



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL decisions and trends

JANUARY 1948

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INDUSTRIAL HYGIENE FOUNDATION

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FOUNDATION FACTS

Foundation Facts is a monthly news-letter issued to industrial concerns holding membership in Industrial Hygiene Foundation. The Foundation is a non-profit association of industries for the advancement of healthful working conditions.

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No. 1

New Appointments to Foundation Committees

New appointments have recently been made to the Foundation's Medical, Engineering and Chemical Committees for 1948.

Dr. E.H. Carleton, Medical Director of Inland Steel Company and Dr. L.C. McGee, Medical Director of Hercules Powder Company, have been appointed to the Medical Committee. Meanwhile, Dr. O.A. Sander was elected Vice Chairman of the Committee and Dr. A.G. Kammer, Medical Director of Carbide and Carbon Chemicals Corp. was named Medical Consultant to the Foundation's staff.

The following have been appointed to the Engineering Committee: F.S. Kriger, Manager, Plant Engineering Department, Corning Glass Works, and D.L. Shelly, Works Engineer, Westinghouse Airbrake Company.

F.C. Flint of Hazel-Atlas Glass Company has been appointed to the Chemical and Toxicological Committee.

The Foundation's Committees are performing increasingly useful services for member companies through their assistance to the Foundation's staff.

Course in Industrial Ventilation and Dust Control

W.C.L. Hemeon, Head Engineer on the Foundation's staff, will give a course in industrial hygiene engineering during the second semester at the University of Pittsburgh. Classes will be held Monday evenings for 16 weeks, starting February 16. Objective of the course, which is being given for the third year, is to:

"Provide plant engineers with basic engineering principles that apply to practical problems of industrial ventilation."

Only graduate engineers are eligible for admission to the course.

Summaries of Conferences

Summaries covering the Chemists Conference and the Engineering Conference, held in connection with the last annual meeting, are now being mailed to Members and Subscribers. The summaries covering the Medical Conference and the Legal Conference are about completed. These will be mailed within a few days.

How Well Can Management Predict?

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This is an article by Dr. William A. Hamor, Assistant Director at Mellon Institute, which appeared in the December, 1947 issue of ADVANCED MANAGEMENT. Reprints are available to members.

IN RE: ABRAMS November 1999

Industrial Health and Safety Programs Needed

WILLIAM R. BRADLEY, Industrial Hygienist, American Cyanamid Co., New York, N. Y.

IN RE: ABRAMS November 1993

THE need for top management to take a direct, active part in industrial health and safety, as a sound step in building human relations, was urged at the twelfth annual meeting of Industrial Hygiene Foundation held at Mellon Institute, Pittsburgh, on Nov. 20. The session, attended by more than 500 executives and industrial health specialists from foundation member companies, was keynoted by William B. Given, Jr., president of American Brake Shoe Co.

Three round-table conferences were held on Nov. 19, the day before the meeting, for physicians, for engineers, and for attorneys. A conference for chemists, research directors, industrial hygienists, and toxicologists was held on Nov. 21 with 96 persons attending. Henry F. Smyth, Jr., administrative fellow, Mellon Institute, was chairman.

Pointing to the increasing competition between companies for the right kind of workers, Mr. Given insisted that the question confronting management now is whether it can afford *not* to make the expenditures necessary to produce "a better place to work."

Top management has a selling job before it in making plant supervisory people health-conscious, in replacing former yardsticks of health and safety, and in bringing to them a sincere belief that better working conditions warrant higher costs, if higher costs are inescapable. Also, and even more important, they must be convinced that the bosses up the line believe just that. Thus setting up a medical department in a company is only step No. 1—selling the importance of the plan is the really tough part.

W. A. Hamor, assistant director of Mellon Institute of Industrial Research; Sumner T. Pike of the Atomic Energy Commission; and John F. McMahon, managing director of the Industrial Hygiene Foundation



Yesterday's Workplace

From personal experience in an old-time iron foundry, Mr. Given brought to mind what terrible places foundries used to be. This particular foundry was in a lean-to building. The pay rates were about the lowest, and the working conditions the poorest. It was hard work and extremely hazardous work. For illumination, molders had a smoky kerosene torch.

A hand shakeout method made it possible for them to breathe in the maximum of dust. The metal was all carried with hand ladles from the cupola to the molds over a floor as uneven as a pasture.

Part of the inherent resistance of young men to a foundry job today comes out of this past history. Mr. Given recalled that a foundry was really an awful place to work. But today the foundry can be as healthful, as clean a place to work as any machine shop. Modern mechanization has even come close to eliminating the tired backs of yesterday.

Improved Working Environments

For today's improved working conditions we give thanks to an awakened management and to formulated standards and suggested methods and practices established by such organizations as the Industrial Hygiene Foundation. These standards provide us practical specifications for "a better place to work," and it will be to our shame if our plants fall short.

We need not only better working conditions, but the best possible working conditions. First, irrespective of expense, we must eliminate silicosis and other

hazards. Every part of every plant must be better lighted than even the expert says is necessary. Every possible safety hazard, irrespective of cost, must be eliminated. There must be cleanliness, good air, and the best temperature possible to maintain. As far as is humanly and mechanically possible, our job is to give each man conditions we should like, were we working in his place. This is not only a human obligation; it is the only way we can gather into our working forces decent, competent young men—the only way we can successfully compete for them with other industries.

If you "rate" the best people in the trades you need, gradually you will get them. As you do, costs will be affected and profits improved. In recent years we have realized that to get them we must earn the reputation of being "a better place to work."

Appreciating the value of exhaust ventilation, Mr. Given cited the installation in one small foundry of five hydroclones having a total capacity of 85,000 cubic feet of air per minute. Each week 60 cubic feet of sludge were removed. This represented a great volume of fine dust which in old days would have been circulating in the foundry atmosphere.

We must build our human relationships on the basis of the debt a company owes the people who make its success. The practice of consulting employees, where possible, before making the changes which directly affect them gives the men a very personal stake in these changes, and they are likely to strive much harder for their success.

Plant Medical Department

In the future, no plant will "rate" the best people without a successful medical department. If we are really sincere in this objective, management will be afraid not to give the medical department what it requests and needs for the successful operation of its program.

Stressing the importance of the medical department in industry, Mr. Given emphasized that there was no greater waste of material than an able medical head in a company where the tops have the right "patter" and the wrong hearts. Actually the executive who isn't deeply interested in eliminating all hazards does not qualify otherwise in this period when human relations are at last getting the recognition due them.

The real problem, he said, is to make effective today's hygiene knowledge. Some industrial medical department hurdles are individuals in management who do not feel or accept a personal responsibility

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for the department's effectiveness. Other unjumpable fences are made by budget controls that defer to tomorrow expenditures which are "musts" today. Also there is resistance from operating people, and there is a willingness to gamble on new production ideas rather than to gamble on new ventilation possibilities recommended by an industrial hygienist.

As a concluding challenge, Mr. Given said, "For us in management there is a crying need to have you in industrial hygiene set your sights high as to what 'ought to be' and in the present period keep high your hope, your courage as you see more and more what industry is 'in fact.'"

Human Relations

Andrew Fletcher, president of St. Joseph Lead Co. and chairman of the Industrial Hygiene Foundation board of trustees, gave a key for improving labor-management relations. He remarked that to combat inflation and to aid a distressed world, what we need is greater production on the part of every worker in this country. He was hopeful that we are nearing the end of the cycle of industrial strife and of the period of extreme positions on the part of either management or labor.

"I know of no better way for improving labor-management relations and thereby improving production," said Mr. Fletcher, "than by developing together ways for improving working and living conditions. Industrial harmony and mutual respect must be earned—they cannot be bought or induced through propaganda, any more than an individual can buy respect or a good reputation. The maintenance of good working and living conditions speaks louder than all the pamphlets or posters ever published."

Today, the prospective employee sees

Elizabeth Kummer, junior fellow, department of chemical physics, Mellon Institute, explains x-ray diffraction analysis of dust to J. E. Gray, National Crushed Stone Association; S. G. Rummel, Robertshaw-Fulton Controls Co.; and Maj. R. H. Duguid of the Army Industrial Hygiene Laboratory



Andrew Fletcher, president of St. Joseph Lead Co., and chairman of the Foundation's board of trustees; Ben Moreell, president of Jones and Laughlin Steel Corp.; and William B. Given Jr., president, American Brake Shoe Co.

industrial medicine not only as a profession that seeks to cure, but a profession that seeks to prevent, according to H. Vonachen, M.D., Caterpillar Tractor Co. Its influence extends into the community from which an industry draws its people. There is every reason to believe that our medical program has materially influenced the health standards of our community. This is not looked upon as a philanthropy but as an important function of management.

C. O. Sappington, M.D., industrial health consultant, reported figures on the cost of an industrial medical program. His findings in one chemical plant during a nationwide study of this problem dis-

closed that sick absence costs this company at the rate of a dollar an hour. On this basis, obviously any reduction in sick absences is bound to add up to a sizable sum over a large group of workmen for the period of a year. Good working conditions reduce labor turnover. A conservative figure is that each turnover case costs a company \$100. On the basis of the dollar an hour figure for absences, and \$100 per case for turnovers, the company found that it saved \$4.08 for every dollar it had spent for industrial health. Good industrial hygiene is more economical than high compensation rates, and this can be translated into terms of dollars and cents, if need be, for its proof.

The findings following public opinion polls, said J. Stevens Stock, senior member, Opinion Research Corp., shows that the public has little understanding or appreciation for a company's efforts to establish safe and healthful working conditions. Often when we ask employees, why did such and such a company build a new factory, why did they put in a retirement plan, and similar questions, the employees tell us such things as, "the union made them do it," or "the Government makes them do it." Often the management receives no credit.

We must find ways of letting workers, the community, and the general public know that management is interested in human welfare—management does have a heart. A company must live right and must dramatize good living. Every policy adopted and every step taken toward a better in-plant living must be accompanied by a favorable interpretation. If not, there are many all too ready to supply an unfavorable one. Whatever is done, we must remember that industrial hygiene must be interpreted as managing with a heart.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

News Items

1 Bowditch Named Health and Safety Director for Lead Industries.

The Lead Industries Association announces the appointment of Mr. Manfred Bowditch as Director of Health and Safety, effective about February 1. Mr. Bowditch goes to the Association from the Saranac Laboratory where he has been Field Director. He was formerly Director of the Massachusetts Division of Occupational Hygiene. In making the announcement, Mr. Robert L. Ziegler, Secretary of the Lead Industries Association said: "This appointment should enable the Association to increase its usefulness to the members, to industry and to the public generally through full-time investigation and education in this important field.....I feel that Mr. Bowditch's background of experience will enable the Association to do outstanding work in the field of lead hygiene and safety."

2 A.A.I.P.S. Meeting.

The American Association of Industrial Physicians and Surgeons will hold its 33rd annual meeting at Hotel Statler, Boston, Massachusetts, during and throughout the week beginning Monday, March 29, 1948. Participating in the Industrial Health Conference will be the American Association of Industrial Nurses, the American Industrial Hygiene Association, the American Conference of Governmental Industrial Hygienists, and the American Association of Industrial Dentists. This will mark the ninth annual meeting of the Industrial Hygiene Association. -- Ind. Med. (Oct., 1947)

3 Ninth International Congress on Industrial Health.

The Ninth International Congress on Industrial Health will be held in England, September 12 to 17, 1948. There will be seven sections with programs devoted to various phases of industrial health, and the general plan includes exhibits, plant visits and social events.

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4 L.I. Island Postgraduate Course in Industrial Medicine.

The Long Island College of Medicine announces its Fifth Postgraduate Course in Industrial Medicine to be given during the two-week period April 5 to April 16, 1948. The course will be conducted under the auspices of the Department of Preventive Medicine and Community Health by a group of more than 60 leaders in industrial medicine, authorities in allied fields and members of the faculty. This presentation continues the series of orientation courses in industrial medicine begun by the College in the fall of 1942 for promoting the health of gainfully employed workers and their families. It will also be the initial undertaking of the new Institute for Occupational Health of the Long Island College of Medicine, a unit of the College recently established to devote particular attention to the problems of health in relation to occupation. The main objective of the course is to provide physicians engaged in full-time or part-time industrial practice, as well as those who wish to enter this field, an opportunity to become acquainted with the most recent developments in the rapidly expanding specialty of industrial medicine. Though arranged primarily for graduate physicians, the course will be of special interest and value to industrial nurses, hygienists and engineers, personnel workers, representatives of management and labor, as well as to other professional and business groups concerned with the health of employed persons. Tuition for the entire course will be \$75.00. Inquiries should be addressed to Dr. Thomas D. Dublin, Department of Preventive Medicine and Community Health, 248 Baltic Street, Brooklyn 2, New York.

4a Heating and Ventilating Directory.

The 1948 edition of the Heating and Ventilating Buyers' Directory is a 320-page volume covering the fields of air conditioning, piping, heating, refrigeration, ventilation, air sanitation. It is primarily a product directory, listing the names of manufacturers or sources of supply of equipment, supplies and services. Published by The Industrial Press, 148 Lafayette St., New York 13, N.Y., the Buyers' Directory sells for \$1.00.

Occupational Disease Statistics

Diseases of Occupations and Other Non-Accidental Injury Cases Settled in 1946.
Stat. Release No. 3243, Workmen's Compensation Statistics. Industrial Commission of Wisconsin. 28 pp. (Dec. 15, 1947)

A total of 1405 injury cases, or 4.5% of the 31,475 compensable injury cases settled in Wisconsin during 1946, are classified as disease of occupations or other non-occupational injuries. Of these, 17 were fatal, (11 silicosis, two asphyxiation, two carbon monoxide poisoning, one other poisoning and one scarlet fever), 12 involved permanent partial disability, and the remainder temporary disability. The leading types of injuries were: dermatitis, 751; inflammation of muscles, joints, tendons, nerves, etc., 336; and plant poisoning cases, 128. The cases are classified according to industry, occupation and causative agent.

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Late News Items5a Dr. Cranch Retires from Carbide; Dr. Nale Named and Dr. Probst Joins Staff.

Dr. A.G. Cranch retired from his position as Manager of the Industrial Toxicology Department of Union Carbide and Carbon Corporation as of January 1, 1948, after 28 years service with the Corporation. He is being retained as a Medical Consultant to the Corporation on a part-time basis. This provides Dr. Cranch with time to accept consulting work in the field of industrial hygiene, toxicology, and medical service to other organizations. He has had a wide and varied experience in these fields. His office will be at the same address: 30 East 42nd St., New York 17, N.Y.

Dr. Thomas W. Nale was appointed Manager of the Industrial Toxicology Department of Union Carbide and Carbon as of January 1. He was formerly Plant Physician for Carbide and Carbon Chemicals Corporation in South Charleston, W. Va., transferring to the New York Office as Assistant Manager of the Industrial Toxicology Department two years ago.

Dr. Everett W. Probst will join the staff of the Industrial Toxicology Department of Union Carbide and Carbon February 1, 1948 as Assistant Manager. He has been employed as Medical Director of the Arlington, New Jersey Plant of E.I. du Pont de Nemours Company. During the war Dr. Probst directed the industrial medical program for 20,000 employees at the Picatinny Arsenal, Dover, New Jersey. During this period he reached the rank of Lt. Colonel in the Medical Corps of the Army.

5b Hemeon to Give Ventilation and Dust Control Course at Pitt.

The course entitled "Industrial Hygiene Engineering" will be given for the third year at the University of Pittsburgh during the second semester, 1948, on Monday evenings, 7:50-9:40 P.M., for 16 weeks, starting February 16. The instructor is W.C.L. Hemeon, Head Engineer, Industrial Hygiene Foundation.

The objective of the course is to provide plant engineers with the basic engineering principles that apply to practical problems of industrial ventilation design. Instruction will include velocity characteristics of exhaust hoods; physical geometry of velocity contours (booths, slots, grills, etc.); matching hood velocity characteristics to those of process; loss and recapture; density-weight properties of dust, fumes, vapors, etc.

REGISTRATION: At University of Pittsburgh, evenings of February 3, 4 and 9, and Saturday A.M. February 7, 1948. Further information may be secured from the Registrar's office.

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6 Occupational Disease Statistics.

	Calif. ³ Aug. 1947	Conn. ² Dec. 1947	Ind. ² Dec. 1947	Mich. ² Nov. Dec. 1947	Ohio ¹ Sept. 1947	Wash. ⁴ Nov. 1947	Wis. ² Oct. Nov. 1947	Totals
Carbon Monoxide	11					1		12
Carbon Tetrachloride	3					1		4
Chemical Poisoning (NOC)	25				16		2	43
Chlorine							1	1
Conjunctivitis	650					2		652
Dermatitis	1168	40	21	50	292	54	91	1716
Heat	44							44
Hernia				8				8
Infections						4	5	9
Inflammatory Conditions	98			1		24	1	124
Lead Poisoning	6		4		6	1	7	24
Metal Fume Fever						1		1
Miscellaneous	7			2	135	9		153
Nasal Septum Perforation						1		1
Noise	6							6
Pneumoconiosis				17	12	1		30
Pulmonary and Bronchial Affections	26					6		32
Silicosis		1		27	31	8		67
Silico-tuberculosis			1			3	2	6
Skin Diseases (other than dermatitis)					1			1
Solvent Poisoning		1						1
Tuberculosis (due to contact)					7			7
Undulant Fever							1	1
Upper Respiratory Affections	22					2	2	26
Totals	2066	42	26	105	500	118	112	2969

- (1) Occupational Disease Cases reported to the Industrial Commission. There were 110,560 days lost, including 13 deaths reported as silicosis, one reported as pneumoconiosis and one reported from a miscellaneous cause.
- (2) Occupational Disease Cases reported to the Health Department.
- (3) Occupational Disease Cases reported to the Department of Industrial Relations and tabulated by the Department of Public Health.
- (4) Occupational Disease Cases reported to the Department of Labor and Industries and tabulated by the Department of Health. Figures reported by Washington as silicosis and silico-tuberculosis represent case reports received from other sources.

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Legal Developments

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Caustic Burns to Arms and Shoulder--Failure to Report to Company's Physician Not Prejudicial.

Defendant, having suffered an injury arising out of and in the course of employment, went directly to the company's infirmary, and was treated there until discharge from his employment, after which he was treated by his own physician. Held, that his failure to comply promptly with the company's request to report for examination to its physician was not prejudicial, since the company knew of his condition which had not become aggravated in the meanwhile. -- Liberty Mutual Insurance Company v. Thrower. Georgia Court of Appeals. No. 31,826. December 5, 1947. (CCH)

Total Permanent Disability--Employee Not Compelled to Work at Expense of Pain.

An award for total permanent disability was sustained where medical testimony tending to estimate the extent of disability at a lower figure was based on the theory that the employee could do the same work as before the injury, although at the expense of pain. -- Gilmore v. George W. Garig Transfer Inc. Louisiana Court of Appeal, First Circuit. December 30, 1947. (CCH)

Injury to Eye Discovered More Than One Year After Accident.

Where the loss of sight in one of the claimant's eyes did not become apparent until more than a year after the occurrence of the explosion which caused the condition, the statute governing limitation was construed to run from the date when the injury was discovered. -- Ogle v. Tennessee Eastman Corp. Tennessee Supreme Court. November 29, 1947. (CCH)

Refusal of Claimant Showing Symptoms of Tertiary Syphilis to Submit to Examination--Compensation Suspended.

A worker who had been drawing compensation exhibited symptoms strongly indicating syphilis in the tertiary stage. Since the disease in that stage is discoverable only by examination of the spinal fluid, an examination not accompanied by appreciable pain or danger, the worker's refusal to submit to such examination at the request of his employer was unreasonable and suspended his right to compensation. -- Trent v. American Service Co. Tennessee Supreme Court. November 29, 1947. (CCH)

Ptomaine Poisoning from Food in Company Cafeteria--Workmen's Compensation Sole Remedy.

A cafeteria employee who received meals as part of her compensation alleged that she had ptomaine poisoning as a result of unwholesome food served to her; since this was an injury arising out of and in the course

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of her employment, workmen's compensation was her sole remedy, and she could not maintain a civil action for damages against the employer. -- Sebek v. Bronze Co. Ohio Supreme Court. No. 31,031. December 31, 1947. (CCH)

12 Employer's Request for Hearing Deemed Filing of Claim.

The employer's letter to the Commission requesting a hearing on its status and liability to an injured minor, which was sent after a verdict for the minor in a common law action against the employer but before judgment, was deemed a timely filing of the claim on behalf of the minor, so that the employee's claim, filed more than a year after the accident but less than a year after the letter, was allowed to be heard. -- Chalkley v. Nolde Brothers, Inc. Virginia Supreme Court. No. 3290. November 24, 1947. (CCH)

Books, Pamphlets and Notices

- 13 Neutron Effects on Animals. Staff of the Biochemical Research Foundation, Newark, Delaware. Dr. Ellice McDonald, Director. Williams and Wilkins Co., Pub., Baltimore, Md. 198 pp. Price \$3.00. (1947)

The initial work on this study of neutron effects is presented in a book of 193 pages containing some 80 pictures, graphs and tables of data. The work is divided into 20 chapters, each representing a separate project in the investigation assigned to a team of staff members. Each project is presented as a separate paper with a short introduction, description of materials and methods, presentation of data, discussion and conclusions followed by bibliography. The projects undertaken, using dogs, rats, rabbits, etc., under wide ranges of neutron dosage, cover such subjects as changes in body weight and hematology, changes in resistance to infection, possible reactions of micro-organisms, effects on enzymes, effects on protein, specific physiological changes, and many others. The data is presented in clear and concise manner, and provides a stable foundation for the eventual proper evaluation of radiation hazards. The opening chapters stress the need for a knowledge of mechanism in radiation damage and describe some of the results obtained from a study of radiation in wave form. A footnote indicates that the present work includes no explanation of mechanism of neutron radiation since the discovery occurred after going to press, but will be included in a later publication. The entire work represents a very rigorous and commendable start on a highly complex subject.

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- 14 Industrial Health Engineering. Allen D. Brandt. John Wiley and Sons, Inc., New York. 395 pp. Price \$6.00. (1947)

This book brings together for the use of the plant industrial hygiene engineer information that has been scattered in the specialized literature of several professions. The design, selection, and operation of industrial ventilation equipment is the main theme in this treatise. The departure from previous handling of the subject comes in its dissociation from theoretical and experimental mechanical engineering and

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association with other aspects of employee health protection. The first three chapters may be regarded as an introduction to the treatment of industrial ventilation. They present the principles and practice employed in the recognition, evaluation, and control of industrial atmospheric contaminants. The importance of the engineer, and his relationship with other professions in industrial hygiene are noted. In the chapters devoted to General Ventilation, Local Exhaust, Design of Systems, Collectors, Exhausters, and Air Flow Measurements, theoretical background and practical considerations are well integrated. In each of these chapters the primary purpose, which is the elimination or control of atmospheric contaminants, is always held in view. It is never lost or obscured by divergent or argumentative technical considerations. Control Measures for Common Operations and the chapter following on Exhaust Systems--- Specific Design Data and Illustrations of Installations will be found extremely useful. What they lack in completeness is supplied by the discretion shown in the choice of those operations and systems which are presented. In order to equip the engineer for the diverse duties that ordinarily are assigned to him, beyond those of ventilating for contaminant removal, the author has included chapters on Respirators, Temperature, Humidity, Comfort and Odor Control, Radiant Energy, Illumination, and Plant Sanitation. These latter chapters are presented in extended outline form, with extensive references to the more specialized literature. The text is well fortified throughout with numerous carefully chosen photographs, drawings, tables and charts.

- 15 Fifty Employee-Benefit Plans in the Basic Steel Industry. J. Zisman. Bureau Memo. No. 65, Bureau of Research and Statistics, Social Security Administration, Federal Security Administration, Washington 25, D.C. 150 pp. (Nov., 1947) Prepared for limited circulation to administrative and research personnel.

This study is the first in a series designed to compile information on employee-benefit plans in major industries. It was limited to the basic steel branch of the iron and steel industry because a proportionately large coverage could be obtained without great difficulty in that industry, with the cooperation of unions and employers. The coverage and major provisions of employee-benefit plans are first described, including life insurance and burial, accidental death and dismemberment, weekly sickness and accident, hospitalization, and surgical benefits, other medical care, and retirement plans. Finances and administration are then discussed, and in an appendix covering two-thirds of the report, the programs of the individual companies are described.

- 16 Trends in Output and Employment. G.J. Stigler. National Bur. of Economic Research, New York. 67 pp. (1947)

Production in the U.S. economy increased almost three-fold between 1899 and 1939, and output per worker almost doubled. The report covers six industries employing half the labor force. The factors of this increase are analyzed and its effect on other factors in the labor situation are studied.

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- 17 A Review of the Literature Relating to Affections of the Respiratory Tract in Individuals Exposed to Cotton Dust. B.H. Caminita, W.F. Baum, P.A. Neal and R. Schneider. Public Health Bull. No. 297, Federal Security Agency, U.S. Public Health Service. 86 pp. (1947) For sale by Supt. of Documents, U.S. Gov't Printing Office, Washington 25, D.C. Price 25 cents.

The 36 more or less organized surveys of the health of groups of cotton workers of different nationalities have shown that the workers suffer from inadequate diet, housing and sanitation, and are more subject to upper respiratory tract affections, but show no evidence of silicosis. On other points there is no general agreement. Four separate disease entities associated with the inhalation of cotton dust have been reported. They are mill fever, weaver's cough, byssinosis and an acute illness among workers handling low-grade stained cotton. The last is caused by a definite organism, aerobacter cloacae. A particular cause for weaver's cough has not been found, but several fungi are found in the dust when the disease is present. Mill fever occurs mostly in workers unaccustomed to the dust, and largely disappears on acclimitization. Byssinosis, on the other hand, occurs after long and continuous exposure. The symptoms of each ailment are fully described. The lack of definite information on many points after considering the 36 surveys and 267 papers in the literature shows the great need of additional, thorough study of the subject. Most of the knowledge of the subject comes from Great Britain and Russia. In the United States the problem of serious dust disease among cotton workers is hardly known to exist, but that may be because it is unrecognized or because the labor turnover is high, i.e. workers leave the industry before disabling symptoms develop.

- 18 Carbon Monoxide and Its Control in Garages. G.W. Rogers. Province of Saskatchewan, Department of Public Health. 26 pp. (1947)

This booklet presents the essential facts about the poisonous effects of carbon monoxide, methods of detection and determination, and methods of protection, with considerable space given to construction of ventilation systems. The Department of Labor of the same Province also issues regulations governing the ventilation of garages and service stations, also ventilation for spray painting, and general protection.

- 19 Cumulative Index, The Journal of Industrial Hygiene and Toxicology, Volumes 18-27 (1936-1945). Williams and Wilkins Co., Baltimore, Maryland. 350 pp. Price \$15.00. (1947)

The index is in two sections, the first covering the text and book reviews, the second the abstracts, for the period given. In both sections, authors and subjects are given in one alphabetical list.

- 20 Accident Facts, 1947 Edition. National Safety Council, 20 N. Wacker Drive, Chicago 6, Ill. 98 pp. Price 50 cents. (1947)

The 1947 edition of this booklet, like its predecessors, gives extensive classification of accidents, industrial and otherwise. An interesting item of information at the beginning of the book is that accidents are the fourth most important cause of death, according to figures for 1945 and 1946, the first three being heart disease, cancer and cerebral hemorrhage.

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- 21 Safety Manual for Operation of Copolymer Laboratories. Second Edition. Reconstruction Finance Corporation, Office of Rubber Reserve, Washington, D.C. 54 pp. (1947) For sale by Supt. of Documents, U.S. Gov't Printing Office, Washington, D.C., 25 cents.

This Manual was developed by and for the companies operating copolymer plants in the synthetic rubber program, and is the result of their common desire to eliminate laboratory accidents. Part one is devoted to the broad aspects of safety, including general laboratory safety, physical testing laboratory safety rules and procedures, chemical laboratory safety rules and procedures, emergency procedures affecting laboratory operations, and recommended safety features for construction of laboratory buildings. The rules include the precautions observed in properly conducted laboratories, both in mechanical and chemical aspects of safety. They are all given as recommendations, but certain provisions originally considered as mandatory by the Manual committee are starred. Part two is confined to safety in handling the hydrocarbons used in copolymer manufacture, including butadiene, styrene and the other hydrocarbons according to number of carbons in the molecular structure. Considerable attention is given to sampling and handling of sample bombs at the laboratory, and storage and disposal and the properties of flammable and explosive mixtures are considered. Mandatory procedures are starred. Diagrams of properly constructed bombs are included. Ten pages of the appendix tables the toxic properties of the materials used in the process.

- 22 Best's Safety Directory of Safety, First-Aid, Hygiene and Fire Protective Products. Second Annual Edition (1948). Safety Engineering Magazine (Division of A.M. Best Co., Inc.), 75 Fulton St., New York 7, N.Y. 494 pp. \$5.00.

The first edition was published late in 1946 (I-H-F Abst. 961, Sept., 1946). This volume has been considerably enlarged, both in new materials made necessary in the development of industry and in firms listed. The plan of listing is the same as in the first edition--nine general headings, several subheadings under each and particular products alphabetically under each.

Carbon Monoxide Hazard in Gas Works

Air analyses in the Copenhagen gas works showed that tobacco smoking was responsible for a greater increase in carbon monoxide hemoglobin in employees than any gas from the process anywhere in the works. The tests were made by the hopcalite method on atmospheric and expired air. It was shown that five cigarettes are sufficient to raise the carbon monoxide hemoglobin content to 5.5%; cigarettes are more effective in producing an increase than tobacco in other forms. Variations through the plant depended upon ventilation and the amount of smoking.

-- D. Frørup, in *Gasteknikeren*, 5, 67 (1947), reported in *Atm. Poll. Bull.*

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Industrial Medical Practice

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- 23 Contributions by Dr. Gardner to the Pathology of Bauxite Workers' Lung.
A.R. Riddell. Occ. Med., 4, 56-67 (July, 1947)

The investigation as a whole has already been reported (I-H-F Abst. 685, June, 1947), and other phases will be fully reported later. In this paper the author tells of the part played by Dr. Gardner in the entire investigation, and gives details of the first two cases studied by Dr. Gardner. The lung appearances, gross, and microscopical, in patients exposed to fumes from electric furnaces in which alundum is made, are very different from those characteristic of silicosis or any known dust disease. The possibilities are discussed thoroughly. The author states that Dr. Gardner at first strongly held to the theory that silica was mainly responsible, but as the situation was further studied he was beginning to be less certain of the accuracy of this assumption. Reference is made to the European cases where alumina is apparently responsible for a form of pneumoconiosis, and it is possible that when large quantities are inhaled it is no longer innocuous. One side light developed in the study is the protection against fibrosis due to silica, secured by adding 1% of aloxite (electrically fused alumina) to 99% of vitreous silica. This protection did not continue in all cases. There are many problems yet to be considered.

- 24 Solubility Theory of Silicosis. A Critical Study.
E.J. King. Occ. Med., 4, 26-49 (July, 1947)

The history of silicosis and the development of theories as to its causation have been reviewed. Various discrepancies in the chemical theory and anomalies in its application are pointed out. Quartz dust is more soluble the smaller its particle size. A progressive diminution in solubility takes place with all size fractions when subjected to repeated treatment with buffered Ringer solution. There is no difference between the ordinary racemic, dextrorotatory and levorotatory varieties. All kinds and fractions of quartz tested produced reticulin and collagenous fibrosis in the lungs of rats. Mixture of one per cent of aluminum hydroxide with the quartz fractions lowered their solubility but did not prevent the formation of fibrosis. A powdered sandstone (70 per cent quartz) had a very low silica solubility but a high pathogenicity. A powdered shale (8 per cent quartz) had a low silica solubility, though higher than the sandstone, and produced little fibrosis. More silica and alumina were dissolved from the shale than from the sandstone in a long-term leaching experiment. An extremely fine amorphous silica (20 angstrom silica) had a high solubility, and was rapidly fatal to animals when injected in large amounts. In smaller amounts, its introduction into the lungs produced no fibrosis. Olivine (a magnesium silicate) had a medium silica solubility in the fraction of the lowest particle size and low solubilities in the fractions of large particle size. Olivine produced only slight fibrosis in the lungs of rats. The solubility theory of silicosis is critically discussed.

-- Author's summary

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- 25 Nodulation With Superimposed Infection in Lungs of Foundry Grinders and Burners. Report of Four Unusual Cases. L.E. Hamlin. Occ. Med., 4, 111-121 (July, 1947)

Findings in the roentgenograms of the chests of four employees in the foundry industry are presented to demonstrate the unusual course of suggestive tuberculous infection in the presence of nodulation hitherto presumed to be due to silicosis. The progress of the disease is inconsistent with the usual picture of tuberculosis superimposed on silicosis, both from the clinical and from the roentgenographic aspects. Occupational exposure as demonstrated by industrial hygiene surveys in the plants where these roentgen patterns were produced does not appear to be adequate to produce the extensive nodulations observed but does seem to be sufficient to cause siderosis. The unorthodox behavior of both infection and nodulation, in spite of continuous exposure, substantiates the impression that the roentgenographic appearance is the result of the deposition of iron pigment (siderosis) rather than reaction in pulmonary tissue due to contact with free silica. -- Author's summary

- 26 First Stages of the Dust Cell Formation in Pulmonary Tissue. A. Policard. Occ. Med., 4, 100-103 (July, 1947)

The author describes the phagocytosis of dust particles by alveolar cells and by septal cells, the only types that are capable of that action. His conceptions are based on 20 years of observation. The process is more complex than is often supposed and is still not entirely understood. There are two fundamental points: (1) to be able to phagocytose, an alveolar cell must be enlarged to about twice its original diameter, which it does by taking in water; and (2) the cells do not act singly, but as a whole. The same is true of septal cells. There is little information about the physiochemical conditions for the process. The phenomenon is comparable to the agglutination of microbes by the platelets in the circulating blood. Other details of interest are presented.

- Benign Pneumoconiosis Due to Metal Fumes and Dusts. O.A. Sander Am. J. Roentgenol. and Rad. Ther., 58, 277-281 (Sept., 1947)

The term "pneumoconiosis," first used in 1867, requires redefinition. Its generic meaning is simply "dust added to the lungs" without implication of damage, but the word has become almost synonymous with fibrosis in many minds. The benign pneumoconioses are those resulting from inert dust deposits in the lungs, which are not the cause of any fibrosis or disability. A number of occupations have been responsible for siderosis. Some early cases are cited and three recent cases in oxyacetylene metal cutters are described, with roentgenograms. Characteristics are discrete and sharply defined rounded shadows, of more or less uniform size and equal distribution, no tendency to confluence, and hilum shadows smaller than those in silicosis. No progressive tuberculosis occurs, and symptoms have been completely absent in all cases. The author pleads for all physicians to be on the alert for postmortem studies of cases showing nodular roentgen-ray patterns. The black pigmentation has been erroneously diagnosed as anthracotic, and as silicotic, but differentiation should be easy. More careful analysis of dust exposures is recommended; dust must be sampled and analyzed. "All that is nodular by roentgen ray is by no means silicosis and we owe it to labor and industry alike to prevent unfortunate mistaken diagnoses which always are so upsetting to all concerned."

- 28 Miniature Chest X-Rays. F.T. Fralick, H.T. McClintock, E.P. Snider and C.A. Wicks. *Canad. Med. Assoc. J.*, 57, 567-572 (Dec., 1947)

The results of several surveys and investigations in which miniature chest x-rays are compared with other films, are reviewed. The conclusion is that, all other factors such as care and skill being equal, fluorophotography compares favorably in sensitivity with 14" x 17" radiographs for screening purposes (i.e. the detection of abnormalities for further study). About 2% of those receiving miniature chest films required further examination, and of those, 30% proved to have no demonstrable disease. The percentage recalled for further examination and to some extent the "over-reading" from the miniature films will be greatest when interpretation is over-cautious, when any clothing remains on the chest, when films are technically substandard, and when the older age groups are being screened. Among the improvements forecast is greater emphasis upon industrial and pre-employment chest x-rays.

- 29 Beryllium Granulomatosis, Alias Miliary Sarcoid, Salem Sarcoid, Miliary Sarcoidosis, Chronic Beryllium Poisoning or Delayed Chemical Pneumonitis. A Description and Report. J. Pyre and W.H. Oatway, Jr. *Arizona Med.*, 4, 21-29 (1947)

Beryllium granulomatosis is a new industrial disease of great potential importance. The causative agent apparently is some compound of beryllium but its action is not understood, its relationship to a bizarre and sometimes concomitant diphtheroid bacillus is unknown, and animal experiments have been fruitless. The pathology and clinical picture are quite standardized, they differ from an acute, transient lesion, which beryllium can also cause. A case is reported which parallels the small number of chronic cases recorded during the past nine months, both in diagnostic feature and progress. All cases of sarcoidosis should be investigated from the standpoint of occupational history. Beryllium compounds must be handled as potentially dangerous materials.

-- C.A.

- 30 British Anti-Lewisite: Its Use and Therapeutic Value in Arsenical Intoxications. R.A. Peters and others. *Lancet (London)*, 2, 498 (Oct. 4, 1947)

The trial with BAL (2,3-dimercaptopropanol) reported by Peters and his associates of the BAL Conference, Medical Research Council, was based on results obtained in 44 patients with severe and widespread arsenical dermatitis of the acute exfoliative type. The ampules of 2,3-dimercaptopropanol contained five per cent BAL in peanut oil and benzyl benzoate; they were nitrogen filled and were sterilized by heating for one hour at 170°C. The drug was given by deep intramuscular injection into the thigh or gluteal region. On the first day four injections of 2 cc. of five per cent BAL were given at four hour intervals; on the second, third and fourth days 2 cc. was given twice a day and on the fifth and sixth days 2 cc. was given once daily. Of the 44 patients studied 31 were benefited by the treatment. Healing was obtained in an average of 21 days. The earliest sign of response was subsidence of the edema.

-- J.A.M.A.

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- 31 Tellurium. II. Effect of Ascorbic Acid on the Tellurium Breath.
R.H. De Meio. J. Ind. Hyg. and Tox., 29, 393-395 (Nov., 1947)

Ingestion of very small amounts of tellurium compounds (dioxide and tellurites) by man or animals is sufficient to produce the characteristic garlic-like odor in the breath, but individual susceptibility varies greatly. After ingestion of larger amounts (milligrams in man) and after constant exposure, the odor may persist for months. Elementary tellurium, on the other hand, does not produce the odor unless administered in much larger quantities. A suitable reducing substance, then, should eliminate the odor by reducing the compound to free tellurium. Ascorbic acid was found to eliminate the odor acquired after a single dose of a tellurium (or selenium) compound, and, temporarily, after long exposure. In addition to the reducing action, it is possible that the ascorbic acid may also be beneficial as it checks the decrease of vitamin C concentration produced in several organs by selenium and tellurium poisoning.

- 32 Benzene Poisoning. II. Examination of Workers Exposed to Benzene with Reference to the Presence of Ethereal Sulfate, Muconic Acid, Urochrome A, and Polyphenols in the Urine Together With Vitamin C Deficiency. Prophylactic Measures. S. Forssman and K.O. Frykholm. Acta Med. Scand., 128, 256-280 (1947) (Swedish)

Workers were studied from two rotogravure plants in one (I) of which they were exposed to benzene over a long period of time, and in the other (II) they had no contact with benzene. In group I (53 persons) the urines contained, on the average, 27.2 per cent of ethereal sulfate, whereas in group II (49 persons) the value was 17.4 per cent. Controls from workers in plant I also gave a low mean value of 7.5 per cent (maximum 15.4 per cent). There is thus definite evidence of an increase in urinary ethereal sulfate excretion from exposure to benzene, which was not affected by the amount of vitamin C. An excretion of ethereal sulfate over 50 per cent is regarded as a danger signal with strong possibility of the existence of poisoning. Muconic acid was not found in the urine; as for Urochrome A and polyphenols, although these increase under the influence of benzene, the practical value of their determination is not yet clear. According to the urinary excretion of ascorbic acid, persons working with benzene are more difficult to saturate with vitamin C. Exposure to benzene creates an increased demand for vitamin C, and an extra supply increases the resistance to the effects of the benzene.

-- C.A.

- 33 Right Eyes for the Job. Hedwig S. Kuhn. Ind. Med., 16, 485-488 (Oct., 1947)

The concept of "seeing" as made up of a number of widely differing physiological functions lends itself at once to the issue being discussed, "Eyes and Jobs." Patterns and grouping of these functions are made to match visual job demands, a part of proper placement. Corrective procedures in professional hands permit: (1) retention of highly skilled workers; (2) careful selection of apprentice candidates due for expensive training; (3) placement of many applicants who would otherwise be either rejected or hired under threat of inefficiency; and (4) finally by special optical combination--providing visual aids to make difficult work easier. The future needs eyes more than ever. Textiles, small parts assembly, manufacture of intricate precision instruments, and perhaps further progress along the lines indicated here will yield as yet unrecognized benefits.

-- Author's conclusions

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- 34 Significance of Sternal Puncture in Occupational Poisoning.
E.I. Velling. *Farmakol i Toksikol.*, 9, 50-52 (1946) (Russian)

Acute and chronic poisoning with TNT, nitrogen oxides, chlorine, cyanides, and fuel gas (propane-butane-butene) had effects which were studied in about 600 spinal puncture tests with rabbits and guinea pigs. Observations of spinal fluid were correlated with blood counts (erythrocytes, leucocytes, myelocytes, reticulocytes, and lymphocytes, normoblasts, hemoglobin, eosinophilic, and polychromatophylic cells). Examination of the spinal fluid yields useful diagnostic and prognostic information. -- C.A.

- 35 The Treatment of Decompression Sickness: An Analysis of One Hundred and Thirteen Cases. O.E. Van Der Ane, G.J. Duffner and A.R. Behnke.
J. Ind. Hyg. and Tox., 29, 359-365 (Nov., 1947)

(1) A comprehensive tabular outline for the treatment of decompression sickness has been developed by workers at the Experimental Diving Unit and the Naval Medical Research Institute which includes three basic principles, (a) the limitation of the maximal pressure applied during recompression to 65 pounds per square inch gage and the maintenance of this pressure for periods of at least 30 minutes and for as long as two hours, (b) a prolonged recompression for periods of 12 to 24 hours or longer at pressure levels equivalent to depths between 30-60 feet, and (c) the inhalation of oxygen at pressure levels equivalent to 60 feet or less in order to promote the more rapid elimination of nitrogen. (2) This treatment outline has served as a guide in the treatment of 113 divers who developed decompression sickness and in 109 of the patients the treatment was successful. The other four patients developed recurrences of their symptoms following treatment. Of the four recurrences, two may be attributed to insufficient recompression and one was due to the employment of faulty oxygen breathing apparatus. (3) Four of 75 patients treated with the procedures involving the use of oxygen developed symptoms of oxygen toxicity, three of them mild and one terminating with a convulsion. These symptoms are relieved promptly by discontinuing the administration of oxygen. -- Authors' summary

- 36 Gynecological and Obstetrical Problems of the Industrial Physician.
M.R. Burnell. *J. Mich. State Med. Soc.*, 46, 555-558 (May, 1947;
Ind. Med., 16, 478-484 (Sept., 1947)

Gynecological and obstetrical problems in connection with industry are discussed, with the conclusion that the industrial physician's consideration of those problems is a logical part of his health maintenance program. His ultimate objective is safe placement at work, the reduction of sick absenteeism, and the correction of working conditions that may result in disability or aggravation of an existing disease. Such a program cannot be developed without the cooperation of physicians in private practice, and the success of the programs depends directly upon the amount of understanding of each other's problems. That this can be done ethically and scientifically has been proved repeatedly. -- From author's conclusion

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- 37 Importance of Detection of Heart Disease Through Available Screening Facilities in Preparation for Employment. B.E. Kuechle. Ind. Med., 16, 488-489 (Oct., 1947)

Cardiacs can and should be employed, and many large industries have programs including their examination, employment, and supervision, but the problem is more difficult for small industries. Surveys by public or private health agencies should supply full information on heart conditions and similar matters to industry. A survey in Los Angeles showed that 2% of 70,000 miniature films showed cardiac shadows. The fact that there are cases of heart disease not revealed by the x-ray does not detract from its value in discovering otherwise unknown cases. A survey program must avoid the two extremes of ignoring suspicious findings or of creating unjustified fears.

- 38 Industrial Health Program. International Harvester Company. Anon. Am. Ind. Hyg. Assoc. Quart., 8, 19-24 (Mar., 1947)

A number of phases of the program at different plants are described---pre-employment examination, orientation of employees and cooperation of engineering, medical and safety departments, industrial nursing program, environmental surveys, control of lead exposure, engineering control measures, and industrial accident and claims handling. Plans for the future include an occupational disease research laboratory.

Industrial Health Hazards and Their Effects

- 39 Dimethyl Sulfate. Chemical Safety Data Sheet SD-19. Manufacturing Chemists' Association of the United States, 608 Woodward Bldg., Washington 5, D.C. 12 pp. Price 20 cents. (Dec., 1947)

Dimethyl sulfate is an extremely irritant substance and is dangerous if inhaled, if in contact with the eyes or skin, or if taken by mouth. There is little fire hazard under normal handling conditions at room temperature. Therefore the precautions against leakage, breakage and other possibilities of contact, common to hazardous substances of its type, are to be enforced. Directions are given for safe handling in all stages, personal protection, and first aid are given, with suggestions for medical treatment.

- 40 The Use of Sodium Fluoride in the Manufacture of Steel. K.E. Markuson. Ind. Med., 16, 434-436 (Sept., 1947)

Sodium fluoride is used extensively in the production of rimmed steel. It is added to the molten steel before cooling in order to lengthen the reaction time and prevent blowholes near the surface. The air contaminant is sodium fluoride dust, and no previous studies had been made on that form of contamination. The impinger and electrostatic precipitator were used for sampling. The McClure modification of the Winter-Willard distillation, followed by the Talvitt rapid routine method, were used in the analysis. The highest finding was 13 mg. per 10 cu. m. for brief periods during pouring,

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amounting to 3.65 mg. per 10 cu. m. of air on an eight-hour exposure basis; in most locations it was much lower. Exhaust systems are recommended where exposure is high. After a brief review of papers recommending maximum limits, the author concludes that there is no evidence against the present maximum permissible concentration of 25 mg. inorganic fluorides as fluorine per 10 cu. m. of air, or 3 p.p.m. of hydrogen fluoride.

- 41 The Petrographic Factor in the Incidence of Pneumoconiosis.
A. Policard. Rev. de l'Ind. Min., 509, 199 (1946) (French)

The author discusses the effect of the nature of the rock dust to which the miner is exposed on the incidence of pneumoconiosis and in particular the toxic effect of mica. Three mechanisms of the action of the dust are described: the traumatic mechanical action, which is the least important; the dissolution of the dust and its action in solution; and the important action, -- the exchange of ions, according to the author, between the mineral particles and the ambient medium of blood. This third mechanism was stated to explain the different action of fresh dust and of aged dust.

-- Atm. Poll. Bull.

- 42 Practical Experiences with Dangers and Illnesses from Plastics.
C.S. McKinley. Ind. Med., 16, 432-434 (Sept., 1947)

The health hazards associated with the manufacture of plastics are not of an extreme nature. Many of the hazards are associated with materials that have been used by industry for years. New materials are appearing steadily and will bear close scrutinizing as to their toxic properties. The manufacture, molding and fabricating of plastics, is a combination of chemical and mechanical processes. The control of the hazards is brought about by consideration of the toxicity of the material, the amounts used, and then instituting adequate environmental, personal and mechanical protection. A common problem encountered is that of sensitization dermatitis. Actual cases can be kept to a minimum by instituting dermatitis control measures. Opportunity for systemic intoxication exists in the use of modifying agents added to the resins. In certain processes, because of frequent changes, they must be watched closely to prevent injury. New chemicals should be tested by a range finding test and followed closely by proper medical examinations until sufficient experience has been gained to evaluate their toxicology.

-- Author's conclusion

- 43 Fiberglas Plastics. J.R. Erwin. Ind. Med., 16, 439-441 (Sept., 1947)

The uses of fiberglas not only in plastics but also as an effective low weight insulating material and a substitute for fabrics--as well as its medical uses as a blood plasma filter, surgical suture material, bandages for burns in which one wishes to determine the nitrogen loss in the exudate, a tracer thread which is opaque to x-ray in surgical sponges, and as light-weight artificial limbs, make it imperative that industrial physicians be familiar with the substances used, the possible complications that can arise from their processing, and their comparative safety when properly controlled. The majority of cases of industrial medical significance are adequately handled by the hygienic measures outlined. In those few cases where "hardening" does not occur after a short period of observation, transfer is indicated.

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However, with the institution of measures such as proper clothing, protective sleeves, adequate washing, the moistening of the material before it is machined or cut, respirators, protective creams, gloves, the use of a soft lanolated soap, and sufficient washing facilities, as well as an alert, well informed medical and safety staff to indoctrinate the worker and the supervision, the problems connected with this relatively new industrial process can be reduced to the minimum.

-- Author's summary

44 Occupational Diseases of Workmen in Gas Coking Plants, Particularly in that of Kleinhuningen. M. Menz. Schweiz. med. Wchschr., 77, 895 ff. (Aug. 23, 1947)

Morbidity statistics in Switzerland show that 32% of 238 workmen employed in gas coking plants were pensioned between 1926 and 1946 on account of disease before they reached their age limit. On street car lines and in underground construction the corresponding percentages were 26 and 9 respectively. Circulatory, rheumatic, and respiratory diseases were more common as the cause of retirement in the coking plants than in the other industries mentioned. Of 93 workers in the gas plants who died in the same period, 29 died from circulatory diseases, 21 from cancer, Chronic benzene poisoning and damage caused by ammonia vapors, sulfur cleansers or naphthalene vapors contributed only slightly to the circulatory diseases, which the author attributes to chronic carbon monoxide poisoning. Draft and temperature differences are probably responsible for the high incidence of rheumatic and respiratory diseases. The author advocates periodic examinations of circulation, blood and lungs and immediate hospitalization even in the mildest cases of carbon monoxide poisoning.

-- J.A.M.A.

45 Significant Aspects of Exposure to Beryllium Compounds in Industry. C.R. Williams. Occ. Med., 4, 104-110 (July, 1947)

Accumulating evidence indicates that some beryllium compounds are definitely toxic when breathed by man. There is some apparent contradiction between experimental work on animals and human experience which is being reported from industry. In view of the fact that workers are becoming ill as a result of exposure to some beryllium compounds, the burden of proof rests with the experimenters, particularly since they do not agree among themselves and because pronounced variations in results have been obtained with different species of animals. In the basic beryllium industry there is little doubt but that the fluorides present complicate the results; however, that does not explain the cases resulting from exposure to beryllium oxide or zinc beryllium silicate. At the present time one of the greatest stumbling blocks to progress in solving this perplexing problem is the lack of generally available reliable analytic methods for determination of minute amounts of beryllium in air, in tissue and in body fluids. Without such a method, it will not be possible to determine the dosage levels required to produce symptoms and it will not be possible to learn the metabolism of beryllium. A further weakness is the absence of positive criteria of diagnosis. At the present time, roentgen rays, clinical signs and history are all used. There are several disputed cases because, as Gardner has stated, "Unfortunately, there isn't a clear enough understanding of this disease to permit these differences (of opinion) to be resolved." All of this leads to but one conclusion as far as the industrial hygienist is concerned, and that is: When beryllium and its compounds are encountered in industry, steps should be taken to keep atmospheric concentrations at low levels. As to safe limits, we know only that in several cases intoxication has developed from exposures in what one would usually call non-dusty atmospheres.

-- Author's summary

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- 46 Lead Absorption and Poisoning. Anon.
Hosp. Corps Quart., 20, 10-12 (July-Aug.-Sept., 1947)

The procedure for carrying out the "Basophilic Aggregation Test" is detailed. It is specified as a screening test, not a specific test, for lead poisoning, based on the same principle as the old stippled cell count. Its widest use is for screening all painters who come in contact with lead paints; welders who may be using rods or material containing small amounts of lead; and all other workers whose occupations bring them in contact with lead or lead products. A count in excess of 1.5 per cent should be sufficient basis to recall an employee for a further and more complete clinical and laboratory examination. It should be borne in mind that all the cells exhibiting basophilic aggregation may not contain equal amounts of basophilic material and hence will not stain in equal intensity. Therefore, any cells showing any variation in color from the normal must be carefully examined for basophilic aggregation by focusing with the fine adjustment. The basophilic cells should not be counted in the laked portion in the immediate vicinity of the line of separation from the fixed portion of the slide as alcohol may have flowed and partially fixed some cells in this region. -- Ind. Hyg. Index

- 47 Acute Mercurialism Resulting From the Distillation of Mercury in a Thermometer Shop. Adelaide R. Smith. Monthly Rev., N.Y. State Dept. of Labor, 26, 51-52 (Dec. 1, 1947) X

This paper reports an episode of acute mercury poisoning affecting at least 11 individuals which occurred from the accidental inhalation of mercury vapor. The accident occurred when a manufacturer of clinical thermometers attempted to cleanse a batch of mercury by distillation without taking any ventilating precautions. The distillation was done by putting 15 pounds of mercury in an iron pot from which a pipe lead to an open crockery bowl filled with water. This was in the basement of a two-story building. After the distillation every worker in the shop was ill. Case histories of 11 workers are presented, with a table of symptoms. The symptoms varied among the individual patients but many of the usual symptoms of mercurialism were generally present, chills, vomiting and sore mouth all occurring in the majority. Failure to take careful occupational histories resulted in three faulty diagnoses, two of trench mouth and one of pneumonia. The practice of distilling mercury in the building was abandoned.

More Jobs

Manufacturing is providing more jobs than ever before in history. The gain over the 1939 average, in fact, is about 57%. But the gains within manufacturing lines vary widely. Employment in durable goods plants is 82% over 1939, non-durables only 38%. In November, manufacturers of durables were providing 7,984,000 jobs. Factories turning out non-durables had 7,867,000 wage and salary workers. That's quite a change from before the war. In 1939, average employment in non-durables was 5,720,000; in durable goods, only 4,357,000.

-- Business Week (January 10, 1948)

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- 48 Hazards in the Use of Mercury Compounds in Treating Seeds.
H.F. Schulte. Ind. Med., 16, 443-444 (Sept., 1947)

Since the author's earlier paper on the subject (I-H-F Abst. 867, Aug., 1946), some additional work has been done in Government laboratories on the extent of the hazard. In general the hazard has been found very slight, but there are a few cases where it is present. The most important remedy is good housekeeping. Respirators are not wholly satisfactory unless frequently cleaned. Additional investigation, including search for additional cases and a laboratory study of the compounds used, is recommended.

- 49 An Evaluation of Neurologic Symptoms and Findings Occurring Among TNT Workers.
R.F. Sievers. Supplement No. 196 to Pub. Health Repts. 26 pp. (1947)
Price 20 cents from Supt. of Documents, Washington 25, D.C.

A number of supposed cases of peripheral neuritis were reported in one department of one plant by the plant physician. One report in the literature had given evidence of a similar occurrence, but otherwise there was only casual mention of the possibility. A thorough investigation was made by Public Health Service in the plant in question. The following facts were established: (1) the polyneuritis, if it was such, differed materially from the usual form and was confined to sensory disturbances; (2) impurities in the TNT were not responsible; (3) there was no vitamin deficiency; (4) no evidence of the disturbance was found in other plants or in other parts of the same plant; (5) no peripheral neuritis could be produced by animal experiments; (6) there is some indication that suggestion may have played a role, but that explanation has not been proved. The author concludes: "It is the opinion of the investigator that peripheral neuritis rarely results from industrial exposure to TNT. The illness when present is limited mainly to mild sensory disturbances without objective evidence of the disease."

- 50 T.N.T. Sickness. W.E. Park. Canad. Med. Assoc. J., 57, 522-526 (Dec., 1947)

This paper is based on clinical records in some 2,500 personal consultations, in conjunction with efforts to control T.N.T. sickness in a shell-filling plant. First T.N.T. rash which occurs in a few workers is described. There is no specific treatment. Removal from contact and thorough cleaning, followed by mild lotions, give best results. The usual effect of T.N.T. is sickness. The author believes that most cases arise from inhalation rather than skin contact. Eleven characteristic symptoms are given in the order of frequency of appearance: (1) loss of appetite; (2) undue fatigue; (3) cough; (4) nausea; (5) headache; (6) tightness in chest; (7) breathlessness; (8) dizziness; (9) abnormal drowsiness; (10) abdominal cramps; and (11) muscle pains. Accompanying signs are low blood pressure, low hemoglobin, and cyanosis. There are two general types of T.N.T. sickness, the hepatic and the anemic, but neither pattern predominates in mild cases. Other diseases that may be confused with this ailment are obstructive jaundice, subacute prostatitis, gastroenteritis, diabetes, neurasthenia, and malingering. Diagnosis on clinical signs and symptoms is more positive than on laboratory tests. Treatment recommended includes removal from contact, a saline laxative, a good dyspepsia mixture and abstention from alcohol; iron as ferrous sulfate when necessary. Some typical cases are described.

- 51 Fatal Case of Toxic Jaundice Due to T.N.T. W.E. Park.
Canad. Med. Assoc. J., 57, 576-578 (Dec., 1947)

Supplementary to the author's other paper (preceding abstract), a fatal case is described. The exposure occurred early in the operation of the plant at a time when knowledge and experience with T.N.T. poisoning was very limited. It emphasizes the greater susceptibility of younger people and emphasizes the importance of early diagnosis and adequate treatment.

- 52 Benzol and Opium. Anon. Monthly Rev., N.Y. State Dept. of Labor,
26, 52 (Dec. 1, 1947)

A case of benzene poisoning in a plant where all proper precautions were seemingly taken, led to investigation of a particular extraction process. After extraction of a gum with benzene in a closed system, the residue was treated with steam to remove the remaining benzene, and a worker transferred the residues to drums manually. In the cramped working space, 1500-2000 p.p.m. of benzene were found at the breathing zone, very much above the toxic limit. Finally a non-toxic substitute for benzene was found.

Skin Diseases and Burns

- 53 Occupational Dermatitis. Anon. Monthly Labor Review,
N.Y. State Dept. of Labor, 26, 48 (Nov. 1, 1947)

This brief note brings out one point not often considered, that dermatoses may be produced without actual contact of the liquid with the skin, where the atmospheric concentration of solvents is high. Droplets may condense upon the exposed skin, giving the same effect as liquid contact. The only remedy is installation of a proper ventilating system to remove the contaminants at their source.

- 54 Dermatological Hazards in the Poultry Industry.
M.H. Samitz. Ind. Med., 16, 489-490 (Oct., 1947)

There are two chief reasons for the negligible number of dermatological cases in the poultry industry: (1) the process of slaughtering and cleansing does not require the use of any chemical agent, thus avoiding chemicals acting as primary irritants or contactants; (2) protective clothing, such as canvas and rubber gloves, burlap and rubber aprons, is used. These prevent dermatitides due to physical agents such as friction or cold. Although there is no enforced showering after work at this plant, washing facilities are adequate. Mild soaps are the common cleansing agents; these workers have no need to resort to solvents or abrasive alkaline soaps for cleansing. During the past two years there has been no instance of fowl mite at this plant.

-- Author's conclusion

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Control Methods

November 1947

- 55 Exhausting Dust or Dollars? W.C.L. Hemeon. Safety Eng., 94, 50-55 (Dec., 1947)

The material presented is substantially the same as in I-H-F Abst. 849, July, 1947.

- 56 Study of Certain Factors Affecting Filtration of Smoke by Fibrous Materials. J.J. Perot. Paper Trade J., 124, No. 25, 54-62 (1947)

The effects of variations in the three factors, thickness, sheet density, and sheet weight of paper filters were studied. An optimum sheet weight and sheet density was found for the maximim filtering efficiency for each pulp. Asbestos and diatomaceous earth, when added to the sheet in low concentrations, increase the filtering efficiency. Fiber length has little effect, but efficiency increases with decrease in fiber diameter. The filtration appears to be due primarily to mechanical effects. No type of fiber tested showed any unusual affinity for the test aerosol, and examination of the fibers under the electron microscope suggested that the particles collected on a fiber were uniformly distributed over its surface. -- C.A.

- 57 Control of a Lead Hazard in the Brass Foundry Industry. L.E. Hamlin and H.J. Weber. J. Ind. Hyg. and Tox., 29, 367-377 (Nov., 1947)

A review of results of a lead control program in brass foundries over a three year period is presented. Findings are based on mass polarographic urine, blood and air analyses, and special clinical examinations for lead intoxication. Interpretations of these are employed as an index of exposure and a guide both for diagnosis and practical control measures. Record forms developed on the basis of experience are illustrated. The analyses of over 15,000 spot urine samples and 1,000 blood specimens furnished reasonable standards, in our experience, for safe or dangerous limits in the evaluation of lead absorption and intoxication. Results indicated that lead intoxication rarely occurred unless the rate of excretion was over 300 micrograms of lead per liter of urine and that values up to 200 micrograms per liter did not have definite significance. Surveys of six plants showed marked correlation between atmospheric contamination, urinary lead excretion and development of intoxication. Comparison of results before and after control measures indicated appreciable reduction in all three factors. Several cases demonstrate the application of the program from a clinical standpoint and the importance of correlation of medical and industrial hygiene procedures is emphasized. Based on results of numerous analyses, the spot sample as a laboratory estimation of the lead hazard and also as a means of uncovering hidden exposures appears to be validated. Necessary precautions in the collection of samples and analytical procedures are outlined; and the factors involved in contamination are discussed. From the large number of laboratory determinations compared with actual plant conditions, the accepted safe limit of 1.5 milligrams of lead per 10 cubic meters of air appears to be too low. The need for practical application of laboratory methods to the reduction of the lead hazard is obvious and it is hoped that the facts presented herewith may have useful significance until a better method is available.

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-- Authors' summary

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- 58 Mercury Exposures in Dry Battery Manufacture. C.R. Williams, M. Eisenbud and S.E. Pihl. *J. Ind. Hyg. and Tox.*, 29, 378-381 (Nov., 1947)

Methods for the control of exposures to mercury and mercuric oxide in the manufacture of the Ruben cell are given. Operations should not be carried on in air-conditioned buildings, where contaminated air might get into the ventilation system. Floors should be impervious and free from cracks, and provisions should be made for flushing them down periodically. A program of routine periodic air measurements should be established as a check on control measures. A medical control program should include both dental and medical examinations. The many potential exposures and frequent appearance of new problems call for constant vigilance.

- 59 Safe Handling of Sodium Fluoride With Personal Safety Equipment and Adequate Dust Removal Systems. H.W. Hoyt. *Occ. Hazards*, 10, 23 (Dec., 1947)

Sodium fluoride, used as a flux in steel making, easily forms dust and is dangerous in that form, causing painful dermatitis and serious membrane and bone damage when inhaled. The charging crews have refused to handle it in bulk, so it is now packed in tubes and thrown into the furnace without opening. In filling these tubes (by Associated Drug Industries) it is necessary to take extreme precautions. The inlet of an exhaust system is immediately over the packaging machine, and the outlet terminates at a wet filter. A plastic shield is also provided so that empty tubes can be inserted safely into the packaging machine. Respirators and rubber gloves are worn by workmen who fill the tubes and by all who handle the material before packaging.

- 60 Perchloric Acid. Industrial Data Sheet D-Chem. 44. *Nat. Safety News*, 56, 40, 42 (Dec., 1947). Reprints available from National Safety Council, 20 N. Wacker Drive, Chicago, Ill.

Anhydrous perchloric acid explodes spontaneously on standing, but the anhydrous acid is important only because it may be produced by distillation of the more dilute acids or salts with sulfuric acid. The acids commonly used are the 70 to 72% aqueous solutions, which are stable at room temperature and in hot solutions in which it is used in the laboratory. The hazards are: (1) explosive reaction of the hot acid with active reducing agents; (2) corrosion on metals and on the skin; (3) explosibility of the anhydrous acid; (4) spontaneous explosibility of a compound formed by reaction with metallic bismuth; and (5) formation of explosive compounds by contact with combustible material and subsequent drying. The last condition is the one most frequently occurring, and necessitating many precautions in handling, which are specified in this pamphlet. Among them are the use of non-combustible hoods where perchloric acid is evaporated, and avoiding spilling on paper, wood, etc. It should not be pipetted by mouth, and organic matter to be treated should first be treated with nitric acid. Burns should be promptly flooded with water.

- 61 Solvent Vapor Exposures from Common Industrial Operations. F.A. Patty. *Am. Ind. Hyg. Quart.*, 8, 5-11 (Mar., 1947)

Most attention is given to metal degreasing. The types of degreasing are first described, and the properties of the principal degreasing solvents,

trichloroethylene and tetrachloroethylene, are considered. Carbon tetrachloride and ethylene dichloride are not as desirable on account of higher toxicity. Only tetrachloroethylene should be used in machines without water-cooled condensers. Heating by steam is preferable, but thermostatic control should be used, no matter what the source of heat. In a sufficiently large room, local exhausts are not required; in fact, general ventilation is more effective. In somewhat enclosed spaces, local exhausts are desirable but the air volume cannot be too high without causing excessive solvent loss. Five common causes of solvent loss and atmospheric contamination are pointed out: (1) air motion of over 50 feet per minute across an open top degreaser; (2) mechanical displacement of solvent vapor; (3) improper operation of condenser; (4) speed of work; and (5) carry out. Other solvent exposures are considered briefly, including cements, chlorinated solvents in cutting oils, drug and chemical manufacture, filling containers, leather manufacture, and painting, including thinners and removers. Directions for calculating concentrations and exposures are given.

Ethylene Dichloride. Chemical Safety Data Sheet SD-18. Manufacturers' Association of the U.S., 608 Woodward Bldg., Washington 5, D.C. 12 pp. Price 20 cents. (1947)

Ethylene dichloride is toxic by inhalation, by prolonged or repeated contact, or by ingestion. It is also flammable. Therefore, safety rules include protection against both types of hazards. A list of properties, directions for storage, handling and waste disposal are followed by a discussion of health hazards and their control by engineering and medical means.

Carbon Tetrachloride, Properties and Uses.
Stauffer Chemical Co., New York, N.Y. 31 pp. (1947)

A full summary of the physical and chemical properties and uses of carbon tetrachloride includes several pages dealing briefly with its safe handling, with reference to Chemical Safety Data Sheet SD-3 (I-H-F Abst. 309, Mar., 1947) for fuller information.

Silicosis in the Gold Mines of the Witwatersrand. A Brief Review.
A.J. Orenstein. Occ. Med., 4, 50-55 (July, 1947)

Progress in silicosis prevention, medical examination and care, and compensation in the South African gold fields, from 1886 to the present, is described briefly.

Use of Rock Dust and Water Under the Federal Mine Safety Code in Limiting Coal Dust Explosions. J.J. Forbes and C.W. Owings. U.S. Bur. of Mines, Inf. Circ., 7421. 12 pp. (June, 1947)

Widespread coal-mine explosions may be prevented if rock dust of suitable size and composition is applied effectively. For maximum protection, the rock dust should be maintained within two or three cuts of the faces. The area between the face and the end of the rock-dust application---which should never exceed 80 feet---should be wetted before blasting. Water should be used on the cutter bar of mining machines, and the coal pile

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should be wetted after blasting and should be kept wetted during loading, either by application of water from a hose or from spray nozzles on mobile-loading machines. The amount of water required to allay dust may be reduced about half by adding a wetting agent to it. A widespread explosion is liable to occur in any bituminous-coal mine that is not rock-dusted adequately. It is extremely important, therefore, to maintain rock dusting in the same manner as other mining operations. It is inconceivable why any mining company should hesitate to apply rock dust and to maintain it adequately when the cost is only about one cent a ton of coal produced. If the precautions given in this circular are taken, coal-dust explosions may be prevented or limited to a very small area.

-- Authors' conclusions

- 66 Extinction of Isobutane Flames by Carbon Dioxide and Nitrogen. G.W. Jones and G.S. Scott. U.S. Bur. of Mines, Rept. Investigations 4095. 9 pp. (June, 1947)

The results presented in this report show that the limits of inflammability of isobutane in air are as follows: Lower limit of inflammability = 1.83 per cent by volume; Upper limit of inflammability = 8.43 per cent by volume. Isobutane has a minimum ignition temperature of 462° C. in air and 319° C. in oxygen. The report describes the apparatus used, methods of conducting the tests, the results obtained relative to the use of nitrogen and carbon-dioxide in the prevention of isobutane-air explosions. The results are presented graphically so that the user may easily determine the explosion hazards of mixtures without resorting to laborious calculations, it being necessary only to know the actual composition of the mixture as determined by gas analysis methods.

-- Authors' conclusions

- 67 Eighty-Second Annual Report on Alkali, etc. Works Alkali etc. Works Regulation Act, 1906 and Alkali etc. Works Orders 1928-1939. By the Chief Inspectors (W.A. Damon and E.A.B. Brise). Proceedings during the years 1939-1945 inclusive. 48 pp. (1947) H.M. Stationery Office, London. Price 1 s.

Problems that must be taken into account in a policy of coal conservation are the reduction of smoke, dust and grit. It is suggested that available supplies of bituminous coal should be reserved for processing only, so that the volatile material can be recovered and smokeless fuel produced. To prevent the emission of dust and grit, well-designed grit arrestors should be installed. Methods of deodorization should be used in viscose manufacture.

-- Bull. Hyg.

Medical Advances

The strides made in wartime medicine are directly applicable to peacetime use. Well-known, but important, are: Mass-production techniques for making penicillin; Discovery of streptomycin; Application of mustard gas to cancer treatment; New antimalarial compounds: chloroquine, pentaquine, paludrine; New insecticides; Rodenticides, plant-growth regulators; The Air Forces' "baby lung" which is being used as a temporary aid in infantile paralysis epidemics; and The Oximeter which shows when the oxygen in the blood stream reaches dangerously low levels.

-- Business Week (January 10, 1948)

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Methods of Detection and Determination

68 A Study of the Efficiency of Methods for Obtaining Vapor Samples in Air.
H.L. Andrews and Dorothy C. Peterson. J. Ind. Hyg. and Tox., 29,
403-407 (Nov., 1947)

Representative vapor samples of benzene and xylidine reproducible to ± 4 per cent may be obtained using the three sampling techniques described. These methods yield samples whose concentrations are easily and accurately measured by their ultraviolet absorption. They show an average loss of less than 10 per cent due to handling. The measurement of benzene vapor concentration by either of the two flask methods appears to be satisfactory for both field and laboratory work in toxicology if the concentration is sufficiently high. For low concentrations, the impinger method is to be preferred. For xylidine, the impinger method is to be preferred at all concentrations because appreciable amounts of vapor are adsorbed on the walls of the sampling flasks. The recoveries obtained in the present study indicate that such determinations do not need to be made directly on the vapor samples.

-- Authors' summary

69 Calibration of Field Equipment from Air Vapor Mixtures in a Five-Gallon Bottle. F.M. Stead and G.J. Taylor. J. Ind. Hyg. and Tox., 29,
408-412 (Nov., 1947)

The dilution characteristics of a small container (five-gallon bottle) are described and the application of the dilution principle to the calibration of industrial hygiene field equipment is outlined. The steady extraction of air from a small container causes mixing of clean air with the gases within the bottle, resulting in a decreasing concentration of vapors within the container. If the mixing is assumed to be instantaneous and complete, the ratio of the decreasing concentration to the original concentration is a function of the number of air changes made: $\frac{C_t}{C_0} = \frac{1}{e^n}$ when n equals the number of air changes. Data are presented to show that this equation is valid for a five-gallon container if the air flow is more than 1.5 liters per minute.

-- Authors' summary

70 Improvement of the M.S.A. Electrostatic Precipitator. G.D. Clayton.
J. Ind. Hyg. and Tox., 29, 400-402 (Nov., 1947)

Improvements in the commercial electrostatic precipitator make possible increased operating voltage and dependability of the electric system and greater sampling flexibility as well as greater accuracy in measuring flow rates. Rapid and easy changing of the vibrator points has been achieved by the development of a new, totally enclosed vibrator unit. A description is given of a simplified volt meter which will indicate the performance of the instrument with ease and dependability.

-- From Author's summary

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- 71 Efficiency of Filter Paper and Impingers for Chromic Acid Mists in Air.
J.F. Ege and L. Silverman. *Am. Ind. Hyg. Assoc. Quart.*, 8, 12-13 (Mar., 1947)

The authors' data indicate that adsorbent filter papers may be used for efficient collection of chromic acid mists in air. With a sensitive analytical method a hand pump may be employed and the filter discs are then analyzed in the laboratory. A rapid method, using impregnated filter papers described in a paper soon to be published permits direct analysis in this field. The use of filter paper in field sampling reduces the amount of equipment necessary in plating shops and other exposures. The efficiency of the filter paper method for chromic acid mists is high and uniform and comparable to any method now in use.

-- From Authors' summary

- 72 An Improved Method for the Determination of Volatile Halogenated Hydrocarbons in Blood and Other Biological Materials. W.C. Alford. *J. Ind. Hyg. and Tox.*, 29, 396-399 (Nov., 1947)

A method and apparatus for the determination of halogenated hydrocarbons in blood and animal tissues are described. The method consists of removing the volatile halide by combined steam distillation and aspiration, oxidizing the organic halide to inorganic halide in a heated platinum tube and absorbing the inorganic halide in an alkaline arsenious oxide solution. The halides are then determined by a standard procedure. Various halogenated hydrocarbons, with boiling points ranging from 40° C. to 146° C. have been determined with an average error of ± 1.8 per cent which corresponds to an absolute error that was usually less than 0.1 mg. and never more than 0.15 mg. The method is simple, reasonably rapid and overcomes most of the difficulties encountered in previously published methods.

-- Author's summary

- 73 Determination of Carbon Monoxide in Air by Use of Red Mercuric Oxide.
J.D. McCullough, R.A. Crane and A.O. Bechman. *Anal. Chem.*, 19, 999-1002 (Dec., 1947)

The authors describe a method for the determination of carbon monoxide in air depending upon the reduction of red mercuric oxide to mercury. The gaseous sample is passed through a reaction tube containing granular red mercuric oxide held at a temperature of 175 to 200° C. The loss in weight of the reaction tube during passage of the sample is an exact measure of the quantity of carbon monoxide present and involves a highly advantageous gravimetric factor. The accuracy of the method has been demonstrated through the analysis of unknowns submitted by the National Bureau of Standards.

- 74 Determination of Nitrogen Oxides in Air. Permanent Color Standards for Use with Method of Patty and Petty. P.R. Averell, W.F. Hart, N.T. Woodberry and W.R. Bradley. *Anal. Chem.*, 19, 1040-1041 (Dec., 1947)

A set of cellophane strips, dyed according to directions given, can be made to match a series of color standards derived from definite concentrations of nitrogen dioxide in air, when treated according to the Patty and Petty method. The particular dyes used have been found to check spectrophotometrically with the color standards. The colors have been found to remain constant in exposure to diffuse daylight over a period of two years. The use of these standards for field comparison saves considerable space and time necessary for the preparation of chemical standards.

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- 75 X-Ray Analysis of Silica Dust in Foundries. D. Huffman.
Occ. Hazards, 10, 11, 38 (Dec., 1947)

In the evaluation of an occupational hazard from the inhalation of foundry dust, it is necessary to know the free silica content of the dust as well as the dust concentration. The dust was collected in a salicylic acid filter, suspended in alcohol and the under 5 micron portion was analyzed by x-ray diffraction. Typical results are reported.

- 76 Determination of Free Silica (Quartz) in Silicates. D. Florentin and M. Heros. Bull. Soc. Chim. (France), pp. 213-215 (1947) (French)

The determination of quartz is especially important because it is responsible for silicosis. The fluosilicic acid gravimetric method of A. Knopf (C.A. 27, 1842) and the fluoroboric acid method of Line and Aradine (C.A. 31, 2124) are subject to serious errors. Double fusion with potassium bisulfate and washing with dilute hydrochloric acid, on the other hand, leaves the quartz on the filter and renders colloidal silica entirely soluble. Although the results of this chemical method were entirely satisfactory they were verified by a physical method of F. Trombe (C.A. 33, 1203) based on the heat evolved by the transformation of alpha-quartz into beta-quartz at 573°.

-- C.A.

Laboratory Toxicological Studies

- The Effect of Asbestos on Tissue Cultures: A Comparative Study With Quartz and Coal Dust. T.H. Belt, J. Friedmann and E.J. King. J. Path. and Bact., 59, 159-164 (1947)

(1) Phagocytosis, even of small particles of asbestos, took place slowly in tissue cultures and a considerable portion of the asbestos dust, approximately 50 per cent, remained untouched, though within range of phagocytes throughout the experiments. Compared with coal or quartz, asbestos was less readily phagocytosed, particle size being equal. (2) Asbestos particles in small amount had little or no toxic effect on living cells in tissue cultures. The growth of fibroblasts was neither retarded nor accelerated and no necrosis of cells was observed as a result of contact with asbestos particles, while fatty change appeared to occur more slowly in asbestos phagocytes than in coal phagocytes. (3) Asbestos particles underwent no visible change, and in particular no visible diminution in size, after having been ingested by phagocytes for as long as five weeks. (4) The motility of wandering phagocytes was decreased after the ingestion of asbestos particles. This effect, not necessarily of a toxic character, may be deleterious in the case of cells within the lungs, since it tends to restrict the migration of cells and so favour the retention of particles within the lungs. (5) Particles under 5 microns in length restricted cellular motility more than larger particles, for the reason that they were more readily phagocytosed. It would seem that wandering phagocytes are rarely able to ingest particles larger than 10 microns. Giant cells sometimes formed in tissue cultures, apparently by fusion of two or more ordinary phagocytes, and were then able to engulf

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larger particles or clusters of particles. (6) There was no evidence of the formation of asbestos bodies in these experiments, nor have we noted the appearance of brown granular pigment like that seen in the lungs of experimental animals. -- Authors' summary

- 78 Tissue Reaction to Sericite and Shale Dusts Treated With Hydrochloric Acid: An Experimental Investigation on the Lungs of Rats. E.J. King, Margaret Gilchrist and M.V. Rae. *J. Path. and Bact.*, 59, 324-327 (1947)

The innocuous nature of South Wales shales and sericites in the rat lung is confirmed. Preliminary treatment of shale and sericite dusts with hydrochloric acid resulted in their acquiring pathogenic properties, which led to the production of fibrous nodules in the lungs of rats. -- Authors' summary

- 79 Toxicity of Polyethylene Glycols by Repeated Epidermal Applications. F.P. Luduena, Jean K. Fellows, G.L. Laqueur and R.L. Driver. *J. Ind. Hyg. and Tox.*, 29, 390-392 (Nov., 1947)

Repeated epidermal applications of polyethylene glycols 200, 400, 1500 and 4000 in doses of 1 to 2 cc. per kg. chiefly were found to be toxic in 23 rabbits kept on a diet of rolled barley. In a more limited group of six rabbits on a diet of Purina Rabbit Chow Complete Ration, polyethylene glycols 200 and 1500 applied in the same way and dosage showed a lower degree of toxicity, while compound 400 seemed to be non-toxic. A further investigation of the polyethylene glycols appears desirable in view of the suggestive results in the limited investigation made by us. -- Authors' summary

- 80 The Toxicity and Narcotic Action of Mono-Chloro-Mono-Bromo-Methane With Special Reference to Inorganic and Volatile Bromide in Blood, Urine and Brain. J.L. Svirbely, B. Highman, W.C. Alford and W.F. von Oettingen. *J. Ind. Hyg. and Tox.*, 29, 382-389 (Nov., 1947)

(1) The fatal concentration of mono-chloro-mono-bromo-methane, di-chloro-methane, and carbon tetrachloride for mice was determined. Expressed as the LD₅₀ this is for mono-chloro-mono-bromo-methane 15.85 mg. per liter (2,994 p.p.m.), for di-chloro-methane 56.23 mg. per liter (16,186 p.p.m.), and for carbon tetrachloride 59.95 mg. per liter (9,526 p.p.m.). (2) Repeated exposure for seven hours to a 5.3 mg. per liter (1000 p.p.m.) of mono-chloro-mono-bromo-methane on five days per week for 14 weeks was tolerated by rats, rabbits, and dogs without evidence of toxic reaction. No significant changes were observed in the blood picture of dogs and rabbits. No evidence of liver damage was noted in the dogs either by the bromsulphalein excretion test or by testing for urobilinogen in the urine. Repeated examination of the urine gave no evidence of kidney injury. (3) Data are presented on the concentration at various times of inorganic bromide in serum, urine and brain and of organic bromide in blood and brain of the exposed and control animals. (4) The histopathologic findings in these and other animals indicate that mono-chloro-mono-bromo-methane will cause temporary degenerative changes of the liver, but, in contrast to carbon tetrachloride, no cirrhosis of the liver was found under the conditions of these experiments. -- Authors' summary

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- 81 The Toxicity of 2-Nitropropane. J.B. Skinner.
Ind. Med., 16, 441-442 (Sept., 1947)

Detailed animal experiments have indicated that the nitroparaffins are toxic and precautions are necessary in their safe handling. Experience with 2-nitropropane in one plant where two workers were exposed about one-quarter of their work-week to concentrations of 10-30 p.p.m. resulted in no adverse effects. Five or six workers exposed daily to concentrations of 20-45 p.p.m. resulted in severe headaches in those least exposed and anorexia, nausea, vomiting and diarrhea in those most intimately exposed. Until more is known definitely about the toxicity of 2-nitropropane, our Division (Div. of Occupational Hygiene, Massachusetts) is regarding 25 p.p.m. as the maximum allowable concentration.

-- Author's summary

- 82 Chronic Chloronitrobenzene Poisoning. I. Morphological Changes in the Blood. S.M. Dubashinskaya. *Farmakol i Toksikol.*, 10, 51-54 (1947) (Russian)

Dogs were poisoned with the eutectic mixture of o- and p-chloronitrobenzene by 4-6 hours daily exposure to air containing chloronitrobenzene vapor (0.01, 0.013 or 0.036 mg. per l.). Hemoglobin, leucocyte, erythrocyte, reticulocyte, normoblast, and methemoglobin counts were made before, during, and after poisoning; tests ran 78, 126, and 84 days in three series. Anemia (low hemoglobin and erythrocyte counts) was a symptom, but there was also some activation of blood replenishment (rise in the reticulocyte count and appearance of normoblasts). There was some leucopenia in the first series (0.01 mg. per l.) Morphological examination of marrow revealed increased hemopoieses. Blood replenishment after chronic poisoning was slow. -- C.A.

- 83 Chronic Chloronitrobenzene Poisoning. II. Morphological Changes of Internal Organs and the Central Nervous System. S.M. Dubashinskaya. *Farmakol i Toksikol.*, 10, 55-58 (1947) (Russian)

Under the same exposure conditions with o- and p-chloronitrobenzene at 0.01 or 0.036 mg. per l., 12 dogs were examined for effects on internal organs and six for effects on the central nervous system. Observed changes included atelectasis of pulmonary parenchyma, emphysema and atelectasis with expansion of pulmonary connective tissue; hyperplasia of Kupferov cells; fatty infiltration, vascular leucocyte thrombosis and vacuole degeneration in liver cells; cardiac hypertrophy and fatty infiltration; chronic nephritis and subacute nephrosis. No significant gastro-intestinal or endocrine changes were observed. In the central nervous system there was some hyperplasia of cell structures, with hyperemia and vascular stasis. There were also changes in cerebral cortex and tissue.

-- C.A.

- 84 Pharmacological Properties of Hexachloroethane. N.N. Plotnikov and L.N. Sokolov. *Farmakol i Toksikol.*, 10, 47-51 (1947) (Russian)

The lethal dose of hexachloroethane in cats, given in capsules over two days or subcutaneously in oil solution was 6 g. per kg. Cats and dogs (six each), given total doses up to 18 g. per kg. in two or four courses of two days each (course 12-14 days apart for cats, 7-56 days for dogs) all survived but one cat. Dosage was oral except that two cats (of which one died) received two courses subcutaneously, then two orally. The chief symptoms were

central nervous system narcosis and (after single doses of 5-6 g. per kg.) fatty degeneration of the liver. In self tests Plotnikov ingested 30 g. hexachloroethane in three days, and Sokolov 48 g. in four days, without harm. Skin sensitivity, as measured by chronaxia, was somewhat diminished. -- C.A.

- 85 Results of Exploratory Toxicity Studies of Commercial Mixtures of Hexachlorocyclohexane Isomers. A.I. Tareeva. Farmakol i Toksikol., 10, 45-47 (1947) (Russian)

Samples of gammexane (commercial hexachlorocyclohexane contaminated with alpha, beta and delta isomers) were tested by oral and respiratory dosage, eye exposure, and patch tests on human skin. Three rats after ingesting 4 g. per kg. died about four days later of respiratory paralysis preceded by clonic spasms. Doses of 0.5 and 1 g. per kg. were non-toxic. Of rats given 2 g. per kg., one died in six days and one recovered. After one hour in an atmosphere containing gammexane (10 mg. per l.) three rats recover in 2-3 days; four mice had brief spasms but recovered in a few days; one mouse died in two days. The same atmosphere gave 100 per cent kill of 20 flies in 15 minutes. Rabbit eyes were treated with 2 mg. gammexane in 0.01 cc. acetone, and controls with 0.01 cc. acetone. In 20-40 minutes, eyes exposed to gammexane showed slight hyperemia of the scleral mucosa; it lasted 2-3 hours. Patch tests, 3 X 3 cm., were made on human skin with doses of 200 and 500 mg. in acetone; exposure time was 90 minutes. The larger dose caused a slight transitory hyperemia. -- C.A.

Radioactivity and X-Radiation

- 86 Health Physics and Its Control of Radiation Exposures at Clinton National Laboratory. K.Z. Morgan. Chem. and Eng. News, 25, 3794-3798 (Dec. 22, 1947)

The determination of the levels of radiation that workers in nuclear fields can tolerate is now assuming the status of an independent field of science. Health physics is the name applied to this newly developed and specialized branch of radiology. This paper describes a number of instruments and methods used to determine exposure at the various atomic energy laboratories and the safety organizations responsible for their successful use. A table of tolerances for the various radiations and a list of the principal instruments with their applications are included.

- 87 Current and Future Environmental Control Problems Attendant on the Use of Radioactive Energy. L.F. Curtiss. Am. Ind. Hyg. Assoc. Quart., 8, 14-18 (Mar., 1947)

In conclusion, we can say that no new types of radiation are to be anticipated in the development of industrial uses of nuclear energy, as far as is known at present. The radiations will be of much higher intensity than any encountered in the past. However, as the Smyth report makes very clear, protective measures can be devised which render these processes as safe, and perhaps much safer, than the industrial operations involving radioactivity

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een in the past. These measures will involve methods and instruments y familiar to workers in the field of radioactivity and nuclear physics. in the future these methods must be applied more scrupulously than they have been in the past. Provided this is done, we have every assurance that every operation will be safe. To quote from the Smyth report: "Factors of safety used in plant design and operation are so great that the hazards of the home and the family car are far greater than those arising from the plant." This should be reassuring to industrial concerns who may contemplate entering this field and serve to speed the conversion of processes developed to provide a lethal weapon to peacetime uses. With this conversion a considerable responsibility will be placed on safety engineers and health inspectors to make certain that the information available is utilized to achieve the safe conditions which are readily attainable.

-- Author's summary

Engineering and Economics of Atomic Power. J.H. Lum.
Chem. Eng., 54, 122-125 (Oct., 1947)

The problems of the production of atomic power are outlined briefly for engineers. A simple form of plant for the conversion of atomic power into steam, and the characteristics of a pile are discussed. The necessary requirements of construction materials are shown in the light of these uses, and the disadvantages of customary materials for heat transfer indicated. The economics of atomic power are shown by comparing the reserves of uranium ore with the reserves of present fuels. Costs of plant construction and operation are considered for both.

Absenteeism, Hours of Labor, Etc.

Eyes on the Job. Ethel M. Spears. Conf. Board Man. Rec., 9, 331-333 (Nov., 1947)

This is the second of two papers each relating one company's experience with the Bausch and Lomb ortho-rater. Training of the test administrators, and methods of record keeping are described briefly. Several points showing the usefulness of the program are noted.

Reducing Absenteeism. Foreman's Letter,
(National Foremen's Institute) pp. 3-4 (Dec. 18, 1947)

Two companies of similar size and products differed greatly in the amount of absenteeism. A study was made of the casting shops of both companies, in which the difference was especially apparent. In the company where attendance was best, the foreman was responsible for explaining department rules to each newcomer, who was then assigned to a man who could explain duties, and similarly through at least two jobs. The foreman kept careful records on each worker, learned the reason for absences, without moralizing or lecturing. Specific penalties were charged for continued absences. The foreman was assisted by linesmen and was freer for personnel supervision. The company stressed three rules in all supervisory training: (1) be patient; (2) listen, and (3) avoid emotional upsets. Moreover, the importance of transmitting

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information faithfully and consistently to the rank-and-file was emphasized. In the company with the higher absenteeism, none of these things were done; employees were assigned indiscriminately without formal instruction, no attempt was made to inform them on company matters, and no absence records were kept. The lesson is obvious.

- 91 What Management Can Do Within the Plant to Control Absenteeism.
W. Dietz. Personnel, 24, 219-223 (Nov., 1947)

A systematic, fact-finding approach to absenteeism is outlined by the author. The first step is to learn where and when absenteeism occurs, who are absent, and why they do not come to work. Classified probable answers to all four questions are given. A few measures sometimes used are considered: vacations, awards, inspirational speeches, family plant visits, and production exhibits may help, but their usefulness is limited at best. Any methods are effective only if they fit local conditions. Adequate supervision, good working conditions, a sound personnel program, a slowly and well-developed welfare plan, all help to discourage absences. "Absenteeism is 'cured' by getting one person to come to work, then another, and so on." The first-line supervisor has the first responsibility; cases he cannot handle may be settled at higher levels.

- 92 Sickness Absenteeism Among Industrial Workers, First and Second Quarters of 1947. W.M. Gafaer. Pub. Health Repts., 62, 1773-1774 (Dec. 19, 1947)

Data for the first quarter of 1947 show a drop of 10% in frequency rates below the corresponding quarter of 1946, the principal factor being a decrease of 14% in the respiratory group, mostly in influenza and grippe. There was a rise of 10% in diarrhea and enteritis. The rates for the second quarter were approximately the same as in 1946.

Industrial Relations, Personnel

- 93 A Practical Testing Program. C.N. Helbert.
Conf. Board Man. Rec., 9, 329-331 (Nov., 1947)

A psychological testing program in use by General Aniline and Film Corporation is described. It involves features of seven testing methods.

- 94 The Possibilities of the Rorschach Technique in Industry.
Gertha Williams. Personnel, 24, 224-231 (Nov., 1947)

The general principles of the Rorschach ink-blot tests and their application to industry are explained by a specialist in the technique. The tests were successfully used by the armed forces in the war. The general principle is that the individual's reactions to the blots reveal the unique combinations of emotional and intellectual factors which comprise the pattern of his personality structure. The test is foolproof in that the person taking the

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test is unable to tell what the "best" answers are. However, certain limitations to the usefulness of the method are pointed out, and the need of research is indicated.

Mental Hygiene and Industrial Health. R.G. Novick.
Nat. Safety News, 56, 28-29, 78-79, 83-84 (Dec., 1947)

Modern industry necessitates work in which most of the worker's personality is not used; this has led in many cases to emotional and psychological disorders, which again lead to ineffectual activity, fatigue, accident proneness, hypochondriacal complaints, increases in hospitalization rate, absenteeism, and alcoholism, frequent job changes, and unpleasantness in human relations. The remedy lies in greater attention to the worker as a person and consideration of his problems. A number of cases of maladjustment are cited, some of which were relieved by consideration of the fundamental difficulty and adjusting the job to the man.

Insurance and Medical Economics

96 Paid Sick Leaves by Salaried Employees. F. Beatrice Brower.
Conf. Board Man. Rec., 9, 347-349 (Nov., 1947)

Of the 466 companies surveyed, 239 have definitely formulated sick leave programs. Tables show the minimum service requirements, prevalence of uniform and graduated sick leave, and maximum and minimum sick leave under the graduated plan. In each table the data is classified according to size of plant.

Medical Examination and Compensation of Miners for Industrial Injury. The Development of the System at Broken Hill, New South Wales. W.E. George.
Occ. Med., 4, 68-85 (July, 1947)

A description has been given of the gradual development of a scheme by which all workers in the mining industry at Broken Hill are examined, prior to their employment, at a central bureau of medical inspection conducted by the New South Wales Government, and re-examined there, when necessary, for compensation for injury sustained at their employment. Sufficient evidence is furnished to indicate that improved working conditions and pre-employment medical examinations, introduced in 1920, have greatly lessened the incidence of pneumoconiosis and lead poisoning at Broken Hill. -- Author's summary

Industrial Life Insurance

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At the end of 1946, there were 107,737,000 industrial life insurance policies in force in U.S. companies, representing aggregate life insurance protection of \$30,246,934,000. This is an increase of 3,639,000 in the number of policies and of \$1,749,976,000 in the amount in force since 1945.
-- Life Insurance Fact Book (1947)

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Public Health

- 98 The Roentgenographic Appearance of Persistent Pulmonary Infiltrates Associated With Sensitivity to Histoplasmin. M.L. Furculow, H.L. Mantz and I. Lewis. Pub. Health Repts., 62, 1711-1718 (Dec. 5, 1947)

The paper reports the roentgenologic characteristics of persistent pulmonary infiltrations found among persons who are sensitive to histoplasmin but not to tuberculin. Various types of infiltrations were found in a survey. In regions where histoplasmin sensitivity is widespread, pulmonary infiltrations as well as calcifications are frequently non-tuberculous and can be differentiated from tuberculosis at present only by skin tests. Thirty-two illustrative roentgenograms accompany the paper.

Accident Prevention

- 99 Agency ("Cause") Classification of Compensable Injuries Settled in 1946. Stat. Release No. 3241, Workmen's Compensation Statistics, Industrial Commission of Wisconsin. 21 pp. (Nov. 28, 1947)

The 31,475 compensable injury cases settled under the Workmen's Compensation Act of Wisconsin during 1946, including the occupational diseases classified in a separate report, are here classified as to agency producing the injury.

- 100 Whither Progress in Safety in Mines? A.M. Bryan. Coll. Guard., 175, 695-697 (Nov. 21, 1947)

The various factors in mine safety--preventing accumulation of firedamp, ventilation, and roof control with attendant dust control, are discussed briefly with reference to conditions in British mines. It is pointed out that advances in mining, especially mechanization, do not necessarily mean greater safety. The author would prefer to see progress on lines which (a) eliminated cutting or undercutting of coal by a high-powered, fast-moving, endless chain of picks; (b) cut a smaller depth of coal at each advance of the face, (c) eliminated shot-firing at the coal face, and (d) enabled coal production to proceed steadily throughout a much longer portion of each working day. These changes would of course involve a radical change in mining method. The author considers the possibilities of controlling roof control so that (1) the energy of moving masses of undermined strata could be used to cut more coal; (2) a machine on the principle of a wedge would lever off the coal in thin slices and drop it on an automatic conveyor; (3) a permanent roof support system could be moved forward automatically as the face advanced; and (4) mechanical principles could be applied to heavy stone work without confining it to short periods.

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- 101 Progress in Metal Mine Safety. J.K. Richardson.
Safety Eng., 94, 18-19, 24-25 (Dec., 1947)

Metal mining has a worthy record of decreasing accident rates during the 21-year period, 1925-1946, as shown by a summary of statistics. Credit for this progress is given the Bureau of Mines, the Joseph A. Holmes Safety Association, many of the operators, and manufacturers of mining equipment. Among factors in increased safety are safer motors and cars, lighter drilling units, the steel centralizer, slushers, mechanical hoists, better fans, and improved personal protection. However, there is very much improvement still to be made, and it is a question whether mining management and mining associations will be able to make the necessary improvements voluntarily or safety codes will be forced upon the industry. "The choice is still ours, but the handwriting is upon the wall! I propose that we energetically and enthusiastically work toward the goal of making metal mining the safest domestic industry."

- 102 Human Factors in Accident Liability, With Special Reference to Accident Repeaters in Industry. P.J. Moorad. Ind. Med., 16, 494-498 (Oct., 1947)

The author presents a thorough discussion of human factors in accidents from the standpoint of the psychiatrist. Much has been accomplished in eliminating general industrial hazards. Engineers have pared their responsibility to the low level of 10% and left for medicine the rest, a truly tremendous task, as the other causes are human factors, including physical or organic and mental or psychological. In the physical and organic factors there are many unsolved problems, and in many industries the medical setup is inadequate and incompetent to locate and watch those factors. A number of neurological disorders resulting in poor physical self-control are mentioned; they should be brought to light in proper physical examinations. However, epilepsy is one that is over-rated as a possible cause of accidents. The psychological factors are even more important. Those due to environment include tempo and pressure of production, night work, fatigue, monotony, and poor personal relationships. These factors, however, do not affect all alike; the other important factor is the individual's emotional make-up. Many statistical studies have shown that most industrial accidents are caused by a small percentage of employees. A very important mechanism by which accidents occur is the subconscious behavior, unrecognized by the worker himself or by others. The workers with various disorders--hypomanic, depression, paranoid, psychopathic, psychoneurotic types and the malingerer, are described. Finally the author makes 12 practical suggestions, the highlights of which are: (1) expect the industrial physician to bring himself up to date psychiatrically; (2) take a full history of the prospective employee, including emotional health and accident record; (3) use quick, efficient methods of testing for nervous and emotional disorders; (4) fit the psychological nature and capacity of the worker to his job; (5) orient the employee to the factory set-up; (6) shift emphasis from production to efficiency and safety; (7) establish a grievance department; (8) establish an educational program for supervisors on emotional problems; and (9) on the first accident check mechanical and environmental factors; on the second accident to the same employee, study the human factors by group consultation; when the third occurs call a psychiatrist. It should not be expected of the psychiatrist to cure all mental disorders in industry. All that he wishes is an opportunity, freedom of action, and cooperation. Given those, psychiatrists will eventually greatly reduce the number of accidents charged to human factors.

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- 103 Make Your Town Safe! H. Yahraes. Public Affairs Pamphlet No. 133, Public Affairs Committee, in cooperation with National Safety Council, 20 N. Wacker Drive, Chicago 6, Ill. 32 pp. Price 20 cents. (1947)

The rules and information concisely given cover the field of safety at home, and on the street. Occupational accidents were the only major group showing no increase in 1946 over 1945. Nevertheless 16,500 persons were killed and two million injured. The development of occupational safety and formation of the National Safety Council are related briefly.

- 104 Explanation Too Complicated. B.C. Hutchins (Letter to Editor) Chem. and Eng. News, 26, 205 (Jan. 19, 1948)

This letter discounts the explanation by R. Gilmont (see I-H-F Abst. 1251, Oct., 1947) of an incident that resulted in burns to technicians who used carbon tetrachloride to extinguish a wax fire. It suggests that the incident resulted from improper technique in using a carbon tetrachloride fire extinguisher and not from an explosive chemical reaction, the necessary conditions for the latter not being present. A volume of liquid carbon tetrachloride was forcefully pumped onto wax that was burning at a temperature much higher than the boiling point of carbon tetrachloride. There was a sudden boiling up of the carbon tetrachloride, causing the burning wax to be blown outward and thus simulating an explosion. The liquid should have been directed at the side of the vessel or at the edge of the fire so that the extinguishing fluid or vapor could flow gently over the surface of the burning material.

Miscellaneous

- 105 Psychiatric and Physiologic Studies on Fatigue. A.L. Watkins and others. Arch. Phys. Med., 28, 199-206 (April, 1947)

A series of psychiatric, chemical and physiologic studies were done on 45 psychoneurotic patients complaining of fatigue and on a comparable control group. The clinical material indicated a great variability in the symptoms, but 80 per cent of the patients were given diagnosis of anxiety neurosis. In 16 of these patients studied intensively specific situations associated with feeling tones of guilt and rejection preceded the onset of fatigue episodes. The blood lactate and pyruvic acid showed a significant increase following an exercise test on a bicycle ergometer, which rise was considerably greater in the patients and was maintained for a longer period of time. There was a correlation of 0.6 between the blood lactate and the heart rate increase after exercise. A grip test for local fatigue showed a greater increase in action potentials and lactic acid production in the patients. Blood lactic acid level increased 100 per cent following four-minute stimulation of the ulnar nerve with a tetanizing current. Most of the patients showed a decrease in circulating lymphocytes resulting from a variety of stress situations of one hour's duration; this is ascribed to increased adrenal cortex activity.

-- Ind. Hyg. Index

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- 106 Facts About Fatigue. Anon. Ind. Health Bull., 2, 1-3 (Aug., 1947) (Canadian)

The article declares that fatigue is an important problem for industry which merits serious attention from management. The health, both physical and mental, of an employee is often the basic cause for fatigue, and therefore it should be the purpose of management to help the worker maintain good health at all times. This can be accomplished by preplacement and periodic medical examinations, health education and general supervision of workers' health. There are many environmental factors which also contribute to fatigue, among which are temperature, illumination, and noise. All of these factors are controllable and an effort should be made to correct them. Other factors contributing to fatigue are the hours of work, method of work, boredom, and morale of the workers. It is important, too, to consider not only one physical aspect of a man but to remember that each worker has his own personal problems which by causing mental strain also enter into the fatigue picture. Along with this, to successfully combat fatigue, it is necessary to take into account not only the hours spent by the worker on the job but also those off the job.

-- Ind. Hyg. Index

- 107 Role of Codes in Industrial Hygiene Administration. T.C. Waters. What's New in Ind. Hyg., 4, 7-10 (Apr.-June, 1947); Ind. Med., pp. 436-438 (Sept., 1947)

Most states have codes dealing with industrial hygiene and accident prevention. In Maryland as an example there are some 33 separate codes dealing with accidents. This causes great confusion; taking the codes on maximum allowable concentrations and varied safety appliances as examples, the author criticises most of them as not establishing proper testing techniques, enforcement regulations, etc., and recommends that all possible steps be taken to make codes more nearly uniform.

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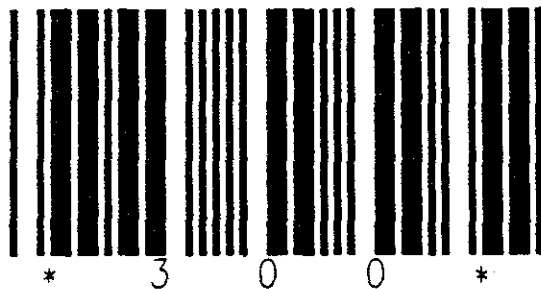
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