defects revealed by the handwriting test are related to disturbances of the central nervous system caused by chronic mercury poisoning, either existent or latent.

432 The Inactivation of Phosphorus on the Skin. M.W. Goldblatt and S.H. Oakeshott. Brit. Med. J. No.4282, 128-129 (January 30, 1943).
The phosphorus-inactivating properties of 1% aqueous copper sulphate, the copper sulphate-glycerol-starch composition of Godding and Notton, and a new composition containing copper in an oil-soluble form made from copper oleate, Turkey-red oil (sulphonated castor oil), Trichloroethylene, and surgical spirit have been compared. The last is shown to be the most effective way of inactivating phosphorus, especially when associated with oil, solvents, or rubber. A procedure is suggested for dealing with cases contaminated with material from self-igniting bombs containing phosphorus, oil, solvents, and rubber. N.B.: It must be pointed out that the treatment proposed is for phosphorus on the skin. The high content of trichlorethylene precludes use of the composition for such internal injuries as were recently described by Blaxland (1942), in which elemental phosphorus was diffusely implanted in the tissues. -- Authors' summary.

433 Silicosis in Potters in the Silesian Glass Industry. H. Schramm. Arch.f. Gewerbepath. u. Gewerbehyg., 10, 460-472 (April 16, 1941). (German).
The author gives the results of radiological examinations in 95 workers with exposures to dust varying from under 3 up to 14 years. Of these, 35 showed no changes due to dust, 23 of them having occupation histories of less than three years. In 14 early silicotic changes were noted, in 8 silicosis of radiological stage I was found, in 9 stage I-II, in 15 stage II, in 8 stage II-III, and 6 stage III.

434 Investigation of the Lung Function in Silicotics. The Lung During and After Moderate Muscular Exercise. E. Roelsen and P. Eskeldsen. Acta med. Scandinav., 109, 377 (1941).
The article reports results of exercise tests with a bicycle-ergometer, on 12 patients with silicosis, 9 with emphysema and 14 healthy persons. The amounts of exercise was 400 kgm. per min. for 10 minutes. All participants reached the steady state after about 5 minutes of exercise. During this state the patients with first and second degree silicosis showed a small average increase in ventilation and respiratory rate as compared with the normals. Two patients with third degree silicosis showed no marked increase of ventilation. The oxygen debt was higher in first and second degree silicotics than in normals, still higher in third degree silicotics, and highest in the emphysema patients. The ventilation in the recovery period was highest in the emphysema patients, lower in the silicotics and lowest in the normals.

435 Pneumoconiosis in the Production and Manipulation of Porphyry and Tufaceous Porphyry. W. Bortsch. Arch.f.Gewerbepath. u. Gewerbehyg., 11, 160-164 (December 31, 1941). (German).
This is an account of pneumoconiosis caused by the mining of "porphyry" and "tufaceous porphyry" in the quarries of the Rocklitz mountains in Northern Saxony. Clinical and radiographical examination of 190 of the workers confirmed the probability that the mineralogical nature of the stone might cause silicosis; 167 were found to be affected, 99 of these being stone breakers and 68 working chiefly as masons, and all heavily exposed to stone dust especially in calm, dry weather. X-ray examination revealed five cases with fully developed silicosis, 22 in the initial stages. Striking features were the long periods of exposure--from 11 to 45 years in the five definite cases--and the relative absence of symptoms, occasional cough being the only complaint. Radiography in a typical case showed numerous sharply defined shadows up to the size of a pea, with calcified deposits above the right hilus; the apices were unaffected. "Porphyry" and "tufaceous porphyry" are purely mineralogical terms; the Rocklitz stone is of the quartz variety, and has a high content of silicic acid, which is regarded as the cause of the silicosis.

436 Silicosis of Intrathoracic Lymph Nodes as Compensable Occupational Disease. J. Hagen. Arch.f.Gewerbepath., 10, 502 (April 26, 1941). (German).
According to the author, reports on silicosis as well as the legal regulations regarding compensation for occupational disease are concerned chiefly with silicotic changes in the lung tissue. He describes several cases of complicating severe silicosis of the intrathoracic lymph nodes with a fatal outcome. One patient, a man aged 63, had comparatively light silicotic changes in the lungs, but had also a severe silicosis of the lymph nodes at the bifurcation, which by severe cicatrical shrinkage led to the formation of traction diverticula in the oesophagus. The puncture of one of these led to pulmonary abscess formation and generally suppurative bronchitis. The fatal outcome of the pulmonary abscesses must be regarded as the result of silicosis. Several additional cases are described and evaluated, leading to the conclusion that when silicosis of the lymph nodes becomes the point of origin of a severe disorder, it must be regarded as a compensable disorder, just as is severe silicosis of the pulmonary tissue.

437 Study of Industrial Workers Exposed to Sulfur Dust. S.S. Pinto, R.A. Brown and E.H. Carlton. J.Ind.Hyg. & Tox., 25, 149-151 (April, 1943).
A study was made of the employees at a sulfur mine. Among the workers exposed to appreciable amounts of sulfur dust for a period of 7 years, no lung lesions were found on x-ray examination which could be attributed to the inhalation of sulfur dust -- Authors' summary.

438 Dangers Arising from Dust and Gas from Iron Alloys. K.W. Joetten. Arch.f.Hyg. u.Bakt., 127, 315-321 (1942). (German).

Iron briquettes have been manufactured in Germany for some time and production is on a small but increasing scale in this country. Therefore this account of German conditions may be of interest. Iron alloys used for making iron briquettes contain iron silicate (25-27% of silica), iron manganese-silicate (40% iron, 30% silica and 30% manganese), not more than 0.1% phosphorus, and an unknown percentage of arsenic. The material is roughly broken up by hand and shovelled into a grinder. At this stage it is sprinkled with water from a hose to prevent dust formation, which is not great, but varies according to the material used, as also does the odor of calcium carbide and garlic (arsenic). Both dust and odor have been more noticeable in recent deliveries of material, and slight explosions have occurred. Although no special disturbances of health have occurred over a period of years, many workers have recently complained of gastrointestinal and respiratory symptoms, especially after explosions and during work with ferro-manganese alloys which give off a smell of garlic. A review of the literature on ferro-silicate and ferro-manganese silicate alloys shows that toxic effects may arise from impurities in the form of phosphorus and arsenic (phosphine and arsine) as well as manganese poisoning (lung inflammation and Parkinsonism). The following data are presented on phosphine and arsine:

Phosphine: toxic concentrations -- rapidly lethal, 2.6 mg. per l.; dangerous to life in ½-1 hour, 0.36-0.84 mg. per l.; innocuous after ½-1 hour, 0.14-0.26 mg. per l.; limit of perceptibility, 0.002-0.004 mg. per l. Acute toxic effects: coldness, epigastric pain, stupor and giddiness, tinnitus, anxiety, dyspnoea, dry cough, loss of appetite, thirst, twitching, dilated pupils, death after a few days; chronic effects: anemia, bronchitis, digestive disturbances, dental necrosis, disturbances of sight, speech and hearing.

Arsine: toxic concentration -- 0.03% by volume. Acute toxic effects: headache, coldness, epigastric pain, anxiety, jaundice, hemoglobinuria and hematuria, retention of urine, convulsions, cyanosis; chronic effects: headache, loss of appetite, tenderness over the liver, restlessness, insomnia, anemia.

The author determined air concentrations in the main workshop and near the grinder and made clinical examinations of 23 workers. The manganese concentration was much below the danger limit. The characteristic symptoms of phosphine and arsine poisoning, especially hematuria and anemia, were not present in any of the workers; in 11 the hemoglobin was 80%; in 27, 70-75%. Some gastro-intestinal and respiratory symptoms were reported. Possibly they were due to the combined action of phosphine and arsine, especially after explosions, when the air concentrations may have been greater than those actually estimated. Preventive measures recommended include more frequent changes of personnel, medical supervision, "special nutrition" (these workers should be classed as "heavy workers"), alteration in position of the grinder (its mouth should not be too high above the ground), deposition of the material in a dry place (the present practice of sprinkling with water may do more harm than good by encouraging the evolution of gases. Pick and Konrad's recommendation that 40-60% ferro-silicate alloy should not be used is regarded as of doubtful value, since Koelsch has stated that a silica content of over 75% stabilizes the compound and decreases the formation of toxic gases.

439 The Absorption and Excretion of Fluoride. II. The Metabolism at High Levels of Intake. W. Machle and E.J. Largent. J.Ind. Hyg. & Tox., 25, 112-123 (March, 1943).

The magnitude and characteristics of the normal fluoride intake and output of a human experimental subject have been described in an earlier paper (Abstract No. 994, October, 1942). The investigation was now extended to abnormal levels of intake, in order to determine the threshold at which storage begins, to

establish the relationship between absorption and storage, and to throw further light on the apparent close relationship between the absorption and the urinary excretion of fluoride. At normal levels of fluoride intake, the urinary plus the fecal output was found to equal the intake, but with higher intake levels the absorption and urinary/excretion both increase, both varying directly with the amounts absorbed and therefore with each other. Within limits, then, urinary fluoride excretion may be used as a measure of fluoride storage. The absorption of fluorine is dependent upon the aqueous solubility of the fluoride salt and its state at the time of ingestion. Inhaled fluorides are effectively absorbed.

440 Pulmonary Irritants. R.A. Kehoe. Bull. N.Y. Acad. of Med., 19, 340-355 (May, 1943).
By means of correlation and comparison of the physical, chemical and physiological properties of the pulmonary irritants, many practical points of importance are apparent. Two tables of data are presented showing the relationship between toxicity and solubility and between irritation and toxicity. The general effects of exposure to pulmonary irritants are also described with an excellent section on pulmonary edema. The section on treatment accentuates the need for complete immobilization. Oxygen administration is advised but venesection is questioned except during the high venous pressure stage of blue cyanosis. The prevention of infection which may follow pulmonary injury is discussed briefly.

441 Ammonia Gas Poisoning. M. Caplin. Lancet. 241, 95-96 (1941).
47 cases of ammonia poisoning occurred following bomb damage to a condenser. Mild cases showed acute pharyngitis and tracheitis; moderate cases, acute bronchitis, and severe cases, pulmonary edema. 3 of 27 moderate cases, and 7 of 11 severe cases, died. Respirators were effective against ammonia.

442 Homonymous Hemianopsia in Carbon Monoxide Poisoning. J. Francois. Ophthalmologica, 103, 143-144 (March, 1942).
Carbon monoxide poisoning may produce optic neuritis sometimes ending in optic atrophy, retinal oedema, and occasionally, in injury to the optic tracts and occipital cortex. Lesions of the optic tracts are apparently due to asphyxia of vasomotor origin. Two cases of homonymous hemianopsia and one of binasal hemianopsia are given in the literature, and the author adds a third case of homonymous hemianopsia. In the last case, the recovery of the left field defect and the persistence of the right field defect were of special interest.

443 Blood-Carbon Monoxide and Anoxemia. L. Binet, M.V. Strumza and P. Nicolle. Compt. rend. Soc. Biol., 133, 632-634 (1940).
The carbon monoxide content of the blood may be doubled when the chloralosed dog is subjected to lowered oxygen tension. The increase parallels the increase in blood-hemoglobin. Both hemoglobin and carbon monoxide are raised by adrenaline injection. The increase in carbon monoxide may be inhibited by ligature of the splenic blood vessels.

444 Factors Producing Carbon Monoxide from Camp Stoves. P.F. Scholander and others. J. Ind. Hyg. & Tox., 25, 132-136 (March, 1943).
Experiments were conducted to find out what circumstances promote monoxide output from camp stoves, including the Primus kerosene and Coleman gasoline stoves. Only a small amount of monoxide was found in the combustion fumes when the flame burned freely in fresh air whether the flame was normal or distorted. A cold plate in contact with the flame greatly increases the output of monoxide, especially when the flame is distorted. Cooking in a tent made of impervious material or coated with ice caused serious poisoning, and occasional ventilation or two open vents did not protect against poisoning. However, heating and cooking in a porous tent gave only an insignificant amount of monoxide in the blood.

445 Hydrocyanic Acid Poisoning by Absorption Through the Skin. B.M. Hess. Muench. Med. Woch., 89, 492-495 (May 29, 1942). (German).
While inhalation of hydrocyanic gas is the commonest cause of cyanide poisoning in man, absorption through the skin frequently occurs. In either case the essential factor in the rapid toxic effect of small amounts of hydrocyanic acid is paralysis of cellular respiration. A concentration of 1-2%, even when a gas mask is worn, has caused severe symptoms, including sensation of heat, flushing, palpitation, rapid pulse, followed by headache, vomiting and lassitude. High room temperature and sweating increase the absorptive capacity of the skin. Preventive measures include good ventilation, suitable clothing, and special gas masks for workers in processes where formation of hydrocyanic acid or cyanides is possible. Treatment of acute symptoms consists of removal to fresh air; thorough and careful washing of directly contaminated areas of skin; use of cardiac stimulants; artificial respiration; intravenous injection of methylene blue (10-40 cc. of a 1% solution), or of sodium thiosulphate (up to 70 cc. of a 50% solution for an adult); inhalation of carbon dioxide may also stimulate the respiratory center. Two cases are quoted. A child of 14 months suffering from severe pyodermia of the scalp received by mistake an application of a 10% potassium cyanide solution. Severe symptoms followed within five minutes, but correct treatment led to recovery after two hours. In the case of a man who received burns of the head and shoulders while working with sodium cyanide, death occurred within two hours in spite of appropriate treatment in hospital. Postmortem findings indicated that the symptoms were due to rapid absorption of cyanide through the injured skin.

446 Nitrogen Oxide Poisoning. N. Ahlberg and K. Dahlberg. Acta med. Scandinav., 109, 471 (1942). (Swedish).
Clinical picture and pathological-anatomical findings in poisoning with vapor containing various nitrogen oxides (NO, NO_2, N_2O_3, N_2O_4, H_2O) are similar to phosgene poisoning. Two cases are described. In the first case the poisoning occurred in a man during welding with acetylene in a badly ventilated room. Symptoms and signs were those of a bronchitis. On x-ray examination extensive bronchopneumonic foci were seen in both lungs. The electrocardiogram revealed an insufficiency of the right coronary artery. A polycythaemia of short duration was observed. All the symptoms and signs had disappeared after seven days. In the other case the patient suffered from poisoning due to inhalation of a reddish-yellow gas which had been formed after a transformer had been struck by a bolt of lightning. Symptoms and signs were similar to those found in the first patient; however, x-ray examination revealed lung infiltrations which were similar to miliary tuberculosis. The patient recovered completely after one and a half months. It is assumed that in both cases a toxic pulmonary oedema was present, caused by the inhalation of various nitrogen oxides. The patients were reexamined after one and a half years and one and a quarter years, respectively and were found healthy.

447 Relation of Sulfur Dioxide to Damage from Flue Gases. C. Loeser. Chem-Ztg. 66, 337-340 (1942); Bull. Inst. Paper Chem., 13, 168.
The author discusses the toxicity of sulfur dioxide to plants, animals and men. He states that 1 part in 500,000 is harmful to roses, but that human beings feel discomfort only at 6 times that concentration, while 1 part in 500 of air prevents breathing and leads to death. The amounts of sulfur dioxide resulting from burning different types of coal are tabulated, and methods for rendering the gas harmless are discussed.

448 Sulfur Dioxide Chemical Pneumonia; Report of a Case with Recovery Following Accidental Explosion of a Refrigerator Unit. H.L. Goldburgh and B.A. Gouley. Ann. Int. Med., 18, 237-242 (February, 1943).
Concentrated sulfur dioxide inhalation may lead to acute inflammation of the respiratory tract, culminating in "chemical" pneumonia. After such exposure, a boy, aged 15, previously well, quickly showed signs of bronchopulmonary involvement. Cyanosis and dyspnea were notable features. Sulfathiazole therapy contributed to the recovery, but its use, limited to the acute phase of the illness, did not prevent the later development of bronchiectasis. -- Author's summary.

449 The Effect of War Gases and Other Chemicals on the Eyes of the Civilian Population. C. Berens and E. Hartmann. Bull. N.Y. Acad. of Med., 19, 356-367 (May, 1943).
Although vesicant, lung irritating, sternutatory and lacrimatory gases are expected to cause casualties, physicians must be prepared for new unknown gases. For example, arseniuretted hydrogen, a hemolytic gas, was considered a possiblity in the fall of 1939. Physicians are urged to remember that applying no local eye treatment will usually do less harm than using medication which may damage the eyes or solutions or instruments that are not sterile, as secondary infection is the principal danger from the external application of the war gases. The immediate treatment of all gas and chemical injuries of the eyes is to flush the conjunctival culs-de-sac with water or a sterile solution of salt (1.4 per cent). If acid is known to have caused the burn, sodium bicarbonate (2 per cent solution) should be used. If an alkali, the conjunctival culs-de-sac would be flushed with boric acid (2 per cent solution). The immediate instillation of light liquid petrolatum is useful and contraindicated only in mustard burns. Severe pain may be controlled by instilling pontocaine (0.5 per cent solution) or butyn (1 per cent solution) once or twice but it is preferable to control pain with internal medication (morphine, allonal, etc.) as most local anesthetics have a deleterious effect on the corneal epithelium. Secondary infection should be combatted with mild silver protein or sulfadiazine solution or ointment (3.5 per cent). Iritis should be suspected in all severe burns and treated with atropine solution or ointment unless secondary glaucoma develops. Ulcers of the cornea and the secondary corneal scarring also symblepharon may require surgical treatment.

450 Industrial Carbon Disulfide Poisoning. F. Warnecke. Arch.f.Gewerbepath. u. Gewerbehyg., 11, 198-248 (December 31, 1941). (German).
The article is an extensive review of the literature on carbon disulfide poisoning with an account of the discovery of the gas, its production, chemical properties, mechanism of toxic action, and a resume of the author's investigation of 80 cases seen during recent years. The nervous system is chiefly affected, owing to the lipoid solvent action of carbon disulfide on central and peripheral nervous tissue. In high concentrations (6.4-10 mgm. per 1.) narcosis results. In chronic poisoning (0.15 mgm. per 1.) the continued small dosage causes various symptoms, the most characteristic of which are related to psychotic disturbance, peripheral nerve injuries and gastrointestinal changes. In America, 0.03 mgm. per 1. is the maximum permissible concentration in a workroom. In the 80 cases studied, only 6 were acute. In 21 cases the symptoms were predominantly psychotic; in 13 cases, they were related to central and peripheral nerve injury and in 35 to gastrointestinal disturbance. The nature and severity of these symptoms are discussed. A description is given of the method and apparatus devised by Frauenhofer for estimating the carbon disulfide content of the air. The reaction depends on the formation of potassium xanthogenate when air containing carbon disulfide is passed through a 10% alcoholic solution of caustic potash.

451 What the Ventilating Engineer Should Know About Carbon Tetrachloride. H. P. Quadland. Heat. & Vent., 40, 38-39 (March, 1943).
This article describes the physical properties and health hazards of carbon tetrachloride. Methods of determining the vapor concentrations in air are given. General ventilation factors are discussed but no specific recommendations are included.

452 The Acute Toxicity of Vapors of Several Monoalkyl Ethers of Ethylene Glycol. H.W. Werner, W.F. vonOettingen and others. J. Ind. Hyg. & Tox., 25, 157-163 (April, 1943).
Glycol ethers have important uses as solvents in industries, but information concerning their toxic action is incomplete and there is not sufficient data available to make possible comparisons of health hazards of these ethers to other commonly used solvents. Therefore, this study was undertaken at the suggestion of the Committee on Industrial Medicine of the National Research Council. The present report covers the first part of the study, which is concerned with the effects of single, moderately long exposures of mice to various vapor concentrations of the compounds. The materials investigated are the methyl, ethyl, n-propyl, iso-propyl and n-butyl ethylene glycol ethers. Results are given in the authors' summary and conclusions: 1. Single seven-hour exposures of mice to vapors of some of the ethylene glycol ethers occasionally produced lung, kidney, or liver changes. Similar exposures to any of the compounds frequently produced histologically demonstrable splenic changes. 2. The usual sign of toxic action of all compounds was dyspnea. An additional common sign with near-lethal concentrations of the n-propyl, iso-propyl, and butyl derivatives was severe hemoglobinuria. 3. Deaths resulting from exposures to vapors of the solvents studied commonly occurred between seven and thirty-two hours after starting exposure; however, in a significant number of instances deaths occurred toward the end of the exposure period or between the first day and the fourth week following exposure. 4. Minimal lethal concentrations expressed as mg. per l. indicate that the ethylene glycol ethers decrease in toxicity in the following order: Butyl, methyl, n-propyl and ethyl, iso-propyl. 5. Hazard indexes indicate that, with conditions comparable to those in these experiments, the difficulty of controlling potential hazards of the derivatives studied should decrease in the following order: Methyl, ethyl, iso-propyl, n-propyl, butyl.

453 Chronic Poisoning from Methanol Inhalation. K. Humperdinck. Arch.f.Gewerbepath. u.Gewerbehyg., 10, 569-574 (June 11, 1941). (German).
There have been few cases of methyl alcohol (methanol) poisoning from inhalation or skin absorption in industry, because the concentrations used are generally low, and also because methanol is not highly volatile. An acute narcotic effect results from oral ingestion, the toxic doses being 5-10 gm. Toxic effects on parenchymatous and nervous tissues are ascribed to the reduction of methanol, when dissolved in the body fluids, to formic acid and formaldehyde. Symptoms may be headache, giddiness, stupor, slight cyanosis, etc., and especially disturbances of vision, which may result in blindness. The atmospheric concentration corresponding to this oral toxic dose would be about 65 mgm. per liter, which is unlikely to be found in industry. The author describes a case of a worker poisoned by manipulating material soaked with methanol in a centrifuge. The material contained 30-40% of methanol, but no complaints had been made over a period of 6 years until blackout measures were instituted. In this case, symptoms were pleural irritation and serious failure of vision, particularly in the right eye. After 6 weeks removal from exposure the vision improved so that fine print could be read at a distance of 20 cm. The pleural irritation, which was considered due to enlargement of the liver returned after 14 days return to work. The only other pathological signs were a decreased patellar reflex and

an increase in the average red cell diameter (7.8 mu). The concentrations of methyl alcohol in different parts of the room under varying conditions showed levels of from 1.6 to 10.9 mgm. per l. Preliminary medical examinations indicated that the worker was especially susceptible to eye injury; also, some absorption through the skin may have taken place. The author concludes that concentrations of 10 mgm. per l. may produce chronic toxic effects, and that 1 mgm. or at most 2 mgm. per l. should not be exceeded.

454 Experimental Trinitrotoluene Poisoning: The Effect of Diet. H.P. Himsworth and L.E. Glynn. Clinical Science, 4, 431-447 (December 15, 1942).
(1) The development of toxic manifestations in rats after administration of TNT is dependent upon the nature of the diet. Severe symptoms and marked pathological lesions develop in rats taking a high fat diet whilst in animals taking a high carbohydrate or a high protein diet the ill effects are slight or absent.
(2) Chronic TNT poisoning in rats shows the following features:
(a) Loss of weight, (b) increased appetite, (c) Excretion of high concentrations of TNT derivatives in the urine, (d) Changes in the blood and associated tissues, the characteristics of which are a great increase in hemoglobin, the appearance of normoblasts, reticulocytes and polychromatic erythrocytes in the peripheral blood, an erythroblastic hyperplasia of the bone marrow and siderosis of the spleen, (e) Hepatic lesions which range from fatty infiltration to an acute necrosis of the parenchymal cells, (f) Loss of hair.
(3) Evidence is presented that the effect of the high fat diet in facilitating the toxic action of TNT is due to the fat diet so influencing the animal's metabolism as to impede its ability to dispose of the TNT within its tissues.
(4) The close resemblance between the effects of TNT in the rat and the findings in human cases of TNT poisoning is demonstrated. -- Authors' summary.

455 An Outbreak of Dermatitis from Airplane Engine Covers. L. Schwartz and S.M. Peck. Pub. Health Repts., 58, 625-631 (April 16, 1943).
The authors summarize the article as follows: 1. An outbreak of dermatitis was observed among workers manufacturing airplane engine covers made from a special pliofilm. 2. R.M.F., a chemical added to the pliofilm to prevent deterioration from light, was found to be the actual cause of the outbreak. 3. R.M.F. is both a primary irritant and a sensitizer. Recommendation is made that all workers handling pliofilm containing the R.M.F. wear protective sleeves and aprons made of ordinary pliofilm, vinylite, koroseal or laminated cellophane. The hands may be protected by wearing finely knitted cotton or washable leather gloves. Persons on the job of heat sealing can protect their faces from fumes by the use of a protective ointment of the invisible glove type. If dermatitis persists after the recommended precautions are observed, workers should be removed from further exposure to the material.

456 Dermatitis from Cutting Oils. Queries & Minor Notes. J.A.M.A., 121, 223 (January 16, 1943).
The large majority of cutting oil dermatitis occurs from the insoluble oils, which are sterile as far as pathogenic bacteria are concerned. In the use of water soluble cutting oils, the skin may be injured by metal slivers contained therein, and the cut infected from the bacteria in the water soluble oil or on the soiled skin and clothing. Sedimentation and filtration are used in many plants to remove the slivers. Heat sterilization or disinfectants may be employed to kill the bacteria. The use of disinfectants prevents reinfection of the oil in the pipes and at the machines, but the disadvantage in their use is that they are skin irritants.

457 Spontaneous Desensitization in Occupational Eczema and its Significance for Estimation. F. Koch. Med. Klin., 37, 1100 (October 31, 1941). (German).
Followup examinations on patients with occupational eczema who had been advised to change their occupations but had not done so, revealed that the majority were still subject to eczema but some had lost it in spite of further contact. An average of about 15% of the patients in various occupations were no longer subject to eczema. Regular weekly observations on 8 patients studied disclosed two different forms of development. One group of 5 patients experienced at every resumption of work, first a considerable exacerbation of the disorder, then a gradual regression of the manifestations, and finally a complete or almost complete disappearance of the eczema. In the 3 other cases eczema occurred on the hands, at the original site, when work was resumed. Later, the lesions healed and recurred at other sites of the body, but in a form so mild that the working capacity was not impaired. The author thinks that the only possible explanation is a desensitization which presupposes specific allergic processes, though various other factors may play a part. Results of artificial desensitization have been slight, but the method should not be abandoned. Further observations may disclose regularities which may become the basis for more favorable results.

458 Contact Dermatitis From Rubber Service Mask. L. A. Lewe. J.A.M.A., Clinical Notes, 121, 422 (February 6, 1943).
The article is a case report of a white soldier aged 42 with rubber respirator dermatitis. On admission the patient presented a bright red erythematovesicular cutaneous eruption confined to the area of his face in close contact with the gas mask. There was a coincidental chronic seborrheic dermatitis of the scalp, axillas, and the crural regions. No other physical abnormalities were found. After treatment the patient again wore the mask and this time presented more severe symptoms, including oozing, crusting and pronounced edema. The eruption responded to treatment with compressing and application of bland antipruritic lotions and ointments. Patch tests showed that the dermatitis was not due to the rubber itself, but to chemicals used in the manufacturing process.

459 The Effect of Cleansing Materials on the Human Skin. 1. Healthy Skin. O.Schnorr, Arch.f.Gewerbepath. u.Gewerbehyg., 10, 409-421 (December 30, 1940). (German).
The effect of a number of liquid and solid soap cleansers used for cleansing the hands was tested by estimating: (1) the hydrogen ion concentration of the skin, (2) the evaporation of moisture, and (3) the swelling of the cutaneous tissues after repeated use. The conditions of use were strictly controlled. Methods used in making the estimations are described. Ten representative cleansers were examined and the results estimated as indicative of an injurious effect on the skin were an increase in the pH value of the skin, a decrease in the time of evaporation of moisture, and an increase of swelling, judged as a percentage difference from the initial value. The skin cleansers tested fell into three groups, according to the effects observed: (1) Those producing no final substantial increase in the pH value of the skin, which were regarded as suitable for regular use; (2) Those producing a final rise in pH value after an intermediate fall or state of equilibrium. This group is regarded as suitable for all but sensitive skins; (3) Those producing an uninterrupted rise in pH value. This group, which included a pumice soap was considered suitable only for occasional cleansing of very dirty skin.

460 Effect of Cleansing Material on the Human Skin. 2. In Skin Disease. M.Schnitzler. Arch.f.Gewerbepath.u.Gewerbehyg., 10, 422-436 (December 30, 1940). (German).
Many industrial dermatoses, particularly of the hands, wrists, and forearms, result from direct contact with injurious materials, the injury being localized in the epithelium. However, the natural buffer-regulating capacity of the skin is

not effective in the presence of external alkaline agents. Increased alkalinity of the skin is followed by swelling of the horn cells, with closing of the follicles and inclusion of foreign particles and bacteria. The latter penetrate to the deeper tissues where the pH is nearer to neutral and favors optimal growth. Cleanliness is a protection against industrial dermatosis if the cleansing material is of a suitable constitution and sufficient time is devoted to thorough washing. The effects of cleansers on various forms of skin disorder (excluding cases of generalized eczema) were tested in the same manner and using the same methods as those used on healthy skin. In the second series the clinical progress of the lesion was estimated. The cleansing materials investigated were divided into three groups: (a) Soaps, solid or liquid, alkali-free, of acid reaction, on the whole suitable for use in skin disorders; (b) Alkaline soaps without admixture of insoluble substances -- long continued use of this group increases the skin injury; (c) Alkaline soaps containing kaolin, pumice, sand, etc. These, especially those of coarse consistency, are unsuitable for any form of skin injury.

461 <u>The Phenomenon of "Black Dermographism."</u> E. Urbach and D.M. Pillsbury. J.A.M.A., 121, 485-490 (February 13, 1943).
Black dermographism connotes the fact that under certain conditions a black line will appear at a skin site stroked with certain metals. Black dermographism not infrequently occurs in women wearing silver or cheap gold jewelry on powdered skin areas. Black dermographism is a physical phenomenon. The earlier theory that it is of some biologic or diagnostic significance is erroneous. Strictly speaking, the term "black dermographism" is a misnomer, since the reaction can be evoked not only on the skin but also on coarse paper, cloth and wood. -- Authors' summary.

462 <u>Epidemic Kerato-Conjunctivitis ("Shipyard Conjunctivitis")</u>. M. Sanders. Arch. of Ophth., <u>28</u>, 581-586 (October, 1942).
This is a preliminary report on investigations into the etiology of epidemic kerato conjunctivitis, which has spread throughout the Pacific coast area and has reached the east coast. The cause of the disease is unknown although evidence points to a nonbacterial agent, a virus. Swiss mice were injected intraperitoneally and intracerebrally with conjunctival scrapings from patients with the conjunctivitis. This was followed by mild symptoms from which the mice recovered. Brain emulsion from the second mouse-passage was incubated in tissue culture of embryonic mouse-brain. This produced a strain which was lethal to mice and gave rise to a pathologic picture which though not unique did not resemble that in other common virus infections. Conjunctival instillation of the mouse virus in a human volunteer produced in four days a mild conjunctivitis. When this was repeated in the same eye typical kerato-conjunctivitis developed. The serum of the patient from whom the original material was obtained had a neutralizing effect on the mouse virus. A second isolation of virus has been effected, but the identity of this virus with the first has not been fully established. This is a preliminary report and further work will be done on the isolated strains of virus.

463 <u>Epidemic Kerato-Conjunctivitis</u>. M. Sanders and others. J.A.M.A., <u>121</u>, 250-255 (January 23, 1943).
The authors present an extensive report on epidemic kerato-conjunctivitis, with clinical and epidemiologic data on 80 cases, including classification of symptoms, proof of method of transmission, demonstration of antibodies, and recommendations for prevention of the spread of the disease.

464 <u>Epidemic Kerato-Conjunctivitis: "Shipyard Eye."</u> C. Kuh. Calif. & West. Med., <u>58</u>, 18-19, (January, 1943).
The symptoms and characteristics of epidemic kerato-conjunctivitis are listed, and include a sudden onset, itching, irritation, blurred vision, pain, and

varying degrees of inflammation and hyperemia of the bulbar and palpebral conjunctiva. Precautionary measures for plant physicians, nurses, and executives to prevent the spread of the disease are also listed. Therapy, including iced compresses and 5% sulfathiazole ophthalmic ointment does not influence the course of the disease, but gives symptomatic relief. It is believed that the incubation period is from 5 to 12 days, and the close contact and direct transfer are necessary.

465 Industrial Eye Affections. P.A. Jaensch. Med.Klin., 37, 1244-1247 (December 12, 1941). (German).
This is an elementary survey of industrial eye affections, containing references to some types that are not widely known. Mention is made of hydrogen sulphide ophthalmia seen amongst workers in artificial silk, the symptoms being similar to those of electric ophthalmia; and of the ocular changes seen in workers with aniline dyes. Aniline dyes may induce lesions ranging from discoloration of the conjunctiva -- best treated by touching the affected area with 60 per cent alcohol -- to symblepharon and iridocyclitis. Benzine may lead to central scotomata and the trichlorethylene preparations -- used extensively for removal of fatty substances -- to trigeminal nerve lesions. Benzol, xylol and toluol are blood poisons and lead to retinal hemorrhage, retrobulbar neuritis and severe corneal damage.

466 Treatment of Young White Mice Infected with Leptospira Icterohaemorrhagiae with Immune Serum. C.L. Larson. U.S. Pub. Health Repts., 58, 10-15 (January 1,1943).
Serum from patients convalescent from Weil's disease and immune rabbit serum and plasma prevent the death of young white mice infected with L.icterohaemorrhagiae. The effect of these materials is marked if administered on or before the fourth day after infection.

467 Survey of Compounds Which Have Been Tested for Carcinogenic Activity. J.L. Hartwell. Nat'l Cancer Institute, U.S. Pub. Health Service, 371 pp. (1941).
This bulletin represents a survey of the field of chemical carcinogenesis in the higher animals; the action of carcinogens on isolated tissues, tissue cultures, plants, protozoa, and bacteria is not considered. The literature is covered to 1939, and the compilation also includes experiments with 153 compounds from the unpublished work of Dr. M.J. Shear and Dr. H.L. Stewart of the National Cancer Institute. The results of the testing of 81 of these compounds are newly reported, while 45 are new to the whole cancer literature. Altogether the work comprises data referring to 696 chemical substances; of these, 169 are reported to be carcinogenic, apart from 23 observed as causing papillomas only. After an introductory discussion, the bulletin takes the form of a tabular review which classifies the substances, and gives data on method of administration, type of animals, etc. The author draws attention to the incompleteness of the data for many of the compounds listed, and urges the more systematic investigation of compounds already studied in a preliminary fashion, and for the filling of large gaps among substances which it would seem desirable to test. The review is completed by a bibliography (over 1200 references), and separate indexes to compounds, routes of application, vehicles, animal species, and tumor-sites.

468 Industrial Toxins and War Production. H.N. Holmes. Science, 96, 384 (1942).
The author contributes evidence from Germany, Britain, and the United States indicating that toluene, benzene, and TNT itself destroy vitamin C (ascorbic acid) in the bodies of workmen exposed to vapors or to skin contact. Some organizations give such workmen 100 mgm. of vitamin C daily to replace what is lost, and the results have been encouraging in maintaining health and vigor.

469 Fatal Accident from Welding in a Closed Cooker. P. Felsch. Z. Spiritusind., 63, 253 (1940). (German).
The welding of a copper pipe to a sheet-copper cooker (2 m. x 4 m.) resulted in the death from pulmonary edema of the workman, who had spent some 40 minutes (with a break occasioned by a fit of coughing) inside the cooker; the edema being due apparently to nitrous poisoning. Precautions are discussed.

470 Metal Welders' Disease in a Crane-Driver. H. Waniek. Arch.f.Gewerbepath.u. Gewerbehyg., 11, 179-184 (December [illegible], 1941). (German).
The author has previously described "metal welders' disease" as a chronic disturbance of thyroid and liver function. He here reports a case of this condition in a crane driver, exposed to the fumes and gases arising from the welding process in a workshop where he had been operating the crane for several months. Symptoms attributed to thyroid dysfunction included nervous irritability, excessive sweating, loss of weight, falling of the hair, rapid pulse, fine tremor of the fingers; liver disturbance was shown by loss of appetite, nausea and sickness, occasional diarrhoea. Bauer's galactose test gave evidence of disturbed liver function.

471 Are Welders Subject to Depletion of Visual Purple While at Work? H.S. Kuhn and E.E. Wille, Jr. Am. J. Ophth., 26, 63-68 (January, 1943).
Sixty-one welders were given the Bio-photometer test for speed of dark adaptation before and after a day's work. Thirty-nine were on the day shift, 22 on the night shift. Half the welders ([illegible]) each received 10,000 units of vitamin A before starting work and again in the middle of the shift. The other welders received a placebo at the same time. There is no evidence of a general lack of dark adaptability among welders and no evidence of any decrement in this function during an eight-hour shift. Welders who received vitamin A showed no greater gain in dark adaptation than those who did not receive it. This should not be interpreted to mean that cases of vitamin A deficiency would not respond to such treatment, nor that these welders would not respond with longer treatment or under different conditions. Individual differences in age, domicile, type of welding, goggles, and food showed no relation to differences in gain or loss of speed of dark adaptation during an eight-hour shift. Welders on the night shift showed a significant average gain in dark adaptation during their work. This is attributed to a greater demand for dark adaptation during periods when they were not actually welding. Several inferences are developed from this fact toward possible improvement of visual ease in welding by further visual engineering in this field. The clinical conclusion is that the excessive number of complaints among welders is due to inadequate protective equipment or carelessness in its use. -- Authors' summary.

472 Chronic Pulmonary Changes and Bronchial Ulceration in an Electric Arc Welder. H.R. Nayer. J.A.M.A., 119, 1500 (August 29, 1942).
Since 1936 there have been several reports in the literature of roentgenographic pulmonary changes in electric arc welders. The roentgenographic abnormalities, discovered by surveys on apparently healthy workers, ranged from increased linear shadows to a generalized fine or nodular mottling simulating silicosis. The workers had no symptoms and were not disabled in any way. There was a history of long exposure to the products of arc welding, usually 15 years or more. The roentgonographic changes were apparently produced simply by the accumulation of iron pigment. Fumes arising from coated rods are largely inorganic material consisting of finely divided iron oxide. The author reports the case of a thirty year old white man, an arc welder for 7 years, admitted to the hospital with cough, sputum and dyspnoea. The admission roentgenogram showed multiple linear and nodular densities traversing the middle third of the right lung from the

root out to the periphery. There was also some exaggeration of the linear markings of the left lung. The tentative diagnosis, on admission, was bronchogenic carcinoma with lymphangitic spread. Bronchoscopy revealed a considerable amount of purulent material in the lower part of the trachea. There was an ulcerated granulating lesion in the right main bronchus just below the tracheal bifurcation; a large amount of nonfoul purulent secretion was seen distal to this lesion. Sections of this granulation tissue, removed by biopsy, showed nonspecific inflammatory changes with large masses of iron pigment scattered about. Removal of the granulation tissue and repeated bronchoscopic dilation of the left main bronchus gradually secured satisfactory symptomatic relief and healing of the ulcerated area. Bronchial lesions accompanying chronic pulmonary changes in electric arc welders have not been previously reported. The mechanism whereby these bronchial changes were produced is not clear.

473 Blood Findings in Cyclotron Workers. S. Warren. Radiology., 39, 194 (Aug.1942). Blood counts and hemoglobin tests on persons exposed to slight radiation from cyclotrons and temporarily radioactive isotopes, for periods of 2 to 30 months, show no significant conditions that are not explained by intercurrent disease, except in a few that show minor variation in the white cell count. Some persons have unstable bone marrow, shown by marked variations in white cell counts on only minor exposure. Such persons should not work where they are exposed to radiation. The precautions for the safety of cyclotron workers appear adequate.

474 Toxicity Studies with the Fungicide Tetra-chloro-para-benzoquinone (Spergon). T.H. McCavack and others. J.Ind.Hyg.& Tox., 25, 98-111 (March, 1943). A fungicide under the trade name of Spergon consists of 99% tetra-chloro-para-benzoquinone and 1% disodium phosphate. It has such a high fungicidal activity that it is now in use commercially for the preservation of cotton and other seed. An extensive investigation was undertaken to determine the extent to which it may be intoxicating to those who handle it and to those who utilize materials preserved with it. In the experiments, Spergon was administered by stomach tube, intraperitoneally, subcutaneously, externally, as a weighed portion of the diet, and as a cottonseed-impregnated product. A number of results of the effect of high concentrations are reported, including an LD_{50} at 0.4 g. orally or 0.05 g. intraperitoneally and fatal results following eating 0.084 g. daily for 10 weeks in feeding mixtures. However, in every effect studied, the quantities producing any damage were far in excess of those that would be ingested, even if all the agent were retained during handling and preparation for consumption, which would not use above 0.2%. Such a dose is tolerated for long periods by healthy animals without detriment to normal growth or activity. The chemical can therefore be used as a protectant for cotton and other seed without danger of intoxicating those who handle it or those who consume the products preserved by it.

475 Toxic Anemia. E. Browning. J.Ind.Hyg.& Tox., 25, 124-131 (March, 1943). The author discusses toxic anemias that result from exposure to benzene, xylene, carbon tetrachloride, solvent naphtha, trichlorethylene, mixed solvents and thinners, and radioactive substances, with special reference to the 1937 Factories Act of Great Britain and later amendments, which includes anemia from these sources in the compensable diseases. These forms of anemia are all of the type now known as "dyshematopoietic"; and leukopenia (lack of white cells) and lymphocytosis (excess of lymph cells) are present to varying degrees. Blood counts and ratios for several of the poisons are presented in tabular form and several cases are described.

476 Influence of Work on Physiological Reactions to Thermal Environment. C.E.A. Winslow and A.P. Gagge. Amer.J.Physiol., 134, 664-681 (1941). Two undressed men pedalled on a stationary bicycle so as to increase their metabolism to over 300 kg.-cal. per hour. The results were compared with those in

the subjects at rest in a semi-reclining position (metabolism 80-100 kg.-cal). Radiation area is the same as in the resting subject (70% of the surface area). Convection constant on the stationary bicycle at rest is 20% less than at rest reclining. Pedalling at a rate of 30 revolutions per minute greatly increases the convection constant, equivalent in cooling power to an air movement of 30-40 cm. per second. Evaporative regulation in the working subject is so effective that skin temperature is constant actually being lower at a given operative temperature for the working than the resting body. With increasing metabolism at a given operative temperature skin temperature of the trunk falls. Rectal temperature rises under working conditions. Internal temperature not skin temperature controls the sweat secreting mechanism. Thermal sensation of pleasantness is produced in the working subject (metabolism 300-400 kg.-cal.) at operative temperature 16° instead of 29° with the resting subject. Maximum comfort is experienced in both instances at 2° below the point where active sweat secretion begins.

477 Basis for Study of Man's Reaction to Tropical Climates. D.H.K. Lee. Univ. Queensland Papers, Dept. of Physiol., 1, 1-86 (1940).
The heat lost from the body by radiation, conduction, convection, and evaporation is related to changes in the environment and to changes in heat production by the body. The consequences of interference with heat loss are discussed in detail. The extent to which adaptive reactions in the cardio-vascular and other systems can compensate for such interference is demonstrated, and the signs of breakdown in these compensatory reactions are described. The effects of food and of work on thermal equilibrium, and the part played by the endocrine glands in maintaining this equilibrium are discussed. Disturbances of the water and electrolyte balance result from environmental conditions that interfere with heat loss. When compensation for interference with heat loss fails, the resulting crisis may take the form of hyperpyrexia, circulatory insufficiency, electrolyte disturbance, or hyperdehydration. The etiological factors relating to each form of failure, together with the associated clinical signs and the development of acclimatization to heat, are discussed. A final section is devoted to climatic factors and their assessment in relation to human comfort and body reactions.

478 Physiological Aspect of a Miner's Work. T.F. Muller and K.N. Moss. Trans. Inst. Min. Eng., 100, 141-151 (1941).
The oxygen expenditure of walking at 3 m.p.h. was measured in several subjects when erect, at a half-stoop, at full-stoop, and on all-fours. The oxygen consumption of a 2 minute exercise period and of recovery to the original resting level was very much increased by the stooping posture, the expenditure on all-fours being more than three times that in the erect posture. Similar comparisons were made during loading weights under a roof of varying height; any posture that required the use of the back muscles increased oxygen consumption. In all tests training diminished the oxygen consumption. Environmental temperature had no influence on the mechanical efficiency of ergometer work.

479 Sensations of Heat and Moisture. G.P. Crowden and W.Y. Lee. Chinese J. Physiol., 15, 475-483 (1940).
An arbitrary scale was fixed for sensations of temperature and moisture. Temperature sensations were correlated with dry-bulb temperature, moisture sensations with relative humidity and summated indices for the two with the "total heat of the air" as used in air-conditioning.

Methods of Detection and Determination

480 Electron Microscopy on Asbestos Dust and on Lungs in Asbestosis. J. Kuehn. Arch.f.Gewerbepath., 10, 473 (April 10, 1942). (German).
The author reports some microscopic studies of asbestos and of lungs of asbestosis victims for the purpose of determining what variety of asbestos is responsible for asbestosis. Serpentine (chrystolite) asbestos is the form generally used, and it was supposed that it would be found in lungs with asbestosis. Sundius and Bygden disclosed, however, that only hornblende asbestos is demonstrable in the lungs, suggesting that serpentine dust is decomposed in the tissues. The author used the electron microscope to study the form, size and structure of asbestos, both in free dust and as found in the lungs. It is usually easy to distinguish the two forms under the electron microscope, the serpentine variety being generally curved, clear and transparent, and hornblende rigid and greater in diameter. However, examination of the particles from 3 lungs did not indicate clearly what variety was present. The photomicroscopic determination of the refraction exponent, suggested by Sundius and Bygden, was then employed. That method revealed that the large asbestos needles isolated from the lungs were of the hornblende type. It is concluded that serpentine asbestos is decomposed in the lungs and is the essential cause of fibrosis. When asbestosis lungs are macerated with nitric acid and hydrogen peroxide, both free asbestos needles and asbestosis bodies are obtained. Hornblende asbestos shows no signs of decomposition by the organism, either in the free needles or on the asbestosis bodies.

481 Polarigraphic Determination of Lead in Bones. E. Weinig. Z.Physiol. Chem., 273, 158-162 (1942). (German).
The polarigraphic method, which is fully described, has the advantages of use of smaller amounts of material, simpler preliminary treatment of the bone ash, and the automatic action of the polarigraph.

482 Biochemistry of Silicic Acid. IX. Isolation and Identification of Minerals in Lung Residues and Air-Borne Dusts from Coal Mines. G. Nagelschmidt and E.J. King. Biochem. J., 35, 152-158 (1941).
The isolation of mineral residues from lungs by digestion with hydrogen peroxide, and removal of carbon from these residues and from air-borne dusts by heating to 380°C are described. The minerals in the residues are then identified by x-ray diffraction methods. Data are presented for the constituents present in a lung residue and a mine dust; the main components are quartz and a member of each of the mica and kaolin groups.

483 A New Method for the Determination of Free Silica in Industrial Dusts. A. Salazar and L. Silverman. J.Ind.Hyg. & Tox., 25, 139-148 (April, 1943).
The authors describe a new method for free silica determination, in which the dust sample is first passed directly through a controlled flame, fusing practically all particles except those of silica. The fused sample is then collected by an electrostatic precipitator and removed to a microscope slide for analysis. The method can be applied to air-borne or rafter dust samples. The amount of free silica is determined by a direct count of the fused and unfused particles. Possible interfering materials are refractories and those which decrepitate at high temperatures. These interferences are not very common and when present may

be identified by their optical characteristics. The determination can be carried out on each microscopic field so that possible particle size variation in transferring fields is eliminated. The method can also be used with the standard petrographic technique, reducing the number of particles to be identified if several refractory materials are present with fusible material. -- Author's summary.

484 A Portable Electrostatic Precipitator. W.L. Lea. J.Ind.Hyg. & Tox., 25, 152-156 (April, 1943).
A portable precipitator is described in which the sampling head and blower are separate from the self-contained power supply. This construction arrangement gives the utmost freedom of movement during sampling, so that the operator can follow workmen and obtain samples accurately representing their inhalation. The precipitator may be built with little effort since all parts with the exception of the sampling head and the high voltage condenser are standard parts. The construction is described and typical data obtained are presented.

485 Determination of Aliphatic Nitrate Esters: A Colorimetric Method. H. Yagoda. Ind. Eng. Chem., 15, 27-29 (January, 1943).
A colorimetric method for the determination of aliphatic nitrate esters is described, based on the hydrolysis of the ester in 82.5% sulfuric acid and the nitration of m-xylenol by the nitric acid liberated. The method has been applied to nitroglycerine, erythritol tetranitrate, and pentaerythritol tetranitrate over a range of 3.0 to 0.005 mg. The nitroxylenol is readily volatilized by a steam-distillation which permits the application of the method to complex systems. The reaction proceeds in stoichiometric proportions, so that the quantity of ester present can be evaluated from a potassium nitrate standard. -- Author's summary.

486 Diethylaminoethanol as a Reagent for the Detection and Colorimetric Determination of Small Amounts of Trinitrotoluene in Air. F.H. Goldman and D.E. Rushing. J.Ind.Hyg. & Tox., 25, (April, 1943).
A method for estimating the concentration of TNT in the air is described in detail. The authors' summary follows: "A colorimetric method has been devised for the estimation of TNT based on the use of diethylaminoethanol as a reagent for this compound. The color produced is very stable. We hope to publish a method soon for dinitrotoluol and for tetryl based on the use of this same reagent."

487 Determination of Fumigants. XI. Determination of Chlorohydrocarbons in Air by Reaction in Monoethanolamine. XII. Determination of Ethylene Dichloride and Dichloroethylene. Analysis of Mixtures. XIII. Determination of Chlorohydrocarbons by Thermal Decomposition. F.P.W. Winteringham. J.Soc.Chem.Ind., 61, 186-192 (1942); Chem. Absts., 27, 1950-1951 (April 20, 1943).
These papers constitute the continuation of a series on the determination of fumigants (many of which are also industrial contaminants.) The methods are long, and the original or the Chemical Abstracts reference should be consulted for details.

488 A Modification of the Silica Gel Method for the Determination of Atmospheric Organic Solvent Vapors. L.V. Cralley and others. J.Ind.Hyg. & Tox., 25, 172-174 (April, 1943).
Silica gel has been used in the determination of benzene and other organic substances in air, but the method has been used only gravimetrically. The authors describe a modified method in which the organic vapor is adsorbed by silica gel and then removed from the gel by a second solvent which will not cause subsequent interference. The amount of the substance sought is then determined by any

accepted method of quantitative chemical analysis. The authors applied it to the determination of carbon tetrachloride, which they removed from the gel by ethyl alcohol and decomposed by alcoholic potassium hydroxide. The chloride formed was then determined volumetrically. Additional studies are in progress to ascertain the applicability of the method to the estimation of other organic solvent vapors.

Control Methods

489 List of Respiratory Protective Devices Approved by the Bureau of Mines. H.H. Schrenk. U.S. Bur. of Mines Inf. Circ., No. 7237, (March, 1943). One of the most valuable services to industry in the protection of health by respiratory devices is the U.S. Bureau of Mines Approval system. The latest list of approved equipment has been revised and contains 10 pages of illustrations. (Copies available from the Information Division, Bureau of Mines, Washington, D.C.)

490 A Practical Housekeeping Program for Industry. H.G. Dyktor. Am.J.of Pub. Health, 33, 557-560 (May, 1943). The author thinks that one man, rather than a committee, should be appointed to carry out a good housekeeping program. In larger plants the safety director or engineer is the person indicated; but in smaller plants not possessing the services of such a man, the employment manager seems best fitted for the job of supervisor. Management gives the supervisor authority to incur expense for fixtures and additional labor. Suggested duties of the supervisor are:--to consult department heads and labor to improve production flow, plant traffic, and storage of unused equipment; to ascertain state and local regulations concerning sanitation; to work out a plan with the maintenance man to keep equipment in good condition; to provide janitor with itemized orders for regular cleaning of the plant interior; to establish a routine for the periodic personal inspection of the plant.

491 How to Design Exhaust Hoods. J.M. DallaValle. Heat. & Vent., 40, (March, 1943). This is the first in a series of articles which will appear in HEATING AND VENTILATING during 1943. They are reprinted from a privately printed monograph which was reviewed by the abstractor in this Digest, November, 1939 under the title "Principles of Exhaust Hood Design."

492 Ventilation and Heating of Maritime Commission Ships. J.W. Markert. Heat. & Vent., 40, 32-37 (February, 1943). This is an excellent and thorough article describing the ventilation and heating of merchant ships. All phases of the problem are discussed. The number of air changes for various ship sections is given and methods of air distribution are shown. The article is well illustrated with photographs of actual installations. Special conditions required for dry cargo holds are described.

493 Ultraviolet Radiation and Ozone as Aerial Disinfectants. W.W. Coblentz. Arch. Phys. Therapy. 23, 709-711 (December, 1942). After a concise review of the literature, the author concludes that "the use of ultraviolet radiation and ozone as disinfectants is not justified andthat if not used intelligently those two germicides may cause serious injury to the occupants of places undergoing disinfection."

494 Warship Ventilating, Heating and Air Conditioning. T.H. Urdahl and W.C. Whittlesey. Heat., Pip., & Air Cond., 15, 105-110, (February, 1943).
Progress in warship construction can only be made by providing more punch per pound, and a naval engineer should strive to develop lighter, simpler, and more foolproof methods to accomplish this end. Conventional practices should be continually analyzed from the functional standpoint and revised wherever commensurate savings in weight or space are possible, or where dependability can be improved. Ventilating engineers are urged to cooperate in giving technical service regarding Naval construction.

495 Protective Methods for the Prevention of Industrial Dermatoses. L. Schwartz. N.Y. State J. of Med., 42, 1525-1528 (August 15, 1942).
Emphasizing that more time is lost from work because of occupational dermatoses than because of any other occupational disease, Dr. Schwartz outlines protective methods for their prevention. These include pre-employment examinations, efficient ventilating systems, the use of protective clothing and protective ointments, and above all, cleanliness. Different types of protective clothing and the value of each are carefully discussed, and it is pointed out that not only this clothing, but the machines, and even the workrooms should be cleaned daily. The requirements for proper non-irritating skin cleansers are listed. The article concludes with a discussion of protective garments, listing six general classes, and the specific uses of each.

496 Elimination of Gas Hazards at Sewage Treatment Plants. Pacific Flush-Tank Co., Water Works and Sewage, 88, [illegible], 463-467 (1941).
The collection and utilization of sludge gas are attended by the risk of explosion and the danger to personnel arising from the poisonous properties of the gas. Operators are safeguarded by the adequate design of control rooms, which should be at ground level, freely accessible, and ventilated by forced draught. Detailed designs are given. Water-seals on gas mains are unreliable and should not be used. The value of flame traps is emphasized and suitable designs are illustrated. Sources of ignition must be eliminated as far as possible, e.g., by employing explosion-proof electrical equipment and non-sparking tools. Gas storage increases explosion risks, and the circumstances which may warrant storage and the most suitable types of gasholders are discussed. It is essential to maintain a positive gas pressure throughout the plant at all times, and means for minimizing pressure losses are described.

497 Effect of a Vacuum on Destruction of Bacteria by Germicides. A.J. Salle and M. Korzenovsky. Proc. Soc. Exp. Biol. & Med., 50, 12-16 (May, 1942).
Cultures of eight species of bacteria were dried on glass slides or on cotton, placed in plugged tubes, and exposed to formaldehyde gas generated in a closed chamber by the addition of commercial formalin to potassium permanganate. When the air in the chamber was at atmospheric pressure the test objects were in no case disinfected in 1 hour, and five of the eight species of bacteria survived for 2 hours. When the chamber was evacuated to 29 in. of mercury before generating the same amount of gas (which raised the pressure in the chamber to 28 in.) only two bacteria survived for 5 minutes and none for 25. It is considered that the only action of an initial vacuum is to cause penetration. A vacuum has no effect on the action of liquid germicides.

498 The Employment of Disinfectants in Droplet and Mist Form. H. Kliewe. Zent.f. Bakt.I.Abt. Orig., 148, 388-395 (March 26, 1942).
The author has embarked on a disinfection study and the elementary conclusions which he reaches are already familiar in this country. He sprayed a saline suspension of Chr. prodigiosum into a vessel of 25 liters capacity or into a small

closed room, and enumerated colonies in agar plates exposed at intervals after introducing a disinfectant by means of three different sprays, giving particles of different sizes. Experiments were done to show that the effects observed were due neither to disinfection on the surface of the culture nor to the mere carrying down of bacteria-laden particles from the atmosphere. He concludes that a disinfectant may be far more effective in air than in water, that relative efficacy in the two media varies from one disinfectant to another, that fine droplets are more efficient than coarse, and that measures which will disinfect the air of a room will not necessarily disinfect objects in it, particularly fabrics or other irregular surfaces. He believes also that the chemical disinfection of air is a practical possibility, applicable with advantage to operating theatres and to rooms used for infectious cases. Whereas lysol was used in his experiments, it is pointed out that something less toxic is necessary for practical purposes. For spraying inhabited rooms, one trial of which apparently prevented the spread of chickenpox among children, he used "a resorcin preparation."

Industrial Medical Practice

499 The Problem of Absenteeism. Ministry of Labor and National Service. Leaflet P.L. 106 London (1942).
Continuous and effective attention must be given to the problem of absenteeism in war factories. Difficulties in enforcing the provisions of the Essential Work Orders in the case of absence from work or persistent lateness are pointed out. Two classes of absences are discussed, those due to "facts" and those caused primarily by "feelings." In the first class, causes of absences are sickness, accident, shopping difficulties, home requirements, fatigue due to long hours and long journeys. An example of the second class is found in the case of workers in a permanently blacked out factory who feel depressed owing to lack of sunlight and the apparent lack of proper ventilation, due to the absence of air movement. Lack of interest in the job and a lack of conviction of its urgency is a cause of absence which production committees should be able to help. An attack on psychological causes of absenteeism is the greatest single contribution that can be made to a solution of the problem. A redistribution of work, or of the labor force, should be considered so that those who need special working hours would not disturb the work of others. Appendix I gives a form for the keeping of absenteeism records and Appendix II gives suggestions for "follow-up" action on these records.

500 A Study of the Effect of Fixed-Pace Work Upon Health. G. H. Turner. Canad. Pub. Health J., 34, 68-73 (February, 1943).
The paper summarizes the first unbiased and systematic study of the chronic effects of fixed-pace work of the conveyor-belt type upon human efficiency and health. The investigation was based upon a study of production and illness records of 1033 employees in three plants. The investigation disclosed that fixed-pace work is detrimental to health and contributes to work dissatisfaction and strained relationships between employer and worker. The investigator suggests: (1) more careful choice of suitable employees for fixed-pace work; (2) regular rest periods in order to decrease fatigue, break monotony and inspect machinery, and (3) variation of machine speeds in accordance with human fatigue curves.

501 The Problem of Functional Disease as Seen in Industry. D.E. Bell. Canad. Med. Assoc. J., 48, 108-110 (February, 1943).
The paper indicates the importance of psychoneurosis as a problem to be faced in industrial medicine. The author believes that the factor of compensation is more important than that of trauma in neurotic cases. Many physicians treat the injury without consideration of the functional disability that ensues. Laymen, however, are in complete readiness to accept functional disability without question. The solution of the problem lies in the education of both the laity and the medical profession in the subject of states of functional disability, including their existence, factors favorable to their development and means of counteracting such factors.

502 Medical Examinations in Industry, Their Function and Scope. W.N. Leak. Brit. J. Physical. Med., [illegible], [illegible]-120 (July-August, 1942). (British).
Pre-employment examinations are considered, often of young persons entering upon industrial employment. Suggestions are given concerning the appointments of the consulting room, the desirability of the use of tactful methods by doctors and attendants, and the importance of giving instruction and counsel to the prospective employee regarding his relation to his work and his employer.

503 The Private Physician's Opportunity in Industrial Medicine. J.J. Bloomfield. New Eng. J. of Med., 225, 929-932 (December 11, 1941).
The private physician should be familiar with problems of industrial hygiene, as only one third of American workers have any medical service at the plant proper, although industrial hygiene service is increasing rapidly. A cut of only 10% in the nearly 400,000,000 man-days a year lost to industry through disability would be a worthwhile achievement. Local medical organizations could form committees on industrial hygiene, with which all private practitioners should cooperate. Objectives of these committees might include: (1) training of physicians to recognize and report, immediately, occupational diseases; (2) pre-employment and periodic physical examinations; (3) the obtaining of detailed occupational and medical histories.

504 Administration of Case Finding in Industry. E.P. Vonallman, Calif. & West. Med., Tuberc. Supp., 57, 51 (July, 1942).
The Alameda County Association did fluoroscopic chest examinations of 5,411 adult persons employed in industry, and made further studies in 120 persons. In 76 persons (1.4%) tuberculosis or other diseases were found; active pulmonary tuberculosis was present in 27 persons. The total cost of the examinations was $2,368.18 or 42 cents per person. The cost of discovering each of the 76 persons needing medical attention was $31.16; the cost of finding each case of active tuberculosis was $87.71.

505 Tuberculous Problems in Industry. W.P. Shoppard. Calif. & West. Med., Tuberc. Supp., 57, 48 (July, 1942).
Tuberculosis has increased in the nations which are at war. Contributing factors are: food shortage, overcrowding, inadequate medical and health facilities, increased work. Ways in which industry can help in the control of tuberculosis are: fixing the length of the working hours; refusing to hire inexperienced help comprising people of an age particularly susceptible to tuberculosis; increasing health safeguards and providing for locating early cases. Necessary health safeguards for industry are: pre-employment and periodic health examinations; compliance with the highest standards for ventilation, lighting and sanitation; dispensary and first aid rooms; health education; responsibility of foremen; personal and domestic hygiene; plant cafeterias; rest periods; rotation on night shifts; prevention of silico-tuberculosis.

506 Some Reflections on the Tuberculous in Industry. B. Mann. Tubercle, 23, 72-75 (March, 1942).
Attention is called to what the author considers an inconsistency in a scheme suggested in a circular recently issued by the Ministry of Labor and National Service. The employment of sputum negative and quiescent cases is proposed, while "the vast bulk of usefully employable tuberculous subjects - the 'middle case' with a positive sputum - is entirely omitted from consideration". Although there is a strong prejudice among both employers and employees against admitting tuberculous persons into industry, there is nothing in the existing method of labor recruitment to guard against the entry of unrecognized sputum positive cases. They may have been passed by the factory surgeon, or they may have had no medical examination at all. A contrast is pointed out between stringent measures taken to avoid dissemination of the tubercle bacilli in the Navy and Air Force and the laxity in allowing increasing numbers of infective workers to pass into the workshops of Britain. The author suggests a plan of part-time employment of the tuberculous, similar to that used in the case of married women. This plan would imply a low standard of living unless earnings were subsidized, with a sliding scale dependent on periodic reassessment of working capacity. A proposal is made for the segregation of infective cases in special workshops or factories, with adequate provision as to canteen, hostel and restroom facilities. The author considers it important that previous history of tuberculosis should be made available in all cases of persons entering industry, such information not to be used against the subjects' interests. Mass radiography should help to classify infective and non-infective cases, so as to limit the dissemination of the disease in industry.

507 Industrial Health and the War. D.L. Lyon. New Eng. J.of Med., 227, 209-216 (August 6, 1942).
The author stresses the fact that non-occupational diseases account for the majority of workdays lost to industry. He defines the function of industrial medicine and lists the major health measures of an industrial health program: (1) prevention, which involves routine inspection of working conditions and a safety program; (2) health education; (3) pre-placement and subsequent physical examinations; (4) medical and surgical care. Qualifications of the industrial physician are: thorough medical experience, an understanding of industrial relations, knowledge of job analysis and many other abilities. A brief discussion of the problems of fatigue and malnutrition among workers, is given. A series of graphs, based on the data on employees of two large companies, are concerned with the effect of the sex and age of the worker and the duration of the illness on diagnosis. Others show the relation of periods of absence to the several days of the week. The fact that absences begin and end most often on Monday seems to indicate a psychological problem.

508 Health Services in Industry. Industrial Welfare Soc. (Bibliography) London: 14, Hobart Place, S.W.1. 60 pp. (1942).
The article stresses the need for health service in industry and deplores the fact that there were in June, 1942 only 150 full time and 550 part time doctors employed in munition factories. Benefits of health service are listed. Requirements for starting a works' health service are explained: a whole time doctor is needed where more than 1000 are employed; a woman doctor should be engaged where women are employed. Small plants, with less than 250 workers should combine to engage a doctor to serve several or should employ part time doctors to attend at regular hours. The suggested organization is similar to that recommended in the United States and actually set up in many establishments. The publication is recommended as being reliable and up-to-date -- in fact it is a valuable compendium of information such as any one undertaking or engaged upon health work in industry wants.

509 Successful Physical and Medicinal Treatment of Severe Carbon Monoxide Encephalitis. Report on the Use of Pervitin. H.G. Scholtz and K. Zuschneid. Deut. Med. Woch., 67, 1382-1385 (December 19, 1941). (German).
Details are given of treatment with pervitin, combined with physical therapy, in a case of encephalitis, following carbon monoxide poisoning. The dosage was increased from 3 mgm. per day to 15 mgm. and was then reduced as bodily and mental activity increased, until, after a period of five months the administration of Pervitin and scopolamine bromide, which had been added later in the course of the treatment, was discontinued with no ill effects. The special value of Pervitin lies in its power to arouse the patient from his mental torpor, to restore his confidence in ultimate recovery and to secure his participation in physical therapy.

510 The Early Recognition and Treatment of Shock. By the Committee on Shock and Blood Substitutes of the Associate Committee on Medical Research, National Research Council of Canada. Canad. M.A. J., 48, 196-205 (March, 1943).
The article is of interest on account of the great number of tissue injuries, hemorrhages and burns encountored in industrial medicine. Primary or neurogenic shock differs from secondary shock in that the symptoms appear more quickly and the pulse rate is slower in the former. In secondary shock, successful treatment depends upon early recognition of the signs of the condition, and in all serious wounds, burns, hemorrhages, and operations, shock should be anticipated. General principles of treatment are: (1) Arrest of hemorrhage, (2) Closure of wounds of chest, (3) Posture-head low position, (4) Relief of pain by morphine, (5) Prevention of further injury, (6) Conservation of body heat, (7) Early restoration and maintenance of blood volume, (8) Control of dehydration by administration of isotonic salt water orally or intravenously, (9) Promotion of comfort and confidence, (10) Evacuation to an operating unit. Burn shock is briefly discussed. Plasma loss continues for 48 hours and hematocrit readings should be taken continuously. Serum transfusion is the only adequate treatment. In the crush or compression syndrome renal failure frequently complicates shock. Early administration of alkali may help prevent renal failure, and pressure bandaging may relieve the syndromo. Anesthesia if needed in shock should be by cyclopropane or ether, never spinal. The article is supplemented by three appendices: The administration of dried serum; technical aids to intravenous administration of fluids; and reactions caused by intravenous infusions. A bibliography is obtainable on request.

511 Syphilis in Industry. N.A. Nelson. Am.J.Syph., Gonor. & Ven.Dis., 27, 73-77 (January, 1943).
The author complains against the prejudiced and misinformed public in regard to syphilis, especially the significance of the blood test. The false belief that the disease is communicable at all times when a positive blood test is found, is prevalent, and its results are soen in industry as in other fields. A positive blood test frequently excludes able men from employment. It has been shown that a syphilitic worker is fully as efficient as his non-syphilitic brother, provided he does not have cardiovascular or neuraxis involvement. The decision is thus left in the hands of an intelligent physician. The author urges that public ignorance be attacked first through industry, by allowing the physician instead of the uninformed layman to determine the medical policy.

512 Relationship of Disease and Weather. H. Kreisman. Heat. & Vent., 40, 61-66 (February, 1943).
This article describes the air conditioned room recently installed at Northwestern University Medical School, Chicago, Illinois. The technical details of the installation are illustrated and discussed.

513 Which Jobs for Young Workers? U.S. Dept. of Labor, Children's Bureau. 5 pamphlets, 4-8 pp. each (October, 1942-February, 1943).
Pamphlet No.1, "Employment of Young Workers in War Industries," introduces the series. The keynote is found in the statement printed on the title page of each pamphlet: "The young worker of today is the skilled worker of tomorrow -- Protect him from injury." The separate leaflets deal with the accident and health hazards in shipbuilding, in employment involving exposure to carbon disulfide, in lead and lead-using industries, and in employment where chlorinated solvents are used. In connection with each type of employment, kinds of work in which workers under 18 years of age should and should not be employed are listed. The value of high school training is recognized by some industries who wish to use the younger workers in places where they can be developed into skilled or semi-skilled craftsmen -- not as laborers or in dead end jobs. Existing Federal and State child-labor legislation provides much guidance, and legal standards, where applicable should be fully observed. The standards developed by the Children's Bureau are advisory, are general in their application and should be regarded as an emergency measure to protect young workers during this war period. (Copies available upon request.)

514 Health and Welfare of Women in War Factories. 3rd Report from the Select Committee on National Expenditure, Session 194[illegible]. London: H.M. Stationery Office, 1942. 24pp.
The report is the result of an inquiry into the welfare and medical arrangements for women employed in Royal Ordnance Factories and other government assisted factories. It is comprehensive and detailed and embodies features and recommendations found in similar publications issued in the United States, several of which have been reviewed in recent issues of the Industrial Hygiene Digest.

515 Nutrition in War Industry. F. Ignatieff. Canad. Pub. Health J., 33, 571-574 (December, 1942).
An essential service in the production of war material is the canteen or restaurant where attractive, nutritious and economical meals are served. These meals and rest-period refreshment are important factors in combatting fatigue, increasing efficiency and improving the health of workers. In the plant discussed a trained dietitian is in charge. The menu is based on a study of the likes of the workers, and the meals are freshly prepared for each shift and served at cost. During the rest periods, milk, fresh fruit juice, and coffee made with 25% milk are served. The personnel department and the medical department have charge of a program of education which includes lectures on eating habits, healthy breakfasts, and proper choice of food in the canteen. These lectures are given during the worker's training period.

Additional News Item

516 The OWI announces that more than 97 per cent of Naval and Marine wounded, from Pearl Harbor to March 31, 1943, have recovered. These figures were contained in a report by OWI on the care of the wounded by the medical departments of the Army and Navy. Percentage figures for the recovery of Army wounded are not available at present owing to incompleteness of records from the fighting fronts. An analysis of available data on Army wounded shows that recoveries are comparable to Naval and Marine percentages. Of all Navy and Marine personnel wounded only 2.6 per cent died subsequently. Fifty-three per cent were returned to duty. Still under treatment as of March 31 were 43.5 per cent. Invalided from service were 0.9 per cent.

INDEX
(May, 1943)