



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

JUNE, 1951
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INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
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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 nonprofit association of industries for the advancement of healthful working conditions.

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Mellon Institute to Have Open House in September

Dr. Weidlein, President of Mellon Institute, has announced that on Saturday, September 15, from 9 A.M. to 6 P.M., and on Sunday, September 16, from 1 to 6 P.M. the Institute will be open to the general public. You are cordially invited to attend. By conducted tours of the building, and by special exhibits and demonstrations, all visitors will be shown the scientific facilities and many interesting results of the Institute's researches. On Friday evening, September 14, preceding the open house, there will be an informal reception held in the Institute, and its general activities will be reviewed. If Foundation Members who would like to attend this reception will let us know, we should be glad to see that they receive invitations.

Title Changes in Mellon Institute

New by-laws adopted at the Annual Meeting of the Board of Trustees of Mellon Institute have changed the title of the Institute's Head, Dr. E.R. Weidlein, from Director to President. There is no change in his status as chief executive officer of the Corporation in charge of the active management of all its affairs. Under the new by-laws he is also Chairman of the Board, and Dr. John G. Bowman, President-Honorarius of the University of Pittsburgh, is Vice Chairman. Concurrent with these changes five Assistant Directors have been named Directors of Research; another, Director of Engineering.

Dr. Rupert Joins Industrial Hygiene Staff

Dr. Frank F. Rupert, Head, Analytical Department of Mellon Institute throughout the past ten years, and actively associated with Industrial Hygiene Foundation for many years in the preparation of Industrial Hygiene Digest, will join the Foundation's full-time staff. Dr. Rupert is a graduate of the University of Kansas and received his Ph.D. degree in 1912 from Massachusetts Institute of Technology. Dr. Rupert has been with the Institute since 1913, and his researches have dealt with writing ink, water colors, physical structure of chalk crayons, silvering mirrors, and industrial hygiene. He served as industrial hygienist for the Hazel-Atlas Glass Company in 1934-1935. Dr. Rupert, with his broad experience in analytical and physical chemistry and in industrial hygiene, is a valuable addition to the Foundation's staff.

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Reprints Available

Reprints of the articles "Auditing Industry's Medical Departments, Facilities and Administration" by C. Richard Walmer, reprinted from the Transactions, and "Air Pollution" by H.E. Schrenk, published in Chemical and Engineering News, are available on request of members.

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IN RE: AIR/AMIS
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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

540 The American Foundation of Occupational Health Takes Over Medical Services in Industry.

The American Foundation of Occupational Health took over on May 1 the evaluation and approval of medical services in industry which has been conducted by the American College of Surgeons for the past twenty years. The Foundation is setting up a board of government, including three representatives each from the Industrial Medical Association and from the donors to the project; two each from outstanding business executives; and one each from the American College of Surgeons, the American College of Physicians, the American Medical Association, the American Academy of Occupational Medicine, the Association of American Medical Colleges, the Association of American Schools of Public Health, and the Industrial Hygiene Foundation. The trustees propose to continue the same type of plant evaluation and approval that the American College of Surgeons has conducted and to expand this service if and when additional funds become available. On its last approved list, December 31, 1950, the College includes the names of 1,459 industrial establishments, 63% of the 2,293 plants surveyed.

541 Baruch Committee Concludes Its Work

Dr. Frank H. Krusen, Chairman of the Baruch Committee on Physical Medicine and Rehabilitation, announced on May 26 that the Committee had achieved its goals and was discontinuing its activities. Mr. Baruch has provided well over \$2,000,000 of his personal fortune to support this branch of healing in honor of his father, Dr. Simon Baruch, a leading pioneer in the field. He will continue to make grants to institutions that have accomplished most in this field. The Committee made its final grant to promote the organization of an International Congress of Physical Medicine to be held in London on July 14 to 19, 1952. The Committee named nine phases of its achievements, prominent among which are: a marked increase in the teaching of physical medicine and rehabilitation in American medical schools; the rehabilitation of many thousands of wounded soldiers and sailors, and still more, civilians; complete recognition of the new medical specialty; establishment of a section of the American Medical Association; clarification of standards of physical fitness; and improvements in the teaching of medical physics. Dr. Krusen's statements include details of these achievements and others and summaries of subcommittee reports.

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IN RE: ALIBRAMBS NOVEMBER 1999

542 Basic Radiologic Health Short Course.

A specialized defense short course for supervisory personnel and local instructors, to provide them with the essentials of radiological defense, will be given by the Texas State Dept. of Health at Austin, June 11-15, July 9-14, and Aug. 13-18, 1951. The program covers basic theory of radiation and radiation detecting instruments, the use and maintenance of instruments, the harmful effects of radiation, protection against radiation, and recommended permissible radiation dosage. Lectures, laboratory work, practical exercises and films will be included. Applications should be made to George W. Cox, M.D., State Health Officer, 410 East 5th Street, Austin, Texas.

543 Safety in Chemical Plants.

Chemical plants are among the safest places in the country in which to work, according to figures released recently by the Manufacturing Chemists' Association, Inc. A record low of 4.56 injuries per million man-hours was achieved in 1950 by the member companies, which account for about 90% of total United States production. The accident rate is less than half the national average and lower than that of any other industry except communications. Chemical plants have made especially notable progress in reducing injuries since 1946. This record is attributed to improved safety measurements adopted in the industry and to good cooperation by employees. The Association's general safety committee has collected and disseminated statistics on chemical plant safety for a number of years. It has prepared 39 chemical safety data sheets. It also issues reports on accident trends, details of unusual accidents, and other information for the assistance of member companies.

Wonders Never Cease

An article appearing originally in Automotive and Machine Shop Safety states that Carnegie-Illinois Steel Co. at Gary has developed a new method for cleaning its electric motors. The motor is shut down and a hood is placed over it. Dried corn cob grits are then blown through the motor assembly by means of a compressed air blast. The grits absorb all the grease and dirt, leaving the motor clean. The advantages of the scheme are plain: The motor does not have to be removed from service, merely shut down for the time being (cleaning with solvents requires drying time); no toxic vapors are created, hence no masks are needed; and there is no fire hazard.

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OCCUPATIONAL DISEASE STATISTICS

544 Occupational Disease Statistics

	Conn. ¹ May 1951	Ind. ¹ May 1951	Mich. ¹ Apr. 1951	Wisc. ¹ Mar. Apr. 1951	Totals
Allergy				1	1
Bronchitis (Formaldehyde)	1				1
Burns				5	5
Carbon Monoxide Poisoning			1	7	8
Dermatitis	71*	17	19	82	189
Eczema				1	1
Eye Irritation				6	6
Eye Ulcer				1	1
Fumes				8	8
Hernia			5		5
Lead Poisoning			1	1	2
Lung Irritation				1	1
Miscellaneous			1		1
Pneumoconiosis			1		1
Silicosis			18		18
Silico-tuberculosis		1		1	2
Skin Infection				7	7
Skin Irritation				8	8
2-Amino Pyridine Poisoning		1			1
Upper Respiratory Infections				3	3
Total	72	19	46	132	269

(1) Occupational Disease Cases reported to the Board of Health.

- * Acids, Cyanides, Dust-inorganic, Dust-metals and compounds, Dyes and inks, Halides, Phenol and phenolic compounds, and Medications caused one each; Alkalies, Dust-organic, and Paints and lacquers caused two each; Chromium and compounds, and Synthetic resins and chemicals caused three each; Oil and solvent (combination exposure) and Solvents (N.O.C.) caused five each; Oils, fats and waxes caused thirty-one; and ten were caused by undetermined hazards.

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LEGAL DEVELOPMENTS

Attitudes Which May Be Adopted in the Dubious Compensation Claim in California. C. Leggo. To be published in California Med. and in Ind. Med. and Surg. in July. Eighteen mimeographed pages.

California's Compensation Law is one of the earliest and most liberal. It allows unlimited medical care and relatively high compensation indemnity, includes an "aggravation of preexisting condition" clause, and provides for resolving doubt in favor of claimants. It is administered under a philosophy described as "literal interpretation of the law." "It has been stated that it is provided by law that the benefit of any doubt must be given to the injured employee." The principle thus stated is much more liberal than the generally accepted benefit of reasonable doubt, and opens opportunities for awarding dubious claims. Awards are often made not only with "liberal interpretation of the law" but also with "liberal interpretation of fact." That is, rules of evidence are relaxed for the benefit of the employee acting without legal aid and without medical reports from experts or specialists, and often relying upon the report of an inexperienced doctor. Such a report, without scientific deduction of the cause of the patient's condition, but hinting at a possible injury as its cause, may lead to an unjustly liberal award. Even when the physician is cautious and experienced the effect of numerous denials of an accident or occurrence that led to a pathological condition may be nullified by the patient's recalling an incident when before the board, not previously remembered or stated.

The "aggravation of preexisting condition" clause provides a prolific field for awards of false claims. J.H. Thompson discussed this recently with respect to myocardial infarction (see I.H.F. abst. 453, May, 1951). Therefore the practicing physician is under pressure to ignore the application of scientific knowledge and "to substitute an unsound legal opinion which attempts to anticipate the currently fashionable decisions of the Industrial Accident Commission."

Patients who have suffered industrial injuries may be classified on the basis of their attitudes: (1) those who view their ability to work realistically, in terms of the actual physical disability, job requirements, and therapeutic needs (normal healthy attitude); (2) those whose emotional attitudes cause resistance to work, which actual physical disability does not justify; and (3) those whose emotional drives to work are so strong that their insistence on working is unrealistic in terms of disability, job requirements, or therapeutic needs. Patient may not stay in the same class during the entire length of the claim. Naturally the second class causes the greatest difficulty in the diagnostic, therapeutic and claims fields. Patients can be converted from the second to the first class in direct ratio to the psychiatric or psychosomatic interest and skill of the attending physician. Considerate treatment by supervisors and others may also affect the patient's progress.

In the concluding pages of the paper the author returns to the question of expediency vs. scientific accuracy and pleads for increased instruction of medical students in sound diagnosis and a better ethical attitude on the part of physicians and the public. He also suggests the appointment of a medical board within the commission, as now established in some States.

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IN RE: AIRLINES
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- 546 Silicosis--Failure to Provide Written Notice of Disablement Excused--
Actual Notice--Statute of Limitations.

Although the claimant failed to give the employer a written notice of disablement, the court ruled that the employer had actual notice and consequently was not prejudiced by the claimant's failure to give the required notice within the period prescribed by the statute of limitations. The court affirmed an award which had been granted to the claimant for disability arising out of silicosis since the board was not considered to have abused its discretion in excusing the claimant's failure to provide written notice. Matter of Dabkowski v. Bethlehem Steel Co., New York Supreme Court, Appellate Division, Third Department. January 10, 1951.

-- CCH

- 547 Silicosis--Street Railway Welder--Proof of Exposure--Causal Connection
Between Occupation and Disease.

Where the claimant, a street railway welder, presented uncontradicted medical testimony to show that there was a causal connection between his occupation and resulting silicosis, the court affirmed an award of compensation for occupational disease. The Milwaukee Electric Ry. & T. Co. v. Industrial Commission. Wisconsin Supreme Court, No. 76, February 6, 1951.

-- CCH

- 548 Chronic Lead Poisoning--Painter--Medical Testimony to Support Claim.

The court held that claimant, a painter, had submitted sufficient evidence to support his claim that his illness resulted from chronic lead poisoning. The claimant had been in the employment of the defendant when he was forced to leave because of illness which respondent to treatment for chronic lead poisoning, a disease to which painters are susceptible. Wesley v. Warth Paint and Hardware Co., Florida Supreme Court, No. 21,702, April 20, 1951.

-- CCH

BOOKS, PAMPHLETS AND NOTICES

- 549 Sources of Information on Personnel Management and Labor Relations.
A.W. Baker and F.S. Rawson. Research Monograph No. 62, Bureau of Business Research, Ohio State University, Columbus, Ohio. 117 pp., (1951).

The approximately 1000 references given would seem to cover the literature of any importance on the subject. First are a few basic texts and general references. The rest are arranged according to subject, so far subdivided that usually not over twenty are in each class.

-- F.F. Rupert

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- 550 Maximum Utilization of Employed Manpower. A Check List of Company Practice. Research Report No. 88, Industrial Relations Section, Dept. of Economics and Social Institutions, Princeton University, Princeton, New Jersey. 54 pp. (January, 1951), Price \$1.00.

An approach to the problem of efficient organization is followed by chapters on losses in manpower potential due to managerial conditions and reduced productivity due to instability of the work force, and to ineffective labor management. The final chapter deals with reduced productivity due to subjective factors affecting the individual employee, and the discussion is equally divided between in-plant and out-of-plant conditions. The former includes: (1) sense of grievance over wages, hours, individual status or working conditions; (2) ignorance of the importance of the job; (3) mental fatigue due to noise, monotony, etc; (4) physiological impairments from various causes; and (5) anxiety because of accident and health hazards. The out-of-plant conditions are: (1) insufficient sleep and relaxation; (2) malnutrition; (3) long journeys to and from the job; (4) lack of recreational arrangements; and (5) anxiety due to health, financial and other personal problems. Suggestions are given for the improvement of each of those conditions. A check list is included for the benefit of an executive who may wish to check the efficiency of the plant or part of it in the features given.

-- F.F. Rupert

- 551 The Toxicity of DDT: Experimental Observations and Survey of the Literature. W.B. Deichmann, S. Withrup, K.V. Kitzmiller and F.F. Heyroth. Kettering Laboratory, University of Cincinnati, 233 pp., (1950).

This monograph represents much the most exhaustive experimental study of DDT we have seen and is followed by a lengthy review of the literature (257 references) on all aspects of the problem. It was published in connection with the hearings on economic poisons in the summer of 1950.

-- Arch. Ind. Hyg. & Occ. Med. 3, 424, (April, 1951).

- 552 Resume of the Proceedings of the Seventeenth National Conference on Labor Legislation, November 29, 30 and December 1, 1950. U.S. Dept. Labor, Labor Standards, Bull. No. 141, 59 pp., (1951).

This bulletin reports the addresses by Secretary Tobin and Executive Director Goodwin of the Office of Defense Manpower, committee reports, resolutions adopted, and a list of delegates and guests. In the report of the Committee on Industrial Safety and Health, the essentials of the President's Conference are reviewed, the principle that responsibility for industrial accident prevention rests in national and State labor departments, and recommendations to the bureaus of the Labor Departments, and to state labor officials.

-- F.F. Rupert

- 553 A List of the Books, Journal Contributions, and Patents by Members of Mellon Institute, 1939-1948. Mellon Institute Bibliographic Series, Bull. No. 5, 124 pp., (1951). Available on application to the Foundation.

This publication lists 1,459 books, bulletins, contributions to books and periodicals, and United States and foreign patents, by members of Mellon Institute during the ten-year period, covering a large variety of

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fields of research. Of the total, 793 are contributions to books and periodicals. They testify to the extensive growth of the Institute as a research organization. They include 44 bulletins and other publications of the Industrial Hygiene Foundation, and a number of articles by its members. Since 1948 lists of publications are being issued annually. -- F.F. Rupert

- 554 Occupational Factors in the Etiology of Gastric and Duodenal Ulcers, with an Estimate of Their Incidence in the General Population. R. Doll, F.A. Jones, and M.M. Buckatzsch. Medical Research Council Special Report Series, No. 276, 96 pp., (1951). His Majesty's Stationery Office, London. Price \$.65.

Duodenal ulcers commonly occur between the ages of 20 and 64; their incidence is greater in men holding responsible positions, and anxiety over work is a common factor. In contrast, gastric ulcers are uncommon before the age of 35, are not related to responsibility or anxiety, but are least frequent in the wealthiest classes and most frequent in the poorest class. There is no clear correlation with conditions of work for either type of ulcer. Irregularity of shifts is discredited as a predisposing factor, and motor vehicle drivers are not especially susceptible. The survey, if in some respects iconoclastic, points the way clearly toward further fields of study. The deficiency of ulcers in agricultural workers, the social gradient of gastric ulcer, and the positive correlation between anxiety and duodenal ulcer are particularly worthy of interest, in emphasizing the need for a coordinated effort to solve the problem of their prevention.

-- Cond. from Authors' Conclusions

INDUSTRIAL MEDICAL PRACTICE

- 555 Value and Operation of an Industrial Medical Program. M.N. Howard and A.E. Hoag. Arch. Ind. Hyg. & Occ. Med. 3, 375-385, (April, 1951).

The purpose of the paper is to demonstrate briefly with the aid of charts the philosophy, the operation and the benefits derived from the medical department at the East River Plant of the Socony-Vacuum Oil Company, Inc. Of special interest is the analysis of lost time in 1949, which shows that 89.3 per cent was due to acute and chronic nonoccupational illness. An analysis of cases dealt with by the medical department personnel shows that 85 per cent of their time was devoted to the care of nonoccupational illness. The discovery of conditions unknown to the employees concerned will increase rather than reduce the practice of private physicians. The confidential treatment of information given by employees to the medical department is stressed. This assurance takes away any fear that a man's job will be jeopardized by visits to the medical department. It is pointed out that opportunities for research are possible in the medical department because the employee remains with the job long enough for follow-up studies. Cooperation of all departments is stressed.

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IN RE: ALBRAMS

- 556 A Community Looks at the Industrial Health Problems: Report of an Industrial Health Survey, San Diego County, California. California State Department of Public Health, San Francisco. 26 pp., (1950).

In 1949, 415 establishments representing manufacturing, nonmanufacturing and agricultural industries were studied with regard to existing industrial health problems. The investigation disclosed inadequate industrial health services, particularly in agriculture, and the need for effective controls of occupational hazards. The report discusses the purpose and the execution of an adequate industrial health service. The plan of the survey, with sample information forms, and the accumulated data are appended.

-- Arch. Ind. Hyg. & Occ. Med.

- 557 Eye Emergencies in Industry. First Aid Treatment by the Physician. A.A. Knapp. J. Am. Med. Assn. 146, 12-16, (May 5, 1951).

The importance of proper first aid treatment by the attending physician is emphasized by the writer in his statement that such treatment will save millions of dollars and thousands of man hours and prevent irreparable mental and physical injury. Emergencies involving the adnexa of the eye and also those involving the eyeball are discussed and methods of treatment are described. These emergencies include ultraviolet and chemical burns, foreign bodies and wounds. Treatment in all cases requires surgical care, control or prevention of body infection brought in by the destructive agent, and attention to the psychogenic factor. Apparent emergency to the eye may have an allergic basis and require treatment as such.

- 558 Coverall Dermatitis. C.P. McCord. Science Miniature. Ind. Med. & Surg. 20, 244, (May, 1951).

Two recent episodes in which groups of workers contracted dermatitis from contact with freshly laundered coveralls pointed to chemicals used in laundering as the cause. Substitution of acids to neutralize the alkaline cleaning agents instead of thorough rinsing may be responsible. The author's main point is that dermatitis may arise from agents not directly applied on the factory premises.

- 559 Protein Requirement of Hard Workers: III. Influence of Pure Protein and Extractives on Ability to Work. H. Kraut, G. Lehman and A. Szakal, Biochem. Ztschr. 320, 99, (1949). (In German).

This study was carried out with two miners as subjects, and their nitrogen and phosphorous balances were determined over a period of nine months. Their working capacity was determined under different dietary conditions. A lowering of the working capacity was observed when the protein intake was reduced from about 104 gm. to 69-81 gm., which, of course, is still above a physiological minimum. It must be pointed out that on the reduced protein intake the moiety of animal origin dropped from about 0.6 to even less than 0.2. Adding meat extract to the protein-low diet depressed the working capacity but adding protein in the form of pure casein caused a rise in capacity. Enriching the diet with protein (much meat) so that 144 gm. was consumed per day (0.65 being animal in origin) acted very favorably on the work performance.

-- Chem. Abst.

- 560 Comparative Study in Personnel, Either Refining or Selling Petroleum. H. Brevi. Med. Depor. y Trab. 15, 3618, (September, 1950). (In Spanish).

Brevi made a comparative study of the clinical records of 400 persons who had worked in the petroleum industry in Argentina for more than ten years. Half of these workers handled petroleum in the process of refining it. The other half was in the business of selling petroleum and its derivatives. The personnel was found in excellent health. Cardiovascular, respiratory and gastrointestinal diseases, or else anemia, were encountered in a very low percentage of cases in each group, but the given disorder was not related to the industrial duties of the worker. Diseases of the skin were encountered in none of the workers. -- Arch. Ind. Hyg. & Occ. Med.

- 561 Effects of Employment on the Course of Heart Disease. The Staff of the Work Classification Unit, Adult Cardiac Clinic, Third (New York Univ.) Medical Division, Bellevue Hospital. Arch. Ind. Hyg. & Occ. Med. 3, 367-374, (April, 1951).

Information from cardiac clinic records may be useful but cannot be considered representative of all persons with heart disease because of the sampling bias. For clinic records to be of maximum value they should follow standard diagnostic criteria and should contain, in addition to careful and complete clinical notes, the following information: (a) work status and occupational classification, (b) the patient's evaluation of the job with respect to taxing features, (c) the physician's estimate of the job in relation to the cardiac capacity of the patient, (d) changes in occupation in relation to changes in functional and therapeutic classification and in relation to cardiovascular episodes, (e) time and cause of death and occupational status at time of death, including data on any unusual physical exertion. The present studies support the contention that many people with heart disease can and do work, without injury to themselves. A number of patients show improvement while employed. In this series of cases, most of the patients remained in their accustomed jobs. There is need for further long range studies on the subject.

-- Cond. from Authors' Summary and Conclusions

- 562 Significance of the Electrocardiogram, Particularly of Chest Wall Leads, for Evaluation of Silicosis. J. Hormann. Ztschr. Kreislaufforsch. 39, 624, (October, 1950). (In German).

Fair evaluation of the condition of the patient with silicosis and reduced functional capacity requires that any circulatory reaction be determined early. It was demonstrated that chest wall radiograms are most useful with regard to circulatory reaction and also to differentiation of myocardial lesions.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 563 Gastroenterology and Industry. J.T. Bercovitz. Compens. Med. 3, 17-20, (Sept.-Nov., 1950).

Certain minimum gastrointestinal studies should be made in connection with preemployment examinations, especially if the applicant is being considered for an overseas assignment. Ulcers are often unrecognized by the patient even when they have existed a long time, but may have serious

consequences when he is overseas and cannot quickly obtain proper medical aid. Also, tropical climates are most unfavorable for gastric or duodenal ulcers. Cancer of the stomach has been also unrecognized and is another reason for thorough preemployment examination. Employees returning from overseas posts should also be submitted to thorough examination for parasitic infection. Furlough medical and laboratory examinations should be made at the beginning of a furlough.

564 Contribution to Investigations on Workers' Basal Metabolism. Stefan Gelineo and Ivan Baric. Arhiv. za Higijenu Rada 1, 123-127, (1950).

The basal metabolism of workers doing heavy physical labor was higher than that of workers doing lighter physical labor. The average basal metabolic rates of ore loaders, carpenters, and stokers exceeded Harris-Benedict rates by about 19 per cent. Harris-Benedict tables of basal metabolic rates apply only to workers doing lighter physical work.

-- Arch. Ind. Hyg. & Occ. Med.

565 The Rehabilitation of Injured Workmen in Puerto Rico. G.A. Moreu, H.J. Flax, and E.J. Taylor. Compens. Med. 3, 5-8, (Sept.-Nov., 1950).

The operation of the workmen's compensation law and of the State Insurance Fund in Puerto Rico is described. The keystone of the medical program is the Fund's Rehabilitation Center, in the same building as the hospital. Rehabilitation begins as soon as the injured workman awakens from the anesthesia and includes medical, vocational, recreational, social, and job placement service. Whenever possible, patients are permitted to stay at home during treatment, and the compensation checks are received at the center. A work test is given the patient before he is discharged. The rehabilitation service has greatly reduced the period of convalescence and has avoided injuries due to disuse of unaffected portions of the body.

SKIN DISEASES AND BURNS

566 Classification of Chemical Substances Used in Industry According to Their Action on the Skin. A.P. Dolgov. Vestnik ven. i Dermat, No. 6,7-12, (1949).

The classification is (1) definite irritants, such as mineral acids, strong alkali; (2) sensitizers, such as dinitrochloro-benzene, turpentine; (3) substances with combined effects of the preceding two, such as the dichromates; (4) petroleum hydrocarbons, which act principally as inducers of dermatitis; (5) substances which are without action on the skin but penetrate it readily and cause toxic effects within the organism; aniline belongs to this group.

-- Chem. Abst.

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IN RE: ALBERTS
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- 567 Occupational Dermatoses Caused by Tar and Its Derivatives.
M. Fleischhacker. Arhiv. Hig. Rada 1, 37-50, (1950).

Several physiological effects, chiefly dermatosis, are described in eighty cases of workers exposed to coal-tar pitch and other chemicals. Aggravation due to sunlight is ascribed to photosensitization by anthracene, acridine, etc. Health precautions are described including formulas for preventive salves containing ultraviolet absorbers such as zinc oxide, titanium oxide, quinine, etc. -- Chem. Abst.

CHEMICAL HAZARDS

- 568 Toxicity. H.A. Shelanski. Soap Sanit. Chem. 26, 123, 125 and 139, (1950).

The importance of determining the degree of toxicity in a substance to be used in a chemical specialty and basic toxicity tests is discussed. -- Chem. Abst.

- 569 Products: Their Use and Misuse. D.D. Irish. Chem. & Eng. News 29, 1729-1730, (April 30, 1951). (Symposium on Industrial Health and Safety).

The author emphasizes the need of "getting, giving out, and using" information on the proper use of a product, and especially on its toxic properties and the danger of its abuse. The responsibility for this process of getting and giving information begins with the school. Very few professors teach the importance of toxic hazards in the design of plants and operation of chemical processes. There are four channels for distributing information: labels, the salesman's contact, leaflets or pamphlets, and direct correspondence. The label is the most important, but the others should also be of great assistance. The author mentions a request for information, grammatically wrong and badly misspelled, concluding: "As you can see, I ain't no professor, so make it simple." It is always well to follow that advice.

- 570 Evaluating Trichloroethylene Exposures by Urinalyses for Trichloroacetic Acid. A. Ahlmark and S. Forsman. Arch. Ind. Hyg. & Occ. Med. 3, 386-398, (April, 1951).

Inhaled trichloroethylene is partly oxidized in the body to trichloroacetic acid, which is excreted in the urine. The urinary concentration of this acid has been used as an indication of the degree of trichloroethylene exposure and of the effect of this in 122 workers. Exposures entailing trichloroacetic acid excretion of less than 20 mg. per liter of urine rarely give rise to definite effects. Excretions of 40 to 75 mg. per liter produce effects in about half of the persons and 100 mg. per liter in almost all cases. Persons excreting 200 mg. of acid per liter of urine must often ask for sick-leave. Age and sex have not been shown to have any

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bearing on the effects of trichloroethylene. Control of the working atmosphere so that the excretion of trichloroacetic acid may not exceed 20 milligrams per liter of urine is practicable under all conditions.

-- Cond. from Author's Summary

DDT (Dichlorodiphenyltrichloroethane). T.T. Stone and L. Gladstone. Clinical Notes, J. Am. Med. Assn. 145, 1342, (April 28, 1951).

This clinical note presents the case of a worker exposed to DDT who had a four year illness characterized by neurological disturbances and leukopenia. A causal relationship between illness and exposure to DDT is suggested by the fact that the patient improved when taken off his regular job.

Associated Experimental Intoxication; Trichloroethylene and Carbon Tetrachloride. G. DeDominicis. Rass. Clin., Terap. e Sci. Affini 48, 195-200, (1949). (In Italian).

Guinea pigs in three groups were exposed to the vapors of carbon tetrachloride, trichloroethylene, and a mixture of both. Carbon tetrachloride alone was most toxic. It cannot be assumed, in using mixtures of two substances, that their effects will be additive biologically. -- Chem. Abst.

Nicotinic Acid and Carbon Tetrachloride Intoxication. G. DeDominicis. Rass. Clin., Terap. e Sci. Affini 48, 189-194, (1949). (In Italian).

Twelve guinea pigs were repeatedly exposed to the vapors of 3-4 cc. of carbon tetrachloride for 10-15 minutes in an inhalation chamber. Six of them also received 0.1 gram of nicotinamide by injection. The latter had a lower mortality rate during the experiment and greater resistance to some phases of liver damage. The data were inconclusive on the general protective action of nicotinamide in carbon tetrachloride poisoning. -- Chem. Abst.

Experiments on the Toxicity of 2,3,5,6-Tetrachloronitrobenzene. G.A.H. Buttle and J.F. Dyer. J. Pharmacol. 2, 371, (1950).

A daily dose of 215 mg./Kg. for mice and 57 mg./Kg. for rats produced no ill effects. Doses of 1,750 mg./Kg. in mice and 400 mg./Kg. in rats cause an inhibition of growth. -- Chem. Abst.

Toxic Effects of Benzene in the Printing Trades. V. Baccarini, L. Businco, and F. Passalacqua. Boll. Soc. Ital. Biol. Sper. 25, 276-277, (1949). (In Italian).

From the data on workers in contact with benzene, and those using it indirectly, the hemoglobin content of the blood is seen to be reduced, although the corpuscles appear normal. Lymphocytes are abnormally abundant, basophiles and monocytes normal, and the polymorphonuclears diminished. Benzene exerts its toxic action by direct inhalation, and also through the skin. -- Chem. Abst.

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- 576 Contribution to the Knowledge of Metabolism of Benzene and Its Homologues in the Human Organism. J. Roubal and J. Zdrasil. *Zvlastni Otisk z Casopisu Lekkaru Ceskych* 89, 761, (1950). (In Czechoslovakian).

A polarographic method was used to study the metabolism of benzene and its homologues in urine, blood and exhaled air. In all three, benzene is bound to a pyridine derivative which originates probably from a coenzyme. By oxidation and fermentation characteristic crystals are formed, a solution of which gives the typical polarographic wave of m-dinitrobenzene upon exposure to ultraviolet rays. -- Arch. Ind. Hyg. & Occ. Med.

- 577 Phosphine Poisoning. M. Lowenthal. Schweiz. Ztschr. Path. u. Bakt. 12, 313, (1949). (In German).

A case of phosphine poisoning is described. The clinical, pathologic and toxicologic aspects of the case are compared with results obtained from animal experiments with varying concentrations of phosphine. Pronounced blood and lymph stasis, accompanied by brain and liver lesions of a special nature occurred as a result of subacute intoxication. Subchronic poisoning produced degenerative changes of the ganglion cells, indicating that gaseous phosphine must be considered a central nervous system poison. The lesions of the brain and the liver appear to be due to a chemical reaction between the phosphine and the red cells, damage to the vascular wall resulting in spastic and paralytic conditions, and osmotic disturbance of permeability. -- Chem. Abst.

- 578 Permissible Tolerance of Hydrogen Sulfide in the Atmosphere. L.F. Glebova. *Gigiena i Sanit.*, No. 4, p. 19, (1950). (In Russian).

Experiments with children kept in nurseries associated with viscose plants showed typical symptoms of sulfide intoxication caused by the toxic materials carried over by the mothers' clothing. The symptoms were evident, although determinations of carbon disulfide gave negative results and hydrogen sulfide concentrations in the air under the clothes were 0.028 to 0.05 mg./M³ or lower. Apparently the effect is caused by cumulative action of small amounts of hydrogen sulfide. The solution was to transfer the nursing mothers to another department. -- Adaptation of Chem. Abst.

- 579 Fluorides in Air of a Water Plant Feeding Sodium Fluoride. J.C. Zufelt. *Water & Sewage Works* 97, 335-336, (1950).

When atmospheric samples were examined at various locations in a water plant where sodium fluoride is fed as a municipal anticaries measure, the fluorine concentration varied from 0.025 to 0.134 mg./cu. m. for routine operations, compared with the maximum allowable concentration of 2.5 mg./cu.m. Dumping barrels into a hopper produced an atmospheric concentration of 8.89 mg./cu. m. Urinary fluorine concentrations determined for plant personnel varied from 0.1 to 1.58 mg./l. of urine, with an average of 0.72, as compared to the concentration of 2 mg./l. considered as indicative of excessive fluorine absorption.

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- 580 A Case of Asphyxiation in a Diving Bell. B. Doro.
Rass. Med. Ind. 18, 67-74, (1949). (In Italian).

A case of asphyxiation is reported which occurred in a diving bell of 20 X 5m. Autopsy revealed death due to carbon monoxide poisoning. Air samples from the diving bell showed no toxic gases to be present, but the oxygen content of the air was only 6.7 per cent, considerably less than the lowest percentage tolerated (14 per cent). The iron walls of the diving bell, as well as the cement coating of welds from previous repairs had absorbed considerable oxygen from the surrounding air. Tables show the effect of temperature, humidity, and components of the ocean water on the oxidation process in the diving bell. -- Chem. Abst.

- 581 Sulfuric Acid. Data Sheet D-Chem. 49. National Safety Council, 425 North Michigan Avenue, Chicago 11, Illinois. National Safety News 63, 39-40, 92-95, (May, 1951). Reprints available from the Council.

This principal hazard is from contact of the acid with body tissues which may be burned or charred and destroyed, or dermatitis may follow repeated exposure to low concentrations. The eyes must be watched especially, and vapor or mist is irritating to the respiratory tract. The threshold limit has been set at 1 mg. per cu. m. or 0.25 ppm. The necessary precautions in shipping, handling and storage are described, and the use of personal protective equipment, showers, and first aid is discussed briefly.

- 582 Lead Poisoning: IX. The Failure of Lead Poisoning to Affect the Heart.
I. Greenfield and I. Gray. Am. Heart J. 39, 430, (1950).

A variety of studies were performed on 340 patients who had lead poisoning. These studies showed that absorption of lead does not have an adverse effect on the cardiovascular or the peripheral vascular systems. Eighteen references are given. -- Chem. Abst.

- 583 Endarteritis Obliterans in Worker Exposed to Lead. F.M. Troisi.
Med. Lavoro 41, 197, (June-July, 1950). (In Italian).

Troisi reports a case of endarteritis obliterans in a worker exposed to lead, who had worked for 22 years in the foundry of a printing establishment. Gangrene developed in the fifth right toe and required amputation of the toe. A few days later, vascular disorders and pain arose in the fifth left toe. These did not progress and healed in a few months. Treatment included rest, foot contrast-baths, drinking about 2 qt. (2 l) of milk daily, and pharmacological therapy. After recovery the worker changed to an occupation that did not involve lead exposure. No relapses have occurred during the 2-1/2 years that have elapsed since then. -- Arch. Ind. Hyg. & Occ. Med.

- 584 Chronic Retarded Pneumopathies of Beryllium. Anon.
Rev. Tuberc. 13, 832, (1949). (In French).

The pulmonary embarrassment provoked by the inhalation of beryllium dust or powder is of two types: the immediate and transitory pulmonary effects often associated with cutaneous and ocular manifestations, and the chronic,

retarded pneumopathies. The results of personal observations of the latter type described and a review of 36 cases by Hardy are presented. The usual clinical symptoms are emaciation, fatigue, coughing, and dyspnea; the troubles are due more to the beryllium itself than to the silicates and fluorides present with the beryllium. The evolution of the pulmonary nodular development is traced through the reticular, micronodular and nodular stages. Some medical legal aspects of beryllium poisoning are also discussed.

-- Adapted from Nuclear Sc. Abst.

- 585 Analytical Chemistry of Beryllium. V. A New Color Test for Beryllium.
T. Furuhashi. Repts. Sci. Research Inst. (Tokyo), 26, 139-143, (1949).

Mitsui Fast Mordant Blue B concentrated (Mitsui) and Sunchromine Fast Blue MB (Nisshin) have the same structure, that is di-sodium 3-(5-chloro-2-hydroxyphenylazo)-4,5 di-hydroxy-2, 7-naphthalenedisulfonic acid. This dye was found to be a better detector of beryllium than quinalizarin and gives a more distinct end point and no fading. The colorimetric procedure with this dye was worked out in detail.

-- Chem. Abst.

- 586 Health Hazards in the Manufacture of Alkaline Accumulators with Special Reference to Chronic Cadmium Poisoning: A Clinical and Experimental Study.
L. Friberg. Acta Med. Scandinav. 138, Supp. 240, 124 pp., (1950).

The air in the factory contained cadmium-iron dust and nickel-graphite dust in amounts of 3 to 15 mg. cadmium and 10 to 150 mg. nickel per cu. m. of air, and 95 to 85 per cent respectively, of the two kinds of dust were less than five microns. Two groups of workers were studied: (I). Average age 44 years, average employment 20 years; II. Average age 35 years and employment two years. In group I a large proportion showed an increased residual capacity of lungs (emphysema), and a remarkably large number of tuberculous changes. Proteinuria (molecular weight of protein 20,000 to 30,000) occurred in about 67 per cent of group I but probably not in group II. In group I there is an increased sedimentation rate of more than 20 mm. per hour in about half the cases. There is evidence of some liver damage with a slight rise in gamma-globulin of blood plasma in 80 per cent of the people in group I. A mild kind of kidney injury, with lowered concentrating capacity was found in group I. There was slight anemia in about 33 per cent of group I and a yellow staining of teeth in both groups. Experimental studies on rabbits indicated that long exposure to cadmium dust is responsible for the clinical changes found in man. The accepted limit of 0.1 mg. cadmium per cu. m. of air is thought to provide a satisfactory safety margin.

-- Cond. from Chem. Abst.

- 587 Prophylaxis of Manganese Poisoning in Steel Smelting. S.V. Miller, V.N. Dymchenko, S.D. Likhtenshtein and M.I. Episheva. Gigiena i Sanit., No. 1, p. 26, (1950). (In Russian).

Air analysis in various locations of a steel-treating plant showed numerous locations containing over 0.0003 mg./l. of manganese; this is especially true in winter months. Usually manganous oxide and manganese-manganous oxide are found in the aerosols. Localized, individual suction outlets are recommended, especially at the sites of melting operations for generally improved ventilation.

-- Chem. Abst.

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- 588 Acute Vanadium Pentoxide Poisoning. M. Rejskova.
M. Pracovní Lékarství 2, 224-227, (Nov., 1950). (In Czechoslovakian).

Five cases of acute vanadium pentoxide poisoning following a short period of exposure are reported. The clinical picture was identical with that described in the literature; in all cases irritation of the upper respiratory tract, with the objective finding of hyperemia and damage to the mucosa, was present. In one case it was necessary to consider the possibility of psychological disturbances (the tendency to weep frequently) due to absorption. Otherwise no disturbances could be found which pointed to degenerative foci in the central nervous system, the stomach or the kidneys.

-- English Summary

- 589 The Effect of Different Dose Levels of Zirconium on the Excretion and Distribution of Plutonium and Yttrium. J. Schubert and Marcia R. White. J. Biol. Chem. 184, 191, (1950).

Zirconium injected into rats one hour after injection of plutonium or yttrium causes an increase in urinary excretion of plutonium or yttrium, proportional to the dose of zirconium. The excess of plutonium excreted after zirconium treatment is primarily derived from the soft tissues, while the excess of yttrium excreted is derived from the skeleton as well. Following injection of zirconium the plutonium blood level was reduced to half the control level in 5 minutes and to 0.1 in 90 minutes. Zirconium and salts of other hydrolyzable elements, such as titanium, iron and manganese, apparently remove plutonium by absorption on colloidal aggregates formed in the blood.

-- Adaptation of Chem. Abst.

- 590 The Use of BAL in Heavy Metal Poisoning. H.N. MacFarland.
Indust. Health Rev. 2, 33, (1950).

BAL (British anti-lewisite) appears to be of value in the treatment of poisoning by salts of arsenic, mercury, cadmium, gold, antimony, copper, nickel and tungsten. Little success has been obtained in the case of lead, uranium, silver, cobalt, selenium, and tellurium compounds.

-- Nuclear Sc. Abst.

- 591 Occupational Cancer. New York State Occupational Cancer Committee,
May R. Mayers, Chairman. Compens. Med. 3, 9-16, (Sept.-Nov., 1950).

This report provides a table of chemical substances and physical agents used in industry and now suspected of having carcinogenic properties and the types of cancer believed to be caused by them. Others may be added and some of those listed may be dropped as new data become available. A form used in New York State for reporting cancer cases is included. The report stresses the importance of accurate and complete occupational history of all cases where there may be a suspicion of occupational cause.

Dealing with people, getting along with people, getting people to work for you, is an art.

-- Executive Training Forum

- 592 Sanitary and Hygienic Working Conditions in Use of Shale Generator Tar for Binder in the Casting Industry. E.M. Stepanenko. *Gigena i Sanit.*, No. 5, p. 24, (1950). (In Russian).

Thermal decomposition of shale generator tar forms harmful gaseous products which contain appreciable amounts of carbon monoxide. Vegetable oils used as binding agents give a similar gaseous decomposition and actually generate more gases than the tar. The volatiles from the tar include aldehydes and phenols, as well as appreciable amounts of sulfur dioxide and volatile sulfur compounds. The results of air analysis in various locations in a casting plant are given.

-- Chem. Abst.

- 593 Industrial Anthrax in the United States. An Epidemiologic Study. A.H. Wolff and H. Heimann. *Am. J. Hyg.* 53, 80-109, (January, 1951).

In recent years human anthrax of industrial origin has become of increasing importance in the United States, especially in the New England and Middle Atlantic States. Carpet wool, rather than apparel wools is shown by this study to be the responsible agent. Human anthrax is shown to be due essentially to goat hair, particularly that originating in certain parts of Asia. In the leather industry, goat skins from Asia are responsible for human anthrax. Recommendations for the control of industrial anthrax include the problem of importation as well as the processing of hide, skins, hair, and wool.

-- Cond. from Authors' Summary and Conclusions

- 594 Estrogen Adsorption and Toxicity in Male Workers in a Chemical Plant. G.H. Fisk, *Can. M. A. J.* 62, 285, (1950).

Careless handling of concentrated estrogen preparations during manufacture resulted in toxic symptoms in five male workers.

-- Chem. Abst.

- 595 Castor Bean: An Industrial Hazard As A Contaminant of Green Coffee Dust and Used Burlap Bags. K.D. Figley and F.F.A. Rawling. *J. Allergy* 21, 545, (November, 1950).

Since April, 1949 Figley and Rawling have discovered nine cases of sensitivity to the bean allergen. All nine suffered severe acute rhinitis accompanied by difficult breathing. Seven of the patients worked in the coffee processing industry; the other two worked in factories for stamping metal parts, in no way connected with the coffee industry. But all nine worked with burlap bags which had been contaminated by castor beans or castor bean pomace. All nine gave strongly positive skin reactions by the scratch method to purified castor bean allergen but four also reacted to an extract of pure coffee beans carefully washed to exclude the castor bean contaminant. This allergenic fraction in the coffee bean is inactivated by the commercial roasting process. The authors stress that the castor bean contains the most potent allergenic fractions known to man and in addition a toxic albumin, ricin, which rivals cobra venom or diphtheria toxin in potency. Therefore only dericinated castor bean extract should be used for skin testing, and then only by the scratch (dermal) method.

-- Cond. from Arch. Ind. Hyg. & Occ. Med.

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- 596 Identification of Castor Bean Allergen in Green Coffee. E.J. Coulson, J.R. Spies and H. Stevens. J. Allergy 21, 554, (November, 1950).

This report supplements the clinical evidence which led Figley and Rawling to recognize apparent sensitiveness to green coffee dust as actually castor bean allergy. Their interest in the identification of castor bean allergen prompted examination of additional specimens of green coffee dust and other coffee products collected from different sources. Castor bean allergen was identified in three samples of green coffee dust from different coffee-roasting plants. Castor bean allergen was also found in one sample of cleaned green coffee beans from a commercial source. Thus the results amplify Figley and Rawling's observations and imply that it is not exceptional for green coffee to be contaminated with some castor bean derivative. No castor bean allergen was detected by Coulson and his co-workers in samples of parchment coffee or cleaned green coffee beans which were produced at a Guatemalan experiment station and were known to have had no contact with castor bean. Available evidence indicates that hazards resulting from castor bean contamination of green coffee are significant only to those who are exposed to green coffee.

-- Arch. Ind. Hyg. & Occ. Med.

INDUSTRIAL DUSTS

- 597 A Review of Illnesses in the Cotton Textile Industry. Anon. Tenn. Ind. Hyg. News 8, 1-3, (April, 1951).

At least four different illnesses associated with exposure to cotton dust have been described to date. Byssinosis is a disease resulting from long exposure to cotton dust. There are three stages of the disease, in which the symptoms progress from irritation of the air passages, through bronchitis, asthma, cough and expectoration until total disablement is reached. Removal from the dusty atmosphere brings relief and complete recovery in some cases in the first and second stages. Complete recovery is impossible in the third stage. Mill fever occurs in new workers exposed to a dusty atmosphere and to older workers returning to work after extended absence or to a dustier atmosphere. Complete recovery is possible after a period of continuous work. Weavers' cough is associated only with the use of mildewed yarns. Removal from the working area or substitution of non-mildewed yarns results in complete recovery. An illness of similar character and symptoms occurred from the handling of low grade stained cotton, which was contaminated in the field. Considerable reduction in the exposure to cotton dust may be effected by use of dust suppressing agents applied to the cotton, and by the use of local exhaust ventilation. Respiratory protection may be used in some instances.

- 598 A Contribution to the Study of Asbestosis. P. Cartier. Arch. Malad. Profess. 10, 589-595, (1949). (In French).

The author has been in medical charge of 3,242 men employed in asbestos mines in Canada, where over 70 per cent of the world's supply of asbestos is mined. Cases of asbestosis were found only in those who had

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been employed for at least 14 years and exposed to air containing at least 5 million particles of asbestos fibers per cu. ft., the fibers being from 10 to 250 microns in length. The outstanding feature of this report is the mildness of any pulmonary trouble among the asbestos miners compared to that reported in the United States and Great Britain as occurring in factories where asbestos is spun and woven. No clinical symptoms of pulmonary fibrosis were present. No case of pure asbestosis was detected in those under age 60, and no physical incapacity was evident. Cases of tuberculosis were not more frequent among the miners than among the clerical staff and the rest of the community, although that incidence was high. It was difficult to ascribe any cardiac affections present to asbestosis, because of the late age at which it appeared. Postmortem findings and roentgenologic examinations indicate that asbestosis is a pathological entity; but among the miners it develops so slowly as not to shorten working life, and there is no evidence that it predisposes to tuberculosis. The conclusions reached are supported by the opinions of experts at Saranac. -- Cond. from Bull. Hyg.

- 599 On the Retention of Air-Borne Particulates in the Human Lung: II.
H.D. Landahl, T.N. Tracewell and W.H. Lassen. Arch. Ind. Hyg. & Occ. Med. 3, 359-366, (April, 1951).

The results of experiments to determine the retention of triphenyl phosphate droplets in the human respiratory tract are reported, and they are much as would be expected from other experiments. A study of subject variability revealed no marked correlations, though it would appear that retention decreases with body size and is somewhat larger for women than for men. Experiments in which the expired air was divided into four equal fractions suggest that the variability is greater in the fractions exhaled first than in those exhaled last. Different patterns of respiration were used, in which the retentions of various-sized particles were measured. The results of these experiments are compared with previous calculations, extended somewhat. Agreement is general, with some discrepancies. The results indicate, however, that the calculations for deposition in various parts of the respiratory tract are fairly accurate. -- Authors' Summary

- 600 Occupational Factors in Pulmonary Dust Disease. G.C. Smith.
M. J. Australia 2, 777, (November 25, 1950).

Smith briefly reviews some of the main factors of pulmonary dust disease of occupational origin and adds some evidence from his own experience. He emphasizes that the diagnosis should not be made unless it is known that the patient has been exposed to harmful dusts. The problem is examined from the point of view of dust composition, particle size, and duration of exposure. A short description is given of one of the less frequent dust hazards to basalt workers, biograph operators, and those exposed to talc, graphite, cement, and certain metallic and vegetable dusts. The principles of prevention of pulmonary dust disease are summarized.

-- Arch. Ind. Hyg. & Occ. Med.

- 601 Delayed Pneumoconiosis. E. Martin. Rev. Med. Miniere,
p. 25, (October-November-December, 1949).

Martin describes six subjects with delayed pneumoconiosis who were followed over a long period and whose case histories are illustrated with

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numerous films. Pneumoconiosis with delayed evolution may develop either immediately or many years after the cessation of dust exposure. The disease develops slowly. The part played in its genesis by silica appears to have been exaggerated. It appears to be related to early tuberculous infection.

-- Adaptation of English Summary

Animal Experiments in the Study of the Biological Action of Dusts.

A. Policard. Rev. Med. Miniere, (October-November-December, 1949). (French).

Policard particularly discusses the design and value of animal experiments. The design of experiments involves the choice of animal (the rat appears to be the most suitable) as well as the selection of the dust in which the two essential criteria are the freshness of the material and its particle size. The dust may be introduced by inhalation in a dusting cabinet or by intratracheal or laryngeal injection of physiological solutions in which the dust is suspended. The reaction of connective tissue may be studied after subcutaneous, intramuscular or intraperitoneal injection of the dust. The general effect on cells and on tissue make it possible to distinguish between one type and another. At present, the chief obstacle to progress in physiopathological research in this field lies in our inadequate knowledge concerning the way in which fibrous tissue forms.

-- Adaptation of English Summary

Comparative Animal Experiments on the Effect of Freshly Broken and So-Called "Old" Quartz from Silicotic Lungs. J.R. Ruttner. Ztschr. Unfallmed. u. Berufskrankh. 43, 66-73, (March 15, 1950). (In German).

It results from morphological investigations in the field of silicosis that even after having remained for decades in the human tissue, quartz does not lose its specific silicogenic effect. This statement can be ascertained by animal experiment, as it is easily possible to produce small silicotic nodules with quartz from silicotic lungs. Such silicotic nodules experimentally set are not to be differentiated from those produced by pure, recently broken quartz under the same experimental conditions. There is, therefore, no difference in efficacy between so-called old quartz and that freshly broken.

-- English Summary

Pneumoconiosis and Silicosis. T.K. Elliott.

Iron & Coal Trades Rev. 161, 15-16, (July 7, 1950).

Summarizing the role of free silica in the development of silicosis and pneumoconiosis it appears that (a) any dust if inhaled in sufficient concentration over a certain period of time can produce disease of the lungs; (b) the nature of the disease is influenced by many factors, including the composition of the dust inhaled; (c) dusts containing a relatively high percentage of free silica (e.g., 90 per cent) produce typical silicosis in which dense fibrosis, nodulation and liability to tuberculosis are prominent features; (d) mixed dusts which may contain varying proportions of free silica (e.g., from 5 to 15 per cent) give rise to different pathological features in which, however, the action of the siliceous element can still be recognized in the lesions produced. The toxigenic effects of the siliceous fraction may be modified by the presence of so-called

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antidotal compounds which are thus alleged to have certain protective characteristics; (e) in dusts containing a relatively low percentage of free silica (e.g., coal dust) often referred to as "inert" dusts, the presence of free silica has probably not a fundamental influence on the production of the disease, although its presence and action is still questionable. The main features of the disease produced by these inert coal dusts are probably due to the result of mechanical overloading of the lungs; (f) although any dust, if inhaled in sufficient quantities, is liable to produce disease, other facts being equal, the one containing the higher percentage of free silica is more liable to produce disease of a type which is more prone to be followed by tuberculosis.

-- Author's Summary

- 605 Two New Clinical Signs in Silicosis. M. Maulini.
Ind. Med. & Surg. 20, 211, (May, 1951).

The two hitherto unmentioned symptoms described in this brief paper are "paracardiac pain" and "knee sign." The author distinguishes the first from the asystole of pulmonary origin and the symptom of crouching or squatting described by Donzelot. The pain is associated with dyspnea and usually appears without apparent cause. The "knee sign" refers to the patient's pressing his chest against his knees to relieve his shortness of breath. It is also associated with impaired respiratory function and is the forerunner of other symptoms of cardiac failure.

- 606 The Erythrocyte Sedimentation Rate in Stages of Silicosis. F. Foubert and G. LaFay. Rev. Med. Miniere, p. 19, (1950). (In French).

Using the Fuente Hita method in a sloping tube, the authors have studied the sedimentation rate in 464 cases of silicosis. They have established sedimentation curves after observing the subjects for several years. In 30 cases of silicotuberculosis they almost always found an accelerated sedimentation rate, which might precede the manifestation of the tuberculous process. In 84 of 108 cases of the nodular type, they observed a low rate. In cases with massive shadows (90) they observed two types of curve, high in cases with diffuse extensive shadows and low in those with shadows showing retraction. In 236 cases with coalescent shadows the same results were produced as in the preceding category, according to whether they were progressive or not. The authors believe the erythrocyte sedimentation rate to be useful in following the progress of silicosis.

-- English Summary

- 607 Blood Changes in Silicosis and Silicotuberculosis. A. Weisinger. Beitr. Silikose-forsch., No. 2, p. 21, (1949). (In German).

In a study of the erythrocyte sedimentation rate among 2,213 silicotics it was found that it is not possible to establish the existence of active silicotuberculosis purely on that basis. Among persons with moderately advanced silicosis a significantly high rate can be explained by changes in protein equilibrium linked with the destruction of pulmonary tissue.

-- Cond. from Bull. Doc. Med. Inst. Hyg. Mines

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- 608 Silicosis and Temporary Disability. P. Cozamian.
Med. Usine 11, 611, (December, 1949). (In French).

The French law of August 2, 1945 provides no compensation for temporary disablement from silicosis. The reason for this is that the development of silicosis is gradual and the trauma is unlike that from an industrial accident. In industrial trauma the injury occurs quite suddenly and temporary disability may commence immediately. In silicosis, however, the disease is chronic and its development slow with disablement occurring terminally. Treatment is of no avail, and eventually permanent, partial, or total disability occurs. In this disease, therefore, there is no temporary disability. The author discusses the justification of such a law as it applies to simple silicosis, silicosis with nontuberculous complications, silicotuberculosis and silicosis with cardiovascular complications.

-- Adaptation by Arch. Ind. Hyg. & Occ. Med.

- 609 Compensation for Change of Employment in Silicosis. P. Cozamian.
Med. Usine 11, 509, (December, 1949). (In French).

Medical examiners responsible for setting compensation rates for change of employment make decisions based on personal opinion. In the interest of equality, the author suggests that this matter be resolved in a more coordinated fashion. According to the law, compensation is awarded only once and cannot exceed five times the old monthly salary. It is intended to assist the worker while he adapts himself to his new job and reaches the salary and degree of proficiency he had attained in his old job. This article outlines the guiding principles by which it is possible to make a more equitable decision as to the amount of compensation to be awarded.

-- Adaptation by Arch. Ind. Hyg. & Occ. Med.

- 610 Report on a Country-Wide Study of Silicosis in the Metal Mines of Japan.
M. Yamamoto. Arch. Ind. Hyg. & Occ. Med. 3, 339-349, (April, 1951).

For this investigation 51 metal mines, each of which employs more than 100 workers, were selected, consideration being given to accessibility. All workers in dusty jobs were examined, with special attention to those exposed ten years or more. All were examined by 35 mm. photofluorography, after which direct roentgenograms were taken where indicated. Altogether, 23,823 workers were examined, 18,906 by photofluorography, and 4,926 by direct roentgenography. A total percentage of 11.51 of silicosis of all grades was computed among the total number of workers examined. The incidence rate of silicosis increases with age, but more rapidly in the younger age groups. The incidence rate of each grade of silicosis shows a normal distribution for all groups 30 years old or over and also in relation to length of service in dusty occupations. The incidence rate of silicosis is in general proportional to the exposure to dust in the mine, and ranged from 81 to 45.4 per cent. This relationship is often obscured by changes in the occupation of the workers. The influence of silicosis on tuberculosis could not be definitely determined. Further study will be made of this question. Vital capacity was found to decrease consistently with age, whether silicosis was present or not. In workers with third grade silicosis it was 10 per cent lower in each age group.

- 611 Northern Rhodesia Silicosis Medical Bureau: Annual Report for 1947; Annual Report for 1948. J.F.C. Haslam, Chairman. Lusaka, Government Printer, 18 pp.

These two reports trace the steps preparatory to the legal enactment establishing a silicosis medical bureau in Northern Rhodesia, on the plan of that established for the gold mines of the Rand in the Transvaal. This new bureau is concerned with four copper mines where a potential risk of silicosis is held to exist. European workers must now be certified by the Silicosis Medical Bureau and must undergo frequent periodic examinations. The African workers stay at the mines only a few years at the longest, but it is thought that it will be practicable to bring Africans from all four mines to the new Institute at Kitwe for full scale roentgenological and clinical examinations in the future.

-- Cond. from Bull. Hyg.

RADIOACTIVITY AND X-RADIATION

- 612 Medical Applications of Radiations and Radioactivity. I. Lampe. Ind. Med. and Surg. 20, 221-226, (May, 1951).

The history and development of radiotherapy are traced. Modern radiotherapy is said to be only about 30 years of age, and much remains to be achieved. Its application is found in nearly every field of medicine. The field may be divided into non-cancerous and cancerous diseases. The wide diversity of disease conditions in which radiation and radioactivity offer therapeutic benefits is indicated and particular stress is placed on the radiotherapy of the cancerous diseases.

- 613 Modern Radiation Hazards in Clinical Practice. W.V. Mayneord. Brit. J. Radiology 24, 6-11, (Jan., 1951).

The quantities of beta and gamma ray emitters now used clinically present hospital organizations with the same radiation problems arising in atomic energy projects. Clinical treatment techniques now frequently involve hundreds of millicuries of high-energy gamma ray emitters, and the new telecurie sources may well reach thousands of curies. Design of laboratories, importance of techniques, personnel dosimetry, waste disposal, and personnel exposure records are discussed.

-- Nuclear Sci. Absts.

- 614 Neutron Cataracts. A.C. Krause and J.O. Bond. Am. J. Ophth. 34, 25-35, (January, 1951).

This paper reviews the clinical and experimental investigations of roentgen and neutron radiation cataracts. The following main points are presented: Both these forms of radiant energy primarily damage the interior epithelial cells of the lens cortex, which in turn produces abnormal fibers leading to opacities in the subcapsular regions of the cortices. Neutrons produce more damage per unit of absorbed energy than roentgen rays. This

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probably produces a shorter latent period. The oxidation of sulfhydryl groups on the enzymes of normal lens metabolism is presented as a possible mechanism for the biologic effect on the lens structure. Future investigations should be directed to working out (a) exact data of exposures of neutrons required to produce cataracts; (b) the specific effect of radiation on normal lens metabolism; (c) methods of prevention both before and after exposure.

-- Arch. Ind. Hyg. & Occ. Med.

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Atomic Burn Injury. E.I. Evans.

J. Am. Med. Assn. 145, 1342-1345, (April 28, 1951).

A brief discussion is given of the thermal hazards of an atomic bomb explosion as it might affect civilian casualty services in an American city. Some details of emergency management of the burn patient are presented. The personnel required for adequate mass burn care are discussed briefly. The need for early organization for the training of first aid and medical workers for this effort is emphasized.

-- Author's Summary

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Radiation Protection from the Industrial Hygiene Standpoint.

J.C. Soet. Ind. Med. & Surg. 20, 227-233, (May, 1950).

The great increase in the use of x-radiation within the past few years has increased the possibility of exposure to a much greater extent than the use of isotopes and other cases of exposure to pile-developed radiation. The author discusses properties of x-rays and new applications, both medical and industrial, and assesses the hazard connected with each. He points out that the use of pile-produced materials has not advanced as predicted several years ago in some of the more spectacular statements.

Progress Report: Spleen Shielding Experiments. L.O. Jacobson, E.L. Simmons, Edna K. Marks, Melba J. Robson, Evelyn O. Gaston, and W.F. Bethard. Pp. 22-29. Modification of Lead Shields for Protection of the Spleen and Appendix During Total-Body X-Irradiation (Abstract). Edna K. Marks. Pp. 30-31. Effect of Spleen Protection During X-Irradiation. E. Lorenz, L.O. Jacobson, Delta Uphoff, Harriet Sutton and R. Schweisthal. Pp. 36-38. Biol. and Med. Divisions Quart. Rept., (February, March, April, 1950). Argonne Natl. Lab.

The first report is concerned with the effects on small animals of lead-shielding the spleen during exposure of the entire body to x-radiation. The report concerning the modification of lead shields is given in its entirety. The changes contribute to better protection. The third report includes some follow-up results and a study of the effects of spleen protection of mice carrying a transplanted lymphosarcoma and given a single body exposure to x-radiation.

-- Cond. from Nuclear Sci. Abst.

618

X-Radiation from Electron Microscopes. J.H.L. Watson and L.E. Preuss. Science 112, 407-409, (October 6, 1950)..

Results of a survey on x-radiation produced while taking motion pictures of electron-microscope images are reported along with the data of surveys conducted on three instruments operating under normal conditions. Abnormal conditions are described, in which a more intense beam was allowed

to strike an inclined target with a corresponding increase in x-ray hazard. However, these conditions are usually transient in the microscope, and it is doubtful if daily doses above tolerance would result.

-- Cond. from Nuclear Sci. Absts.

- 619 The Uranium Pile. T. Price.
Atomics 1, 167, (June, 1950).

In continuation of a previous discussion (Atomics 1, 99-106, 1950), the author deals with the choice of coolants for uranium piles, the health hazards to the personnel operating a pile, and the design of protective shields. The by-products of uranium piles are described, and the working lifetime of a pile is assessed. Twenty references are included.

-- Nuclear Sci. Absts.

- 620 A Hands and Feet Contamination Monitor. F.S. Goulding and
K.E.G. Perry. Atomics (London), 2, 43-50, (February, 1951).

The design of a permanently installed monitor for use in monitoring the hands, feet, and clothes of workers using radioactive materials is discussed. Provision for the detection of alpha, beta, and gamma contamination is included, and, as far as possible, the operation of the instrument is fully automatic to allow for use by unskilled workers. In the case of hands and feet, indication is given by meters showing integrated counts over a short period, with an alarm bell to give warning of excess dose. A counting rate meter having a roughly logarithmic scale and also a loud-speaker indication are included for use with the clothing probes.

-- Nuclear Sci. Absts.

- 621 Monitor for Airborne Radioactive Dust. J.B.H. Kuper, E.H. Foster and
W. Bernstein. Atomic Energy Commission Unclassified Document 800, (No Date).

This eight page paper describes a continuous monitoring instrument, several of which have been constructed and operated at Brookhaven for studying the natural radioactive background and its daily variations. A strip of filter paper is moved continuously across an aperture through which the air to be monitored is pumped. After dust collection the paper passes one or more counters. The standard Brookhaven arrangement utilizes one mica window beta-gamma counter which sees the dust sample about one hour after collection and an alpha counter which sees the sample about four hours later. The apparatus is so designed that additional counters can readily be used, or the time sequence of the various counts readily altered from a minimum of about one-half hour to a maximum of about 18 hours following collection.

-- Adaptation of Nuclear Sci. Absts.

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IN RE: AIR ABST'S NOVEMBER 1950

HWBB-0014113

ENVIRONMENTAL MEASUREMENTS

Collection of Mist and Dust for Particle Size Measurement: Electrostatic Precipitation on Hemacytometer. H.G. Bourne, Jr., and L.B. Fosdick. Anal. Chem. 22, 1563-1565, (1950).

With commercially available equipment a method was devised for collecting air-borne particles by electrostatic precipitation in order to determine particle size. The apparatus requires a Spencer No. 1483 bright line hemacytometer and the Mine Safety Appliances electrostatic precipitator. (Further details concerning the preparation of the apparatus are given.) When the dust-and mist-laden air is drawn through the precipitator the particulate matter is deposited electrostatically on the hemacytometer. After obtaining a sufficient deposit the hemacytometer is transferred to a microscope stage where the particles are counted under an oil immersion objective. Diameters may be measured by means of a filar micrometer. Statistical parameters are determined as explained by Dalla-Valle (Micromeritics, pp. 55-57, 1948 (C.A. 42, 4442-1)). -- Cond. from Chem. Absts.

Some Problems of Industrial Air Analysis. V. Vouk and M. Fugas. Arhiv za Higijenu Rada 1, 168-191, (1950).

Some important problems of industrial air analysis are discussed: (1) maximal allowable concentrations, (2) sampling procedures and (3) calibration of instruments and analytical methods. Tables comparing American, British, and Soviet maximum allowable concentrations are included. -- English Summary from Arch. Ind. Hyg. & Occ. Med.

Gas Tester. T. Wilner. Tek. Tid. 80, 553-554, (1950). (In Dutch).

An apparatus originally designed for the detection of very small amounts of combat gas is used for detection of halogen-substituted substances in the air, such as carbon tetrachloride, trichloroethylene, chlorobenzene and cooling agents of the freon type. A small electric fan drives the air to be tested through a small catalyst spiral where the acid decomposition products of the detected substance cause a distinct red color change on a specially impregnated test paper. The construction of the apparatus is described in detail. -- Cond. from Chem. Absts.

Determination of Parathion in Air Samples by Ultraviolet Absorption Spectroscopy. R.C. Hirt and J.B. Gisclard. Anal. Chem. 23, 185-187, (January, 1951).

A sensitive method for determining the concentration of parathion present as air-borne dust, mist, or vapor was needed for industrial hygiene work directed toward keeping workroom atmospheres free of this toxic material. This determination was made by the ultraviolet spectroscopic analysis of parathion in ethyl alcohol which had been used to scrub a known volume of air.

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The detectability is calculated to be 9 micrograms when a 50-mm. absorption cell is used. If parathion is present only as vapor, a large volume of air must be sampled because of the low vapor pressure of parathion. Data from collected samples showed that nearly all positive results in tests for parathion were due to air-borne dust or mist. This method offers a sensitive means of determining the concentration of parathion in the atmosphere, which can be used for the monitoring of manufacturing and packaging operations, as well as for laboratory studies of such factors as vapor pressure and vapor phase toxicity.-- Authors' Summary from Arch. Ind. Hyg. & Occ. Med.

- 626 Separate Determination of Fluorides as Gases or Aerosols.
G.S. Luzina. Zavodskaya Lab. 16, 623, (1950). (In Russian).

In air analysis the aerosol is separated by means of an electric precipitator with 13,000 volts. The gaseous fluorides are absorbed by a liquid absorbant. -- Chem. Abst.

- 627 Rapid Determination of Aniline in Industrial Establishments.
A.I. Bulycheva. Zavodskaya Lab. 14, 1208, (1948). (In Russian).

The method is based on colorimetry of the reaction of aniline with chloramine-T in alkaline solution in the presence of phenol (use of 3 per cent phenol in 2 per cent sodium hydroxide is recommended). The blue color builds up in 15 to 20 minutes and is stable two to three days. The determination is done visually with a calibration set of standards. Determination of aniline in the atmosphere is readily done by aspiration into a water trap; 92 to 100 per cent recovery and determination is possible with samples containing as little as 0.01 to 0.2 mg./l. -- Chem. Abst.

- 628 Colorimetric Determination of Small Quantities of Diphenylamine in Air.
B.V. Ponomarenko. Zavodskaya Lab. 13, 937, (1947). (In Russian).

The determination of diphenylamine is based on its reaction with diazotusulfanilic acid in an acid solution. The reaction product is violet-red. Diphenylamine in air is best absorbed in 50 per cent sulfuric acid. -- Chem. Abst.

- 629 Determination of Free Quartz in Lorraine Iron Ores. J. Aubry and G. Turpin. Rev. Met. 47, 146, (1950). (In French).

A 1-gram sample ground to pass 120 mesh is treated in the cold with a mixture of acetic acid and sodium acetate of hydrogen iron concentration 2.5, filtered through a tared alundum crucible, and the precipitate boiled for a few minutes in 20 per cent sodium sulfide solution. After filtering through the same crucible the precipitate is transferred into the original beaker, boiled with 100 cc. of sodium sulfide solution, filtered through the crucible, and washed with hot water. The precipitate is transferred to a beaker, treated with 200 cc. hydrochloric acid and 200 cc. nitric acid, and then filtered through the crucible, washed with hot water, dried, and weighed. -- Chem. Abst.

See also

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IN RE: AIRBORNE NOVENBER 1950

- 630 Toxicological Study of the Barium Content of the Stomach.
Blanche D.E. Gaillard. Pharm. Weekblad. 85, 799-801, (1950). (In Dutch).

The barium content of various tissues of a person accidentally poisoned by barium chloride was determined. The tissues were digested with nitric and sulfuric acids, diluted with water, filtered, and the precipitate ashed. The ash was mixed with potassium carbonate and sodium carbonate, fused, cooled, dissolved in water, and barium sulfate precipitated. Calculated as barium chloride, pancreas and the stomach content contained 0 mg., the stomach wall 116 mg., and the intestines 53.5 mg. per 100 g. sample.

-- Chem. Abst.

PREVENTIVE ENGINEERING

- 631 Engineering Phases of Plant Health Control. W.A. Cook. Ind. & Eng. Chem. 29, 1517-1518, (April 16, 1951). (Symposium on Industrial Health and Safety).

The author discusses briefly the various factors in industrial health, including exposure to radiation as well as the older hazards, and concludes as follows: "In order to ensure a continuing effective control of conditions affecting health, information should be obtained on toxicological properties of substance used and produced, periodic determinations should be made of exposures to potentially injurious materials and processes, and any conditions causing excessive exposures should be brought under proper control."

- 632 Air Conditioning and the Health of the Industrial Worker. T. Bedford. J. Instn. Heat & Vent. Engin. 17, 112, (May, 1949).

The quality of air has a profound influence on health. Air conditioning increases worker efficiency and comfort but has no effect on the incidence of sickness. Among men doing heavy work and exposed to sudden changes of temperature, illness and mortality rates are higher. Good ventilation is desired, but the effectiveness of air germicides is doubtful. Accidents are at a minimum at temperatures between 65 and 69 F. Equivalent temperature, which makes allowances for radiation, dry bulb temperature and air movements, is often a better index of warmth than effective temperature. Adequate and variable air movement is desired. Thirty-seven references are given.

-- Refrig. Abst.

- 633 Campaign Against Dust in Belgian Coal Mines. P. Ledent. Arch. Belges Med. Sociale Hyg. 8, 67, (February, 1950). (In French).

Various measures for reducing the dust raised in the mining process are being introduced into a large number of Belgian coal mines. Among these measures are: exhauster machines for dry dust; apparatus for the removal of sludge; humidification of the coal; the use of combined hammer and pick with automatic water spraying device. In general, the miners were not agreeable to the use of any type of mask. -- Cond. from Arch. Ind. Hyg. & Occ. Med.

- 634 Decontamination and Removal of Spilled Mercury by Ferric Chloride.
S.F. Yavorovskaya. *Gigiena i Sanit.*, No. 3, pp. 19, (1949). (In Russian).

A 20 per cent solution of ferric chloride is a most effective decontaminant for mercury drops; the coating produced on the droplets is more effective and durable than is that formed by other agents; oil, dilute nitric acid, potassium permanganate, hydrogen sulfide, sulfur emulsions, clay. The effect is that of sharp lowering of the vapor pressure of mercury in the surrounding air; thus 1.5 mg./cu. m. concentration was reduced to 0.01 in experiments lasting up to 70 days (at the end of the period a rise of 0.07 was noted). -- Chem. Abst.

- 635 Chlorination of the Gases Given Off in Factories.
R. Freitag. *Zucker* 3, 16, (1950).

In efforts to eliminate the unpleasant hydrogen sulfide gas generated in viscose rayon factories, the use of automatically regulated chlorine treatment has been found to be most satisfactory. It has been determined that the amount of chlorine needed is only a portion of the theoretical requirement for oxidation of the hydrogen sulfide, and that the chlorine apparently acts as a catalyst in the destruction of the hydrogen sulfide. -- Chem. Abst.

- 636 Waste Gases of Vegetable Oil Oxidation Processes and Their Disposal.
G.M. Ginodman. *Gigiena i Sanit.*, No. 3, pp. 22, (1949). (In Russian).

The gases contain acrolein and unknown organic acids. They can be burned in open furnaces at 800 to 900° C. with complete loss of odor. Catalytic oxidation at 200 to 300° C. is more satisfactory. -- Chem. Abst.

- 637 The Rate of Bactericidal Action of Triethylene Glycol Vapor on Micro-organisms Dispersed Into the Air in Small Droplets. W. Lester, Jr., O.H. Robertson, T.T. Puck, H. Wise and Mable Smith. *Am. J. Hyg.* 50, 175, (1949).

Hemolytic streptococcic group C, pneumococci type I and staphylococcus albus were atomized into a room constructed to maintain temperature, relative humidity and the degree of glycol vapor saturation at the desired level. The bacterial content of the air was determined by means of bubbler sampler and blood agar settling plates. In four minutes the air samples were essentially free from bacteria when the experiment was carried out at 15 to 40 per cent relative humidity and 40 to 100 per cent saturation of glycol vapor at room temperature. The apparent bactericidal action increased progressively as the relative humidity increased from 5 to 55 per cent with increasing percentage saturation of glycol vapor. When humidity increased beyond 50 per cent, rapid diminution of the rate of killing of the bacterial cells occurred with any given percentage saturation of glycol vapor.

-- Adaptation of Chem. Abst.

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- 638 Comparison Between the Influence of Water Vapor and Triethylene Glycol Vapor on the Bacteria Content of Air in a Playroom in a Children's Home Under Ordinary Working Conditions. E. Gedda. Nord. Hyg. Tidskr., pp. 275, (1950). (In Norwegian).

After reducing the bacterial content of the air 40 to 83 per cent in earlier examinations in children's homes under ordinary working conditions with triethylene glycol vapor, the author compared the results with those obtained with the same apparatus dispersing water vapor. Water vapor gave a reduction of only 30 per cent, whereas glycol vapor gave a reduction of 60 per cent. A summary is given of temperatures, relative humidities and concentrations of glycol vapor in previously published examinations of this kind in Goteborg. The apparatus which is produced by a firm in Goteborg consists of an electric hotplate automatically supplied by a glycol reservoir and provided with a fan. -- Arch. Ind. Hyg. & Occ. Med.

COMMUNITY AIR HYGIENE

- 639 Air Pollution. H.H. Schrenk. Chem. & Eng. News 29, 1640-1642, (April 23, 1951).

Controlling air pollution outside the plant is more difficult than preventing objectionable concentrations of harmful materials inside the plant, because weather and other factors interfere. Nuisance value cannot be measured in absolute units, and a basis has not yet been established for harmful effects of general air pollutants. Most of the work on air pollution so far has had the object of correcting existing conditions. The problem of the future will be one of anticipating and preventing adverse conditions. This will involve better knowledge of the pollutants in any particular case. The author classifies pollutants, briefly discusses their determination, and reviews the common methods for their control. The prevention of air pollution for future plants should start with the selection of the plant site, and a knowledge of the hazards involved. The air pollution problem can then be prevented.

- 640 Atmospheric Pollution. L.C. McCabe. Ind. and Eng. Chem. 43, 79A, (February, 1951).

On November 25, 1950, 22 deaths and 320 casualties requiring hospitalization were reported from a refining town in Mexico. The patients lived in the vicinity of recently installed units for the recovery of sulfur from natural gas. The units were not completed and waste gas containing 16 per cent hydrogen sulfide was being sent to flare 90 ft. above the ground, with additional gas to insure combustion. As a result of the overflow of mono-ethylamine into the burners they probably became blocked, and the hydrogen sulfide was allowed to flow into the nearby village. Unfortunately a heavy fog occurred at the time, and temperature inversion was reported.

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- 641 Health and Air Pollution. A Study on a Limited Budget. H. Heimann, W.J. Reindollar, H.P. Rinton, and R. Sitgreaves. Arch. Ind. Hyg. & Occ. Med. 3, 399-407, (April, 1951).

A method of studying air pollution in relation to human morbidity is presented. In the present instance the degree of air pollution was indicated by dustfall measurements. Within the limits of this survey the data show that the frequency of the common cold was significantly greater in the high dustfall area than in the low dustfall area and that this difference was not due to differences in socioeconomic status, age, sex or occupation. The method presented, as indicated by the collected data and their analysis, suggests a procedure of studying the perplexing problem of the effects of air pollution on health.

-- Authors' Summary and Conclusions

- 642 Natural Removal of Pollution From Atmosphere. A.R. Meetham. Quart. J. Roy. Meteorological Soc., 76, 359-371, (October, 1951). (Reprint).

Observations of atmospheric pollution throughout Britain are considered in relation to pollution through combustion of coal. Estimated weight of ash emitted into the air and the estimate, from deposit gauges, of ash deposited are considered likely to agree fairly well at a figure of rather over one million tons per annum. On the assumption that about 1.5 million tons of smoke are blown to sea each year, it is shown that about 1.1 million tons of sulfur dioxide are blown to sea each year: the remaining 0.8 million tons of smoke and 3.9 million tons of sulfur dioxide must be deposited in Britain, irrespective of quantities measured in deposit gauges. The average life of a smoke particle before deposition on land is probably of the order of 1-2 days: that of a molecule of sulfur dioxide is estimated with rather more certainty to be less than 12 hours. Of the chlorides collected in deposit gauges more than half, as a rule, come from the sea, and less than half from the utilization of coal; but the ratio must vary with the position of the deposit gauge relative to the sea and to industries.

-- Atm. Poll. Bull.

- 643 Dispersion of Hot Gases in the Atmosphere. O.G. Sutton. J. Meteorol. 7, 307-312, (October, 1950). (Reprint).

A plausible assumption concerning the mechanism of entrainment of air by the jet leads to simple expressions for the mean temperature and mean velocity of a jet of hot air rising in a calm atmosphere of uniform potential temperature. The theoretical expressions agree with the laboratory measurements of Schmidt. The coefficient of diffusion for these conditions is of the same order of magnitude as that derived from the large scale spreading of cold smoke in the atmosphere. An approximate solution is given for the shape of the plume from a hot source in a horizontal wind. The reduction of maximum concentration at ground level, caused by adding heat to the effluent from a stack, is directly proportional to the strength of the heat source and inversely proportional to the height of the chimney and the cube of the horizontal wind speed.

-- Atm. Poll. Bull.

- 644 Electrical Fog Dispersal. M. Pauthenier and N. Lautfoulah.
Compt. Rend. 231, 953-956, (November 6, 1950). (In French).

The theory of fog dispersal by spraying a mass of fog or cloudbank with a hail of electrified particles is evolved. Whereas fog scavenging by means of neutral particles would require 20 tons/km² of scavenged area, charged particles would reduce the requirement to 550 kg./km². Factors which have been ignored in this theoretical consideration are indicated.

-- Atm. Poll. Bull.

- Grit Arrestors for Steam Boilers. A.J. Ter Linden.
Electrotechniek 28, 489-496, (December 7, 1950). (In Dutch).

A formula is given for assessing the nuisance caused by a certain quantity of fly ash leaving a chimney. It is found to be proportional to d , d^3 , or d^4 (d = diameter of particles), according to whether the number of dust particles, total surface, or weight is considered as significant. The principal properties of mechanical dust collectors (dry and wet systems) and electric precipitators are described. Special attention is given to the development of cyclone dust collectors and to results of investigations made in the Mechanical Engineering Laboratory at Delft for determining the optimum shape of a cyclone.

-- Atm. Poll. Bull.

MANAGEMENT ASPECTS

- 646 We Owe It to Our People. W.B. Given, Jr.
Natl. Safety News 63, 18,19, 66-76, (May, 1951).

The author first calls attention to the change in attitude of most executives toward their employees. It was thought some time ago that employees are indebted to their employer, but now the author and others have largely convinced supervision in all ranks that management owes something to the employee. He then describes in some detail the medical plan operating in the 54 plants of the company (American Brake Shoe Co.). Employees range from 550 to 41 per plant. The cost of the program in 1949 was about \$35 per employee, or roughly 2 cents per man-hour. The cost per employee in small plants is only slightly higher than the average. The cost of service has fully justified itself in insurance saving, in better relations with the state health departments, and in morale.

- 647 Enlightened Management. Editorial.
Chem. & Eng. News 29, 1715, (April 30, 1951).

A talk by J.F. Lincoln of the Lincoln Electric Company is reported, describing unusually progressive labor-management policies in his organization. He holds that the erroneous belief that the interests of labor and management are not closely allied is the cause of strife between the two groups, and will eventually lead to dictatorship. In his plant, salaries and wages are about double those paid elsewhere in the Cleveland area for

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similar work, labor turnover is almost negligible, and over 70% of the employees are stockholders, and prices of products have been reduced. The plan has been adopted by several hundred companies across the nation, and nowhere has it failed. The editorial points out that Mr. Lincoln described all the essential attributes of the plan except one--the progressive attitude of the mind of Mr. Lincoln himself.

- 648 Human Relations and the Industrial Scientist: A Teacher's View. H.J. Leavitt. Chem. & Eng. News 29, 1727-1728, 1790, (April 30, 1951).

The author describes a college course in human relations which he conducts. First he defines human relations as the process by which people try to satisfy their needs through others, and considers the problems of human relations to be, how can A get B to satisfy A's needs, and vice versa. The problem, then, is in getting one party to change his behavior so as to better satisfy the other. Teaching human relations is helping trainees to improve their ability to change other people. In the course, grades, textbooks and rules are deemphasized, the students are expected to express their opinions, and finally they are given practical problems in changing the behavior of others.

- 649 Mental Hygiene Service at a United States Air Force Base. O.B. Schreuder, A.O. England, and J.H. Hoffman. Ind. Med. and Surg. 20, 218-220, (May, 1951).

The need to present a medical service which concerns itself with the "total-man" has long been recognized, in principle, by the medical profession. The inclusion of a preventive mental hygiene program within the broad framework of an industrial medical service is consistent with the over-all objectives of preventive medicine. It is realized by those active in industrial medical circles that preventive mental hygiene is indispensable to the creation of a healthy, happy and productive work force. In practice the mental hygiene program evolves around: (1) the detection and follow-up of poor occupational risks in the preplacement phases of examination; (2) the counseling of employees with mild emotional disturbances and the referral of severe cases to civilian physicians; (3) the education of nurses supervisors, and employees in the concepts of sound mental health.

-- Authors' Summary

- 650 Psychosis as a Side Door Out of Industry. F. Tallman. Ind. Med. and Surg. 20, 212-214, (May, 1951).

The annual admissions to a state-hospital system include a significant number of industrial workers. It is therefore important that the medical departments of industrial plants be aware of the importance of early diagnosis, which implies a case-finding procedure; adequate treatment, which means referral to the appropriate agency; follow-up, including re-employment; and finally, the awareness of the importance of emphasizing, whenever possible, the preventive aspects of mental hygiene.

-- Author's Summary

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- 651 One Hundred Problem People.--A Study of Accident Frequency, Medical Complaints, Absenteeism, and Disciplinary Penalties in a Manufacturing Industry.
G.A. Eadie. Ind. Med. and Surg. 20, 215-217, (May, 1951).

A continued study of 100 employees who sustained the most accidents and were otherwise conspicuous confirms Fulton's conclusions that the same individuals remained in those categories, but the largest group, the psychoneurotics, showed definite improvement when treated by approved methods. Poor results were obtained in the alcoholic group, those with organic disorders of the central nervous system, and psychotics. It is important to detect people of these classes early so as to begin corrective measures.

- 652 Employers' Military-Leave Policies: Effect on Benefit Plans, Fall 1950.
Anon. Monthly Labor Rev. 72, 411-413, (April, 1951).

These studies were intended to cover policies and practices beyond selective service requirements. The Draft Law guarantees reemployment (under certain circumstances) and the right to participate in insurance or other benefits which were in effect at the time of leaving. Recent surveys were made by the Bureau of National Affairs (BNA) and the National Industrial Conference Board (NICB). The BNA study indicates that it was still early for summing current policies, as these may be liberalized in the face of intensive mobilization and other causes. Time spent in military service is to be credited for pensions in 75 per cent of the companies covered by the BNA survey and in 90 per cent of those covered by the NICB survey. Practices vary as to whether industry continues its contributions during the employee's absence. Group insurance policies, especially life, are in most cases dropped within six months, but about seven per cent of all companies studied will contribute to the cost of the employee's National Service Life Insurance premiums. Hospital and surgical coverage is dropped because these services are made available through the Federal Government. About one-third of the companies will continue hospitalization and surgical benefits for employees. About 85 per cent of companies studied by BNA and nearly all of those studied by NICB pay for unused but earned vacations. Some type of "induction" bonus is given to employees leaving for military service in almost two in three companies reporting in the NICB preliminary survey. Less than one in three companies of the BNA survey give bonuses. In one out of twelve companies such payments were restricted to draftees.

- 653 Labor in the American Economy. Annals Am. Acad. Political & Social Sci. 274, 1-205, (March, 1951).

Nearly all the March number of this publication is given to an outstanding series of papers on labor problems, by authorities in their respective fields. The roster of authors includes George W. Taylor, Robert A. Taft, William Green, Philip Murray, George Gallup, Cyrus S. Ching, and other prominent persons. The 27 papers are grouped into the following headings, although the fields necessarily overlap: (1) labors needs, desires, and problems; (2) labor and economic power; (3) labor and political power; (4) the impact of unionism on managerial policies; and (5) social control of labor relations.

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- 654 Legal Restrictions on Night Work by Women. U.S. Dept. of Labor, Women's Bureau. Monthly Labor Rev., 72, 414-416, (April, 1951).

In eighteen States and the Territory of Puerto Rico night work by women in specified industries is either prohibited or regulated. In thirteen States and Puerto Rico such work is prohibited by law for one or more industries. Six of these states and Puerto Rico have also established regulations to cover women's night work in certain other industries or under certain conditions. Restrictions and regulations concerning maximum number of hours which women may work nightly or weekly have been provided by Maryland, New Hampshire, New Mexico and Pennsylvania. In Utah provision of transportation for night workers is the only regulation provided. Restrictions and regulations in effect on November 1, 1950 are tabulated by states.

- 655 Present Condition of Workmen's Compensation Laws, and Possible Changes. M. Dawson. Arch. Ind. Hyg. & Occ. Med. 3, 350-358, (April, 1951).

The author states the object of workmen's compensation laws as economic rehabilitation of the employee. This presupposes physical rehabilitation and adequate maintenance during disability. There has been much progress toward reaching this goal, but it has not been uniform, and some states have lost ground. Retrogression has been caused by haphazard complications of the laws and a drift into legalism. Liability attitudes are deplored and the thought is stressed that workmen's compensation must be different from liability litigation. The compensation laws of Canada are cited. The Ontario act reads that decisions of the Board shall be upon the real merits and justice of the case and are not bound to follow legal precedent. Also, that the action of the Board shall be final and conclusive and shall not be open to question or review in any court. Supposedly, in the United States there must be court appeals in workmen's compensation cases; but exceptions have occurred in some states. A possible need for reorientation in compensation laws and their administration is suggested, as these have been shown to be obsolete, in many cases.

- 656 Heart Diseases and Working Capacity. B. Moia and M. Bieler. Med. Depor. y Trab. 15, 3614, (September, 1950). (In Spanish).

According to Moia and Bieler, heart diseases shown by incipient high arterial pressure or by a valvular sequel of rheumatic fever do not diminish the working capacity of candidates for employment. The owners of business and the boards of corporations should be compelled by law to give work to those candidates.

-- Arch. Ind. Hyg. & Occ. Med.

- 657 Geriatrics. Problems With the Aged in Industry. C.T. Olson. Ind. Med. and Surg. 20, 205-211, (May, 1951).

The author considers the problem one of the most important, facing not only industrial medicine but industry as well. The care of the elderly, which used to be a definite responsibility of the family, is now being shoved into more impersonal channels. Whatever plan is devised for the care of the elderly, industry will have to pay the bills, and should,

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therefore, attack the problem. The author believes that it is incorrect to generalize too much about the effects of chronological aging on the individual in terms of group work competence. Since persons differ so greatly it is necessary to individualize in the geriatric group.

Old Age and Employability. S.S. Levine.
Conn. State Med. J. 15, 117, (February, 1951).

This article is a restatement of the problem of the aged worker in industry. The author feels that early retirement is a waste of valuable skills and experiences. During World War II the older worker proved his value. The salutary effect of employment on the worker is also discussed. The author feels that old age is the problem of society as a whole.

-- Cond. from J. Am. Med. Assn.

ACCIDENTS AND PREVENTION

Laboratory Safety. H.H. Fawcett.
Chem. & Eng. News 29, 1302-1305, (April 2, 1951).

Five specific hazards are associated with most laboratories: toxicity, chemical burns, fire, electric shock, and glass cuts. Toxicity is probably the most pernicious and the least commonly appreciated. It is a mistake to assume that laboratories escape toxicity problems simply because small quantities of chemicals are involved. A number of cases of serious injury by laboratory quantities are described. Portable instruments are available for detecting many toxic substances. Personnel should be trained to know what to do in case of accidents of any of the types mentioned. The author discusses methods of teaching safety in college classes, and names teachers who have successfully integrated safety into their courses. Safety manuals, bulletins, and warning labels all contribute to safety. A bibliography on laboratory safety is appended.

Explosive Properties of Hydrazine. F.E. Scott, J.J. Burns, and B. Lewis.
U.S. Bur. Mines, Rept. Invest. No. 4460, 18 pp., (May, 1949).

The report deals mostly with the explosion hazards of hydrazine, becoming of interest as a fuel, but it is pointed out also that it is very toxic. Doses of 0.1 gram hydrazine sulfate per kilo body weight injected subcutaneously cause vomiting, extreme restlessness, augmentation and later depression of the heart beat, respiratory difficulty, coma and death. The vapor affects the eyes on continued exposure. The explosibility tests show that liquid hydrazine or the hydrate does not explode by detonation when unmixed, but it can be ignited with oxygen in the presence of platinum at 30°C. at higher temperatures with other catalysts. Tables show the limits of inflammability under various conditions.

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- 661 Electricity and the Human Body. W.B. Kouwenhoven.
Safety Rev., (U.S. Navy) 8, 4-9, (March, 1951).

Today in the United States and Canada electricity kills seven per million of the population annually. Factors which determine the effects that electricity produces when it flows through the body are: (1) type of circuit; (2) voltage; (3) resistance; (4) current; (5) pathway; (6) duration. The amount of current that will flow through a victim, as determined by Ohm's law may vary from less than 1 milliamperes (1/1000 of an ampere) to values as high as 100 milliamperes. The effects of the wide range of current values are grouped in eight classifications: (1) threshold of feeling; (2) let-go current; (3) freezing current; (4) current producing unconsciousness; (5) fibrillation current; (6) nerve-blocking current; (7) countershock current and (8) excessive current. Effects of the passage of an electric current through the body are numerous. In certain mental diseases an electric shock may heal. In most cases the production of electric anesthesia has not been successful, although a short unconscious period may follow convulsions caused by passing an electric current through the brain. Other effects, including burns, rise in blood pressure, hemorrhages and damage to nerve cells are discussed. In general, low voltages and small current shocks kill through the mechanism of ventricular fibrillation and high voltages either through the destruction or inhibition of the nerve centers, asphyxia being the most common immediate cause of death.

- 662 New Safety Explosives for Dusty or Fiery Coal Mines. R. St.Guilhem.
Indust. Safety Survey 26, 81-94, (May-June, 1950).

All explosives, even the safest, ignite firedamp (methane) if detonated under suitable conditions. A high degree of safety can be had in shotfiring in mines by adding inhibiting substances mixed with the explosive or wrapped around it as a sheath. The French claim success may be had by adding a high proportion of sodium chloride to the explosive but not by sheathing. The author credits the United States with success in using substitutes like Cardox, which is carbon dioxide in a special cartridge. Also in the United States great stress is laid on dust control and on ventilation.

-- Arch. Ind. Hyg. & Occ. Med.

- 663 The Electrification of Metal Dusts. A.R. Boyle and
F.J. Llewellyn. J. Soc. Chem. Ind. 69, 45-49, (1950).

The static electrification of a number of metal dusts has been measured in two standard experiments; these results, together with the electrostatic energy required for the ignition of dust clouds of metal powders, provide a basis for the estimation of the electrostatic hazard likely to be encountered in handling quantities of materials.

-- Editor's Summary

Young men today are faced with a decision: they can become workers and retain that status with its attendant security, or they can become executives--with all of the responsibilities and obligations, but also with all of the opportunities and satisfactions.

-- Executive Training Forum

MISCELLANEOUS

- 664 Civil Defense Organization and Medical and Health Services in Civil Defense. J.C. Sargent. J. Am. Med. Assn. 145, 897-900, (March 24, 1951).

This paper is the first of a series requested by the Council on National Emergency Medical Service to inform the medical profession on problems pertaining to civil defense. It is concerned mostly with general organization and the necessity of a complete and well-integrated program.

- 665 What You Should Know About Biological Warfare. Federal Civil Defense Administration, Publication PA-2, 29 pp., (1951). For sale by Supt. of Documents, U. S. Govt. Printing Office, Washington 25, D.C., Price \$.10.

The point receiving most emphasis is that the dangers of biological warfare have been greatly exaggerated. There is no possibility that germ warfare will knock out entire cities, kill millions, or cause terrible epidemics. The great epidemics of the past, such as the London plague, moved very slowly, and could have been quickly controlled by modern prophylactic methods. For preparing to combat such a hazard as really exists, the citizen should cooperate with the government for giving blood samples, by good housekeeping, and by keeping healthy. If a bomb attack occurs, no one will know beforehand whether it is a biological attack, atomic weapon or other kind, and the often published safety precautions should be used. Permission is given to responsible organizations to reproduce this publication.

- 666 Poisonous Crayons. R.T. Merwin. Assoc. Food & Drug Officials U.S., Quart. Bull. 14, 13-16, (1950).

Analyses of orange and yellow-orange colored crayons causing non-fatal poisoning in a two-and-a-half year old child revealed the presence of zinc sulfide 2.5, barium sulfate 8.56 and zinc sulfide 3.46, barium sulfate 18.80 per cent respectively. Prohibited colors were absent. Poisoning was attributed to the hydrogen sulfide liberated by the gastric acid. A rat refused to eat food mixed with the yellow-orange colored crayon.

-- Chem. Absts.

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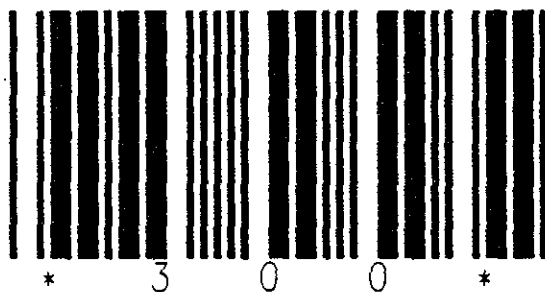
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