

IN RE: ABRAMS November 1992

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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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November 1992

IN RE: ABRAMS

INDUSTRIAL HYGIENE FEATURES

Aviation medicine consultation problem cases is the topic of Abst. No. 115.

Abst. No. 116 discusses a program of industrial first aid.

Acute psychiatric problems in industry is the concern of Abst. No. 120.

Abst. No. 140 reports on the approximate oral toxicity in rats of selected household products.

Information on acute sulfur dioxide toxicity and the effects of histamine and histamine liberation is presented in Abst. No. 142.

For data on chemical pneumonitis from inhalation of zinc chloride consult Abst. No. 143.

Abst. No. 148 discusses fingernail cystine content in chronic mercury exposure.

Nonoccupational diffuse pulmonary fibrosis: report of a case in an asbestos worker is the title of Abst. No. 161.

Abst. No. 162 reports on a case of fiber glass pneumoconiosis.

A fatal case of aspiration of talcum powder by a child is described in Abst. No. 163.

A description of combustible gas detectors is given in Abst. No. 185.

Air flow requirements for underground parking garages are evaluated in Abst. No. 186.

FOUNDATION FACTS

I-H-F BOARD OF TRUSTEES held a special meeting on February 8, at the Foundation's headquarters. A permanent Policy and Planning Committee was established and a Program Committee was appointed to plan the Management Session of the Annual Meeting.

I-H-F ENGINEERING COMMITTEE met at the Foundation's headquarters on February 7, to discuss plans for the Engineering Conference of the Foundation's 27th Annual Meeting to be held on October 24-25, at Mellon Institute.

A RESEARCH PROGRAM ON THE PATHOGENESIS OF EXPERIMENTAL TUBERCULOSILICOSIS was recently completed under the direction of Dr. Paul Gross. This three-year study, sponsored by the National Institutes of Health, was concerned with quantitation of the dust mobilized and cleared from the lungs as a result of induced pulmonary inflammations. It was found that in the presence of a violent inflammation much dust is removed from the lungs, whereas little dust is removed in the presence of an indolent inflammation.

DR. H. H. SCHRENK, the Foundation's Managing Director, attended the Pennsylvania State Chamber of Commerce Pollution Abatement Committee meeting in Harrisburg on February 9. This Committee covers both water and air pollution.

NEW REPRINTS available from the Foundation upon request are: "The Concept of Organizing Pneumonia" by Paul Gross and E. J. Benz, Arch. Pathol. 72, 607-619 (Dec. 1961); and "Human-Factors Engineering and Safety Research" by Theodore F. Hatch, J. Occ. Med. 4, 1-5 (Jan. 1962).

DR. A. G. KAMMER, Head, Department of Occupational Health, Graduate School of Public Health, University of Pittsburgh, died suddenly from a heart attack on January 31. Dr. Kammer had been an active member of the Foundation's Medical Committee from 1947 until 1959.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

99 Annual Meeting of Air Pollution Control Association.

Chicago will be the world's air pollution control center next May 20-24 when scientists and administrators from many countries of the world will meet in the Sheraton-Chicago Hotel for the 55th Annual Meeting of the Air Pollution Control Association. The five-day conference will attract more than 1,000 experts to hear and discuss over 75 technical papers, according to Dr. W. L. Faith, President of the Association. Topics include timely and up-to-the minute sessions on automotive vehicle emissions; control systems, with emphasis on latest developments; instrumentation; health; meteorology; community surveys; and odor control. One of the features scheduled is an information session devoted to radiation fallout. This session is designed to familiarize registrants with phases of this important problem. The latest pollution control equipment and instruments will also be exhibited. Among the highlights of the meeting will be the presentation of the Frank A. Chambers and Richard Beatty Mellon awards for outstanding achievement in the control of air pollution. Mr. Daniel A. Sullivan, well known Chicago industrialist, presently a consultant with the Armour Research Foundation, is General Conference Chairman.

100 Industrial Ventilation Conference.

North Carolina State College will be the host to the 4th Annual Industrial Ventilation Conference on March 19-22, 1962. This Conference will provide three and one-half days of workshops for the presentation of design information and practical solutions to air handling problems. This will be a meeting place for the exchange of ideas and problem solutions for those interested in good industrial ventilation. Instruction will be by lecture, demonstration, and class problems. The Conference will be conducted by the Mechanical Engineering Department of the School of Engineering and the College Extension Division of North Carolina State College. For further information, address Motte V. Griffith, Jr., College Extension Division, North Carolina State College of Agriculture and Engineering, P.O. Box 5125, Raleigh, North Carolina.
-- Am. Ind. Hyg. Assn. J.

101 Toxicology of Air Pollution.

A large-scale animal study designed to determine the possible effects of air pollution on human health will be undertaken at the Wayne State University College of Medicine in Detroit. Under a \$190,000 Public Health Service contract, researchers at Wayne State will study more than 4,000 experimental animals—rats, guinea pigs, rabbits, and mice—with particular emphasis on pulmonary function, length of life, blood studies, and pulmonary pathology. Animals will be divided into three groups, the first of which will breathe exhaust-contaminated air pulled in directly from a heavily traveled street through a large duct especially constructed for the study. The second group will be exposed to the normal urban air present in the laboratory. The third group will be housed in a room supplied with specially cleansed air, from which almost all impurities will have been removed. Among the common air pollutants which will be measured continuously, using automatic electronic instruments, are carbon monoxide, total hydrocarbons, oxides of nitrogen, total oxidants, sulfur dioxide, carbon dioxide, and inorganic particulates. Additional studies will involve human subjects exposed to conditions comparable

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with those of the animals. In the study Dr. A. J. Vorwald, Professor and Chairman of the Department of Industrial Medicine and Hygiene at Wayne State, will employ for the first time a technique which will permit measurement of the cardio-pulmonary function of small laboratory animals.

-- Cond. from Am. Ind. Hyg. Assn. J.

102 Hygienic Guide Series.

The following additional Hygienic Guides are now available: Benzene (Benzol) (Revised 1961); Bromochloromethane (Methylene Chlorobromide, BCM); Carbon Tetrachloride (Revised 1961); 1,1,1-Trichloroethane (Methyl Chloroform) (Revised 1961); Epichlorohydrin (1-Chloro-2,3-epoxypropane); Ethylene Chlorohydrin (2-Chloroethanol); Methyl Chloride (Chloromethane); Nitroethane; Nitromethane; Propanol (Propyl Alcohol); and Cumene (Isopropylbenzene, Isopropylbenzol, Cumol, 2-Phenylpropane). They are given in the December AIHA Journal, pp. 504-524, and can be obtained from the American Industrial Hygiene Association, 14125 Prevost, Detroit 27, Michigan, at 25 cents each.

OCCUPATIONAL DISEASE STATISTICS

103 Occupational Disease Statistics. (Cases reported to the respective Health Departments.)

	Conn. Nov.	Ind. Oct. - Dec.	Pa. Dec. - Jan.	Tenn. Dec.	Total
Anthraco-silicosis			13		13
Carbon monoxide asphyxia			6		6
Dermatitis	24 *	6 *	28	13	71
Fumes (unidentified)			2		2
Hepatitis			1		1
Irritation of eyelids			1		1
Lead poisoning	1	1	1		3
Lung abcess from silicosis			1		1
Nephritis			1	1	2
Poisoning (unspecified)			1		1
Pneumoconiosis		1	39		40
Pneumoconiosis (suspected)			16		16
Respiratory irritation			1		1
Silicosis	1	1	6		8
Silicosis (suspected)			6		6
Silico-TB			1		1
Tracheo-bronchitis (acute)			1		1
Tuberculosis			1		1
Total	26	9	126	14	175

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to plants: poison ivy, 1; occupational dermatitis due to oils and greases and metal cutting compounds, 3; occupational dermatitis due to solvents, 6; occupational dermatitis due to other chemicals: alkalies 1, amines 1, miscellaneous 1, plating chemicals 2, synthetic resins or resin (plastic) compounds 5, toluene diisocyanate 1; occupational dermatitis—other: cement 1, fiberglass 1, miscellaneous 1.

Indiana: Solvents 2, fiberglass 1, cause not stated 3.

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COMING EVENTS

- 104 Mar. 5-9 13th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Pittsburgh, Pa.
- Mar. 16-17 Society of Nuclear Medicine, Southeastern Chapter, Atlanta, Georgia
- Mar. 19-22 4th Annual Industrial Ventilation Conference, North Carolina State College of Agriculture and Engineering, Raleigh, North Carolina
- Mar. 20-22 National Health Forum, Cleveland, Ohio
- Mar. 20-29 American Chemical Society, 141st National Meeting, Washington, D.C.
- Mar. 21-24 American Orthopsychiatric Association, Los Angeles, Calif.
- Mar. 26-28 American College of Surgeons, Sectional Meeting, Memphis, Tennessee
- Mar. 27 18th Annual Quality Control Clinic, Rochester, New York
- Mar. 29-31 Eastern Conference of Radiologists, New York, New York
- Mar. 31-Apr. 1 American Psychosomatic Society, Rochester, New York
- Apr. 1-6 American College of Allergists, Minneapolis, Minnesota
- Apr. 6-7 Association of Clinical Scientists, Chicago, Ill.
- Apr. 6-8 American Society for Internal Medicine, Philadelphia, Pa.
- Apr. 9-12 24th Oil Heat and Air Conditioning Exposition sponsored by National Oil Fuel Institute, Chicago, Ill.

LEGAL DEVELOPMENTS

Workmen's Compensation and Mental Disturbances.

- 105 Workmen's Compensation Awards for Psychoneurotic Reactions. The question of whether and under what circumstances a worker insured under workmen's compensation should be allowed disability payments for a psychoneurotic reaction has been presented to judges and administrative boards with increasing frequency in recent years. Existing doctrines governing the award of disability payments under workmen's compensation statutes are in many cases unsuitable for dealing with this form of disturbance. This comment will attempt to re-evaluate these doctrines in the light of psychoanalytic theories explaining the causes, essential nature, and symptoms of psychoneurotic reactions. It will further evaluate the effect of compensating psychoneurotic injuries on the employee and his disturbance. From preface to comment in Yale Law Journal 70: 1129, June 1961.
- 106 Workmen's Compensation—Disabling Psychosis Caused by Emotional Pressures of Assembly Line Held a Compensable Injury. Claimant, a machine operator, found himself unable to keep up with the assembly line on which he was employed without using a procedure forbidden by the foreman. When he fell behind, the other workers on the line berated him, and when he used the forbidden procedure, he was reprimanded by the foreman. After a while, he suffered a mental collapse—medically described as paranoid schizophrenia—and was hospitalized for a month. The psychiatric testimony at the hearing on the claim for workmen's compensation showed that while there was nothing unusual about the assembly line job, its pressures triggered a predisposition of claimant's personality toward schizophrenia. The referee awarded compensation and the appeal board (of three members), by a divided vote, affirmed, finding that the claimant's injury was caused by his employment, and was, therefore, compensable under the state workmen's compensation act. The Supreme Court of Michigan, by a five to three decision,

affirmed the award, holding that a disabling psychosis caused by the emotional pressures of a job to which the claimant cannot adjust is a compensable injury under the state act. (Past Michigan decisions have held: (1) that emotional disabilities resulting from a single physical injury or a single mental shock are compensable; (2) that a physical injury may be compensable even though it was not occasioned by a single event.) In the instant case, the court decided that a mental injury ought not be treated as different from a physical injury and, therefore the mental injury need not be occasioned by a single event but may be caused by a series of work connected mental stimuli or events. Carter v. General Motors Corporation, Chevrolet Gear and Axle Division. 361 Mich. 577, 106 N. W. 2d 105. Michigan Supreme Court, December 1, 1960.

107 New Labeling Requirements.

The Food and Drug Administration has reminded manufacturers of household chemical (aids) that the new labeling requirements of the Federal Hazardous Substances Labeling Act became effective February 1, 1962. However, it has suspended until August 1, 1962, those parts of its regulations under the new law which spell out the detail the placement on the label, type size, and color contrast requirements for the information called for by the law. At the same time, it emphasized that the information required by the law must be on the label and "located prominently *** in conspicuous and legible type in contrast by typography, layout or color with other printed matter on the label." Under the new ruling, temporary labeling, such as sticker labels, may continue to be used while manufacturers are redesigning packages and using up existing supplies of packaging materials. The temporary suspension of certain provisions of the regulations under the Federal Hazardous Substances Labeling Act were published in the Federal Register of Wednesday, January 10, 1962.

108 To Prevent Air Pollution from New Sources.

State-wide rules to prevent air pollution from new sources have been adopted by the New York State Air Pollution Control Board, Dr. H. E. Hilleboe, New York State Health Commissioner and Board Chairman, announced recently. Dr. Hilleboe said adoption of the rules, which will become effective April 2, 1962, marks the end of the first stage of a program designed to combat New York State's growing air pollution problem. The Board will now concentrate on the adoption of a system of air quality standards for each area of the state. Rules for the abatement of existing pollution will follow. The state-wide rules require review and approval of plans for construction or modification of air pollution sources, including large heating and power plants, incinerators and most manufacturing processes. Plans should be submitted to the Board prior to construction, modification, relocation or installation of any potential source of air pollution. Plans do not have to be filed for such minor sources of air pollution as fuel-burning equipment in homes, small apartment buildings, restaurants, and small bakeries. The rules also make provision for temporary exemptions for trial installations. The rules encourage municipalities in the development of local air pollution control programs and do not interfere with the right of municipalities to pass their own regulations. Procedures for submitting plans and copies of the newly adopted rules will be available in the near future.

109 1963 Autos will have Blow-By Devices.

The board of directors of the American Automobile Manufacturers Association voted unanimously to install blow-by devices on the 1963 models. This action put them one up on the Department of Health, Education and Welfare which had demanded that they start this procedure with the 1964 models or face compulsory legislation. The blow-by device is actually a crankcase ventilation system that reduces fuel vapor emissions which contribute to smog. Reports indicate that one of these when installed at the factory will increase the cost of the new car by approximately \$5.50. Increased production will probably lower this cost somewhat. Recirculation of the crankcase gases through the engine is the result of the installation of a blow-by. There, these hydrocarbon vapors face combustion rather than being shunted directly to the outside air through the vent tube. California has required these devices on all new cars sold in the state since the introduction of the 1961 models.

-- Am. Soc. Civil Eng., Sanitary Eng. Div. News

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BOOKS, PAMPHLETS AND NOTICES

- 110 Encyclopedia of Chemical Labeling. I. Mellan and Eleanor Mellan. Chemical Publishing Co., Inc., 212 Fifth Ave., New York 10, N. Y. 111 pp. (1961). \$8.75.

The far too frequent accidents in handling and shipping hazardous materials indicates the critical need for more accurate, effective, and systematic warning labels. This book provides up-to-date classifications of hazardous chemicals, information on handling, shipping and storage of hazardous chemicals, and details on antidotes and treatment. It describes a method for developing an effective warning label. The most important aspects of chemical labeling are discussed under the following headings: background and practice of chemical labeling; practices, samples of Interstate Commerce Commission labels, samples of other labels currently in use; classification of labels for safe, accurate labeling; classification method and key, major classification of hazardous chemicals, and minor classification of less hazardous chemicals. All chemicals falling in the major and minor classification are listed alphabetically for easy reference.

- 111 Pure Air for Pennsylvania. A Joint Study of the Extent and Nature of Air Pollution in Pennsylvania. D. M. Anderson with J. Lieben and V. H. Sussman. Pennsylvania Department of Health and Public Health Service, U. S. Department of Health, Education, and Welfare. 136 pp. (Nov. 1961). Complimentary copies available from: Division of Air Pollution Control, Pennsylvania Department of Health, P.O. Box 90, Harrisburg, Pennsylvania.

This is an excellent brochure with numerous informative tables and first-class photographs. This study was conducted to determine the extent of the air pollution problem in Pennsylvania and to provide a guide for future planning and action. Eighty-three per cent of the state's population was covered by the survey. In the opinion of local officials, over one-half of the 91 problem areas are partially or completely the result of pollution outside the jurisdiction of local government authorities. Forty-six of the 91 communities had sulfur dioxide as a major pollutant. Forty-seven of the 91 communities had smoke or flyash as a major pollutant. An adverse level of sulfur dioxide may be expected about 40 times per year in Philadelphia, Pittsburgh and Meadville. Concentrations of sulfur dioxide exceeded U. S. average concentrations in Aliquippa, Ambridge, Baden, Beaver Falls, Midland, Monaca, Washington and York. Suspended particulate loadings were significantly greater than the U. S. average in Ambridge, Avalon, Chester, Harrisburg, Johnstown, Lebanon, Philadelphia, Pittsburgh, Scranton and Williamsport. Air Pollution effects on property indicated an estimated \$750,000,000 is lost each year on laundry and cleaning bills, on painting and on damage to merchandise and buildings. Damage to crops and to animals from air pollution was reported in 54 communities. In regard to sources of air pollution, a study of 11 of the problem communities indicated that 44% of the pollutants came from transportation, 39% from industry and 17% from domestic sources. Use of automotive fuel is increasing at about 5% a year. Even now smog occasionally forms in the larger cities in the state. Increased consumption of gasoline in future years will result in a serious smog problem.

- 112 Noise and Hearing. Relationship of Industrial Noise to Hearing Acuity in a Controlled Population. C. D. Yaffe and H. B. Jones. U. S. Department of Health, Education, and Welfare, Public Health Service, Division of Occupational Health. PHS Publication No. 850. 72 pp. (1961). For Sale: Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 70 cents.

The relationship of changes in hearing acuity to long-term exposure to industrial noise was studied in Federal penitentiaries during the period 1953-1959 by the Division of Occupational Health of the U. S. Public Health Service. The workers studied were employed in textile mills, wood products and sheet metal products manufacturing; brush, shoe, and clothing factories; and printing. Overall noise levels in these operations ranged from approximately 75

to 110 decibels. Men employed in these plants had their hearing tested periodically. A group of approximately 600 men was maintained during the course of the study. Since replacements were made to take care of turnover, data were collected on 1,952 different individuals during the study. Of these, 1,070 had pre-employment audiograms. Approximately 12,000 men had their hearing tested at the time of admission to the penitentiaries. Findings are compared with 4 well-known proposed sets of criteria. For hearing conservation purposes the findings are in agreement with the recommendations of the Subcommittee on Noise of the American Academy of Ophthalmology and Otolaryngology and Air Force Regulation 160-3. In general, the damage risk criteria proposed by Rosenblith and Stevens for broad band noise are also confirmed. The theory that narrow band noise requires more stringent criteria is not substantiated by the findings of these studies, if the definition of Air Force Regulation 160-3 for such noise is employed. Approximately half of commonly encountered industrial noise would be classed as narrow band by this definition. The lower limit of 50 sones per octave band, as proposed by Hardy, does not always provide sufficient protection.

-- Authors' abst.

- 113 Guide to Research in Air Pollution. 4th Edition. American Society of Mechanical Engineers. Obtainable from: ASME Order Department, 345 East 47th St., New York 17, N.Y. \$4.50.

The 4th Edition of Guide to Research in Air Pollution has been published by the American Society of Mechanical Engineers. The volume was prepared by a Task Group created by the ASME Committee on Air Pollution Control's Subcommittee on Current Topics and Trends. This edition of the Guide covers projects active in the calendar year 1959.

INDUSTRIAL MEDICAL PRACTICE

- 114 Adaptation of the Use-Dilution Method to Primary Evaluations of Disinfectants. L. F. Ortenzio and L. S. Stuart. J. Assn. Offic. Agr. Chemists 44, 416-421 (Aug. 1961). (Journal of the Association of Official Agricultural Chemists, Box 540, Benjamin Franklin Station, Washington 4, D.C.*).

The procedure presented here for applying the official use-dilution method in the primary testing of germicides can be employed by formulators in establishing the maximum effective dilutions that can be safely recommended for disinfecting hospital floors, walls, fixtures, and equipment. Illustrations given on this application with 3 commercial formulations suggest a relatively high degree of reliability. This should make the procedure especially valuable in the referee testing of products which demonstrate some degree of activity over a wide range of dilutions and for which large numbers of replicate tests are often necessary to establish exact end points in the method.

-- Public Health Eng. Absts.

- 115 Aviation Medicine Consultation Problem Cases. C. A. Berry. Arch. Environmental Health 3, 695-703 (Dec. 1961).

The flight surgeon frequently finds it necessary to request consultation of the aviation medicine specialist on problem aero-medical cases. The specialist utilizes the skills of allied clinical specialists and then relates their findings to the flying environment. He must always have the prime responsibility for these problem cases. During the 3-year period, 1956-1958, there were 1,159 such cases seen at the USAF aviation medicine consultation centers. The order of frequency of cases seen was cardiovascular, neuropsychiatric, ophthalmological, otolaryngological, and pulmonary problems. Reasons for these referrals are discussed. Case histories and disposition of the following problems are discussed: dysbarism, duodenal ulcers, syncope, migraine, and pneumothorax.

-- Author's summary

* Address not in current list of periodicals.

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- 116 A Program of Industrial First Aid. E. J. Schowalter.
J. Occ. Med. 4, 23-26 (Jan. 1962).

The industrial physician is advised to take the following steps in establishing his first aid program: (1) Determine the field in which special emergency aid will best support the plant medical program. (2) Delineate the plant areas or units to be covered by first aid personnel. (3) Evaluate the aptitude and ability of the selected first aiders in the light of the program demands. (4) Devise and write a course of instruction as a supplement to the Red Cross manual that will detail special skills and techniques. (5) Obtain the endorsement of top management for establishment of the proposed program. (6) Undertake instruction of initial class and training of the instructor to handle subsequent classes and review sessions. (7) Set up routines for maintaining first aid supplies. (8) Detail communications and transportation routines. (9) Establish review and practice sessions. (10) Maintain an active, constant, and personal interest in the functioning of the program.

-- Author's summary

- 117 Trends in Emergency Care. J. C. Dickison.
Occ. Health Rev. (Ottawa) 13, No. 4, 16-19 (1961).

The author would urge attendants to accident cases to think in terms of how very much can be done for an injured patient, apart from definitive care, rather than how little can be done. The features of the airway, the arrest of hemorrhage, the dressing of wounds, the splinting of injured parts, the protection from the elements, oral hydration when possible, have all been listed in the present paper. To conduct these first aid measures in rational sequence and with satisfactory results, demands the most important thing of all—a sound mind which will not entertain panic at any time in any situation.

-- Author's summary

118. A Review of the Value of Periodic Health Examinations. R. F. Schneider.
Trans. Assn. Ind. Med. Officers 11, 27-36 (Apr. 1961).

The fact, that in 1961 there is still wide disagreement concerning the value of periodic medical examinations, suggests that the data accumulated so far are not adequate for an evaluation, and that there is a need for accurate criteria for assessing the data which are accumulated during such procedures. In his discussion the author offers supporting evidence from his own experience as well as from that of other physicians, and while admitting the many limitations of periodic examinations, suggests that their performance does offer the following favorable results: (1) Previously unrecognized disease is detected often while still asymptomatic and more likely to respond favorably to treatment. (2) Disease previously known to exist is found not to be receiving needed observation or treatment, and the patient can often be persuaded to seek and accept that which is required. (3) Certain base-line observations can be made and adequately recorded, facilitating the later recognition of changes when the appreciation of these may aid in the solution of diagnostic problems. (4) The contracts between patients and examining physicians offer a medium for highly personalized health education. (5) Reassurance concerning their health status is often a source of major relief and support to individuals with open or concealed anxiety about it. (6) Analysis of the results of many such examinations over a period of years would enable the making of many observations concerning factors of apparent importance in the maintenance of health and in the cause, prevention, early diagnosis, progress and treatment of various diseases.

-- Cond. from Bull. Hyg.

- 119 Doubts on the Periodic Health Examination. W. T. Jones.
Trans. Assn. Ind. Med. Officers 11, 37-38 (Apr. 1961).

The scepticism of the value of periodic medical examinations expressed by the author in this paper ought to be present in the minds of all physicians conducting such examinations; otherwise it is inevitable that the examinations will develop into a sterile routine, and both the examiner and the examined will be lulled into a state of erroneous belief and sham security. In his role as sceptic, the author has rightly adopted the epidemiological approach and has stressed the need for critical evaluation of methods and results. More knowledge is needed about the

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early clinical forms of disease and particularly about the earliest biochemical changes which may be detectable by routine "screening" procedures. He suggests that it is upon population groups which are shown by epidemiological and other methods to have unfavorable health experiences that routine periodical medical examinations should primarily be concentrated. The author concludes with the following statement: "Whilst we await basic advances in knowledge it is felt that our efforts in the field should be directed towards the better education of our patients. An awareness and willingness to recognize and admit early symptomatic deviations from health and a readiness to seek prompt advice, against a background of a mature mental state, would seem to be the most rational and rewarding approach for at least the immediate future."

-- Cond. from Bull. Hyg.

- 120 Acute Psychiatric Problems in Industry. M. Sherman.
Ind. Med. & Surg. 30, 532-534 (Dec. 1961).

The industrial physician must be aware of the premonitory signs of mental illness. He should be prepared to deal with the acute psychiatric emergency quickly and effectively by being familiar with psychiatric consultation and hospitalization facilities in his community. He must know the essential legal procedures in his own state for commitment of a patient to a mental hospital. Abnormal emotional response to injury requires urgent psychiatric consultation until after all other specialties have been explored. Psychiatric consultation is difficult to obtain in many communities on an emergency basis. The solution may rest in the establishment of cooperative psychiatric services supported by several companies, employing several part-time consultants to provide continuous coverage.

-- Author's summary

- 121 Involuntional Reactions Following Occupational Injuries in the Middle Aged. E. Friedman and P. L. Forster. Ind. Med. & Surg. 30, 535-542 (Dec. 1961).

A number of cases have been presented to illustrate the importance of involuntional factors in prolonging disability following occupational traumata in the middle aged. The significance of increases in such cases in light of employment of older people was pointed out together with tentative suggestions for prevention and therapy. It was found that the clinical pictures of involution following occupational injuries in the middle aged were similar to the retirement syndrome and the reactions following illness in the aged. It was felt that this type of reaction warranted much more medical and legal attention and should be considered in every instance of prolonged or excessive disability in the middle aged.

-- Authors' summary

- 122 A Program for Rehabilitation of Patients with Tuberculosis. M. Nacman and S. H. Dressler. Diseases of Chest 40, 631-638 (Dec. 1961).

It seems fair to assume, on the basis of several years of preliminary experience, that a modern treatment program for tuberculosis should combine the effective use of all aspects of medical treatment, especially chemotherapy, early ambulation, and planned activity. It was observed that this program which emphasized the healthy aspects of the patient's emotional and social adjustment often served to counteract any tendency to become dependent upon the hospital. Vocational training, equipment, and prescribed physical activity were not considered enough. It was noted that the rehabilitation program became more effective when patients realized that they were being offered a real opportunity to be helped emotionally, socially, and vocationally. It is the authors' conclusion that it is not useful to employ the concept of the "typical" tuberculosis patient. Attempts to understand tuberculosis patients in terms of stereotypes can often be misleading. Rehabilitation planning should, therefore, be geared to meet the unique needs and personality differences of individual patients. This necessitates close cooperation between all members of the staff so that every aspect of the patient's life can be considered as part of "total treatment". Such a rehabilitation program as is described seems to offer the best opportunity to prepare the hospitalized patient to return home as a productive citizen and with a greater degree of security. Many of the barriers, which for so many years limited the scope of rehabilitation, have been removed under this approach. Should the results of this program be confirmed by careful follow-up studies, it is fair to conclude that the authors have entered a new era in the rehabilitation of tuberculous patients.

-- Authors' summary

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- 123 Regeneration of Respiratory Epithelium. An Experimental Study in Dogs.
S. D. Greenberg and R. K. Willms. Arch. Pathol. 73, 53-58 (Jan. 1962).

The reserve cell appears to be the parent cell of respiratory epithelium, regenerating as an intermediate squamous-like cell or low columnar cell followed by ciliated columnar cells. Within 3 weeks, respiratory epithelium with mucus-secreting acini will regenerate, lining a graft of Mersilene cloth (an Ethicon product, tightly woven of polyester fibers) covering a tracheal "window" 1 cm. square. A narrow band of compact fibrous connective tissue separates the regenerated epithelium from the underlying Mersilene cloth. While granulation tissue and acute inflammatory reaction are within the lamina propria, squamous-like epithelium will line the graft. Prolonged infection will result in layering of the reserve cells and appearance of large squamous cells with deeply staining nuclei. Elastic fibers first appear at 6 months. Ectopic bone formation is an occasional incidental finding.

-- Authors' summary

- 124 Waterborne Infectious Hepatitis Epidemic from a Chlorinated Municipal Supply.
D. C. Poskanzer and W. G. Beadenkopf. Public Health Repts. 76, 745 (Sept. 1961).

An epidemic of 83 cases of infectious hepatitis associated with jaundice occurred in 2 neighboring New York state communities between November 1956, and February 1957. Seventy of the cases occurred within the first 30 days of the epidemic. The 2 communities, although 2 miles apart, had a common water supply. As an emergency measure water was taken from a stream potentially subject to pollution. It was chlorinated but not otherwise treated. Only 2 of the first 70 patients did not reside on the water supply. The distribution in time of the cases is consistent with a common-source epidemic. Milk, food, contact, insects, hepatotoxins, and parenteral inoculation appeared very unlikely as common sources of infection. It is concluded that the epidemic of infectious hepatitis was waterborne through the emergency water supply, despite the fact that the water was chlorinated.

-- J. Am. Med. Assn. References & Reviews

- 125 Peripheral Lung Cancers Arising in Scars. H. Yokoo and E. E. Suckow.
Cancer 14, 1205-1215 (Nov.-Dec. 1961).

Seven cases of peripheral lung cancers arising in scars were presented, in which the histological characteristics suggested a close relationship between the development of cancer and scar in the lung. Literature concerning scar cancer of the lung was reviewed and pertinent points were discussed. A high incidence of bronchiolar carcinoma was observed among these peripheral tumors arising in scar tissue. Since normal bronchiolar epithelium as well as bronchiolar carcinoma seem to possess a wide range of morphological variations through metaplasia, the undifferentiated carcinoma or squamous cell carcinoma found in the present series and of others may possibly be of a bronchiolar origin. The histogenesis of scar carcinoma requires further investigation. The importance of studying small carcinomas of the lung to elucidate the natural history of lung carcinomas in general was emphasized, and it was felt that carcinomas of bronchogenic origin have been too frequently made on the assumption that most lung carcinomas arise in the larger bronchi, a situation which seems to require re-evaluation.

-- Authors' summary

- 126 Dysplastic Lesions of the Bronchial Tree. D. K. Ford, H. K. Fidler and D. R. Lock.
Cancer 14, 1226-1234 (Nov.-Dec. 1961).

Histological examination of the bronchial trees of 39 adult men and 26 adult women, dead of diseases other than carcinoma of the bronchus, has indicated that terminal bronchitis, or uremia, or autolysis may cause dysplastic changes in the bronchial mucosa. These changes may be confused with the histological appearances of intraepithelial carcinoma of the bronchus, which was not observed in the 65 bronchial trees studied. Surface carcinoma of the bronchus was observed in 10 of the 31 cases of primary lung cancer, but in only 2 of these cases was the surface carcinoma distinct from the main tumor.

-- Authors' summary

- 127 A Study of Tobacco Carcinogenesis. 8. The Role of the Acidic Fractions as Promoters.
E. L. Wynder and D. Hoffmann. Cancer 14, 1306-1315 (Nov.-Dec. 1961).

The established carcinogenic activity of cigarette smoke condensate on mouse epidermis can to a great extent be accounted for on the basis of initiating carcinogens, largely polynuclear aromatic hydrocarbons, and promoting substances, one group of which are the phenols. The phenolic compounds themselves account for 0.9% of the total cigarette smoke condensate. Promoting activity is also present in the acidic fractions, the specific nature of which remains to be determined. The positive sebaceous gland short term test for cigarette smoke condensate seems to reflect the role of the promoters rather than that of the initiators. Practical aspects must include the reduction of the promoters either through removal of the precursors, selective filtration, or a reduction of their formation during the combustion through the use of additives to tobacco. To account for the established carcinogenic activity of cigarette smoke condensate demands a consideration of initiating carcinogens as well as promoting substances. In view of the multitude of different substances in the condensate and possible modes of interaction, it would seem impossible to duplicate the activity of the condensate through combining different single substances. At best we can hope to approach the general direction of explaining the mechanism of tobacco carcinogenesis. Such direction the authors believe is at hand through the initiating as well as the promoting substances that have been established to exist in cigarette smoke condensate. There are 40 references in the bibliography.

-- Authors' summary

- 128 A Serologic Investigation of Leptospiral Infections in Dairy Farmers and Cattle Ranchers.
N. G. Miller. Am. J. Hyg. 74, 203-208 (Sept. 1961). (American Journal of Hygiene, School of Hygiene and Public Health, Johns Hopkins Press, Baltimore 18, Maryland*).

A serologic investigation of 288 dairy farmers and cattle ranchers for leptospiral infections revealed an incidence of 2.9% in the two occupational groups. Separately, the dairy farmers experienced a higher rate of infection (3.8%) than the cattle ranchers (2.6%). Neither of these two groups appear to have as high a rate of leptospiral infectivity as the packing house worker. Four serotypes, Leptospira pomona, L. grippityphosa, L. sejroe, and L. ictero-hemorrhagiae were detected in 3 of the 4 geographic areas studied. These are located primarily in Nebraska. The most common serotype, L. pomona, was found exclusively in the southeast area which experienced an epizootic in cattle in 1958. In the northcentral area, 3 farmers and a cattle rancher had agglutinins for L. grippityphosa suggesting the possibility of an enzootic in cattle in this area. Agglutinins for L. sejroe were demonstrated in a dairy farmer in the eastcentral area. This is believed to be the first indication of human infection by a member of the hebdomadis group in the United States.

-- Public Health Eng. Absts.

- 129 Focus of Leptospirosis in Tunnel Construction. M. Valenti.
Policlinico Sez. prat. (Rome) 68, 1354 (Sept. 11, 1961). (Policlinico Sezione pratica, Luigi Pozzi, via Sistina 14, Rome, Italy*).

Leptospirosis is presented as an occupational disease affecting workers assigned to labor in sewers, canals, and marshes, or in contact with polluted water and animal carriers of Leptospira. Two cases of leptospirosis are described, both occurring among workers at a railroad tunnel construction in Rome. Fourteen workers, between 1952 and 1960, were affected by a febrile disease of a nonspecific clinical picture and in most cases associated with jaundice. Agglutination tests were positive for leptospirosis whenever they were made, even 2 years after recovery. On request from the Rome Department of Labor, the Roman Office of Public Sanitation made an inquest on the conditions prevailing at the tunnel being constructed. As a result, a campaign of rat extermination and of general disinfection of the living and working quarters was carried out. Preventive measures were taken against pollution of drinking water and of the food consumed at the tunnel. Three months after these measures were taken no case of leptospirosis had been reported. It is pointed out that the number of cases similar to those described must be much larger than is generally known, given the nonspecificity of the clinical picture. Vaccination is recommended as the most effective protection against occupational leptospirosis.

-- J. Am. Med. Assn. References & Reviews

* Address not in current List of Periodicals.

03121006

- 130 A New Technique for Evaluating Respirator Performance. W. A. Burgess, L. Silverman and F. Stein. Am. Ind. Hyg. Assn. J. 22, 422-429 (Dec. 1961).

A quantitative method of evaluating over-all leakage of respirators designed for protection against highly toxic aerosols has been developed for use while being worn by sedentary and working subjects. The method allows definition of penetration or leakage well below 0.1% using an aerosol with a geometric mean size of 0.2 micron. The same procedure can be used for smaller sizes and longer periods of use. It can also be applied to existing aerosols in the field. The procedure has been applied to all available respirator models with complete success.

-- Authors' conclusions

SKIN DISEASES AND BURNS

- 131 Photosensitization of Coal Tar. J. Starke and O. Jillson. Arch. Dermatol. 84, 935 (Dec. 1961).

A case of exfoliative psoriasis following irradiation and application of coal tar ointment to a patient with chronic psoriasis is presented. Photo skin tests revealed: (1) The patient burned to an exceedingly small amount of ultraviolet light. (2) He was sensitized to the erythema zone of the ultraviolet spectrum. (3) His photosensitivity was elicited by hot quartz ultraviolet lamp. This is contrary to what has been reported in the literature, in that tar has not been reported to sensitize to the erythema zone of ultraviolet nor to hot quartz of ultraviolet. The treatment is to avoid all tar until the sensitivity disappears, at which time tar is the treatment of choice.

-- J. Am. Med. Assn. References and Reviews

- 132 The Fixed Eruption Therapy. A. L. Welsh and M. Ede. Arch. Dermatol 84, 1004 (Dec. 1961).

The authors present a discussion (based upon personal experience as well as upon a review of world literature) of the major groups of drugs and chemical allergens which (alone and incorporated into mixtures) have produced fixed eruptions: antipyretics; laxatives and dyes; antisyphilitic drugs; central nervous system depressants; gums, oleoresins, enzymes and glycosides; anti-infective agents; autonomic drugs; cardiovascular therapeutics, unclassified drugs, and substances other than drugs. Fixed eruptions demonstrate the basic phenomena of allergy: that certain circumscribed areas of the body can be specifically and highly sensitized, while other portions remain immune; that polysensitization can, and does occur; that there may be centrifugal spread of sensitivity. Yet, there may develop, also, an acquired local immunity.

-- J. Am. Med. Assn. References and Reviews

- 133 Outbreak of Formaldehyde Dermatitis. W. I. Glass. New Zealand Med. J. 60, 423 (Sept. 1961).

An outbreak of formaldehyde dermatitis occurred recently in Auckland. The firm concerned manufactured formaldehyde resins and then used these resins in a paper treatment process. Dermatitis developed in 16 of 60 workers over a period of 3 months. The dermatitis usually took the form of an erythema with or without scattered macules and papules. The most common sites were the face, neck, and eyelids, and inner aspects of the forearm. Three workers showed a severe fissuring dermatitis of the palms associated with paronychia and softening of the nails. With the help and cooperation of the general practitioners in the district, the Public Health Nurse, and the management and workers at the firm, this outbreak was effectively controlled.

-- J. Am. Med. Assn. References and Reviews

- 134 Contact Eczema Due to Formaldehyde in Resin Finished Textiles. G. Hovding.
Acta Dermato-Venereol. 41, 194 (1961).

Since the introduction in 1926 of the anti-crease treatment of regenerated cellulose fibers with urea-formaldehyde resin, the output of resin-finished rayon and cotton fabric has risen steadily. Most of the resin-finished textiles are used in the manufacture of dresses, blouses, skirts, and trousers. In these finishing processes, formaldehyde-base resins have an extensive application. The present study was carried out during 1953-1958 on 2,110 patients who were patch tested to a routine test series that included 4% aqueous formaldehyde. Three and one-half per cent of the males and 9% of the females had positive reactions to formaldehyde. Only 50% of the positive reactors had actual eczema caused by formaldehyde exposure and 65% of these, all females, were diagnosed as having textile formaldehyde eczemas. The high incidence of reactivity in females results from women using more formaldehyde-containing textiles than men and wearing them in more intimate contact with the skin. As a prophylactic measure, the author cites a simple chemical test for detection of free formaldehyde in fabrics and suggests labeling of formaldehyde-treated textiles.

-- J. Occ. Med. Absts.

- 135 Plant Dermatitis. A. Rook. Brit. J. Dermatol. 73, 283 (July 1961).

It is fairly well recognized that allergic sensitivity to a plant may be restricted to a botanical species or may extend to related genera in the same family. However, it is less well appreciated that sensitivity may be confined to one or a few horticultural varieties of certain common garden plants. Three such cases of plant dermatitis—in which the patients were shown to react only to one or a limited number of the varieties they handled—are reported. The genetic growth, and cultural mechanisms underlying this phenomenon are discussed. A brief account is given of some of the plants concerned. The significance of variety-specific dermatitis is discussed, and the necessity of patch testing with the actual plant variety or varieties with which the patients have been in contact is stressed.

-- J. Occ. Med. Absts.

- 136 "Pigeon Mites" Causing a Pruritic Dermatitis. S. B. Litwin.
J. Am. Med. Assn. 177, 714-716 (Sept. 9, 1961).

Bird and fowl mites are important to man not only as vectors in the spread of disease but also as agents which may cause local dermatitis and pruritus. The latter may occur on any part of the body exposed to the insect. Treatment consists of good personal hygiene and adequate control of nesting and roosting habits of the fowl vector.

-- Public Health Eng. Absts.

- 137 Fungus Infections in Northern New York State. W. Saunders.
N. Y. State J. Med. 61, 1542-1544 (1961).

Among 59 fungus isolations from human dermal infections, 20 were identified as Trichophyton verrucosum. About 90% of the patients had been in contact with cattle. Clinically, most of the cases presented themselves as kerion. Tr. verrucosum has not been reported before as an agent of human infection in northern New York. Importation from southern Canada by cattle is suspected.

-- Public Health Eng. Absts.

- 138 The Problem of Metabolic Therapy in Major Burns. G. T. Murphy and M. J. Jacobson.
Am. Surgeon 27, 629 (Sept. 1961). (American Surgeon, Williams & Wilkins Company, 428 E. Preston St., Baltimore 2, Maryland*).

Despite recent improvements in many aspects of burn treatment, most authorities agree that little real progress has been made towards lowering the mortality from major burns. There are many formulas upon which one may base parenteral-fluid therapy in burns and many different opinions concerning their use. This study covers this aspect of burn therapy. Case

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records of all adult patients treated from 1953 through 1958 with burns of greater than 30% of the total body surface were reviewed with particular reference to fluid therapy and urinary output. A total of 27 patients were studied. Of these, 18 with burns of 30-40% of the body surface had a mortality of 33%. Nine patients with greater than 50% burns had a mortality of 88%. All patients with burns of 30-40% of surface who were treated by the Evans Formula and kept strictly on the formula had low hourly and total urine excretion. Those who were given oral fluids in addition to the parenteral fluids indicated by the formula had a definite increase in the total urine output which in the opinion of the authors was a distinct advantage during the initial burn phase. Of the total group, 15 patients had persistent initial acid urines. Of these 15, 11 had a renal shut-down to a marked degree and 14 died. Therefore, the authors felt that enough electrolyte solution should be used to maintain an alkaline urine. Of the autopsy cases, 64% had signs of adrenal exhaustion. The authors conclude that the Evans Formula provided insufficient colloid and fluid in the cases of 30-40% body area burns, and autopsy findings of depleted adrenals indicated that steroids may be of value particularly during the skin-grafting phase of recovery.

-- Cond. from J. Occ. Med. Absts.

- 139 Effect of Human Growth Hormone in Patients with Severe Burns. S. O. Liljedahl, et al. *Acta Chir. Scand.* 122, 1 (1961).

The authors treated 5 patients having severe burns involving more than 30% of the body surface with hormone preparations from pituitary glands obtained at necropsy. Human growth hormone, 10-20 mg. was given daily for 7 to 9 days. A positive nitrogen balance was established in 2 patients. The concentration of albumin in the serum tended to increase and there was a favorable tendency towards healing in all cases. -- Can. Med. Assn. J. Absts.

CHEMICAL HAZARDS

- 140 The Approximate Oral Toxicity in Rats of Selected Household Products. H. C. Hodge and W. L. Downs. *Toxicol. & Appl. Pharmacol.* 3, 689-695 (Nov. 1961).

The acute, "screening", oral toxicities of about 40 common household products purchased in neighborhood stores were determined in adult albino female rats. All products fell in toxicity classes 1, 2, or 3 as defined by Gleason, et al. (*Clinical Toxicology of Commercial Products*, Williams & Wilkins Company, Baltimore, Maryland, 1957), i.e., had lethal doses greater than 500 mg./kg. From the standpoint of acute oral toxicity, appropriate labeling is suggested for substances lethal in amounts of 500 mg./kg. or less unless experience has demonstrated a negligible hazard; substances of lesser toxicity would remain unlabeled unless hazard was demonstrated.

-- Authors' summary

- 141 Late Prognosis of Nitrous Fume Poisoning: A Follow-Up Study. K. G. Rigner and A. Swensson. *Acta Med. Scand.* 170, 291 (Sept. 1961).

The authors report on 39 patients in whom nitrous-fume poisoning had occurred in Sweden between 1940 and 1955. In an attempt to study more closely the late prognosis of nitrous-fume poisoning the authors reexamined or otherwise got information about these patients. Two of the 39 patients had died afterwards before the follow-up examination was started; they died from other diseases, but one of them had disease of the mitral valve diagnosed before the poisoning, and it could not be excluded that the injury caused by the nitrous fumes brought on a deterioration leading to death 8 years later. Fourteen patients, particularly those with serious symptoms in the acute stage, were reexamined clinically and physiologically between 1954 and 1958. Information about the remaining 23 patients was obtained by letter or telephone. Sequels of clinical importance were lacking. Neither was there found disablement from the social or vocational point of view. The prognosis for those surviving acute nitrous-fume poisoning is good, except for preexisting heart or lung disease.

-- J. Am. Med. Assn. References and Reviews

- 142 Acute Sulfur Dioxide Toxicity. Effects of Histamine and Histamine Liberation. K. J. Leong, H. N. MacFarland and E. A. Sellers. Arch. Environmental Health 3, 668-675 (Dec. 1961).

A comparison has been made of the susceptibilities of normal and pretreated mice, rats, and guinea pigs to a single lethal inhalation exposure to sulfur dioxide. For each species, tests were conducted at 3 different concentrations of the gas. The mean survival time of exposed groups was employed as the criterion of response. When mice and rats were pretreated by the intraperitoneal injection of 200 or 300 mg. per kilogram of histamine, mean survival times were significantly reduced when compared with the values obtained for normal animals at all sulfur dioxide concentrations examined. The tolerance of all 3 species was, for the most part, unaffected when ovalbumin was injected prior to gassing, although the treatment was probably successful in elevating blood and tissue concentrations of histamine. Adrenalectomized rats were found to be more susceptible to high sulfur dioxide concentrations than normal animals. Histological examination of the lungs of animals from the various groups revealed that the severity of the damage was primarily dependent on the length of exposure. In normal animals, pulmonary edema with areas of consolidation were usually observed. In the case of those treatments which produced a significant reduction in survival time, the animals generally exhibited bronchial obstruction. The relationship of these results to the problem of sensitive individuals who exhibit acute responses to urban smogs has been discussed.

-- Authors' summary

- 143 Chemical Pneumonitis from Inhalation of Zinc Chloride. F. A. Johnson and R. B. Stonehill. Diseases of Chest 40, 619-624 (Dec. 1961).

Three cases of severe, generalized chemical pneumonitis resulting from exposure to zinc chloride have been presented with representative roentgenograms. Two responded to symptomatic treatment while under close observation and one showed rapid progression and demanded the most aggressive measures. Despite the generalized involvement in all 3 patients and the relatively long persistence of infiltrate on chest roentgenograms, no lasting effects were detected by analysis of follow-up symptoms, chest x-ray films, ventilatory function tests or blood gas studies. From a modest review of the literature, it is believed that the use of adrenocortical steroids during the acute phase of chemical pneumonitis has not been properly emphasized. Since the earliest complaints or findings are notoriously minimal, the authors wish to reemphasize the cardinal principle of the closest watchful expectancy in patients recently exposed to noxious inhalant vapors.

-- Authors' summary

- 144 Determination of Lead in Urine by an Ion Exchange Method. W. H. Hill, Fay H. Hengstenberg and C. E. Sharpe. Am. Ind. Hyg. Assn. J. 22, 430-433 (Dec. 1961).

The work described was limited to the determination of lead in urine by concentrating lead on an ion-exchange resin, eluting the lead from the resin with acid and determination of the lead by polarography or by the dithizone method. The possibility is suggested that ion-exchange concentration and subsequent elution of elements can play a vital role in extending trace element techniques in the field of biochemistry, industrial hygiene, and air pollution. The authors expect to investigate this method for the determination of such elements as thallium and nickel which are of interest in respect to industrial hazards.

-- Authors' summary

- 145 Evaluation of Lead Values in Urine Spot Samples. A. Bruusgaard. Nord. Hyg. Tidskr. 42, 71-74 (1961).

In determinations of lead content carried out on 779 samples of urine from persons with occupational exposure a positive correlation could be demonstrated between lead content and the specific gravity of the urine. The author accordingly suggests that the observed lead content should be adjusted to a value corresponding to a standard specific gravity of 1025 by multiplying by 25 and dividing by the last two figures of the specific gravity of the sample. A lead content of 90 micrograms per liter in a sample with a specific gravity of 1010 thus becomes 225 micrograms per liter when corrected, indicating a marked degree of exposure.

-- Bull. Hyg.

03121010

- 146 Contribution to the Study of Saturnism by Inhibited Oils. L. Rasetti, F. Cappellaro and P. Gaido. *Rass. med. ind.* 30, 71-75 (Jan.-Feb. 1961). Italian.

The authors have carried out an inquiry on a group of workers in continuous contact with inhibited oils containing lead naphthenate. Sixty-five per cent of the workers were impregnated or intoxicated by lead. The authors point out the saturnine risk presented by these oils and prove that the principal way of poison absorption is cutaneous.

-- Public Health Eng. Absts.

- 147 Abnormal Trace Metals in Man: Lead. H. A. Schroeder, et al. *J. Chronic Diseases* 14, 408-425 (Oct. 1961).

The following conclusions are presented: (1) The concentrations of lead in a variety of foods, tissues, vegetation, and manufactured products were measured by a microanalytic chemical method and data on human tissues obtained by spectrographic methods were analyzed statistically. (2) Lead seems to be ubiquitous. (3) Lead accumulates with age in the American human kidney, liver, lung, bone, pancreas, and aorta up to the fifth and sixth decade. (4) No obvious increase in exposure from foods or fluids during the past 20 years was demonstrated, although airborne lead has probably increased. This latter increment to the total body burden is usually small. (5) Wild animals and birds are exposed to lead. (6) Lead is probably not an essential element. (7) Lead in human tissues appears to come both from natural sources and from industrial contaminants, although the proportions from each source could not be estimated. The bibliography contains 34 references.

-- Public Health Eng. Absts.

- 148 Fingernail Cystine Content in Chronic Mercury Exposure. M. Kleinfeld, et al. *Arch. Environmental Health* 3, 676-679 (Dec. 1961).

The effect of chronic occupational exposure to mercury on the cystine level of the fingernails was studied. Based on the available environmental data, the workers were divided into 3 groups: a control, a minimally exposed, and a moderately exposed group. A good correlation was noted between the degree of exposure and the urinary excretion of mercury. However, there were no significant differences in the cystine content of the fingernails between the 3 groups. The results of this study indicate that mercury, in the range of exposure encountered, does not affect the metabolic pathway involving the conversion of methionine to cystine.

-- Authors' summary

- 149 Toxicologic Investigations of 1,2-Dibromo-3-Chloropropane. T. R. Torkelson, et al. *Toxicol. & Appl. Pharmacol.* 3, 545-559 (Sept. 1961).

1,2-Dibromo-3-chloropropane was found to be but slightly irritating to the skin upon short single exposure. However, repeated applications caused necrosis of the dermis, the epidermis remaining fairly well preserved. The compound can be absorbed through the skin in toxic amounts. It is not likely to cause permanent injury to the eyes on single application, but probably will be painful and cause transient irritation. The compound was found to be moderate to high in toxicity from single respiratory exposure and highly toxic on repeated exposure, producing damage even at 5 ppm, the lowest level studied. Excessive exposure to the vapors resulted in damage to the liver, kidneys, and various tissues including sperm cells and seminiferous tubules, dermis, bronchioles, renal collecting tubules, lens and cornea, and alimentary canal. Injury caused by this compound was noted to be particularly slow in healing. Precautions for the safe handling of this compound are discussed.

-- Public Health Eng. Absts.

- 150 Industrial Benzene Exposure from Petroleum Naphtha: (1) Rubber Coating Industry.
L. D. Pagnotto, et al. *Am. Ind. Hyg. Assn. J.* 22, 417-421 (Dec. 1961).

Benzene is present in certain naphtha solvents in amounts varying up to 9.3% by weight. The extent of benzene exposure from these naphthas in the rubber coating industry was determined by air tests and urinary phenol analyses. This latter test is a sensitive and reliable index of benzene exposure. It has a sensitivity greatly exceeding that of the urine sulfate ratio test and enables detection of benzene exposures well below the maximum allowable concentration (MAC) for this substance. Excessive benzene exposures (one case as high as 125 ppm) were consistently found on saturators using naphthas containing considerably more than 3% benzene. The benzene exposure of churn men was much lower than that of the saturators. Phenol excretion results were mainly below 200 mg., however, the range of values extended to 480 mg. per liter of urine. The extent of benzene exposure for spreaders was slightly lower than that of churn men. Air test results ranged up to and slightly above the MAC. A number of urine phenol values were above 200 mg. but none above 350 mg. per liter. The blood examinations thus far have revealed that several workers showed hemoglobins below 13.5 grams and one man suffered a marked blood dyscrasia that subsided completely following withdrawal from work.

-- Authors' summary

- 151 Mammalian Toxicity and Histopathologic Effects of 2,6-Dibutyl-4-Nitrophenol.
D. Vesselinovitch, et al. *Toxicol. & Appl. Pharmacol.* 3, 713-725 (Nov. 1961).

Measurements of the acute toxicity of 2,6-di-tert-butyl-4-nitrophenol (dibutylnitrophenol; Bayer 28589) indicated that this compound has a low toxicity as evidenced by the following LD50 values in mg./kg. when the compound was given intraperitoneally: female rats 260, male rats 270, male guinea pigs 580, female mice 850, and male mice 700. By the oral route the compound was about one-half as toxic as it was when given parenterally. The compound had a relatively high tendency to produce a cumulative toxic action as evidenced by mortality of the acute LD50 or levels exceeding 0.1% in the diet. Microscopic examination of the tissues of acutely poisoned animals showed degenerative changes in the heart, liver, spleen, kidney, and lung. The most pronounced changes consisted of patchy, waxy, degeneration of the heart, mild to moderate fatty changes in the liver, and lymphorrhesis, abortive mitosis, and other cellular changes in the spleen. The kidney exhibited zonal necrosis and degeneration of the tubular epithelium. These structural changes in the kidney were accompanied by functional changes consisting of a reduction in urine-concentrating ability and a rise in blood urea nitrogen.

-- Authors' summary

- 152 Nervous and Biochemical Disturbances Following Hexachlorobenzene Intoxication.
F. DeMatteis, B. E. Prior and C. Rimington. *Nature* 191, 363-366 (July 22, 1961).

Outbreaks of cutaneous porphyria have occurred in southeastern Turkey since 1956, affecting children predominantly, with symptoms of photosensitivity, hepatomegaly and porphyrinuria, but with no abdominal or neurological symptoms. The suspected cause was poisoning by hexachlorobenzene introduced in bread made from dressed wheat intended for sowing. This has been verified by experiments on rats. In this study tests were made on hexachlorobenzene intoxication on rabbits, guinea pigs, mice, and rats. There were interesting differences in the response. Rabbits responded most like man. Rabbits developed uroporphyrinuria, and rats developed coproporphyrinuria. Symptoms are described in detail and results of chemical analysis of organs are presented. The toxicity of hexachlorobenzene is confirmed by the experiments on these 4 animal species. This study shows that whereas in man cutaneous lesions dominate the picture and nervous symptoms are absent, animals have striking neurological symptoms without evident histopathological changes in the central nervous system or the peripheral nervous system. It is suggested that these symptoms may have a biochemical origin.

-- Public Health Eng. Absts.

03121012

- 153 Pesticide Residues in Foods: Analytical Philosophy, Technology and Capabilities in Other Countries. F. A. Gunther. J. Assn. Offic. Agr. Chemists 44, 620-626 (Aug. 1961). (Journal of the Association of Official Agricultural Chemists, Box 540, Benjamin Franklin Station, Washington 4, D.C. *).

Pesticides and their residues in foodstuffs are issues involving public health on a world-wide scale. The history of residue chemistry, foreign and domestic legislation, and foreign residue research facilities are presented. There are 15 references to the subject.

-- Public Health Eng. Absts.

- 154 Synthesis of Di-2-Naphthylthiocarbazon—A Simplified Method. D. M. Hubbard. Am. Ind. Hyg. Assn. J. 22, 459-461 (Dec. 1961).

A simple, straightforward laboratory method is given for the preparation of di-2-naphthylthiocarbazon. The method requires no elaborate equipment and can be used for preparing this compound in a refined state, showing a molecular extinction coefficient of approximately 42,000 at wave length of 645 millimicrons. Since this compound is superior to dithizone when used for the determination of mercury in biological material (particularly urine) and since it is no longer commercially available, its preparation within the laboratory becomes a necessity. The starting compound, 2-naphthylhydrazine hydrochloride is readily available. -- Author's abst.

INDUSTRIAL DUSTS

- 155 The Differential Thermal Analysis of Quartz. D. K. Craig. Am. Ind. Hyg. Assn. J. 22, 434-442 (Dec. 1961).

The differential thermal method for the analysis of quartz is discussed and the literature briefly reviewed. The design and construction of a differential thermal analysis apparatus is described, and details of some of the results obtained with the present apparatus are given. The bibliography contains 27 references to the subject.

-- Author's abst.

- 156 Technical Status of Fabric Dust Removers in Cement Works. H. Ihlefeldt. Staub 21, 448-453 (Sept. 1, 1961). German.

For a daily production of 1,000 tons of cement about 540,000 cu.m. of waste gas per hour must be treated for removal of dust. For about 70% of the gas, fabric dust collectors are preponderantly employed. These dust collectors achieve high efficiency at relatively low first cost, yielding residual dust contents of less than 30 mg./cu.m. The higher maintenance costs compared with other types of dust collectors may possibly be reduced by new fabric-protecting cleaning processes and by the use of fabrics of highly wear-resistant synthetic threads. The filter at a coal-grinding plant is described in detail as are the associated safety arrangements and automatic fire extinguishing apparatus.

-- Public Health Eng. Absts.

- 157 The Effect of Inspiratory Airflow on the Uptake of Dust Particles into the Human Respiratory Tract. H. Drasche. Ind. Med. & Surg. 30, 515-521 (Dec. 1961).

In experimental dust inhalation studies in man it should be recognized that variations in individual inspiratory velocity patterns are of the same importance as the volume of the dust laden air that is inhaled during exercise, especially in those cases where the degree of retention

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within the respiratory tract from a given outside dust concentration has to be determined. Different complaints about breathing troubles in subjects working under equal conditions in a dusty atmosphere can be explained by the separating effect of inspiratory flow at different velocities. These findings are of interest in the field of pneumoconiosis research. Among the numerous theories on the pathogenic principles of pneumoconiosis, constitutional factors have been discussed, but, unfortunately, up to now, no definite proof could be established about the nature and basis of this theory. But it is well known that in addition to the quality or the chemical structure of inhaled dust, the quantity of it plays an important role in the pathogenesis of pneumoconiosis. In this contribution, it could be demonstrated that the inspiratory velocity pattern, predominantly dependent on constitutional factors, causes significant differences in the uptake of dust particles smaller than 5.0 microns in healthy subjects with equal lung volumes and equal ventilation capacities.

-- Cond. from author's conclusions

- 158 A Pilot Enquiry Into Byssinosis in Two Cotton Mills in the United States. C. B. McKerrow and R. S. F. Schilling. *J. Am. Med. Assn.* 177, 850-853 (Sept. 23, 1961).

In a pilot study of byssinosis in 2 American cotton mills, it was found that dust concentrations around the carding machines appeared to be much lower than those in English mills spinning similar types of cotton. The following findings indicated, however, that some byssinosis was present in the 2 American mills: (1) In one mill the records of the plant physician suggested that 4 men had symptoms of the disease. (2) In the other 43 male workers—19 from the card-rooms and 24 from other parts of the mill—by a standard questionnaire were examined. One card-room worker gave a clear-cut history of byssinosis and the prevalence of chest symptoms was higher among card-room than other workers. (3) In 35 of these men, the change in ventilatory capacity during a working shift was measured, and, although some decline occurred during work in both of the 17 card-room workers and the 18 other workers, the fall was significantly greater in the card-room workers.

-- Public Health Eng. Absts.

- 159 Control of Silicosis in East Germany. A. Brandt. *Z. ges. inn. Med. u. ihre Grenzgebiete* 7, 323-331 (May 1961). German.

In 1956, a medical and technical organization for the study and control of silicosis was established as part of the Institute of Industrial Hygiene of the Academy in Berlin-Lichtenberg. This organization exercises control from the center out to individual works. Every dusty industry, every dusty working place, every silicotic workman and every worker exposed to dust can thus be constantly supervised. For the treatment and prophylaxis of silicosis there are 3 sanatoria; many works have installed prophylactic aerosol plants. The position in East Germany as regards pneumoconiosis is shown by the fact that there were 11,283 cases in 1957 and 12,757 in 1959. This does not indicate any increase in the production of cases because most of them were due to exposure before 1945; the total number of cases appearing after 1945 is distinctly less. It was not possible to compare the silicosis cases arising since 1945 with the numbers employed in each industry over the whole country but this was done in the Dresden area. It was found that in stone quarrying and in the metal industry (sandblasters and cleaners of castings) the percentage of cases was high, while in copper mining and potteries it was low. The time taken to develop the disease from the beginning of exposure increased from 32.5 years in 1942 to 37 years in 1957. In women this lengthening of exposure time was even more marked, thus showing that the preventive measures are more successful with women. In most industries the incidence of new cases of pneumoconiosis is falling off.

-- Bull. Hyg.

- 160 Elimination of Dust from the Lungs and the Influence on the Reticuloendothelial System. J. Ferin. *Ann. Occ. Hyg.* (London) 3, 1-5 (Jan. 1961).

Dust which reaches the respiratory bronchioles, alveolar ducts or alveoli is beyond the reach of the ciliated epithelium. Phagocytosis is believed to be a means of elimination of such dust. Ferin finds that the administration of silica particles by a single intratracheal injection has a stimulating effect upon the reticuloendothelial system (RES) in general as judged by the absorptive capacity of the liver for intravenously administered colloidal silver. In a

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further experiment, trypan blue was injected to stimulate the RES a few days before the animals were exposed to dust. This led to a much greater elimination of dust injected into the lungs as compared with controls. It is concluded, therefore, that the functional state of the RES is closely connected with the elimination of dust from the lungs. -- Bull. Hyg.

- 161 Nonoccupational Diffuse Pulmonary Fibrosis: Report of a Case in an Asbestos Worker. P. Cartier and P. Gross. Arch. Environmental Health 4, 73-80 (Jan. 1962). Reprints available from Industrial Hygiene Foundation upon request.

A case of nonoccupational diffuse chronic interstitial pulmonary fibrosis is reported in a worker exposed to asbestos dust for 38 years. Whereas the chronic interstitial pneumonitis appeared to have had its inception about 32 years prior to death and resulted in depletion of the pulmonary reserve, it was a superimposed patchy bronchopneumonia which, causing severe dyspnea and cyanosis, was the immediate cause of death. This case illustrates the hazard of making a clinical diagnosis of pneumoconiosis on purely presumptive evidence. A clinical diagnosis of pneumoconiosis to be sound, must be based on (a) knowledge of significant exposure to dust of respirable particle size, and (b) knowledge of the clinical as well as the radiological evolution of the pulmonary disease.

-- J. Am. Med. Assn. References and Reviews

- 162 Fiber Glass Pneumoconiosis. G. B. Murphy, Jr. Arch. Environmental Health 3, 704-710 (Dec. 1961).

The case presented is that of an industrial worker who developed a cough, weight loss, and hemoptysis following heavy exposure to fiber glass dust from the insulation of old hot water heaters. The hemoptysis was localized by bronchoscopy to the right lower lobe, and its persistence led to exploratory thoractomy and right lower lobectomy. Pulmonary pathology consisted of multiple focal abscesses arising from terminal bronchi and bronchioles which contained minute fiber glass particles. Careful pathological studies indicate that the particulate matter found in the lung is identical to particulate matter obtained from the insulating material and seems to be minute fragments of fiber glass varying in size from 1 micron to fibers 14 microns x 60 microns. This particular case represents an acute phase in the disease characterized by necrosis with leukocyte and monocyte infiltration. Fibrosis is slight. Whether or not progressive pulmonary fibrosis will develop remains to be seen. At present, 3 1/2 years after resection, the patient is well and working. The condition is apparently relieved by termination of exposure to fiber glass particles. Protection can be secured by the use of an adequate respiratory mask. This mask must be designed to eliminate particles as small as 1 micron in diameter from the inhaled air.

-- Author's comment

- 163 Fatal Aspiration of Talcum Powder by a Child: Report of a Case. J. J. Molnar, G. Nathenson and S. Edberg. New Engl. J. Med. 266, 36-38 (Jan. 4, 1962).

The talcum-powder container, often a favorite plaything of small children, may be a source of tragedy in the home. The case reported here demonstrates a rapidly fatal course in a twenty-two-month-old Negro boy, who aspirated talcum powder while playing with such a container. The child was admitted to the Bronx Municipal Hospital Center 30 minutes after aspiration of talcum powder. The incident was brought to the mother's attention when she heard the child choking. The mother immediately gave him a mixture of vinegar and milk which failed to induce emesis. In the hospital, various emergency measures were applied but in spite of these, the child died 20 hours after aspiration of the powder. Autopsy findings are described in detail. Commercial talcum powder is a mixture. In the case described, it consisted of 93% of talc, 5% magnesium carbonate and 2% of other ingredients. Pulmonary disease due to inhalation of talc has recently been emphasized in occupational medicine. The pathological changes in chronic talcosis are similar to those of asbestosis, but are unlike those described here after acute aspiration. The acute bronchitis and bronchiolitis found at pathological examination has been known as the earliest change in bronchiolitis obliterans. This rare condition usually follows inhalation of irritant substances, aspiration of foreign bodies or certain viral

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infections of the respiratory tract. If the patients survive the first 24 to 48 hours, organization of the intraluminal exudates will begin with active fibroblastic proliferation. The short survival period in the present case did not permit organization of the bronchial exudate to develop. The potential danger of talcum powder is not appreciated. The aim of this report is to create an awareness of the hazard of talcum aspiration. To avoid additional deaths it is urged that physicians emphasize to parents the importance of storing talcum-powder containers out of the reach of children.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 164 Biomedical Support Requirements in the Space Era. J. W. Humphreys, Jr.
Arch. Environmental Health 3, 684-688 (Dec. 1961).

One approach to providing biomedical support in the space era consists of: fixing the responsibility for development and operation firmly upon a single agency, formation of a full-time medical support task group composed of selected members from all agencies involved, establishment of an appropriate place of an adaptable, flexible biomedical support complex at which assigned skills can be integrated to provide preflight preparation, inflight monitoring, day to day clinical support, and medical recovery operations. Control of all recovery operations on land, sea, and in the vertical dimension can be exercised from this complex by full use of advancing communications technology and of high performance transportation. This pilot complex could be expanded or duplicated as required. The approach suggested may not be the solution to the problems, but the provision of adequate biomedical support in the space era offers one of the greatest challenges ever faced by medicine. The long lead times, the unknowns of space, the time/distance factors, the forces involved coupled with the exorbitant demands upon already short medical resources make it imperative that immediate action be taken to devise a workable economical concept and plan of operation. The time is now, as hardware technology is passing medicine in the race for space. It is essential that medicine keep pace.

-- Author's summary

- 165 Biomedical Support of Present Man-in-Space Programs. S. C. White.
Arch. Environmental Health 3, 689-694 (Dec. 1961).

The life science support program of Project Mercury is a very complex program even though this is the first manned space flight effort of the United States. Some of the complexity may be due to our lack of knowledge of the space environment. The personnel assigned to such programs must be willing to modify the criteria and procedure on a daily basis in order that the procedures and concepts reflect the latest information available. The cost of delaying any modification climbs rapidly in both dollars and time lost if not pursued vigorously. There is a great advantage in having the life science personnel following the entire project from its initial concept through to the flight programs. The program presents one of the greatest challenges the biomedical community has ever had. Both the national and international biomedical communities are working to meet the deadlines of the present program, Project Mercury.

-- Author's summary

- 166 Some Physiological Responses to Arctic Living. R. J. T. Joy, et al.
Arch. Environmental Health 4, 22-26 (Jan. 1962).

A standard cold exposure test of nude subjects, with measurements of shivering (EMG), oxygen consumption, and rectal and skin temperatures, performed before, during, and after periods of arctic living, demonstrated changes which are attributed to a physiological cold acclimatization. Following 52 days of winter maneuvers in Alaska, there was a 50% decrease in shivering response to the exposure test, while 43 days spent in Greenland in November

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caused an 80% fall in shivering. The other measurements were not significantly affected. The rate and magnitude of change is related to effective ambient temperature, amount of clothing, and length of exposure to cold. -- J. Am. Med. Assn. References and Reviews

- 167 Raynaud's Phenomenon. Gezade Takats and E. F. Fowler. J. Am. Med. Assn. 179, 1-8 (Jan. 6, 1962).

Of 66 patients exhibiting Raynaud's phenomenon who have been followed from 1 to 25 years, 20 exhibited peripheral vascular disease, 35 were diagnosed as having collagen disease, 7 showed evidence of vasomotor hyperactivity, and 4 showed abnormal clumping of red blood cells or precipitation of globulin. Only 18 patients were subjected to bilateral dorsal sympathectomy. The failure rate is not so much due to the recurrence of sympathetic activity, but to case selection. Many patients have been erroneously subjected to sympathectomy, only to exhibit typical full-blown symptoms of scleroderma or lupus later. Results of the operations done in the presence of peripheral vascular disease, or because of a nervous discharge from the diencephalon, have been excellent except for 2 technical failures. -- Authors' abst.

- 168 Raynaud's Phenomenon of Occupation Origin in Uranium Miners. N. Williams and A. L. Riegert. Occ. Health Rev. (Ottawa) 13, No. 4, 3-8 (1961).

It is suggested that environmental working temperature is of considerable significance in determining the onset of Raynaud's phenomenon. Over the years several accounts of occupational Raynaud's disease have appeared in the literature. In spite of this, there is considerable uncertainty as to the factors involved in its causation. Considerable differences of opinion have been evident as to the dangerous vibration frequency of the mining tools used; the figure varying from 2,000 to 36,000 vibrations per minute, with the most frequently incriminated vibration being in the 3,000 to 3,500 range. Until recently the tools for the measurement of vibration have been crude, but now that adequate instrumentation is available, it is most desirable to measure all the characteristics of vibration because frequency may not be the only factor involved in the causation of Raynaud's phenomenon, and a plea is made for this information to be recorded in all future studies of the disease in order that the influence of these factors may ultimately be determined. Earlier writers have been almost unanimous in their view that the trigger mechanism is always cold. In the cases investigated by the authors it would appear that, at least in the conditions under which the work was being undertaken, vibration was in some cases the main trigger, though in most cold alone was sufficient to trigger an attack.

- 169 Industrial Hygiene in Relation to Workers in the Supersonic Testing of Materials. W. Possner. Z. ges. Hyg. u. ihre Grenzgebiete 7, 420-436 (June 1961). German.

This account of an inquiry into the possible hazards to the health of 125 workers engaged in the testing of materials by supersonic waves is preceded by a technical description, with diagrams and photographs, of the particular supersonic test apparatus used by these workers, which is of the piezo-electric type. There is a description of the way in which this test apparatus is used. Reference is also made to published reports on the signs observed and symptoms complained of by workers testing with supersonic waves. Details of the age and duration of work of these 125 workers, of whom 10 were women, are given. The results of the medical investigation are described at very great length with tables and with diagrams to illustrate the frequency of symptoms in relation to hours of work or duration of employment. In summary, the findings were: (1) Skin disease on hands and fingers—vesicular-papular eczema was observed on 7 workers, scaliness of skin in 4, and 2 complained of interdigital itching; these skin troubles are stated to be the result of exposure to oil and dirt. (2) Complaints of various kinds made by 29 men and 6 women included pain, weakness, feelings of cramp and paraesthesia in the hands and arms. A few workers complained of eye-strain. -- Bull. Hyg.

- 170 Age, Noise and Hearing Loss. A. Clorig and H. Davis.
Ann. Otol. Rhinol. & Laryngol. 70, 556 (June 1961).

This article describes the results of air- and bone-conduction threshold measurements performed on 124 professional men whose histories of exposure to steady noise and gunfire were completely negative. (Even men who had merely been exposed to basic training in the armed forces were excluded.) The amount of hearing loss correlated with age is shown to be rather small, and apparently most of what does occur appears as a conductive deficit. That is, while threshold sensitivity at 4,000 cps measured by air conduction showed a gradual drop of about 17 db from age 25 to 55, there was a drop of only 6 db by bone conduction. A similar but even more pronounced air-bone gap was shown at both 4,000 and 2,000 cps by 40 aged inmates of an old soldiers' home, most of whom had never been exposed to noise or gunfire. It is concluded that true presbycusis involves conductive changes in the middle ear. The authors discuss the implications of these results in regard to the problem of a "presbycusis correction" for compensable hearing loss, taking the position that for compensation purposes, hearing loss should be measured by bone conduction, and that the only correction for presbycusis that should be applied would be the slight amounts of average bone-threshold shifts measured in the present research.

-- J. Occ. Med. Absts.

- 171 A Double-Wall Noise Control Enclosure for an Impulsive Sound Source. R. M. Hoover, L. J. Williams and W. G. Russert. Am. Ind. Hyg. Assn. J. 22, 448-454 (Dec. 1961).

The design of a group of double-wall noise control enclosures on the upper floor of an existing building is described and some noise reduction measurements are reported. A design objective for these enclosures was to achieve more effective noise reduction than that provided by existing heavy, on-grade, double-wall, reverberant enclosures, but with reduced weight. This objective was achieved by a combination of a light weight inner skin, a moderately large air space, a masonry exterior, isolation of the inner room floor slab, and the use of sound absorbing materials. Other noise control measures included sound retarding doors and windows, mufflers in the air supply and return passages, and flexible service connections to the rooms. Peak and octave band noise levels taken inside and outside the old and new enclosures are reported.

-- Authors' abst.

RADIOACTIVITY AND X-RADIATION

- 172 Genetic Hazards of Radiation to Man. Part 2. P. DeBellefeuille.
Acta Radiol. 56, 145-159 (Aug. 1961).

From various experimental and clinical data on the incidence and the genetic portion of congenital anomalies and on their induction by ionizing radiation an attempt was made to predict the magnitude of the increase in human reproductive wastage in the first generation, which would lie in the neighborhood of +0.01 per roentgen (gonad dose). The implications of this parameter are discussed in connection with the risks to which human populations are, or may be, exposed through clinical use of roentgen rays, fallout from nuclear weapon tests, and the possible use of such weapons in warfare.

-- Nuclear Sci. Absts.

- 173 A Radiochemical Determination of Alpha Exposure from Enriched Uranium in Urine. J. S. Alercio, G. A. Welford and R. S. Morse.
Am. Ind. Hyg. Assn. J. 22, 443-447 (Dec. 1961).

A method is described for the separation and measurement of alpha activity from enriched uranium in urine. The uranium is collected by an alkaline phosphate precipitation and is isolated from urine constituents through ion exchange. The resulting solution is measured

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fluorimetrically for uranium and then electroplated for alpha count. Self absorption of the alpha particles is minimized by the preliminary ion exchange separation by an improved electrodeposition technique. Fluorimetric recovery of added uranium from one liter of urine is approximately 95% $\pm$ 10%. The recovery by alpha count is 92% $\pm$ 10%. -- Authors' abst.

- 174 Radiation Alarm Pedestal. W. H. Ray.
Am. Ind. Hyg. Assn. J. 22, 494-496 (Dec. 1961).

Ion chamber radiation survey instruments have been equipped with a contact-making meter. They are also equipped with an ordinary electrical receptacle so they may be plugged into a pedestal when not being used to make a survey. The pedestal may be located to keep the instrument in a convenient position for the user. The pedestal contains a battery-powered alarm which will sound when the radiation dose rate attains the level at which the contact meter is set.
-- Author's abst.

- 175 An Inexpensive Multifrequency Pulse Generator for Calibrating Radiation Ratemeters.
R. P. Marquiss and R. L. Kathren. Am. Ind. Hyg. Assn. J. 22, 455-458 (Dec. 1961).

A pulse generator suitable for use in calibrating radiation ratemeters is described. Basically employing a simple multivibrator circuit, the device provides pulse rates ranging from 30 to 200 thousand pulses per minute. Stability and reproducibility of pulse rate was found to be good. The entire unit can be built from ordinary parts at a cost of approximately \$25.00.
-- Authors' abst.

- 176 An Incinerator for Wastes Containing Microcurie Amounts of Carbon-14. V. E. Lavetter.
Am. Ind. Hyg. Assn. J. 22, 485-488 (Dec. 1961).

A description is given of a small rotating drum incinerator designed for the quantitative ignition of a radionuclide whose combustion product is gaseous at normal temperature and pressure. Samples of the flue gases and mineral residues indicated that the system was safe for disposal of small animals containing microcurie amounts of radiocarbon. Flue gases from the special incinerator mix with those from a large municipal incinerator, and discharge through a chimney 150 feet high after the mixture passes through a wet fly ash collector.
-- Author's abst.

- 177 Radiation Dose Received by Passengers and Crew on Planes Carrying the Maximum Number of Radiation Units. D. M. Davis, J. C. Hart and A. D. Warden.
Am. Ind. Hyg. Assn. J. 22, 497-503 (Dec. 1961).

The dose of ionizing radiation received by passengers and crew members traveling on commercial airlines which transport radioisotopes is of interest to all persons who travel the airways frequently. Tariff regulations permit the air transport of 40 units of radioactive materials where one unit represents a quantity of radioisotopes which when packaged delivers a dose rate of one mr./hr. at a distance of one meter from the center of the package. Using 5 different types of commercial aircraft, shipments of radioisotopes were simulated and dose levels determined at various locations in the aircraft under conditions normal to commercial travel. The survey indicates that the tariff regulations should be amended giving consideration to the type of aircraft involved.
-- Authors' abst.

- 178 Health Aspects of the Commercial Melting of Radium Contaminated Ferrous Metal Scrap.
R. H. Starkey, J. A. Quigley and J. W. McKelvey.
Am. Ind. Hyg. Assn. J. 22, 489-493 (Dec. 1961).

Radium in ferrous scrap metal reacts very similarly to uranium in that it is virtually all removed in the slag. The purified metal could cause no health hazard to the steel fabricators or to the general public who might eventually use products manufactured from the steel. Workers

can safely carry out the smelting of radium contaminated steel if good general ventilation is provided along with other relatively simple industrial hygiene controls. These should include the wearing of adequate respiratory protection while working with the contaminated scrap or slag or while working in the immediate area of the furnace. Protective clothing should also be worn to minimize the possibility of radium being carried home on the clothing of the workers. Good person hygiene should be followed to minimize the possibility of ingestion of radium from contamination of the face and hands. Contaminated scrap metals should be mixed with non-contaminated scrap when possible and practical. This will further reduce the personnel exposures and still will not contaminate steel to significant levels. In fact, it will further reduce the average concentration in the resultant steel.

-- Authors' conclusions

- 179 Radiation and Public Health. L. E. Burney. Bull. N. Y. Acad. Med. 37, 238-250 (1961).

A general review and analysis is made of the rapidly expanding field of radiological health protection, with particular emphasis on the programs of the Public Health Service and on the new dimensions of medical science in a nuclear age. Many Federal agencies, in addition to the Public Health Service, together with state and local health departments, professional groups, and private organizations are proceeding cooperatively along 3 general lines: research on the biological effects of radiation, with particular emphasis on the somatic and genetic effects of low-level radiation; monitoring of radioactivity levels in the environment; and control of man-made radiation to eliminate or reduce unnecessary exposure from all sources. Physicians, too, are being called upon to meet unique challenges and responsibilities—specifically to insure that x-ray procedures under their control measure up to radiation-safety requirements, and to serve as informed citizens of their communities in regard to the health effects of radiation.

-- Public Health Eng. Absts.

- 180 Radioactive Fallout and Drinking Water. E. A. Snow. J. New Engl. Water Works Assn. 75, 27-37 (Mar. 1961).

The salient factors regarding the hazards of radiation in drinking water supplies are presented from the viewpoint of the waterworks operator. While emphasizing the hazards from fallout, other sources of radioactive wastes which might be introduced into domestic water supplies are also discussed. Data are given on the effects of radioactivity by natural agents with primary consideration to the water environment and a resumé of current methods of decontamination.

-- Nuclear Sci. Absts.

- 181 Fallout Radioactivity in Cattle and Its Effects. M. A. Van Dilla, G. R. Farmer and V. R. Bohman. Science 133, 1075 (Apr. 7, 1961).

In 1957, the U.S. Atomic Energy Commission authorized a project to determine what effects, if any, the radioactivity resulting from atomic bomb tests at the Nevada Test Site was having on cattle grazing in areas heavily contaminated by fallout as compared with cattle at a distance. Fission product level in the rumen contents and fecal samples from the Nevada test herd showed a close correlation with Nevada atomic bomb tests. The levels of cesium-137 and strontium-90 in cattle on the test site and elsewhere in Nevada are quite similar to the levels in cattle from other parts of the country. There has been no evidence to date of biological injury either of a gross or histological nature.

-- J. Occ. Med. Absts.

ENVIRONMENTAL MEASUREMENTS

- 182 Photoelectric Granulometry of Fogs. M. Deloncle. Ann. Occ. Hyg. (London) 3, 154-161 (May 1961). French.

A rapid method is described for finding the sizes of drops between 4 and 100 microns in diameter such as those which occur in fogs and mists. The method is based on photoelectric measurement of the light scattered by individual drops and has the advantage of allowing them to remain freely suspended in air during the observations.

-- APCA Absts.

- 183 Sound Level Meters. A Survey of the Problems of Standardization. H. C. Hardy.
Mag. of Standards 32, 324-329 (Nov. 1961).

The sound level meter is perhaps the most used instrument in general acoustics. The comprehensive study which has resulted in the revision of the standard has taken over 8 years. The long time in preparation reflects the changing requirements in modern noise technology. These influences were so great that there will probably be a steady demand for more improvements. For this reason, the S1 sectional committee (of the American Standards Association) has proposed to set up a new committee to study another revision as soon as this document is in print. Thus, the progress which is made in noise measurements can become more rapidly available to the public through up-to-date standards. The committee believes that the new standard is a considerable improvement over the old one. The committee feels that in future revisions many of the limitations and compromises will be eliminated.

-- Author's conclusion

- 184 Methods for Estimating Oxides of Nitrogen Emissions from Combustion Processes.
P. F. Woolrich. Am. Ind. Hyg. Assn. J. 22, 481-484 (Dec. 1961).

Methods for estimating emissions of oxides of nitrogen from combustion processes have been developed. Nitrogen oxide formation is related to temperature or heat supplied in the combustion process; and temperature or heat supplied is related to exhaust gas volume as a function of per cent carbon dioxide in the exhaust gas. The formation of nitrogen oxides is related to fuel consumption by a power function which is linear on a log-log plot. Equations and nomographs have been derived by means of which the pounds of nitrogen oxides per hour emitted from a combustion process may be estimated.

-- Author's abst.

PREVENTIVE ENGINEERING

- 185 Combustible Gas Detectors. J. E. Zatek.
Ind. Eng. Chem. 53, 57A-59A (Aug. 1961).

Safety testing instruments operating on the catalytic behavior of a heated platinum filament and designed to detect combustible gases in air at explosive and toxic concentrations are described. Combustion on the filament surface preheated by an electric current raises the temperature and causes an electrical resistance change which is substantially linear for gas concentrations in the range of 0 to 100% of the lower explosive limit of the combustible being tested. For mixtures within the explosive range, the meter needle is deflected to the right of the calibrated scale, above the 100 reading, and remains there. For mixtures that are too rich to burn, the meter needle is momentarily deflected to the right of the scale and then returns to some intermediate point since there is insufficient oxygen for complete combustion. Applications and limitations in use of these gas detectors are discussed. Detectors have been designed which differentiate electrically between natural gas and petroleum vapors, with adjustable calibration controls which can measure five different gases in the range of 0 to 100% of the lower explosive limit for each, and with dual scale meters graduated from 0 to 100% and 0 to 10% of the lower explosive limit. The latter scale is used to measure toxic concentrations of gases and vapors which may be flammable. Reference charts are provided to convert meter readings directly to parts per million. Poisoning of the filament occurs in the presence of tetraethyl lead, silicone vapors, halogenated hydrocarbons and acid gases, such as hydrogen chloride or hydrogen sulfide. Effective use of the instruments requires that the operator must know their limitations.

-- Public Health Eng. Absts.

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- 186 Air Flow Requirements for Underground Parking Garages. G. M. Hama, W. G. Fredrick and H. G. Monteith. Am. Ind. Hyg. Assn. J. 22, 462-470 (Dec. 1961).

Extensive studies correlating carbon monoxide concentrations with traffic density, car capacity and ventilation rates in a two and three-level underground parking garage showed that 500 cubic feet per minute of ventilation must be provided for each parking space in the garage to maintain hygienic standards based upon carbon monoxide and customer acceptance based upon smoke and odor. Provisions should be made to reduce ventilation rates to 350 cubic feet per minute per space during normal load periods. Hygienic standards for peak load operations, fleet type garages and general service type garages are discussed. -- Authors' abst.

- 187 Baghouse Cures Stack Effluent. C. O'Connor and G. Swinehart. Power Eng. 65, 58-59 (May 1961).

Increased load placed on the Pasadena Municipal Incinerator made it necessary to install some type of flue gas washing equipment. A water type scrubber proved unsatisfactory. Grain loading was reduced, but opacity still exceeded the allowable limits. Some type of filter was suggested since the plume was found to be due to particles of less than one micron in size. An experimental baghouse was installed and put into operation in October 1959. With inlet loading of 13.4 grains per cubic foot, outlet loadings of 0.031 grains per cubic foot are obtained. Bag life cannot be evaluated yet, but with inlet temperatures ranging from 300°F to 750°F no serious problems were encountered during the first year of operation. Bag material is silicon-treated Fiberglas. Cleaning is accomplished by a reverse flow method. In general, evidence points to sulfur trioxide as the culprit in plume formation. The authors' findings bear this out since sulfur trioxide analysis of the flue gas showed a reduction from 27.3 ppm to 1.6 ppm in the filtered effluent. -- Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 188 Effects on the Eye of Air Pollutant Mixtures. S. R. Mettier, et al. Arch. Environmental Health 4, 103-107 (Jan. 1962).

Rabbits were exposed to a wide variety of smog-type mixtures. Only epoxy compounds produced an effect. They caused keratitis, iritis, and sloughing of the epithelium. The regeneration rate and dehydrogenase activity of the epithelium were unaffected.

-- J. Am. Med. Assn. References and Reviews

- 189 Management of Airborne Wastes in a Nuclear Economy—The Role of Meteorology. D. H. Pack. Am. Ind. Hyg. Assn. J. 22, 471-480 (Dec. 1961).

The increasing utilization of nuclear energy will create new types of airborne waste problems. Creation of a "neighborhood" of multiple reactor sites (relatively) close together will require airborne budget calculations. In anticipation of these requirements meteorologists are extending their research into larger scales. Some of the new techniques for observation and calculation are presented. Included are radar tracking of tracers to distances of 100 miles, new fluorescent dye experiments, and new wind measuring techniques. -- Author's abst.

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- 190 Air Pollution Potential East of the Rocky Mountains: Fall 1959. C. M. Boettger.
Bull. Am. Meteorol. Soc. 42, 615-620 (Sept. 1961).

The weather over the eastern two-thirds of the United States was monitored, and air pollution potential forecasts were made and disseminated to affected cities. The experiment allowed for air sampling under a variety of synoptic patterns, and the results strengthened the validity of the previously developed criteria as indicators of prolonged periods of 2 or more days of high air pollution. Other considerations are indicated for the prediction of isolated days (not prolonged periods) of high pollution.

-- Public Health Eng. Absts.

MANAGEMENT ASPECTS

- 191 Alcoholism in Industry—Detection, Prevention and Control. Irene Kingston.
Occ. Health Rev. (Ottawa) 13, No. 4, 23-27 (1961).

The author discusses the subject under the following headings: Effect of alcohol on the body; Alcoholism—a total disorder; The problem drinker; The extent of the problem; A hidden problem; Detecting the problem drinker; What is industry doing? Company programs; Program of the Bell Telephone Company of Canada; Role of the supervisor; Role of the Medical Department; Program of Imperial Oil Limited; Progress—no panacea; and Sources of help. The author concludes that alcoholism is a major health and social problem which challenges industry to do a job of rehabilitation; a job which industry is especially well fitted to undertake because it has the necessary tools—means of detection, of motivation of employee to seek help, and of treatment. Using these tools, some industries are already doing an excellent job; but regrettably such progressive industries are still in the minority.

- 192 The Abstinent Alcoholic. D. L. Gerard, G. Saenger and R. Wile.
Arch. Gen. Psychiat. 6, 83 (Jan. 1962). (Archives of General Psychiatry, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.*).

A follow-up study of 300 patients with a drinking problem was conducted. Only 17% of them sustained abstinence as long as one year. These abstinent patients are in "better" health, have better employment, and family relations than those who did not become abstinent. However, the majority of these abstinent patients are psychiatrically overtly disturbed or functioning with gross inhibitions and limitations in their personal relationships. A minority has a sense of identity, comfort and purpose through total involvement with Alcoholics Anonymous, and another small group has achieved a measure of identity, comfort and purpose without any institutionalized source of support. It was noted that prolonged abstinence may be associated with gross mental disturbance and maladjustment. It was also noted that both social improvement and abstinence were practically never related to either the acquisition of insight or to personal growth within a formal psychotherapeutic context.

-- J. Am. Med. Assn. References and Reviews

- 193 Occupational Health in Europe. T. H. Patterson.
Occ. Health Rev. (Ottawa) 13, No. 4, 20-22 (1961).

One of the most impressive developments related to occupational health in Europe is perhaps that of the attitude toward training in this field. Not only is special occupational health training given to doctors and nurses at the undergraduate and postgraduate level, but quite extensive training is offered and may even sometimes be compulsory for all types of engineers who may eventually find themselves employed in industry. Special training in

* Address not in current List of Periodicals.

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occupational health is also offered in several countries for representatives of management. In some instances, compulsory or voluntary training courses exist for foremen or shop supervisors. In some of these countries, engineers and other non-medical professional students receive more than 25 hours of undergraduate training in occupational health. This exceeds the training given medical undergraduates in Canadian universities. The reason for this is that there is a growing recognition in some of these countries that occupational health knowledge when placed in the hands of engineers, management, technicians, and foremen or supervisors in industry, results in the development of working methods and in the application of production techniques which are designed not only to improve production but also to protect the health of workers.

ACCIDENTS AND PREVENTION

- 194 Human-Factors Engineering and Safety Research. T. Hatch. J. Occ. Med. 4, 1-5 (Jan. 1962). Reprints available from the Industrial Hygiene Foundation upon request.

The subject is discussed under two broad headings: A New Look at Accident Prevention, and Human-Factors Engineering. The author emphasizes the need for research and the development of improved and even new procedures to be incorporated into industrial accident prevention programs of the future. This requires teamwork between specialists in human performance and behavior—the anthropologists, physiologists, and psychologists, the biostatistician and epidemiologist—and the safety engineering specialists to develop the necessary principles and laws which operate in the man-machine complex and from which the safety engineer and design engineer may draw to accomplish the desired results. The development of these broader principles of safety engineering is an important part of a relatively new field of engineering specialization which is called for the lack of a better term, "human-factors engineering". Human-factors engineering is defined as "the application of the principles, laws and quantitative relationships which govern man's response to external stress to the analysis and design of machines and other engineering structures, so that the operator of such equipment will not be stressed beyond his proper limit or the machine forced to operate at less than its full capacity in order for the operator to stay within acceptable limits of human capabilities".

- 195 Hidden Injuries in Industry. J. F. Coyne. J. Occ. Med. 4, 20-22 (Jan. 1962).

Low frequency and severity rates have become the goal of industrial managements and these rates may reflect a more aggressive attitude concerning lost-time cases than they do a safer work environment. The time to prevent lost-time cases is before injury occurs rather than by after-the-fact inveigling of the attending physician. Concern has become centered about a numerical statistical index rather than about the welfare of the injured employee. To correct inequities in the present standard and to encourage the reporting of hidden injuries, a system of mandatory assessments of time lost has been proposed for industrial injuries. --Author's summary

- 196 Toxicity Problems with Solid Missile Propellants. C. W. Kraul and R. H. Duguid. Arch. Environmental Health 3, 680-683 (Dec. 1961).

The variety of chemicals and processes used in the solid rocket propellant field requires alertness on the part of all concerned, not only to the hazards resulting from the physical properties of these chemicals and processes, but also to the toxic health hazards. Health protection among those concerned with the development, manufacture, and use of these propellants calls for the application of the 3 E's of accident prevention, namely, engineering, education, and enforcement. In addition to these well-known areas of prevention, it is important that periodic industrial hygiene surveys of the work environment be made to determine if the concentration of the chemicals in the air, and skin contact, are adequately controlled. Many of the toxic chemicals produce their harmful effects only after prolonged and repeated exposures to low concentrations or small amounts of the materials. Therefore, the absence of toxic symptoms at any one time cannot be accepted as proof that a harmful exposure does not exist. Such chronic exposures can be evaluated only by adequate industrial hygiene surveys of the work environment and periodic medical surveillance of the health of individuals working with these materials.

-- Authors' conclusions

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