

IN RE: ABRAMS November 1992



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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL . . . decisions and trends

MARCH, 1953

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH 13, PA.

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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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STAFF INCREASED

David Truan has been appointed to the Foundation's staff as biostatistician. He was formerly associated with the University of Pittsburgh School of Public Health in that capacity. Mr. Truan received his B.A. degree in 1947 and his M.S. degree in 1951, both from the University of Pittsburgh.

COOK TO DELIVER CUMMINGS MEMORIAL LECTURE

Warren A. Cook, Director, Division of Industrial Hygiene and Engineering Research, Zurich-American Insurance Companies, Chicago, and a member of the Foundation's Chemical-Toxicological Committee, has been selected to receive the Donald E. Cummings Memorial Award for 1953 during the Industrial Health Conference in Los Angeles, California. The presentation will take place on April 23 at the annual banquet of the American Industrial Hygiene Association, sponsor of the award. The award is made in recognition of "outstanding contributions to the knowledge and practice of the profession of industrial hygiene." Recipients of the award in the past five years have been Dr. W. P. Yant, Dr. Alice Hamilton, Dr. Philip Drinker, Prof. Theodore F. Hatch, and Dr. Leonard Greenburg.

SCHRENK APPOINTED TO COMMITTEES

Dr. H. H. Schrenk, Research Director of the Foundation, has accepted membership on three new committees. He will serve as the AIHA representative on the ASA Committee Z2, as a member of the American Chemical Society's Air Pollution Committee, and as a member of the Committee on Noise of the Acoustical Society of America.

COMMITTEE CHANGES

Dr. Anna M. Baetjer, The Johns Hopkins University, has been appointed Chairman of the Chemical-Toxicological Committee. Dr. H. F. Smyth, Jr., who has been such an able chairman for the past seven years, resigned because of the pressure of other work, but will remain as a member of the Committee.

TRANSACTIONS AVAILABLE

Transactions of the Foundation's 17th Annual Meeting are completed and are being mailed to members this week. Bulletins on the Conferences will be available later.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

218 Conference on Industrial Medical Practice.

A seminar on fundamentals of industrial medical practice will be held at the Harvard School of Public Health, April 3 - 4. The subjects will be adapted to physicians building part-time employee health services in industries in their communities. The subjects covered, will be: industrial injuries, occupational diseases, industrial medical practice, and the role of industrial medicine in the country's problems of medical care. Information can be obtained from the Secretary, Harvard School of Public Health, 55 Shattuck St., Boston 15, Mass.

219 Doctor Page Receives Award.

Dr. Robert C. Page, General Medical Director, Standard Oil Company (New Jersey) was awarded a gold medal and a Certificate of Honorary Membership in the Argentine Medical Association at the time of his visit to Argentina in June, 1952. The award was a tribute to Dr. Page as a medical man, a scientist, organizer and writer, and for his work towards a better understanding regarding modern medicine between the nations of the Western Hemisphere.

-- Medicine for Industry

220 Three-Dimensional X-Rays.

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Three-dimensional x-ray motion pictures have been produced by radiologists at the University of Rochester Medical School. One camera, either a 35 mm. or 70 mm., is used to photograph the subject. The stereoscopic effect is obtained by a moving x-ray tube synchronized to move in an arc maintaining the position of the x-ray beam on the subject. The moving x-ray tube and the synchronized rotation of the subject on a revolving chair give the necessary image shift to create the binocular effect. Two prints of the film are made, and are run through two standard motion picture projectors that run synchronously. The images are projected through polaroid filters on to a metallic-surfaced screen, and viewed through polaroid glasses. The film produced can be used for conventional, as well as stereoscopic, motion picture projection. The pictures are

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expected to be of special value in the study and diagnosis of congenital heartdisease. A study of swallowing is also being made. The process is now ready for clinical trials.

-- Sci. News Letter, Feb. 14, 1953

Symposium on Radioisotopes.

A symposium on "Management Problems in the Industrial Application of Radioisotopes" will be a two day section of the first advanced course in industrial uses of radioisotopes to be given at Oak Ridge, Tenn., April 20-May 1. The symposium will include: dealing with the USAEC (contracts, products obtainable, and other services), legal problems encountered in radioisotope use, insurance problems, public relations, the role of consulting laboratories, safety and procurement of radioisotopes, and the equipping and staffing of radioisotope laboratories. An advanced course in autoradiography will also be given at Oak Ridge June 15-26, while three basic courses in radioisotope techniques will be given June 8, July 6, and August 10.

-- Atomic Energy News Letter, Jan. 27, 1953

LEAD POISONING IN 1747

The following articles are copied from Primitive Physic, which was first published in 1747.

Colic from the Fumes of Lead, White Lead, Verdigris, etc.

This, some term the dry bellyache. It often continues several days, with little urine and obstinate costiveness. In the fit, drink fresh melted butter, and then vomit with warm water. To prevent or cure: Breakfast daily on fat broth, and use oil of sweet almonds frequently and largely. Smelters of metals, plumbers, etc., may be, in a good measure, preserved from the poisonous fumes that surround them, by breathing through cloth or flannel mufflers twice or thrice doubled, dipped in a solution of sea-salt or salt of tarter, and then dried. These mufflers might also be of great use in similar cases.

For One Seemingly Killed with Lightning, a Damp, or Suffocated.

Plunge him immediately into cold water. Or blow strongly with a bellows down his throat. This may recover a person seemingly drowned. It is still better, if a strong man blow into his mouth. -- See the directions published by the Humane Society.

-- Occ. Health Newsletter (Seattle, Wash.) Nov. 1952

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OCCUPATIONAL DISEASE STATISTICS

222 Occupational Disease Statistics.

	Conn. ¹ Jan. 1953	Ind. ¹ Jan. 1953	Mich. ¹ Jan. 1953	Wisc. ¹ Jan. 1953	Total
Allergy				4	4
Carbon Monoxide Poisoning				4	4
Dermatitis	47*	6**		24	77
Dermatoses			9		9
Eczema (glue)				1	1
Fumes				4	4
Gas Intoxication				1	1
Hernia			2		2
Occlusion Eustachion Ear Drum (Noise)				1	1
Pneumoconiosis			2		2
Silicosis		1	22	1	24
Skin Infection				5	5
Skin Irritation				4	4
Miscellaneous			12		12
Total	47	7	47	49	150

1. Occupational disease cases reported to the State Board of Health.

* Acids, alcohols (N.O.C.), dust-metals and compounds, dyes and inks, ketones, oil and solvent (combination exposure), phenol and phenolic compounds, poisonous plants, and synthetic resins and chemicals caused one each; Dust-inorganic caused two; Soap solutions, glue, etc. caused four; Solvents (N.O.C.) caused eight; and oils, fats and waxes caused twenty-four.

** Rayon and paint solvent caused one each; Rubber caused two; and the causes of two others were not stated.

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LEGAL DEVELOPMENTS

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223 Summary Survey of State Legislation of Interest to Physicians Enacted during 1952. Bureau of Legal Medicine and Legislation, American Medical Association.

Following is the portion of the report dealing with workmen's compensation and occupational disease legislation:

Choice of Practitioner--A New York law authorized injured employees to select to treat them any podiatrist authorized by the chairman of the industrial board to render podiatry care. A Kentucky law authorized employees to choose their own physician, at the employer's expense in emergency cases and in those cases when the employer fails to select one.

Examination of Employees--Laws in New Jersey and Virginia made it unlawful for an employer to require an employee to pay the cost of any medical examination required as a condition of employment.

Extent of Medical, Hospital, Dental, and Other Care--A Louisiana law required employers to furnish reasonable medical, surgical, and hospital services and medicines not to exceed \$1,000 in value, unless the employee refuses to accept such services.

Persons Covered--A New York law provided that resident physicians, resident interns, and assistant resident interns in prisons, reformatories, insane asylums, and hospitals maintained by a municipal corporation shall be employees within the meaning of the state workmen's compensation act.

Reports of Attending Physicians--A Kentucky law provided that employees and employers shall furnish to the opposite party copies of any medical examination made of the employee either by a physician chosen by the employer or by the employee's own physician.

-- J. Am. Med. Assn.

224 Silicosis--Knowledge by Claimant--Notice of Disability.

Where the compensation authorities have found in his favor, a claimant is to be given the most favorable inferences reasonably deducible from the testimony. Thus, where a man had been told by a doctor that he had miner's asthma and he later applied for unemployment compensation and received benefits thereunder, it is fair to infer that he considered himself employable when he applied for the benefits, and that the unemployment officials considered him ready, able and willing to accept suitable employment. The ninety day period for giving notice did not begin to run until the claimant knew that he was unable to work, which was when his own doctor declared him totally disabled and since he gave notice of his disability within ninety days thereafter, the judgment awarding compensation is affirmed. Masouskie v. Hammond Coal Co. Pennsylvania Superior Court. No. 149. January 20, 1953.

-- CCH

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225 Foundry "Chipper"--Silicosis--Subsequent Enactment of Remedial Statute--Non-compensable as Matter of Law.

The claimant worked as a "chipper" in a foundry and suffered silicosis as a result of exposure to silica dust. He was transferred to other work immediately and later was given employment in the washroom. His contention that the varying temperatures in the washroom, coupled with his silicosis, disabled him, was rejected by the Workmen's Compensation Board, which found that his condition was the result only of the prior silicosis. Since at the time he suffered silicosis, the statute authorizing compensation for that disease had not been enacted, and since the statute, when enacted, expressly excluded compensation for prior exposures, the silicosis of the claimant was not compensable as a matter of law. Juniak v. General Electric Co. New York Supreme Court, Appellate Division, Third Judicial Department. No. 237-27. November 17, 1952.--CCH

226 Baker--Asthmatic Attacks--Occupational Disease--History of Illness--Supporting Evidence.

The claimant, a baker, had worked at his trade for many years and had had frequent attacks of asthma, some requiring his hospitalization. For five years he worked for his daughter, the appellant. For five months after the daughter had closed her business, the claimant worked for various other employers, then was struck by a disabling asthmatic attack. Since, however, there was no evidence definitely supporting or in any substantial way giving rise to inferences that the claimant had contracted the occupational disease while in, or subsequent to, his daughter's employ, a decision and award for him were reversed and the claim remitted for further consideration. Mattes v. Blum. New York Supreme Court, Appellate Division, Third Judicial Department. No. 224-8. November 17, 1952.

-- CCH

227 Fluorescent Tube Handler--Exposure to Beryllium Dust--Permanent Total Disability--Statute Construed.

For seven years the claimant handled fluorescent tubes for her employer and was exposed to beryllium dust. She contracted pulmonary beryllium granulomatosis therefrom, and became permanently totally disabled. The Workmen's Compensation Board held that the disability arose from an occupational disease within the meaning of the Workmen's Compensation Law. The Board discharged the Special Disability Fund from liability. The evidence, however, sustained the appellants' (employer and insurer) contention that the claimant's disability arose from a dust disease within the meaning of the Workmen's Compensation Law and that the appellants were entitled to reimbursement for payments made by them in excess of 260 weeks. Rechani v. Tube Light Eng. Co. New York Supreme Court, Appellate Division, Third Judicial Department. No. 218-9. November 17, 1952.

-- CCH

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228 Worker in Steel Plant--Continuous Loud Noise--Deafness--Dispute Between Insurers--Time of Disablement.

For many years the claimant worked in a steel plant and was subjected to loud noises. In October, 1947, the claimant was switched to outside work where there was less noise. On January 1, 1948, the appellant insurance company assumed the risk. Prior to the latter date the respondent insurance company was responsible for accidents. Part of the time the claimant was covered by the appellant, the claimant was operating a rivet machine. Neither insurer contested the claimant's right to compensation based upon a loss of hearing, but the appellant contended that no part of the deafness occurred after January 1, 1948, when it was covering industrial accidents. The "disablement", in the case of an occupational disease, is regarded as the happening of an accident. This is fixed by the date of the last injurious exposure. Although the deafness was a slow process, the date of disablement was controlling. Since the claimant's status as a riveter continued, and the disablement occurred, during the initial portion of time the appellant was on the risk, the appellant was liable for the award. Russo v. Despatch Shops, Inc. New York Supreme Court, Appellate Division, Third Judicial Department. No. 229-19. November 17, 1952.

--CCH

229 Death Benefits--Concrete Driller--Silica Exposure--Statute Construed--"Disability" Defined.

For seven months immediately prior to May 7, 1943, the decedent worked as a concrete driller without using a face mask. He became ill of silicosis as a result and left his employment for another type of work. In 1945, he became totally disabled; and in 1946, he died. The Workmen's Compensation Board found that the disability and death were a result of his work as a concrete driller. The applicable statute provided coverage for such a death if it occurred "within five years following continuous disability from such disease". The death of the decedent was covered by the statute--the fact that the decedent did other work for part of the five year period did not negative "continuous disability". "Disability" is the state of being disabled from earning full wages "at the work" at which the employee was last engaged. The decedent's "last work" in connection with silicosis was his work of drilling concrete. After he had stopped drilling concrete, he was continuously unable to resume that task, and his death was embraced by the statute. Besides, a literal construction of the words of the statute would mean that the period did not begin to run until after the continuous disability had ceased, which would clearly bring the decedent's claim within the statute. The decision and award of the Workmen's Compensation Board were affirmed. Tirelli v. Contractors for Dry Docks. New York Supreme Court, Appellate Division, Third Judicial Department. No. 213-3. November 17, 1952.

-- CCH

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230 Pulmonary Tuberculosis--Exposure to Afflicted Patients--Circumstantial and Medical Evidence.

Ample circumstantial evidence existed to show that as an incident to the claimant's employment, she contacted persons afflicted with active tuberculosis. Medical evidence supported a finding of the Workmen's Compensation Board that through such contact, the claimant suffered the compensable occupational disease of pulmonary tuberculosis. Quallenberg v. Union Health Center. New York Supreme Court, Appellate Division, Third Judicial Department. No. 305-11. November 19, 1952. -- CCH

BOOKS, PAMPHLETS AND NOTICES

231 Pharmacology and Toxicology of Uranium Compounds. Vol. 1, Parts 3 and 4. Chronic Inhalation and Other Studies. (National Nuclear Energy Series).
C. Voegtlin and H. C. Hodge. McGraw-Hill Book Co., 330 West 42nd St., New York 36, New York. pp. 1087-2466 (1953) \$18.00.

This comprehensive treatise on uranium compounds began with parts 1 and 2, published in 1949. The additional sections are concerned mainly with the chronic inhalation toxicity of uranium compounds and the mechanism of uranium poisoning. The results given here are based on extensive experimentation, involving one- and two-year studies of several methods of administration of the toxic materials, and of correlation of the data obtained in each. The mechanism study included bone deposition and inhibition of carbohydrate metabolism. Further information is provided on tolerance to uranium poisoning, on the chemical complexing of uranium in the body fluids, and on the methods of pulmonary retention of particulate matter. New analytical methods are discussed. About 150 pages are devoted to maximum allowable concentrations of uranium dust. An extensive bibliography on the biological effects of uranium is included. -- FFR

232 Human Factors in Air Transportation. Occupational Health and Safety.
R. A. McFarland. McGraw-Hill Book Co., 330 West 42nd St., New York 36, New York. 830 pp. (1953) \$13.00.

The conquest of the airspace as a medium of transportation is one of the outstanding achievements of modern times. Every step in the development of air transportation has necessitated parallel development of safety. This in turn depends, not only upon mechanical factors, but also upon the health and comfort of personnel, not only of flight crews, but also of ground workers. The main problems involved are selection and training of flight and ground personnel, maintenance of their health and efficiency, safety on the ground and in flight, sanitation

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and health in airline operations, and passenger and service problems. Each of these subjects has many subdivisions, of which a few are pre-employment and periodic examinations, fatigue, aging and efficiency, accident prevention, survival and rescue in accidents, passenger comfort, and air transportation of patients. Each of these subjects and others are considered in separate chapters, and the book concludes with a chapter on the organization and functions of air transport medical programs. Many of the subjects discussed are not peculiar to air transportation, and the studies and conclusions given will be of value in many other industries.

-- FFR

233 Atmospheric Pollution in the Great Kanawha River Valley Industrial Area, February 1950-August 1951. W. Virginia Bureau of Industrial Hygiene and The Kettering Laboratory, University of Cincinnati. 168 pp. (1952).

This report describes a survey whose costs were borne by industrial companies in the area. Its purpose was to obtain information as to the local air pollution problem, determine the "needs of establishing an aggressive air pollution control program" for the area, and to compare dust fall rates with those of some previous determinations. Questionnaires were distributed to all industries seeking detailed data on contaminants each discharged to the atmosphere. The response was not entirely satisfactory. Aside from the monthly dust fall measurements, the study was confined to the determination of typical concentrations of miscellaneous chemical entities: chloride, aldehyde, ammonia, nitrogen oxides, fluoride, hydrogen sulfide, sulfur dioxide, and weight concentrations of air borne solids. Some 3600 air samples were taken and 5400 chemical analyses made. Emissions of solids from industrial stacks total about 500 tons daily, mainly from coal burning operations. Sulfur dioxide emissions from coal burning total about 265 tons daily with an additional 30 tons from an industrial process. No broad conclusions are drawn as to corrective measures.

-- FFR

INDUSTRIAL MEDICAL PRACTICE

234 Industrial Health Experiences in Pennsylvania. Arch. Ind. Hyg. & Occ. Med. 6, 469-486 (Dec. 1952).

A Joint Conference of the Council on Industrial Health of the A. M. A. and the Chairmen of the State Medical Society Committees on Industrial Health was held at Pittsburgh, Jan. 17, 1952. The late C. F. Long, Chairman of the Commission on Industrial Health and Hygiene, Pennsylvania State Medical Society, presented the history of the activities of the Commission. It was established in 1939, with the objectives of surveying industrial medical practice in the state, and of increasing the general practitioner's familiarity with techniques of industrial

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medicine. The activities have included: promulgation of a set of principles applicable to the relationships of the medical profession and union health funds; study of the problem of the nurse in industry; two postgraduate courses in industrial medicine in Philadelphia; and other accomplishments mentioned in the following paper. Progress has been made in the number of industrial physicians and in the respect accorded them, and in the number of courses in industrial medicine. In comparison with the objectives, however, progress has been disappointing.

Papers by C. E. Noyes and by J. D. Harley describe a successful industrial and community health program conducted at Williamsport fostered by the Community Trade Association of that city with the aid of the State Commission. It has resulted in integrated medical programs in the industries, education of employees and their families in nutrition, decreased absenteeism, group health and hospital insurance for at least 6 out of 7 employees, chest x-ray examinations for over 30,000 persons, attention to venereal disease in many of the industries, a course in industrial nursing, distribution of an industrial health bulletin, and a conference on alcoholism. Voluntary efforts like this one, if conducted more widely, will counteract the tendency toward a government compulsory health program.

G. Everts describes an early survey by the Philadelphia Tuberculosis Association and the resulting interest in industrial hygiene on the part of industries. Similar activities by other organizations at the present time should be able to stimulate interest of industries that do not now have in-plant service. The ethics of the relation of the industrial physician to the private practitioner are discussed in connection with the inauguration of a program.

The experience of Union Health Center in Philadelphia is related by J. A. Langbord. Brief talks were given by T. L. Hazlett on industrial medical education in Pittsburgh and by D. C. Braun on the Medical Director's Club.

- 235 Industrial Health and Welfare Plans in Relation to the Medical Care Problem.
R. P. Sim. Med. for Ind. (Standard Oil N.J.) 13, 4-6 (Jan. 1953).

The author pleads for increased attention on the part of industry to medical care for employees. The absenteeism rate due to non-occupational sickness is over 6 days per employee per year and is increasing, while the rate due to industrial accidents and diseases is 0.85 day and is slowly decreasing. It is to the interest of industry to aid in maintaining the health of workers. Both employee and employer must come to regard the worker as a member of the community. Workers must first be approached and made aware that health is a problem to be solved. Enlightenment in regard to medical care must first occur in management, in government, and primarily, in the medical profession itself.

- 236 Unit First-Aid Kits for Field and Small Plant Use. Data Sheet D-202. Natl. Safety News 67, 38, 70-76 (Feb. 1953). Reprints obtainable from National Safety Council, 425 North Michigan Ave., Chicago 11, Illinois.

Unit first-aid material has proved to be more practical than bulk first-aid supplies in many situations, especially for small or isolated groups. Reference

is made to the U. S. Bureau of Standards Code R 178-41 and to Federal Specifications GGK-391 (amended). Often individual physicians prefer variations from these specifications. A table is presented showing size and contents of first-aid kits for various industrial operations. Suggestions are given for first-aid training, report forms, inspection and control, record keeping, and special purpose kits.

- 237 The Right Man for the Right Job. R. A. Hicks, N. B. Walker, D. S. Henson, and R. W. Murphy. Ind. Med. & Surg. 22, 69-75 (Feb. 1953).

The selective placement practice of the Naval Supply Center at Oakland, California, is described, with especial attention to employment of handicapped persons. Today in America there are 28 million disabled people, and the number is increasing at the rate of approximately 250,000 per year. The Navy is nearly the greatest of all employers in industry, and so employment of the handicapped is an important problem for a naval establishment. This paper tells at some length how the problem is handled.

- 238 Malingering, with Reference to the Eye, Ear, Nose, and Throat. S. L. Shapiro. Ind. Med. & Surg. 22, 65-68 (Feb. 1953).

The author discusses the types of malingering that may arise in connection with possible occupational injury or disease of those organs. Various hints are given for detecting malingering and differentiating it from neurosis. Malingering tests are often of great value, but they fail when a man has been tested a few times. The traditional malingerer, who creates an accident out of thin air, is rare. More common is an attempt to attribute a pre-existing condition to an accident. In the pre-legal phase of malingering proper handling by the insurance company, the physician, and especially by the employer will do much to prevent litigation. Entire impartiality on the physician's part is essential.

- 239 Expert Testimony. C. P. McCord. Ind. Med. & Surg. 22, 56-62 (Feb. 1953).

Without evil intent it has been observed that many physicians, engineers, industrial hygienists, and nurses are not at their best in the courtroom. In part, this is due to lack of familiarity with the practices that attend litigated matters. This presentation points out some of the pitfalls of expert testimony and possible ways to avoid some. Much technical testimony throughout the United States is of low order. Justice will be served by the full and friendly participation of the best technical minds in the adjudication of matters in legal dispute.

-- Author's Summary

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- 240 Heart Disease and Industrial Medicine. A Panel Discussion, E. M. Kline, Moderator. Ind. Med. & Surg. 22, 76-79 (Feb. 1953).

The participants in the panel discuss heart disease in industry from various angles: the general problem, rehabilitation, what industry can do, workmen's compensation, and the family physician. The procedure of the Work Classification Clinic of the Cleveland Area Heart Society is described. Employment was found for a large percentage of cardiac patients who applied. Follow-up interviews showed that twice as many people improved medically and vocationally, as became worse. Emotional rehabilitation is an important factor. Suggestions are given for placement of cardiac workers, including (1) employment at light work, (2) selective placement with evaluation of physical, emotional, mental, and environmental factors, (3) a special handicap job pool, and (4) individual selection with the aid of the family physician. Compensation aspects are discussed. Much responsibility devolves upon the family physician for correct diagnosis.

SKIN DISEASES AND BURNS

- 241 Chronicity and Relapse of Industrial Dermatitis. A. J. Rook. Trans. Assn. Ind. Med. Officers 2, 66-71 (July 1952).

The author discusses five factors involved in prolongation or relapse of dermatitis: sweating, aging, emotion, infection, and sensitization. Interference with the free delivery of sweat can result from various mechanical, chemical, infective, and electro-physiological agents. There is some evidence that stoppage of the pores contributes to relapse of dermatitis, and the problem should be thoroughly investigated. Changes in the skin due to aging are considered, with the conclusion that dermatitis is often chronic in the elderly person, but causal evidence is lacking. A patient's emotional state can be of great significance in determining chronicity or relapse. It has been shown that emotional stress lowers the skin temperature and causes changes in electrical resistance of the skin. The healthy skin possesses remarkable powers of self-disinfection, but infections can develop when the normal mechanisms are disturbed, for instance when alkaline serum is exuded. It has been shown that such infections produce allergic sensitization and contribute to the prolongation of a dermatitis already established. Autosensitization has been demonstrated experimentally and may be responsible for chronicity and relapse of dermatitis. Cross-sensitization is of less practical importance, but is increasing in frequency with the number and complexity of chemicals used in industry. In conclusion the author suggests general principles for management of occupational dermatitis, including accurate diagnosis, early treatment, physiological treatment with non-sensitizing remedies (avoiding local use of penicillin, sulfonamides, and antihistamines), relief of psychosocial features, follow-up treatment, and rehabilitation.

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- 242 Occupational Nail Marks, True and False. F. Ronchese.
Ind. Med. & Surg. 22, 45-48 (Feb. 1953).

Attention is called to the value of an accurate examination of the nails of potential employees. Visible defects like absence of nails, atrophy, thinness, fragility, separation into layers, splitting and fissuring should be evaluated for the hazard they may entail in certain types of work. Good descriptive notes should accompany the examination record. This will protect the employer against false claims of occupational lesions of similar nature. -- Author's Summary

- 243 Chemical Alopecia. A Unique Case. G. E. Morris.
Arch. Ind. Hyg. & Occ. Med. 6, 530-531 (Dec. 1952).

An unusual case of alopecia (loss of hair) is presented. It was caused by leakage from a drain pipe containing one of the common pipe cleaning compounds, which acted as a depilatory. The compound was found to contain sodium hydroxide, and had a pH of 13.5. After frequent washing with cold water the dermatitis subsided and the hair grew back.

CHEMICAL HAZARDS

- 244 Short-Term Intraperitoneal Toxicity Tests. D. W. Fassett and R. L. Roudabush.
Arch. Ind. Hyg. & Occ. Med. 6, 525, 529 (Dec. 1952).

Short-term or subacute toxicity tests are indispensable in enabling the toxicologist to design long-term tests, and they often provide sufficient information by themselves to permit making a decision on the toxicity of a compound. Short-term tests often correlate well with those of longer duration and in some cases may render the latter unnecessary. The authors describe some efforts to improve the efficiency of short-term tests. The intraperitoneal method is preferable to the oral, on account of differences in intestinal absorption. Choice of dosages and types of injury to be observed are discussed. Twenty compounds of widely varied composition were used in the studies, and typical results are presented with graphs.

- 245 Cerebral Residues of Acute Carbon Monoxide Poisoning. F. R. Dutra.
Am. J. Clin. Pathol. 22, 925-935 (1952).

The cerebral lesions that follow carbon monoxide poisoning are: dilatation of blood vessels, anemia, perivascular hemorrhage, degeneration and death of ganglion cells, focal demyelination, and foci of necrosis. These are caused directly or indirectly by diminution of oxygen in the brain. -- Chem. Absts.

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- 246 Injuries to the Central Nervous System in Chronic Experimental Poisoning by Hydrogen Cyanide. P. Valade. Bull. acad. natl. med. 136, 280-285 (1952) French.

The effects of acute poisoning by hydrogen cyanide are fairly well understood. In order to study the effects of chronic exposure to small doses, dogs were exposed to inhalation of a concentration of 50 mg. per cu. m. (45 ppm) for half-hour periods, with intervals of 8 days, for 12 exposures. The intervals seemed to permit complete recovery, so they were reduced to 2 days for 7 to 19 exposures. Results varied widely with individual dogs. The first symptom to appear was dyspnea with nausea, exaggerated intestinal peristalsis and diarrhea. Nervous symptoms came on later with muscular tremors and loss of equilibrium, advancing to convulsions. The animals lost weight and died in one to two months. Examination disclosed many hemorrhages in the brain and cervical cord and degeneration of the nerve cells. This study suggests that exposure to even mild concentrations of hydrogen cyanide should be avoided. -- Cond. from Bull. Hyg.

- 247 Air Contamination in Industry. IV. Hydrogen Sulfide in the Atmosphere of Tanneries. J. Roubal, J. Zdrasil, and F. Picha. Pracovni Lekarstvi 4, 155 (May 1952). Bohemian.

A case of hydrogen sulfide poisoning occurred in the pit of a modern sole-leather tannery. Two hours after the accident the concentration of hydrogen sulfide in the air of the pit was 0.21 mg. per liter. A systematic examination of the air in the tannery showed that the highest values were found in the pit and cropping (0.1 mg. per l.), and 0.02 to 0.05 mg. per l. in other parts of the tannery. It was discovered that the hydrogen sulfide was not due to putrefaction but to its liberation from sodium sulfide during the tanning process in acid liquor.

-- Cond. from English summary in Arch. Ind. Hyg. & Occ. Med.

- 248 Ozone. Its Physiological Effects and Analytical Determination in Laboratory Air. S. Wilska. Acta Chem. Scand. 5, 1359-1367 (1951).

Ozone is formed by electrical discharge either silent or growing, ultra-violet radiations, and some chemical or electrochemical processes. At 0.015 ppm ozone removed body odors probably by masking effects, but at tolerable concentrations it does not sterilize air. Ozone is highly irritating and is both an acute and a chronic poison. As determined iodometrically the concentration of ozone near a spectrograph rose to 1 ppm in 1 hour and the concentration near an ultra-violet lamp was below the limit of determination, 0.1 ppm. At 0.1 ppm ozone irritated respiratory organs after 15 minutes. Exposure periods to ozone of 3 to 4 minutes, totaling 3 to 4 hours per week, produced distinct symptoms of chronic poisoning (shortness of breath, continuous headache) after 2 weeks. Oxides of nitrogen may contribute to irritation, but ozone is more significant. Poisoning may result from exposure to electric machine rooms, transformer stations, artificial-sun-treatment rooms, ozonizers, spectrographic equipment, and ultra-

violet lamps. The concentration meeting requirements of maximum allowable concentration is near or below the minimum at which ozone can be detected by odor (0.05 - 0.1 ppm). -- Chem. Absts.

- 249 Coproporphyrinuria. Study of Its Usefulness in Evaluating Lead Exposure. S. S. Pinto, Christine Einert, W. J. Roberts, G. S. Winn, and K. W. Nelson. Arch. Ind. Hyg. & Occ. Med. 6, 496-507 (Dec. 1952).

The quantitative urinary coproporphyrin determination was studied in relation to the clinical symptoms produced by increased lead absorption and compared with a number of other commonly used laboratory procedures. Evidence is presented which indicates the urinary coproporphyrin determination is more promising than any other screening test in picking out those members of a lead-exposed group who need further medical studies. In this group of 124 persons who worked in a lead smelter, the quantitative urinary coproporphyrin III excretion ranged from 5 to 736 gamma per 100 ml. of urine. No evidence of hypertension resulting from prolonged exposure to atmospheric lead was found.

-- Authors' Summary

- 250 Renal Function in Lead Poisoning. A. Ursula Pardoe. Brit. J. Pharmacol. 7, 349-357 (1952).

Chronic administration of lead to rats resulted in marked enlargement of their kidneys and livers and some increase in the weight of heart, spleen, and adrenals. No significant change in arterial blood pressure was observed nor was glomerular filtration rate altered. Tubular excretory rate rose following prolonged dosing, and 100 days after lead was discontinued fell to the pretreatment level. Histological changes are described.

-- Cond. from Chem. Absts.

- 251 The Uptake and Excretion of Water in Rats Poisoned with Lead. A. Ursula Pardoe and M. Weatherall. Brit. J. Pharmacol. 7, 358-369 (1952).

Additional detailed information on absorption and excretion of lead are presented (see preceding abstract), including the effects of vasopressin and of nicotine in the presence and absence of lead.

-- Cond. from Chem. Absts.

- 252 Importance of Systematic Hematological Examination of Workmen Exposed to Lead Intoxication. H. Desoille, S. Tara, and J. Vacher. Arch. maladies profess. 13, 59-65 (1952) French.

A statistical study of complete hematological examinations of 354 cases of lead poisoning is reported. Figures for a printing establishment with a slight poisoning risk are compared with those for an accumulator factory where the risk is more serious. Mild anemia preceding or accompanying clinical symptoms was

frequent. Punctate basophilia were found to a smaller degree among those with clinical symptoms, and so their determination is deemed insufficient in itself for detection and diagnosis. The authors conclude that in the detection of lead poisoning systematic hematological examination at regular intervals is of greatest importance, and such an examination should include RBC count and morphology, color index, and enumeration of punctate basophils. (In the discussion that followed the paper, the authors' claim that anemia is an early sign of lead poisoning was contested, and prevalence of anemia in a printing works, without punctate basophilia, was attributed to other causes. Measurement of blood urea was recommended as the best test for control of health in lead workers.)

-- Cond. from Bull. Hyg.

253 The Value of Blood Counts in the Diagnosis of Lead Poisoning in Workshops.

A. Hadengue and M. Collin. Arch. maladies profess. 13, 66-68 (1952) French.

A 9-year study was made of the employees in lead storage battery works, with frequent erythrocyte counts and punctate basophilia tests. Only 6% of 450 persons exposed to lead for at least one year showed RBC less than 4 million per cmm. In many of the cases the anemia could not be ascribed to lead in the absence of other clinical or biological signs. Many slight cases recovered spontaneously, even with continued lead exposure. The values of RBC in lead workers were subject to many factors, ethnic, pathological, or nutritional, apart from lead, making interpretation of mild anemia extremely difficult. Frequent search for punctate basophilia was still considered to be the most specific and best diagnostic test for lead poisoning. The indications for red cell counts were: (1) at employment, to avoid exposing a person with latent anemia; (2) in cases of severe prolonged lead absorption, shown by raised and persistent punctate basophilia; and (3) where there is increased blood urea or any clinical signs ascribable to lead. Progressive fall of RBC at an interval of some weeks should call for immediate removal from lead exposure.

-- Cond. from Bull. Hyg.

254 Estimation of Lead Content of Blood. W. Ricklin.

Z. Unfallmed. Berufskrankh. 45, 141-158 (June 1952) German.

The author considers estimation of the amount of lead in the blood the most reliable means of determining whether excessive contact with inorganic lead has occurred. This does not hold for organic lead compounds. (1) Normal persons. The lead content of normal blood is usually between 20 and 30 microgram %. Even a transient exposure to lead may raise this level. (2) Lead workers. In 60 lead workers the average level was 75 microgram % (minimum 40, maximum 170). Duration of exposure had no effect on the average level. The highest average values were found in a group of workers handling moist lead oxide, involving much contamination of the hands and possible ingestion. Punctate basophilia and the other usual blood defects were found in all these workers, but there was no correlation with blood content. Clinical symptoms (pallor and "blue line") appeared to be similarly related to a minimal blood lead level. The symptoms

were present in about one-third of the workers with levels above 60 microgram %, but were absent below that level. (3) Cases of manifest lead poisoning. Levels were highest during the most acute stage, falling with clinical improvement but showing considerable variation. In general, acute symptoms developed during the early months of exposure; with long exposure the blood lead level may rise as high as 170 microgram % without further toxic manifestations. This the author regards as evidence of an acquired tolerance to a high lead content of blood, and he suggests that a rapid rise is more conducive to intoxication than a gradual increase. The recent literature on the pathogenesis of lead poisoning is reviewed.

-- Cond. from Bull. Hyg.

- 255 Lead Content of Cerebrospinal Fluid. B. Pernis.
Med. lavoro 43, 251-260 (June-July 1952) Italian.

The lead content of the cerebrospinal fluid in normal subjects and in patients suffering from lead poisoning (including a case of lead encephalopathy) has been determined by polarographic and spectrographic methods. In the cerebrospinal fluid of normal subjects, lead was either absent or present in minimal amounts, always less than 18 gamma per 100 ml. In lead poisoning cases in which the central nervous system was not impaired, the cerebrospinal fluid showed a lead content either equal to or slightly above that found in normal subjects. In the cerebrospinal fluid of a patient with acute lead encephalopathy, lead itself was found in much larger amounts. It was, however, considerably lessened after the nervous symptoms had disappeared. It is therefore probable that, at least in cases similar to the one observed (with mainly psychic symptoms), the impairment of the central nervous system is caused by the direct action of lead on the nervous cells of the brain cortex.

-- English summary in Arch. Ind. Hyg. & Occ. Med.

- 256 Chronic Neurological Disease as a Possible Form of Lead Poisoning. E. J. Butler.
J. Neurol. Neurosurg. Psychiat. 15, 119-128 (May 1952).

The author reviews the long succession of papers that have dealt with the possibility of an association between lead poisoning and disseminated sclerosis and certain other chronic diseases of the central nervous system. He concludes that any evidence in favor of a connection is purely circumstantial and describes his own experiments on the subject. Using a new absorptiometric dithizone micro-method (not yet published), he estimated the lead content of various body fluids in a variety of patients with disseminated sclerosis and miscellaneous chronic neurological conditions (87 in all) and others with lead poisoning and lead exposure. It was found that urinary lead, blood lead, and urinary coproporphyrin values were within normal limits in the patients with neurological disease. In various tissues from 5 autopsies of patients with nervous diseases, no abnormality in lead content or distribution was found. BAL was administered to a small group of neurological patients and the urinary lead excretion increased from 2- to 4-fold. This merely indicated excretion of normal lead and did not indicate abnormal lead levels in those

patients. Examination of patients with proved lead poisoning confirmed the fact that lead and coproporphyrin were present in the urine several months after exposure ceased. In a few neurological patients the disease had been present for a shorter time than that. The author concludes that these studies do not support the view that lead plays a part in the etiology of disseminated sclerosis and of certain other chronic nervous diseases. -- Cond. from Bull. Hyg.

- 257 Preliminary Investigations on Prehypophyseal Gonadotropic Functioning in Lead Poisoning. A. Roule and G. Morra, Med. lavoro 43, 261-271 (June-July 1952) Italian.

Biological determination of prehypophyseal gonadostimulin eliminated in the urine was made in 12 cases of lead poisoning, following the method of Varney and Koch. In eight cases insufficient elimination of the gonadotropic substances which appeared to be related to the intensity of the lead absorption and the gravity of the clinical picture of poisoning was revealed. The authors advance the hypothesis that insufficiency of the prehypophyseal gonadotropin represents a deviation of the prehypophyseal substances in response to the toxic stimulus of lead, as occurs in the general adaptation syndrome.

-- English summary in Arch. Ind. Hyg. & Occ. Med.

- 258 Use of Albumin Serum in Keratinized Tablets for the Prevention of Lead Poisoning. S. De Renzi and R. Ricciardi-Pollini, Med. lavoro 43, 276 (June-July 1952) Italian.

The authors propose the use of blood protein in keratinized tablets, instead of milk, for the prevention of lead poisoning. They discuss the theoretical experimental basis of the method and report the first practical results.

-- English summary in Arch. Ind. Hyg. & Occ. Med.

- 259 Behavior of Mercury in the Animal Organism Following Inhalation. W. F. Ashe, E. J. Largent, F. R. Dutra, D. M. Hubbard, and M. Blackstone. Arch. Ind. Hyg. & Occ. Med. 7, 19-43 (Jan. 1953).

Severe damage was observed in the kidneys, livers, brains, hearts, lungs, and colons of rabbits exposed to mercury vapor in the concentration of 288 mg. per cu. m. over a period of 4 hours or more. Microscopic evidence of mild damage was found after one hour's exposure. One rabbit died after 6 hour's exposure for 5 days to that concentration. In the remaining three experiments, exposure was for 35 hours weekly (5 days at 7 hours). In the second, exposure to 60 mg. per 10 cu. m., gave nearly the same results as the first after 6 weeks, but with no fatalities. In the third, exposure to 60 mg. per cu. m. resulted in significant but temporary damage to kidneys and brains in 6 weeks. In the fourth experiment, dogs and rabbits were exposed to 1 mg. mercury per 10 cu. m. air for 83 weeks. No microscopic evidence of damage was found. In studies of

urinary excretion of mercury, a maximum was found to be established in a few weeks, varying from 3 mg. per liter in the second experiment down to 0.014 mg. per l. in the fourth. Analysis of the tissues gave varying results in the individual animals, but showed progressive retention in the second and third series, but establishment of equilibrium after 5 or 6 weeks in the fourth. The literal translation of these results to industrial exposure is naturally impossible. After extensive discussion, however, the authors hazard the opinion that the threshold for safety for healthy men under occupational conditions will not be far from that indicated as safe for the animals, namely 1 mg. per 10 cu. m. With these data available, observations on human subjects could be safely carried out.

-- Cond. from authors' summary

Investigations on the Toxicity of Some Organic Mercury Compounds which Are Used as Seed Disinfectants. A. Swensson. Acta. Med. Scand. 143, 365-384 (Aug. 1952)

A critical analysis of the literature on poisoning by organic mercury compounds does not support the statements that the ethyl and methyl compounds are more toxic than the phenyl and similar compounds. The author conducted a series of animal experiments by subcutaneous, intraperitoneal, and intravenous injections with the compounds in question. The results show no difference between the effects of those compounds, except in the case of single intraperitoneal injection, where the order of toxicity was mercuric chloride, phenyl mercury acetate, methyl and ethyl mercury chlorides, methyl and ethyl mercury dicyandiamides. (The Bull. Hyg. reviewer points out the difficulty of applying the results of animal experiments to human intoxication, and considers the paper a challenge to physicians to seek for and publish further cases of poisoning by organic mercury compounds with hydrocarbon groups of high molecular weight, such as the phenyl and tolyl derivatives. On the clinical evidence available at present there is good reason to favor the use of phenyl and tolyl mercury compounds as seed fungicides.)

-- Cond. from Bull. Hyg.

The Vegetative Syndromes in Thallium Poisoning. H. G. Mertens. Klin Wochschr. 30, 843-849 (Sept. 1952). German.

Thallium poisoning is usually considered to manifest itself only as a polyneuritis but in this paper based on the experience of 7 cases, there is a long and rather discursive account of many symptoms and signs which may be met with in this poisoning. Early symptoms may be pains in the legs, disturbances of sensation and of the cranial nerves. The alopecia and sweat suppression are described. There may be tachycardia, increase in blood pressure and also disturbance of carbohydrate metabolism. Some cases simulate thyrotoxicosis. Stress is laid on the multiplicity of symptoms and signs which may be encountered in cases of thallium poisoning, and these are discussed in relation to the toxic effect of thallium on the nervous system and the ductless glands.

-- Bull. Hyg.

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- 262 Experimental Studies in Metal Cancerigenesis. II. Experimental Uranium Cancers in Rats. W. C. Hueper, J. H. Zueffle, A. M. Link, and M. G. Johnson. J. Natl. Cancer Inst. 13, 291-306 (Oct. 1952).

In view of the increase in mining and milling of uranium ores, it seemed advisable to investigate whether cancers might develop in tissue into which metallic uranium was placed. The uranium used emitted pure alpha rays. Sarcomas were produced by deposition of about 50 mg. of uranium in the marrow cavity of a femur in 11 of 33 rats. Intrapleural administration of approximately 300 mg. of uranium produced sarcomas in 2 of 33 rats. All sarcomas either surrounded the uranium deposits or formed in their immediate vicinity. In 6 cases metastases were produced. It is uncertain whether the sarcomas were due to carcinogenic action of uranium or were caused by radiation from this substance. The sarcomas appeared either to be of periosteal origin or to stem from mesodermal elements of the thigh muscle.

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

- 263 The Toxicology of a Phosphate Polymer and Its Use as a Uranium Antidote. C. S. Tidball, W. E. Downs, R. Megarian, and A. Rothstein. Atomic Energy Commission, (UR-204) 50 pp (May 1952).

As a part of a study on the antidotal properties of polyphosphate in metal poisoning, the toxicology of commercial sodium hexametaphosphate is presented. Two mechanisms of toxic action of hexametaphosphate are established: hypocalcemia on intravenous infusion, and acidosis on intraperitoneal or subcutaneous injection. Previous success at antidoting uranium poisoning with subcutaneous calcium hexametaphosphate is not corroborated by this series of experiments.

Cond. from Nuclear Sci. Absts.

- 264 The Pathology of Ferrous Sulfate Poisoning. J. P. Smith. J. Pathol. Bacteriol 64, 467-472 (1952).

The absorption of iron from the intestinal tract is regulated by the iron requirements of the body. There is a mucosal block to iron, the essential factor of which is ferritin. Ferritin consists of micelles of ferric hydroxide attached to soluble specific protein. Ferritin appears only in response to the absorption of iron into the mucosal cells. It is postulated that in acute ferrous sulfate poisoning there may be over production of ferritin in the body. This will initiate the shock syndrome from which death finally occurs.

--Chem. Absts.

- 265 Death after Repeated Exposures to Refrigerant Gases. Report of a Case. J. Mendeloff. Arch. Ind. Hyg. & Occ. Med. 6, 518-524 (Dec. 1952).

A case of death after repeated exposures to refrigerant gases (methyl chloride, sulfur dioxide, and dichlorodifluoromethane) is described. The anatomical lesions found in the lungs, kidneys, and liver are described with illustrations and correlated with the clinical abnormalities which the patient presented. It is

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difficult to trace the conditions to any one of the refrigerants, as they were not strictly typical for any of the gases, but some findings were more nearly related to methyl chloride poisoning than to any effects of the other chemicals.

266 Toxicology of Permanent Wave Preparations. J. Frenkiel.
Arch. mal. profess. 13, 369-373 (1952) French.

Liquids with a base of thioglycolic acid are used by hairdressers in producing permanent waves by the cold process. The claim that thioglycolic acid is toxic is considered. Unless prepared with care this substance may contain injurious impurities, and up to 20% of other acids have been found. One adjuvant is iron which may be masked by sodium hydrosulfite, which in its turn may generate hydrogen sulfide. The material, when applied to the hair, should not have a pH greater than 10. Many investigations are reviewed in which ammonium thioglycolate was given orally and applied to the skin, both of animals and human beings. The general conclusions are that, for the most part, any sensitization which has been reported can be ascribed to impurities introduced by careless manufacture, too strong alkalinity, or the presence of sodium hydrosulfite. The material in itself is harmless and the cold process for permanent waving is harmless.

-- Cond. from Bull. Hyg.

267 The Toxic Effects of Hexaethyltetraphosphate in Man. T. H. Lewis.
Ann. Internal. Med. 37, 384-388 (1952).

A case of near-fatal poisoning following cutaneous, ingestion, and inhalation exposure to HETP is reported, with description of symptoms. The dangers of organic phosphates used as insecticides are emphasized, as is the importance of adequate protective equipment for workers applying them. The possibility that HETP has carcinogenic properties is suggested by the development of bronchogenic carcinoma in the reported patient 10 months after exposure.

-- Cond. from Biol. Absts.

268 The Metabolism of Benzene in Man. J. Teisinger, V. Bergerova-Fiserova, and J. Kudrna. Pracovni Lekarstvi 4, 175 (June 1952). Bohemian.

Experiments are described in which 15 persons inhaled benzene for 5 hours at an average concentration of 340 gamma per liter. They retained an average of 46.3% of the inhaled benzene. During the desaturation period an average of 12.1% of the retained benzene was eliminated through the lungs. This figure is substantially lower than was obtained in earlier experiments with two-hour exposure, indicating that length of exposure has a bearing on desaturation through the lungs. In the urine only 0.1 to 0.2% of the absorbed benzene was excreted as such. In the urine of unexposed persons, an average of 9.5 mg. of phenol (including p-cresol), and 4.6 mg. of pyrocatechol is excreted daily. Hydroquinone does not usually appear in the urine, except after consumption of smoked meat and fish and

use of certain drugs. After the inhalation of benzene, an average of 28.8% of the absorbed benzene is excreted as phenol, 2.9% as pyrocatechol, and 1.1% as hydroquinone. Within 48 hours the excretion of these substances is practically completed. Determination of the ratio between inorganic and organic sulfates confirmed the known fact that organic sulfate rises. This rise, however, is disproportionately higher than the amount which would correspond to the excreted phenols. The view is put forward that benzene affects the metabolism of other substances of a protein nature, the metabolites of which are excreted as ethereal sulfates. -- Cond. from English summary in Arch. Ind. Hyg. & Occ. Med.

- 269 The Value of Observing Platelets when Diagnosing and Prognosing Poisoning Due to Benzene. P. Morel and L. Roche. Arch. maladies profess. 13, 385-387 (1952) French.

The claim is put forward that when attacking the hemopoietic bone marrow, benzene particularly attacks the platelets, which are not generally enumerated when assessing damage from benzene. The claim is supported by evidence from 4 cases of benzene poisoning. The reduction in number of platelets occurs before the other blood cells show any alteration, and may be so pronounced that none may be present; further, this manifestation persists after the patient has recovered and all other cells have returned to normal. These results would indicate that reduction or absence of platelets should be noted when periodic examinations of benzene workers are made. Thereby a warning may be obtained without waiting for a hemorrhagic syndrome. Lack of platelets may be regarded as a forerunner of a tendency to hypoplasia or a medullary aplasia.

-- Cond. from Bull. Hyg.

- 270 Relation Between Methemoglobinemia and Catalasis in Experimental Aniline Poisoning. L. Ghiringhelli. Med. lavoro 43, 272-275 (June-July 1952). Italian.

Ghiringhelli sets out to confirm whether the transformation of hemoglobin into methemoglobin which is noted in the course of aniline poisoning is accompanied by inhibition of peroxidasis (catalasis). With this intention he inoculated six animals with doses of 20 mg of aniline per kilogram of body weight, and after having established that the maximum values of methemoglobin are observed two to four hours after injection, he estimated the hematic value of peroxidasis before and one, two, three, four, and five hours after injection of the aniline. The results obtained show that the peroxidase activity remains almost constant when only maximum oscillations of 12% are taken into account. The failure to inhibit the enzymatic activity of peroxidasis in vivo by the effect of aniline (which is confirmed in vitro) is attributed by the author to the fact that the body can bring into play reactions of at least partial neutralization of the action of the toxic product.

-- English Summary in Arch. Ind. Hyg. & Occ. Med.

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- 271 The Toxicity of Benzene Hexachloride. H. Petry. Zentr. Arbeitsmed. Arbeitsschutz 2, 107-112 (July 1952) German.

A case of poisoning by gamma-benzene hexachloride is described. A baker used 200 to 250 g. of a proprietary powder containing about 3% of benzene hexachloride for dusting his bakehouse. About 15 minutes later he suddenly experienced difficulty in breathing and was found to have severe cardiac and cerebral disturbance. The patient's breath had the odor of the insect powder. Digestive disturbances, motor weakness, and paresthesia of part of the body developed a day later. The symptoms gradually receded but even after some weeks some residual signs of the action on the nervous system and myocardium were evident. Some clinical particulars are given. Few examples of the toxicity of gamma-benzene hexachloride have been recorded, and they consist mostly in reports of the irritant action of the chemical on the skin, eyes, nose, and mucous membranes. These reports are compared with the accounts of the much greater toxicity of DDT. Studies on animal toxicity are described. It is suggested that inhalation experiments would have shown a higher toxicity than in the experiments recorded.

-- Cond. from Bull. Hyg.

- 272 Toxicity of 2,4-Dichlorophenoxyacetic Acid and 2,4,5-Trichlorophenoxyacetic Acid. A Report on Their Acute and Chronic Toxicity in Dogs. V. A. Drill and T. Hiratzka. Arch. Ind. Hyg. & Occ. Med. 7, 61-67 (Jan. 1953).

The toxicity of the plant hormones and herbicides 2,4-D (dichlorophenoxyacetic acid) and 2,4,5-T (trichlorophenoxyacetic acid) was determined by experiments on dogs. The acute oral LD50 of 2,4-D was approximately 100 mg. per kg. body weight, and that of 2,4,5-T the same or higher. Toxic doses of the former produced a definite myotonia accompanied by anorexia and weight loss, and the latter, only signs of mild spasticity. All dogs survived the oral feeding of 2, 5, or 10 mg. per kg. of either compound 5 days per week for 90 days. These doses did not produce any symptoms or changes in body weight, organ weights, or blood count. Feeding of 20 mg. per kg. was generally fatal. Symptoms are described.

-- Cond. from authors' summary

- 273 Urinary Excretion of Paranitrophenol Following Parathion Exposure. J. Lieben, R. K. Waldman, and L. Krause. Arch. Ind. Hyg. & Occ. Med. 6, 491-495 (Dec. 1952).

The results of the work of Gardocki and Hazleton (see following abstract) suggest that determination of p-nitrophenol in the urine may be a simpler and more reliable method than the determination of cholinesterase activity. Experiments were conducted on monkeys because they are more resistant to parathion than other animals. The animals were given a single dose of parathion, either subcutaneously or by skin application, and urinary p-nitrophenol was estimated by the method described by Waldman and Krause (IHF Abst. 341, March, 1952). Administration by either method results in a prolonged excretion of paranitrophenol,

beginning within 24 hours, and lasting up to 32 days, but with considerable fluctuation. Tests are in progress on greenhouse workers and other personnel exposed to parathion. An attempt is being made to evaluate the paranitrophenol test and to determine whether it can be used quantitatively as well as qualitatively.

- 274 Urinary Excretion of the Metabolic Products of Parathion Following Its Intravenous Injection. J. F. Gardocki and L. W. Hazleton. J. Am. Pharm. Assn. Sci. Ed. 40, 491-494 (Oct. 1951).

The principal urinary excretion product of parathion in mammals is probably p-nitrophenol. p-Aminophenol is excreted in traces in the urine following parathion administration. Reduction of p-nitrophenol and its metabolic intermediates to p-aminophenol provides a sensitive method of analysis. In animals this method readily detects the metabolic products following administration of asymptomatic doses of parathion. In all of the studies conducted, plasma cholinesterase levels were significantly lowered following parathion administration in doses of 1 mg. per kg. or more.

-- Authors' Summary

- 275 Industrial Aspects of Skin Cancer. E. L. Wynder. Chemist (Am. Inst. of Chemists) 30, 23-31 (Jan. 1953).

The various industrial causes of skin cancer are discussed. In Great Britain, 2,975 cases of skin cancer were reported up to 1945. Of these cases, 59.4% were attributed to pitch or tar products, and 40% to shale oil, mineral oil, or bitumen. In the United States, on the other hand, only 151 cases were reported up to 1948. The number would undoubtedly be much higher if a better system of recording and reporting could be instituted. In addition to chemical agents, ultraviolet light, radioactive substances, and scars from burns are among the causes of skin cancer. The latency period is long; the maximum number in the British investigation occurred in pitch and tar workers from 20 to 24 years after the first exposure, and 50 to 54 years in shale and mineral oil workers. The cure of skin cancers depends upon early recognition and treatment. Preventive measures, however, are most important. They should include compulsory medical examination, prevention of contact, protective clothing, and especially worker education. These measures have greatly decreased the incidence of cancer in Great Britain. In the United States the recent investigations by the Standard Oil Company have contributed to prevention of cancers from high-boiling oils. Compensation laws should be on a par with those of Great Britain, but in the absence of adequate laws, industries should of their own accord collect information and apply it for protection of workers and the advancement of cancer work in general.

- 276 Occupational Skin Cancer in a Group of Tar Workers. R. E. W. Fisher. Arch. Ind. Hyg. & Occ. Med. 7, 12-18 (Jan. 1953).

A survey of 241 workers in a tar distillery is reported. The changes found in the skin are briefly described, and their incidences are tabulated according

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to type of skin change and number of years of exposure. There is no evidence that fair-haired men are more prone to tar warts than are dark-haired men. There is significant evidence to show that susceptibility to acute tar erythema is related to susceptibility to tar warts. Chronic tar skin does not necessarily precede the development of tar warts.

- 277 Mule Spinners' Cancer. Second Interim Report of the Joint Advisory Committee of the Cotton Industry, (Great Britain) Ministry of Labour and National Service. 10 pp. (1952) H. M. Stationery Office, York House, Kingsway, London WC2, England. Price 6d.

The present report is concerned mainly with the substitution of non-carcinogenic oils for those known to produce cancer. Purified products known as Technical White Oils have been found to give as good lubrication as the oils that have been used in industry, in spite of their lower viscosity.

-- Cond. from Bull. Hyg.

- 278 Printers' Asthma. P. B. S. Fowler. Lancet 263, 755-757 (Oct. 18, 1952).

Asthma is reported in 32 printers exposed to a spray fluid containing gum acacia. An additional 14 printers had symptoms of sensitization to the spray fluid. The average duration of exposure before asthma developed was 4 to 8 years, but the period of exposure was half as long for the 6 printers who had a past or family history of allergy. In one firm 19% of the printers had asthma and a further 30% had early symptoms of asthma due to sensitization to the spray. The industrial hazard can be eradicated by the substitution of dextrose for gum acacia in the spray fluid.

-- Author's Summary

- 279 Medical Aspects of the Coking Industry. J. Rogan. Gas World 136, (Coking Sect.) 25-26 (Aug. 2, 1952).

The health risks of the coke industry are reviewed. The coal dust is a potential cause of pneumoconiosis, although it is doubtful whether it is present in hazardous quantities. A silicosis risk is present during demolition of old refractory brick lining. Where producer gas is used in carbonization, the carbon monoxide hazard is always present. Cancer-producing substances, such as benzpyrene are present in the oven fumes. Tar is responsible for a number of skin diseases. Benzene and the substances producing bladder cancer are rarely present in dangerous amounts. Preventive measures are discussed briefly.

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- 280 Retention of Air-Borne Particulates in the Human Lung. Part III.
H. D. Landahl, T. N. Tracewell, and W. H. Lassen. Arch. Ind. Hyg. & Occ. Med. 6, 508-511 (Dec. 1952).

Measurements of the retention of triphenyl phosphate droplets in the human respiratory tract have been made at a flow rate of 60 l./min. As was expected, the percentages retained were higher at this flow rate than those previously obtained with lower flow rates for the corresponding pattern of respiration. The curves of the percentage retention as a function of particle size are very similar to the curves obtained at a lower flow rate. They also show a minimum retention for particles of about 0.4 micron diameter. Some experiments were carried out in which the average time spent by an air sample in the lungs was varied. The percentages retained compared favorably with values calculated for the corresponding breathing pattern. The observed percentage retention was found to increase from about 20 to 60% as the mean time in the lungs increased from 2 to 12 seconds.

-- Authors' Summary

- 281 Pneumoconiosis Due to Silica of Fossil Origin. J. Lecocq, C. Guyot-Jeannin, and J. le Lay. Arch. maladies profess. 13, 363-365 (1952). French.

The authors present the results of an examination of 9 men aged between 40 and 60 who had been employed for long periods with exposure to dust when grinding diatomaceous earth (kieselguhr), which contains over 90% free silica. Seven of the men presented no clinical or radiological sign of pneumoconiosis. One other exhibited signs of mild silicosis, but he had previously been employed in mines. The other showed a few nodules ascribed to sequelae from illness. In none of the men were tubercle bacilli found in the sputum. A number of other authors are quoted who have also found no nodular silicosis due to exposure to diatomaceous earth.

-- Cond. from Bull. Hyg.

- 282 Effect of Cortisone on Experimental Intraperitoneal Silicotic Nodules.
F. R. Magarey and J. Gough. Brit. J. Exptl. Pathol. 33, 510 (Oct. 1952).

In a previous report (IHF Abst. 1211, Dec. 1952), the authors demonstrated that cortisone in large doses reduces the formation of fibrous tissue provoked by powdered quartz in the peritoneal cavity of rabbits. The question considered here is whether cortisone affects the fibrous connective tissue of established silicotic nodules. In the experiments now described, intraperitoneal silicotic nodules were established in six rabbits, after which half the rabbits received 20 mg. cortisone acetate daily for 22 to 84 days. In the cortisone-

1992 treated animals diffuse delicate connective tissue, consisting of loosely knit fibers and thin-walled blood vessels, surrounded the silicotic nodules. In the controls, a cellular fringe with fibroblasts suggested that active fibrosis was still progressing. The authors were unable to detect any reduction of collagen in established silicotic nodules in the treated animals, although further fibroblastic proliferation was apparently retarded. This suggests that cortisone will not have any lasting benefit on the collagen in human silicosis, although it might arrest progression of the lesions while it was being administered.

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

- 283 Pulmonary Tuberculosis in the Rhondda Fach: an Interim Report of a Survey of a Mining Community. J. G. Cox and T. F. Jarman. Brit. Med. J. 2, 843-853 (Oct. 18, 1952).

November 1952 A field experiment was designed to study, in a mining community with a high prevalence of pneumoconiosis, the effect of reducing tuberculosis infectivity upon the rate of appearance of progressive massive fibrosis in miners already affected by simple pneumoconiosis. The present report is concerned with the findings of the first roentgenological survey of the adult population. Figures are given for the prevalence of tuberculosis by age and sex. The extent of tuberculosis is apparently typical of such areas in the country. About 30% of the miners and ex-miners had some roentgenological signs of pneumoconiosis; 15% had progressive massive fibrosis. All but two patients with infectious tuberculosis were given hospital treatment. The number of infectious cases has been reduced by about 60%, and the patients are all being closely supervised by a health visitor. Future surveys will show what effects this reduction will have on the tuberculin positivity and on the rate of appearance of new cases of tuberculosis and massive fibrosis.

-- Cond. from Authors' Summary

- 284 A Clinical and Pathological Study of a Case of Pulmonary Asbestosis. H. Bastenier, H. Denolin, A. Decoster, and R. Denolin-Reubens. Arch. belges med. sociale, hyg., med. travail et med. legale 10, 61-70 (Feb. 1952) French.

IN RE ABRAMS November 1952 A diagnosis of asbestosis must depend upon a history of occupational exposure to asbestos dust, associated with effects on the respiratory organs. A case is reported in which a woman had worked for 25 years weaving asbestos in a factory with heavy dust exposure. The symptoms described are typical. The authors compared this case with those of uncomplicated silicosis; in the latter residual air is frequently increased, expiration is prolonged, and the maximum respiratory capacity is reduced, but hyperpnea is less, rapid breathing is not so intense, and anoxemia is never so important during effort, as in asbestosis. These differences are stressed as important when necessity may arise in determining the occupational origin of a case with obscure diagnosis.

-- Cond. from Bull. Hyg.

- 285 Baritosis. Report of a Case. E. P. Pendergrass and R. R. Greening.
Arch. Ind. Hyg. & Occ. Med. 7, 43-48 (Jan. 1953).

A case of baritosis and anthracosilicosis is reported, occurring in a man who worked in a hard-coal mine in Pennsylvania and in a small lithopone plant where he was exposed to finely divided particles of barium sulfate.

-- Authors' Summary

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 286 Heat Relief in Industry. Heat. Pip. Air Cond. 25, 90-95 (Feb. 1953).

The paper on the subject by B. R. Small (IHF Abst. 543, May 1952, also published in Heat. Pip. Air Cond. in October and November) is discussed by several commentators, who present their experiences with several of the methods described and their adaptations.

- 287 Proceedings of the Third Annual National Noise Abatement Symposium, Oct. 10, 1952. 59 pp. Obtainable from National Noise Abatement Council, 9 Rockefeller Plaza, New York, N.Y. at \$1.00.

This symposium was sponsored jointly by the Acoustical Society of America, the Acoustical Materials Association, the American Industrial Hygiene Association, the National Noise Abatement Council, and Armour Research Foundation of Illinois Institute of Technology. Following are abstracts of the seven papers, which are published in full:

Industrial Noise Measurement - Science or Art? C. R. Williams and J. R. Cox, Jr., pp. 1-17--Comprehensive directions are given for the use of sound measuring instruments. The discussion shows clearly that noise measurement is an art. Every step in the evaluation of a noise problem depends more upon the skill and experience of the observer than on the scientific basis. Mistakes in judgment, undetected malfunctioning of an instrument, and failure to recognize the effects of outside influences can all lead to significant errors. In view of the fact that one of our important jobs is to gather basic data, particularly with respect to damage risk criteria, we are all faced with the responsibility of developing an understanding of just what each meter reading really means.

-- Adapted from Authors' Summary

Methods for Reducing the Noise of Industrial Machines. P.H. Geiger and R. N. Hamme. pp. 19-26--A typical noise analysis of a machine is first presented. The possible methods of reducing the noise from a machine are discussed critically, including resilient mountings, vibration damping materials, acoustical housings, and sound-absorbing materials. The functions of these materials are distinct, and it is emphasized that the function of the material has

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to be considered when it is being selected, and then it has to be used in the right place. Cost is an important factor, and usually limits the extent of noise suppression.

The Use of Acoustical Materials in the Control of Industrial Noise.

H. J. Sabine. pp. 27-35--The principles and practice of the use of acoustical materials are discussed extensively, with consideration of effectiveness as related to distance, multiple sources of noise, and reverberation.

The Ear and Noise. H. P. House. pp. 36-39--The diagnosis of early hearing loss due to noise is not difficult. Audiometric tests will reveal a characteristic dip in the frequency of 4,000 cycles per second long before the patient becomes aware of any symptoms referable to his ear. The differential diagnosis of more advanced acoustic trauma, after the patient becomes aware of his hearing loss, is much more difficult. Therefore, pre-placement and routine periodic follow-up audiograms are essential not only to establish an accurate diagnosis but, much more important, to determine the presence of acoustic trauma at the earliest possible moment in order that adequate protective measures may be instituted.

-- Author's Summary

The Effects of Noise upon the Behavior of People. W. A. Rosenblith.

pp.40-48--The author limits his discussion to the effects of noises that are not loud enough to cause ear injury. Many statements that have been made on this subject are not justified by any experimental work. In order to arrive at a clear understanding, noise and behavior must be strictly defined with respect to the particular situation, and no general conclusion can be drawn as to the effect of noise on behavior. The question should be limited to the effect of a specific noise on specific behavior.

Safety Standards for Industrial Noise. S. R. Guild. pp. 49-52--The observational data now available are inadequate as a basis for setting up safety standards for industrial noise. The knowledge of the resistance of the human ear to injury by sounds is only on a qualitative basis. Human beings cannot be kept under rigidly controlled conditions for the time necessary to obtain the quantitative data desired. The facts needed for rational safety standards can be obtained by field surveys in which management, labor, and specialists cooperate. These field surveys must include procedures to exclude cases of impaired hearing not caused by the occupation at the time of the survey. The procedures include thorough clinical examination, complete personal history, and a pre-placement examination of each worker.

-- Cond. from Author's Summary

The Measurement of Hearing Loss. A. Glorig. pp. 53-59--The principles of the measurement of hearing loss are discussed. Hearing of speech is the most important factor to be measured in auditory tests. Tests are grouped in three main categories: those for screening, for diagnosis, and for research. The test material used depends upon which of those three categories is chosen. Finally, recommendations are made concerning test rooms, equipment, and tests for industrial situations.

--Cond. from Author's Summary

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IN RE: ABRAMS November 1992

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- 288 The Influence of Airplane Noise on Auditory Thresholds. B. H. Senturia.
Ann. Otol. Rhinol. Laryngol. 61, 331 (June 1952).

Enlisted trainees were examined for auditory thresholds during pre-flight training, and reexamined after the completion of each phase of training. The study included 100 students with records of 20/20 hearing for whispered voice at their Army physical examinations. It was demonstrated that a large percentage of men in pilot training show temporary hearing losses after exposure to aircraft noise. These temporary losses tend to involve the frequencies 1024 to 5792 cps. In the more vulnerable 2896 to 5792 cps region, recovery of hearing loss is delayed. It may be concluded that hearing losses during primary, basic, or advanced pilot training are, on the whole, temporary losses, which are recovered after 24 hours of freedom from exposure to aircraft noise.

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

- 289 Experimental Studies of Noise from Subsonic Jets in Still Air. L. W. Lassiter and H. H. Hubbard. National Advisory Committee for Aeronautics, Technical Note 2757. 35 pp. (Aug. 1952). Copies obtainable from above Committee, Washington, D. C.

Experimental studies have been made of the noise from a series of model subsonic jets ranging in diameter from 0.75 to 12.0 inches and the results are compared with data obtained for a turbojet engine. The effects of such parameters as jet size, exit gas velocity, density, and turbulence level on the noise generated in the mixing region of a jet are evaluated. The velocity and turbulence level were found to have the greatest effect on the noise intensities and the frequency content was found to be a function of jet size and the observer's location. The noise generated by the turbojet engine was found to be closely related to that generated by simple model jets and an empirical relation is given to allow the extrapolation of available jet-noise data to other operating conditions.

-- Authors' Summary

- 290 Some User Objections to Fluorescent Lighting. H. C. Weston.
Trans. Assn. Ind. Med. Officers 2, 72-78 (July 1952).

Complaints of ill effects from fluorescent lighting since its introduction in Great Britain 10 years ago include cutaneous reactions, headache, glare, insufficient illumination, conjunctivitis, eyestrain, fogging, nervous strain and instability, flicker and stroboscopic effects, and cosmetic effects. The complaints have in general been without foundation. On investigation other causes were found for most of the conditions. Glare and insufficient lighting have been corrected by proper adjustment of the illumination. Stroboscopic effects are noticeable only in particular circumstances, and individual susceptibility may be a factor. The objection to color of the light usually disappears after familiarity with it, and the color may be corrected if necessary. The industrial medical officer is in the best position to investigate any complaints within his plant. Experiments on the psychological factor are suggested.

RADIOACTIVITY AND X-RADIATION

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291 Radioactive Static Electricity Eliminators. J. D. Graves.
Metal Progress 62, 94-96 (Nov. 1952).

The principal uses of static eliminators are: (1) to permit separation of surfaces, as in unrolling paper; (2) to prevent dust collection on surfaces; and (3) to prevent dissemination of flammable dusts. The three types of radiation are effective, but each has its limitations. Alpha-ray emitters must be placed within a few inches of the source on account of the short range of the rays. Beta rays, with a longer range, are more widely scattered, and are efficient for static elimination only when relatively large surfaces must be discharged. Gamma rays are hazardous on account of their long range, and can be used only where it is necessary to ionize large volumes of air in an uninhabited or heavily shielded area. Radium can be used as a source with the advantage of a long half-life, where the presence of beta and gamma radiation is permissible. Radium-D may be employed when gamma radiation is not permissible, but is expensive. Polonium may be used where neither beta nor gamma radiation is permissible, but must be frequently replaced, as its half-life is only 138 days. Radioactive cobalt is the only other metal now used or giving promise of application. Radioactive static eliminators are completely safe if properly constructed, installed, and used. On the other hand, they can be serious hazards if misapplied. They must be installed only by persons with full knowledge of their hazards, and the equipment should be frequently checked.

-- Cond. from Engrs. Digest

292 The Late Effects of Internally-Deposited Radioactive Materials in Man.
J. C. Aub, R. D. Evans, L. H. Hempelmann, and H. S. Martland. Medicine 31, 221-329 (Sept. 1952).

Case histories of thirty persons containing internally deposited radium, alone or in combination with mesothorium, are presented. Most of these individuals were exposed at least 25 years ago. The radium deposited in the body of each person was measured by standardized techniques. Physical characteristics observed are summarized and the role of internally deposited radioactive materials in mortality rate, incidence of illness, and severity of symptoms during illness of surviving patients are discussed. The biological and physical properties of radium and mesothorium are reviewed and physical aspects of radium and mesothorium toxicity are discussed.

-- Nuclear Sci. Absts.

Justice: What you get when the decision is in your favor.

-- National Safety News, Aug. 1952.

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- 293 Bilateral Lenticular Opacities Occurring in a Technician Operating a Microwave Generator. F. G. Hirsch and J. T. Parker. Arch. Ind. Hyg. & Occ. Med. 6, 512-517 (Dec. 1952).

A case of lenticular opacity in a man who had operated a microwave generator for about a year is described in detail. The average daily exposure was estimated at 0.5 watts per sq. decimeter, with short periods when it was much higher. Circumstantial evidence points to the radiation as the cause of the opacity; however, the authors hesitate to draw a conclusion, considering that microwave energy has been used as a modality of physical therapy for a number of years without any record of ocular damage. The case is presented to call the attention of ophthalmologists, industrial physicians, and microwave operators to the potentialities of these radiations. Much remains to be learned about the various factors which control the absorption of microwave energy by tissue systems in a "near field" situation. Until more data have been accumulated, it is probably wise for personnel in daily contact with the energy dissipation of these devices, especially in relatively confined spaces, to wear metallic spectacle frames in which a fine copper mesh has been substituted for the glass lens.

- 294 Barite-Aggregate Concrete for Gamma-Ray Shielding. K. A. Shelstad, V. E. Vaughan, and E. L. Cameron. Can. J. Technol. 30, 334-339 (Nov. 1952).

A large degree of protection from gamma rays of atom bombs can be attained by adding barite to the concrete used in walls. A maximum barite particle size of 3/4 inch can be used when the compressive load on the concrete is not over 3,000 to 3,500 lbs. per sq. in. Mechanical strength is limited only by the friable nature of the aggregate. Subject to that limitation, there are no inherent difficulties in using barite. The density of the aggregate is 190 to 200 lb. per cu. ft., as compared with 145 to 150 for ordinary concrete. A barite-aggregate wall four inches thick transmits only about 25% of the gamma rays striking it, and an eight-inch thickness reduces the transmission to less than 5%.

- 295 Tetrazolium Salts as Protectors against Lethal Effects of X-Rays. N. Puckett, S. Bellack, and A. T. Kreps. Atomic Energy Commission Publication AMRL-77, 9 pp. (March 1952).

The administration of tetrazolium compound before irradiation produced a definite protection against lethal effects of x-rays in mice. Possible mechanisms by which these oxidizing substances provide protection are discussed.

-- Nuclear Sci. Absts.

And now we have a new definition of a committee: "A committee is a group of the unwilling, appointed by the unfit, to do the unnecessary."

-- Detroit Medical News, Dec. 8, 1952

ENVIRONMENTAL MEASUREMENTS

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- 296 Improved Photometric Determination of Carbon Monoxide by Means of Palladous Chloride. E. W. Rice. Arch. Ind. Hyg. & Occ. Med. 6, 487-490 (Dec. 1952).

An improvement in determination procedures for carbon monoxide in air by the palladous chloride method is described. A spectrophotometer or photoelectric colorimeter is used instead of other types of colorimeter heretofore employed. Spectrophotometric curves were first determined for standard palladous chloride solutions with a suitable excess of potassium iodide. The transmission minimum occurs at 406 to 410 millimicrons; therefore, a 400 filter was selected for use with a photoelectric colorimeter. With the use of the procedure described, the curves follow Beer's law in quantities up to 0.4 mg. of PdCl_2 , and the concentration range for optimum accuracy is from 0.08 to 0.4 mg. Since the reaction involved is the reduction of palladous chloride to metallic palladium by carbon monoxide, the quantity of the palladous salt remaining in solution is estimated by the colorimetric method, with unused solutions as standard. From the difference the quantity of carbon monoxide is calculated. Full details of the method are given.

- 297 The Detection and Estimation of Carbon Monoxide. C. S. W. Grice and F. J. Hartwell. Trans. Inst. Min. Engrs. 111, 305-319 (March 1952).

The authors review those of the available methods for the detection and estimation of carbon monoxide which may be of use to the coal-mining industry. Methods depending upon the absorption of CO by hemoglobin offer no special advantages except in cases in which the saturation of blood has to be determined. Chemical absorption in liquid reagents should be reserved for use in general analysis in which concentrations of the order of 0.25% or more are suspected. As a standard laboratory method the use of iodine pentoxide is still unequalled for the estimation of concentrations between 0.0005 and 0.2%, while for the detection of small quantities in the field potassium pallado-sulfite indicating tubes provide the most convenient and accurate method. For continual recording the choice lies between the catalytic oxidation on hopcalite and the infrared absorption method. The infrared method will probably come into wider use, but it is remarked that infrared gas analyzers do not provide an absolute measure of the gaseous component under examination and that ultimate accuracy must depend on their calibration with mixtures of known composition. Birds and mice remain the only portable indicators which work continuously without human intervention.

-- Bull. Hyg.

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- 298 Determination of Sulfur Dioxide by Color-Changing Gels. G. D. Patterson, Jr., and M. G. Mellon. Anal. Chem. 24, 1586-1590 (Oct. 1952).

A gel sensitive to sulfur dioxide can be prepared from about 2 ml. of silica gel and 20 ml. of saturated ammonium vanadate at pH 5.5 to 8.5. Other active gels were also prepared. The gel is placed in a glass tube and air is drawn through it. As little as 10 ppm of sulfur dioxide can be determined. The resulting colors can be interpreted (1) by measuring the length of colored gel, (2) by comparing the color with standard color cards, or (3) by determining the volume of air required to produce a desired color. Hydrogen sulfide and hydrogen chloride also produce color effects which interfere, and ammonia has a bleaching effect.

-- Chem. Absts.

- 299 Colorimetric Determination of Nitroparaffins. L. R. Jones and J. A. Riddick. Anal. Chem. 24, 1533 (Oct. 1952).

This work was begun because no sensitive or specific colorimetric method was available for the determination of small amounts of secondary aliphatic nitroparaffins. The method, as developed, depends upon the decomposition of nitroparaffin to nitrous acid by means of treatment with concentrated sulfuric acid. The resulting nitrous acid is combined with resorcinol to form what is believed to be a p-nitrosophenolic compound. This compound gives a deep red-blue color, measurable at a wave length of 560 millimicrons by means of a spectrophotometer. The color is suitable for the quantitative determination of most secondary and a few tertiary nitroparaffins in amounts as small as 3 to 5 gamma, with an expected accuracy of + 5% and a precision of + 1%. It is possible to determine 2-nitropropane in air and in mixtures of primary nitroparaffins. The method has been adapted to the determination of halogenated nitroparaffin fumigants when used on grains.

-- Authors' Summary

- 300 Portable Electrostatic Precipitator Operating from 110 Volts A.C. or 6 Volts D. C. A. D. Hosey and H. H. Jones. Arch. Ind. Hyg. & Occ. Med. 7, 49-56 (Jan. 1953).

A portable electrostatic precipitator for field sampling has been described. This instrument has four features: (1) It collects samples on either glass slides or metal plates, thereby permitting direct microscopic examination of the sample and simplifying the procedure of removing material for chemical analysis; (2) it has a light-weight sampling head with built-in flowmeter; (3) it will operate from either 110 volts A.C. or 6 volts D.C., and (4) the complete unit weighs less than 17 lb. and can be conveniently carried from the shoulder, thus increasing its portability and the ease of collecting atmospheric samples by electrostatic precipitation. Tests showed that the new unit had collection efficiencies comparable to the PHS-50 modified electrostatic precipitator for lead oxides. The instrument survived a rather severe desert shakedown test.

-- Authors' Summary

301 Application of Molecular Filter Membrane to the Analysis of Aerosols.A. Goetz. Am. J. Publ. Health 43, 150-159 (Feb. 1953).

Molecular filter membranes are now successfully used for water filtration for bacteriological tests. The author presents the first brief survey of the nature and the application of molecular filter (MF) membranes to the assay of atmospheric environment for suspended particulate matter. These membranes represent dry gels of micellar structure, the elements of which are of the molecular order of magnitude, and are held permanently, without the use of binding agents, by inter-molecular forces. Extensive work on these filters has now produced an almost completely wet-dry stable membrane, free from extractable constituents, and with a flow resistivity sufficient to permit aerosol filtration with sampling rates similar to that of fibrous materials (paper) used for the purpose. The pore openings can be controlled within narrow margins to suit particular applications. The membranes are supported by porous plates with negligible flow resistance, which is in turn supported by a metallic screen. The sampling apparatus is described and illustrated. Relatively high differential pressures can be effectively applied when high sampling speeds are required. The most significant factor for the performance of MF membranes is the high dielectric constant. The large electrostatic charges throughout the membrane cause the retention of particles much smaller than the pore diameters. Examples of the application of MF membranes are given, including fumes, smokes, and microbiological aerosols. Various tests have shown an extremely high percentage of retention. The method has considerable potential promise because of its simplicity and economy.

302 Air Sampling with Membrane Filters. M. W. First and L. Silverman.Arch. Ind. Hyg. & Occ. Med. 7, 1-11 (Jan. 1953).

Final evaluation of the usefulness of molecular filters for the collection and analysis of aerosols must be made on the basis of extensive comparative studies in the field, but already laboratory and some field studies have indicated a number of applications that offer advantages to the industrial hygienist in convenience, accuracy, and simplification of air-sampling equipment. Comparative dust counts with the use of membrane filters and the midjet impinger indicate that comparable counts may be obtained with the filters with an appreciable saving in time, labor, and equipment. Acid mists and metal fumes may be collected at nearly 100% efficiency, and in many cases sufficient sample for analysis may be collected conveniently with a 600 ml. handpump. Applications to particle size separations and electron microscopy are subjects for further investigation.

-- Authors' Summary

303 Gravimetric Sampling of Dust in Coal Mines. H. H. Watson and T. G. Morris.Engineering 174, 228 (Aug. 22, 1952).

The authors have designed a simple, portable, dust-sampling apparatus for determining the concentration and particle-size distribution of air-borne dusts. The unit consists of a compressed-air ejector as its suction source, a large Soxhlet

extraction thimble as the collecting medium, and a flow indicator. The ejector is discussed in a previously published paper by Watson. The thimble is described as "fat-free, seamless, single thickness," 41 mm. in diameter. The flow meter, essentially a gauge measuring differential pressure across an orifice, is a modified aircraft air-speed indicator calibrated against a rotameter. Air-flow resistance of the thimble varies from 4.7 in. (12.07 cm.) to 25 in. (63.50 cm) water gauged at 150 liters per minute. Absence of discoloration on the suction side of the thimble indicates high retention of coal mine dust. A weighing technique is discussed which gives a standard error of 2 mg. It is suggested that the error in flow metering, caused by the reduction in operating pressure from P_0 , the calibration pressure, to some lower pressure, P_1 , as the thimble is plugged, can be reduced by calibrating the flow meter at a pressure between P_0 and P_1 . A table of duplicate sampling tests at a coal face is presented in support of the hypothesis that small errors were to be expected by not sampling isokinetically.

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

304 Determination of the Dry Weight of Filter Papers. H. H. Watson.
Engineering 174, 101 (July 25, 1952).

The author discusses a method for drying and weighing both clean filter papers and papers with a deposited sample of air-borne coal dust. The paper is rolled into a loose cylinder, placed in a weighing bottle, and heated overnight in an air oven at 105 C. In the morning it is desiccated over anhydrous (magnesium perchlorate) for one hour, and the bottle is weighed with and without the paper three successive times. The mean of the three readings is taken as the correct weight. Duplicate readings on some 92 papers, weighing about 0.2 gm. each, show a maximum difference between successive readings of ± 0.2 mg. Of these 92 successive weighings, 77 show a difference between readings of ± 0.1 mg. Results of an investigation to determine the effect of manipulating the papers during use and weighing indicate that this causes no error. Determination of the effect of relative humidity in the oven at various temperatures indicates that for highly accurate results this factor should be controlled. Some data are presented on the oxygen take-up of coal vs. time. Moisture regains of Whatman No. 41 papers at various relative humidities are also given.

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

305 Note on Preparation of Dust Samples for Microscopic Sizing. M. W. First.
Arch. Ind. Hyg. & Occ. Med. 7, 58-60 (Jan. 1953).

Directions and suggestions for preparation of dust samples for particle size determination. The rubbing-out process with a wooden toothpick is recommended, with the aid of suitable mounting media. Choice and preparation of various media are discussed. More uniform slides for examination may be obtained by the use of a cascade impactor, but the procedure is generally more complicated than direct microscopic examination.

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IN RE: ABRAMS November 1992

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PREVENTIVE ENGINEERING

- 306 Effectiveness of the Fog Filter. F. A. Thomas, Jr.
Heat. & Vent. 50, 113-115 (Feb. 1953).

The fog filter described consists of a spray tower differing from the conventional type in the arrangement of the nozzles, which are spaced throughout the length of the tower in parallel horizontal planes to discharge at a common angle. A high angular velocity is produced by the combined effect of the nozzles and the nearly tangential entry of the air into the fog chamber. The air is discharged through an inner shell concentric to the outer shell. The efficiency of the filter for various purposes is tabulated. Good performance has been indicated on certain fine dusts and fumes, some oils, mists, and odors. Its poor efficiency for some other materials may yet be improved by further modifications. Suggestions are made for variations to obtain maximum efficiency for particular purposes. Power costs are comparable with those of other high efficiency collectors.

COMMUNITY AIR HYGIENE

- 307 Progress in Air Pollution Control. W. C. L. Hemeon.
Air Repair 2, 119-122 (Feb. 1953).

Solid air pollutants from coal burning consist of (1) visible black smoke from ineffective combustion of gases, and (2) invisible fuel dust of ash and partially coked coal. The black smoke nuisance, naturally given most attention at first, has been greatly reduced, by increasing accomplishment in smoke abatement among large coal users, by the replacement of coal-burning locomotives with diesel engines, and by changes in domestic heating. The principal change has been the substitution of oil and gas for coal. Census figures for several cities as examples show usually a small percentage reduction in coal burning, and large increases in the use of gas and oil. Fly ash, the second constituent in air was at first given very little attention, but has continually increased in importance. During the past 15 to 20 years the fly ash problem has been studied and codes and standards have been developed. Visible smoke is no longer a criterion of air pollution control. New problems are thus introduced, the solution of which can be solved only by technical study of the nature, amounts and sources of dusts and other air pollutants. Very few cities have undertaken such a program. One question is economic, it is how clean an air the community can afford. There is no definite evidence on the effect of air pollution on health; however, there is no necessity for proving health effects in order to justify

measures for cleaner living environment. Vast technological improvements have been more effective in reducing air pollution than has legislation.

- 308 Air Pollution Abatement Manual. Chapter 8. Manual Sheet P-9. The Meteorology of Air Pollution. Manufacturing Chemists Assn. Inc., 246 Woodward Bldg., 15th & H Sts., N.W., Washington 5, D.C. 39 pp. (1953). 75 cents.

Weather is known to be an important factor in air pollution. Meteorology may aid in: (1) the determination of required reduction in emission from a particular source; (2) stack design; (3) planning and interpretation of air pollution surveys; (4) plant site selection; and (5) meteorological control of operations. Air pollution may also affect local weather. The fundamentals of meteorology are discussed, including macro- and micro-meteorology, and atmospheric diffusion. Stack meteorology, that is, the study of factors affecting dispersion of pollution from stacks and chimneys, is discussed extensively. The bearing of meteorology on planning and interpretation of air pollution surveys, and on site selection, is considered. Micrometeorology, the study of local conditions, is necessary for all these purposes, as weather bureau data, based on the records of widely separated stations, are insufficient for knowledge of the local weather that may affect air pollution.

- 309 Cumulative Annotated Bibliography on Atmospheric Pollution by Smoke and Gases. H. P. Kramer and M. Rigby. Meteorol. Absts. 1, 46-71 (1950).

This bibliography contains 240 annotated references to works published between 1661 and 1949 (arranged chronologically and outlined by subject and geographical location) on air sampling and analysis instruments and methods; effect of atmospheric pollution on animals, building materials, public health, vegetation, etc.; mechanics of dispersion of particles in the air; smoke-abatement measures and other aspects of air pollution in relation to meteorological factors in all parts of the earth. -- Chem. Absts.

- 310 Toxicology of Chemical Air Pollutants. H. E. Stokinger. Chemistry in Can. 5, 23-26, 36 (Jan. 1953).

The author reviews existing knowledge on the health effects of the common air pollutants. He first discusses the biologic fate of air pollutants, with consideration of the factors affecting the body intake of particles and of gases, the relations between particle size and alveolar deposition and retention of solids and of oil particles, and biologic mechanisms of organic molecules. Specific pollutants are then considered, including sulfur dioxide and trioxide and sulfuric acid mist, arsenic and arsine, hydrogen sulfide, oxidation products of unsaturated hydrocarbons, beryllium, and cadmium. There are about a dozen metals whose toxicity is unknown. It is emphasized that there is still much to be learned about the toxicity of air pollutants.

- 311 Research on Atmospheric Dust in Steel Foundries with Special Reference to the Use of Statistical Surveys. G. M. Michie and G. H. Jowett. Foundry Trade J. 93, 527-535, 563-569 (Nov. 6 and 13, 1952).

The authors discuss the use and interpretation of atmospheric dust surveys, including dust sampling and estimation, and the potential importance of automatic methods. Two environmental dust surveys were made, and the data were subjected to detailed statistical analysis. The results show the influence on dust level of such factors as local operational process, day of week, and time of day. Statistical considerations involved in the design and analysis of such surveys are discussed.

-- Battelle Tech. Rev.

- 312 Industrial Experience in Fly Ash Collection. B. S. Norling. Air Repair 2, 114-118 (Feb. 1953).

The experience of a particular company with fly ash collection is reported. Removal by an electric precipitator is the most efficient method, but more expensive than by mechanical collection. The costs of installation in this case would be \$545,000 and \$420,000 respectively. The ideal solution for thorough removal is a combination of methods, but its cost would be prohibitive in most existing boiler plants. If collectors are installed when the plant is built, the cost is but a fraction of the cost of installing them later, particularly when no provisions are made for future installation. A number of points regarding installation and operation are discussed. Future ordinances regulating fly ash emission will probably become more restrictive and the improvement in means of reducing atmospheric contamination must be given careful study in considering future installation.

- 313 Some Aspects of the Physical Behavior of Aerosol Particles in the Atmosphere. W. E. Ranz and H. F. Johnstone. AECU-2093 18 pp. (May 5, 1952). Atomic Energy Commission.

Phenomena which are associated with the behavior of individual particles can be understood in terms of known physical concepts if factors which are insignificant by many orders of magnitude in normal experience are recognized to be significant in a scale of values reduced to the mass and size of an aerosol particle. The following topics concerning aerosol particles in the atmosphere are discussed in terms of known concepts, with recognition of significant factors: (1) gross motion of aerosol particles caused by atmospheric turbulence; (2) forces which affect the motion of individual aerosol particles; (3) effect of the electric field in the atmosphere on the deposition of dust particles; (4) washout of dust particles by raindrops; (5) coagulation caused by thermal and turbulent motion as it affects the particle size of the atmospheric aerosol, and (6) decay and growth of aerosol particles.

-- Nuclear Sci. Absts.

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- 314 Occupational and Personal Factors in the Etiology of Carcinoma of the Lung. R. B. McConnell, K. C. T. Gordon, and T. Jones. Lancet 263, 651-656 (Oct. 4, 1952).

Published work on the cause of lung cancer is reviewed. The authors investigated the environmental, occupational, and smoking history of 100 patients with carcinoma of the lung, and 200 other patients with other diseases than cancer, all in the Liverpool area. Careful questioning showed that 47% of the cancer patients had been exposed to various dusts, fumes, and smokes, while 43% of the controls had been similarly exposed. Only a slightly higher proportion of the cancer patients lived in industrial areas (60% as compared with 54.5% of the controls.) An equal proportion of the two groups (16-17%) had lived near a gas works or other industrial source of atmospheric pollution. No significant difference was found in the incidence of smoking, or of the proportion of cigarette smokers, in the two groups, but a significantly higher proportion of the smokers with cancer (33%) had smoked more than 20 cigarettes per day than had the smokers without cancer (18.1%). There was a slight difference in the same direction among pipe smokers. It is possible that heavy smoking of cigarettes may be a factor in the etiology of lung cancer.

-- Cond. from authors' summary

MANAGEMENT ASPECTS

- 315 Health Means Company Wealth. R. C. Page. Med. for Ind. (Standard Oil N.J.) 13, 30-35 (Jan. 1953).

It is important for every employee to know what his health is and to learn to live within the budget nature has given him. A constant problem in an industrial health program is the difficulty in influencing employees of all ranks to improve their attitudes and activities so as to safeguard their health. The primary purpose of all industrial health programs must be: (1) to anticipate and prevent disease, and (2) to assist all employees in maintaining a normal health curve. Methods of carrying out these objectives are discussed, including occupational history, study of the pattern of home life and extracurricular activities, and complete physical inventory.

- 316 A Small-Plant Cooperative Medical Service. Doris M. Thompson. Mgmt Rec. (National Industrial Conference Board) 14, 420-422, 444 (Nov. 1952); Ind. Med. & Surg. 22, 34-36 (Jan. 1953).

This paper describes the Hartford Small Plant Group Medical Service. The essential features of this service have been covered in IHF Abst. No. 1247 (Dec. 1952).

- 317 Changes in Human Performance with Age. A. T. Welford.
Trans. Assn. Ind. Med. Officers 2, 78-82 (July 1952).

The author reviews studies that have been made on the nature of changes of capacity associated with age, and refutes some common misconceptions. The clearest knowledge comes from laboratory experiments, but their results can be checked by observation under actual working conditions. In general, the experiments show that: (1) older people tend to put more effort and concentrated care into their performances than do the younger ones; (2) in spite of this, they lack confidence in their ability; (3) older people tend to be slower but more accurate than the younger; and (4) the changes with age begin early; by the thirties many of the changes have begun, although their effects may not become striking until much later. The difference in speed, however, is not greatly evident in easy tasks. Moreover, there is more difference between individuals in performing the same task as they grow older. The physiological sources of the changes in performance are discussed. Memory and previous experience are factors. One reason for difficulty in learning is that many older people are out of the habit of learning. It is suggested that older people should be instructed by their contemporaries or seniors rather than by their juniors; also that they be given written instructions which they can take their time in following. While some aspects of human performance obviously deteriorate with age, others appear to improve, including the elusive quality called wisdom. It has not been possible to define and measure these aspects with any degree of precision. When this can be done it will be possible to give a more balanced appreciation of old age.

- 318 Employment of the Older Worker. T. G. Klumpp.
Publ. Health Repts. 68, 20-22 (Jan. 1953).

Arguments are presented in favor of selective retirement rather than fixed-age retirement. The achievements of noted people at advanced age are cited. If the principle holds that older workers should be cleared out to make room for younger ones, it will still hold in 1980 and will necessitate retirement at a still younger age and will greatly increase the burden on government pensions. The fixed formula of retirement must be made more flexible and broken down into alternate possibilities: continued work for the fully productive, job reassignments for those capable of performing other duties, and down-grading or "tapering off" when desirable. A pension tax rebate and an increase in pension benefits for each year of deferred retirement beyond 65, have been suggested. The Armed Forces have successfully handled the problem of selective retirement, but very little has been done by industry in that direction.

- 319 What Good Vision Can Do for Management. R. Clair.
Natl. Safety News 67, 30, 31, 78, 80 (Feb. 1953).

There are three possible approaches which may be used in selling optometric service to industry. The first is plant-wide testing and correction of vision.

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The second is a truly generalized program, including evaluation and correction of vision, adequate illumination, use of color, and eye protection. Such a comprehensive program is a large and costly order, and involves cooperation of the optometrist with the illuminating engineer, the color expert, and the safety engineer. Moreover, both these programs include vision correction where the job requires it. The third and most desirable approach consists of consultation on specific problems. A number of typical cases where such service was given are described. The solution of some of the problems lay beyond the realm of the optometrist, but many accident-producing situations were relieved by correction of vision. The benefits of a good eye program are listed.

- 320 Industry's Problem Children. G. Gordon. Natl. Safety News 67, 32,33,81-85 (Feb. 1953).

The problem of accident-prone workers is discussed, and a number of typical cases are described. It is emphasized that emotional disturbances causing accident proneness are not the concern of the psychiatrist alone, but also of the supervisor and management. The habit of condoning repeated accidents leads to more accidents until discharge or psychiatric treatment is necessary, with loss to the employer and deterioration in the employee's condition. It is unnecessary for the supervisor to practice psychiatry. Strict discipline applied to a worker or to a foreman on any evidence of accident proneness has resulted almost always, in the author's experience, in obtaining good performance.

ACCIDENTS AND PREVENTION

321. The Incidence of Accidents in Relation to the Annual Cycle. M. S. Schulzinger. Ind. Med. & Surg. 22, 49-55 (Feb. 1953).

On the basis of studies from the literature and his own analysis of 12,820 industrial accidents and 8,202 non-industrial accidents by age, sex, and monthly and seasonal distribution of occurrence, the author suggests that: (1) The incidence of injury is characterized by a higher proportion in summer and lower proportion in winter. (2) The incidence of injury follows a relatively fixed annual pattern, increasing steadily from a low in February to a high in June and August and then declining. (3) The peak month of injury shifts with increasing age in the male, from June-July to August and September, while the peak month of injury for females of all ages is August. (4) The percentage of summer injuries and the range of difference between the high incidence of summer and the low incidence of winter narrows significantly with increasing age. (5) The causes of seasonal fluctuations of accidents have not been fully determined. Seasonal and climatic stresses on body and spirit probably play an important role. High and

low temperatures, as well as a host of social and economic factors also have an important influence. -- Author's Summary

322 Twenty-Ninth Annual Report on Safety in Mines Research 1950. Great Britain, Ministry of Fuel and Power. A. H. A. Wynn, Director. 48 pp. (1952) H. M. Stationery Office. Obtainable from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. 2s 1 1/2 d.

The Safety in Mines Research (Advisory) Board was re-established in 1950. A number of activities are reported. An extension of the work on fire hazards included development of means of detecting combustion or overheating in roadways, assessment of means of restricting the spread of fires, assessment of the fire hazards with diesel engines, and estimation of the fire resistant qualities of brattice cloth. Two fires caused by diesel locomotives were due to the ignition of dust deposits on the hot surface of the exhaust scrubber. The National Coal Board is conducting large-scale trials of fluorescent tubes for longwall-face lighting, including studies of the effect on output and on accidents. Reference is made to an investigation of the pressure generated during explosion of the pentane-air mixture inside a core-cooled motor. Work on the intrinsic safety of electrical equipment is discussed. Work on inflammability of dusts in industries other than mines is being continued. Much attention is being given to dust control and the pneumoconiosis hazard. It is provisionally concluded that so long as attention is confined to dust particles between 0.2 and 10 microns in diameter, the number of particles, the weight, and the specific surface all give reasonable estimates of the health hazard. The mineral composition and size distribution of dust particles in lung residues are being studied. Good results have been given by x-ray diffraction in the rapid analysis of crystalline dusts. A rough but quick estimate of dust concentrations is yielded by the S. M. R. E. cap-lamp densitometer. An automatic dust sampler described in an earlier report has been improved by the addition of an elutriator to ensure that only the smaller particles are collected. Many studies in engineering and metallurgy are described. -- Cond. from Bull. Hyg.

323 How Safe Are Safety Solvents? M. Z. Poliakoff. Natl. Safety News 67, 28,29,85-91 (Feb. 1953).

The use of carbon tetrachloride for general industrial cleaning has lost favor on account of its toxic properties. In its place have appeared a number of "safety solvents" which are not as safe as their labels and advertising literature would indicate. The flash point of a mixture is not a criterion of safety, because non-flammable solvents tend to mask the flash point of flammable materials, and because evaporation of one or more constituents may leave a mixture with a lower flash point. The auto ignition point, explosive range or flammable limits, vapor density, and latent heat of vaporization should be taken into account as well as initial flash point. Toxicity by inhalation and skin contact is another point to be considered. Since MAC and vapor pressure of mixtures are not available, it is usually necessary to run toxicity tests in order to estimate the hazard. The manu-

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facturer has the responsibility of making such tests and supplying the information obtained. Even when the safest solvent is produced, the information is of no avail unless the user observes the required precautions. General safety precautions are described.

324 Grease-Gun Injuries. R. C. Bell.
Brit. J. Plastic Surg. 5, 138 (July, 1952).

A high-pressure grease gun delivers grease at the pinhole nozzle, under a pressure of 2,000 lb. per sq. in., as a fine spray which may penetrate the tissues like a needle and fill a finger in the split second before it can be pulled away. Two cases reported here occurred in the same garage and with a medium containing 10% lime soap and 90% mineral oil. The entry of the grease causes an instantaneous swelling of the finger and an increased interstitial pressure which may be followed by vascular obstruction and gangrene. The tissues become white, tense, and anesthetic. Later symptoms are described; they vary with the depth of the grease and the presence of infection. Treatment of the patients is described. In one case incisions were made and the grease, present in large and small globules, was removed ten days after the accident. The patient returned to work after two months and had full freedom of movement in 4 1/2 months. Conservative treatment of the other case led to an operation after two years, and the method is not recommended.

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

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