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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

APRIL, 1966
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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH, PA. 15213

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IN RE: ABRAMIS
November 1992

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IN RE: ALBRAMS
November 1992

INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

MELLON INSTITUTE, 4400 FIFTH AVENUE

PITTSBURGH, PA. 15213

April, 1966

MHBB-0019855

TO THE MEMBERS OF IHF:

FIRST QUARTERLY REPORT - 1966

In the past three months, there have been several important developments in Foundation programs.

New Members. The Foundation is pleased to announce the following new members:

Marcona Mining Company	Manufacturing Chemists' Assn.
Chrysler Corporation	National Coal Association
M. J. Gordon Company	Eastman Kodak Company
Metropolitan Life Insurance Company	(reinstated membership)

Publications. The following publications have been issued since the first of the year:

- Second Decennial Index (1955-1964) to the Industrial Hygiene Digest.
- 1965 Annual Report
- Two reprints: "Silicotic Bronchiolitis Obliterans," P. Gross and Heinrich Brieger, Arch. Environmental Health 12, 519 (Jan. 1966); and "Dust Particles in Lung Sections," P. Gross and E. Tolker, Arch. Environmental Health 12, 213-216 (Feb. 1966).

Meetings. The second Engineering Discussional in January and the first Chemical-Toxicological Discussional in February were very successful, thanks to the efforts of sponsoring Foundation Committees, with over 50 registrants in each case. These have been so popular that they are both to be scheduled on an annual basis hereafter, if possible. There were also meetings of the Board of Trustees in Pittsburgh, the Legal Committee in New York, and representatives of the Chemical-Toxicological Committee met at the Society of Toxicology Meeting in Williamsburg. In addition, representatives of the Engineering Committee and Nursing Committee met to discuss Foundation activities.

A number of smaller research planning meetings were held at Mellon Institute with representatives of industry, universities and the U.S. Public Health Service, Division of Occupational Health. These meetings have been listed in the Industrial Hygiene Digest Foundation Facts; significant progress will be reported as it develops.

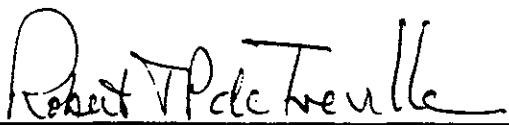
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A tentative program for the 31st Annual Meeting to be held at Pittsburgh's new Chatham Center on October 18 and 19 has been prepared and will be presented to the combined meeting of the Board of Trustees, Executive, and Policy and Planning Committees on May 10. The program will be announced shortly thereafter in the Industrial Hygiene Digest.

An invitation to visit the Foundation's exhibit on emphysema is extended to all those attending the American Industrial Hygiene Association meeting in Pittsburgh on May 16-20.

Research Laboratory Programs. The Foundation has received almost complete support for its \$120,000 two-year emphysema research project. Accordingly, Dr. Gross has proceeded with this important program under the current sponsorship of the American Iron and Steel Institute, the Automobile Manufacturers Association, Bituminous Coal Research, Inc., the American Petroleum Institute and the Manufacturing Chemists' Association.

Research and Educational Programs In-Plant. Because of the success and results obtained from the experimental course in Employee Mental Health and Industrial Nursing Practices (see Nursing Series Bulletin No. 1, 1965) a five-year training grant has been received from the National Institutes of Mental Health. This grant beginning July 1, 1966 in the amount of \$639,522 will cover costs of developing educational tools and testing them in selected companies in the Foundation's membership as a pilot plant. The American Institutes for Research in Pittsburgh will receive the major portion of this grant for thousands of hours of research psychologists' and technicians' time to develop programmed instructional tools. Several Foundation member companies will aid the program significantly by allowing their personnel and facilities to be used.



Robert T. P. deTreville, M.D.
Managing Director

deT:sjc

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INDUSTRIAL HYGIENE FEATURES

Periodic health examinations using an automated multitest laboratory are discussed in Abst. No. 328.

A study of work performance ratings of former psychiatric patients is given in Abst. No. 330.

Flies and disease are investigated in Abst. No. 352.

Abst. No. 353 outlines progress in tetanus prophylaxis.

Consult Abst. No. 360 for treatment of strong alkali burns of the eye.

Abst. No. 361 is concerned with the treatment of electrical injuries.

The treatment of major burns with dilute aqueous silver nitrate is described in Abst. No. 362.

An outbreak of resin dermatitis in a car factory is described in Abst. No. 363.

A study on the hydrogen sulfide darkening of exterior paint is presented in Abst. No. 368.

See Abst. No. 371 for information on the concentration of lead in bone in plumbism.

Abst. No. 374 reviews untoward reactions to lysergic acid diethylamide (LSD).

Abst. No. 381 surveys sequelae of acute organic phosphate poisoning.

A description of an inertial-type particle separator for collecting large samples is given in Abst. No. 384

An investigation of byssinosis in the waste cotton industry is given in Abst. No. 386

Abst. No. 418 presents data on the safety of drivers with chronic disease.

FOUNDATION FACTS

NATIONAL INSTITUTES OF MENTAL HEALTH GRANT TO INDUSTRIAL HYGIENE FOUNDATION: The Foundation is pleased to announce approval from the National Institutes of Mental Health for a five-year training grant in the amount of \$639,522 in support of the Foundation's pilot plant studies on Employee Mental Health and Occupation Health Nursing Practices. (See Industrial Hygiene Digest 28:7 pp.i, July 1964, 28:11 pp.ii, Nov. 1964 and Nursing Series, Bulletin No. 1).

ASSISTANCE TO FOUNDATION MEMBERS: Representatives of the Laundry and Dry Cleaning Association visited Drs. deTreville and Rinehart at Mellon Institute on April 5 to discuss an information research project. Others, from the Asbestos and Fibreglass Industry, met with Drs. Gross and deTreville on April 12 to discuss work on Asbestos in progress in the Foundation's Research Laboratory. Drs. John G. Keller, American Petroleum Institute, Committee for Air and Water Conservation, and David Andrews, Manufacturing Chemists' Association, Committee on Atmospheric Pollution, visited Dr. Gross' Laboratory during April to discuss the progress of emphysema studies.

STAFF ACTIVITIES: On April 21, Dr. deTreville was elected a fellow of the American College of Physicians. He attended the American Industrial Health Conference in Detroit the week of April 25. He met during April with the Foundation's Engineering, Chemical-Toxicological, Legal, Medical and Nursing Committees to finalize details of the 31st Annual Meeting program in preparation for the meeting of the Foundation's Board of Trustees on May 10 at Mellon Institute. Dr. deTreville will speak on "Management of Environmental and Occupational Health Problems" on May 13 at the Pennsylvania Chamber of Commerce sponsored 14th Annual Clean Streams and Clean Air Conference in Harrisburg and on "The Industrial Hygiene Foundation and The Occupational Health Nurses" at a meeting of the Pennsylvania State Association of Industrial Nurses on May 14 at the Penn-Sheraton Hotel in Pittsburgh. Dr. Gross has accepted an invitation to moderate a session at the 2nd Annual Conference on Atmospheric Contamination in Confined Spaces, to be held May 4 in Dayton, Ohio under the sponsorship of the Aerospace Medical Research Laboratory, U.S. Air Force Systems Command.

INDUSTRIAL HYGIENE FOUNDATION EXHIBIT: IHF will have an exhibit on emphysema research at the American Industrial Hygiene Association meeting in Pittsburgh, May 23-27.

THE 31st ANNUAL MEETING will be held on OCTOBER 18-19, 1966 at Pittsburgh's new Chatham Center.

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IN RE: AIRBAMS

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EDITORIAL

SHORT-TERM LIMITS
(Pennsylvania Department of Health Regulations)

The attention of Industrial Hygiene Foundation members was called to the appearance of short-term values in the state of Pennsylvania in an Editorial which appeared in the February 1965 issue of Industrial Hygiene Digest. The subject of Short-Term Values was reviewed thoroughly at the Foundation's 30th Annual Meeting in October 1965. The Transactions of the latter appeared in the April 1966 issue of the AMA Archives of Environmental Health (now in distribution to Foundation members). These short-term limits are used in the state of Pennsylvania in addition to the list of Threshold Limit Values published by the American Conference of Governmental Industrial Hygienists (see Industrial Hygiene Digest 29:9 Foundation Facts and pp. i-ix, Sept. 1965) also present in the regulations.

Under the provisions of the Administrative Code Act of April 9, 1929, P. L. 177 of the Commonwealth of Pennsylvania, the following Rules and Regulations of the Department of Health was amended on August 18, 1964.

Section 3 was amended by adding a new paragraph, "L", as follows:

- L. "Short-Term Limit" shall mean the maximum atmospheric concentration of a contaminant to which a workman may be exposed for a specified short-time period. The concentration represents an upper limit of exposure for the specified time and assumes that there are sufficient recovery periods between episodes for recuperation. The daily average exposure to the contaminant, including these episodes, shall be such that the threshold limit value shall not be exceeded. (These values are set forth in Table 2 which was revised on August 17, 1965 as follows, and which table is a part of these regulations.

TABLE 2 SHORT-TERM LIMITS

Maximum average exposure for the time period specified				Maximum average exposure for the time period specified			
Substance	P.P.M. ^a	Mg. per ^b Cu. M.	Time in minutes	Substance	P.P.M. ^a	Mg. per ^b Cu. M.	Time in minutes
Acetic acid	40	-	5	Chlorine	3	-	5
Acetone	1,000	-	30	Chlorine trifluoride	0.1	-	5
Acrolein	0.5	-	5	Chloroacetaldehyde	1	-	5
Acrylonitrile	40	-	30	Chloroform	400	-	30
Allyl alcohol	5	-	30	Cobalt	-	0.5	30
Allyl glycidyl ether (AGE)	10	-	5	Copper fume	-	0.1	30
Ammonia	100	-	30	Cyanide (as CN)	-	5	30
Amyl acetate	200	-	30	o-Dichlorobenzene	50	-	15
Amyl alcohol	150	-	30	1,1-Dichloroethane	200	-	30
Aniline	50	-	30	1,2-Dichloroethane (Ethylene dichloride)	200	-	30
Benzene	75	-	30	Dichloroethyl ether	35	-	30
Beryllium	-	0.025	5	1,1-Dichloro-1- nitroethane	10	-	30
Boron trifluoride	1	-	5	Diethyl amine	100	-	30
Bromine	0.4	-	30	Diglycidyl ether	0.5	-	5
2-Butanone (MEK)	300	-	5	Diisobutyl ketone	50	-	30
Butyl acetate	300	-	30	Ethyl acetate	1,000	-	15
Butyl alcohol	150	-	30	Ethyl acrylate	50	-	15
tert. Butyl alcohol	150	-	30	Ethylamine	25	-	30
Butylamine	5	-	5	Ethyl benzene	200	-	30
tert. Butyl chromate	-	0.1	30	Ethylene diamine	20	-	5
Cadmium oxide fume	-	0.3	30	Ethylene glycol dinitrate and Nitroglycerin	0.2	-	30
Calcium oxide	-	10	30	Ethylene imine	5	-	30
Carbon disulfide	100	-	30				
Carbon monoxide	400	-	15				
Carbon tetrachloride	25	-	30				

TABLE 2 (Continued)

Maximum average exposure for the time period specified			
Substance	P.P.M. ^a	Mg. per ^b Cu. M.	Time in minutes
Fluoride	-	10	30
Fluorine	0.5	-	5
Formaldehyde	5	-	5
Hexanone (MBK)	200	-	30
Hexone (MIBK)	400	-	5
Hydrazine	1	-	30
Hydrogen chloride	5	-	5
Hydrogen cyanide	20	-	30
Hydrogen fluoride	3	-	15
Hydrogen sulfide	20	-	5
Iodine	0.1	-	5
Manganese	-	5	30
Methyl acetate	400	-	5
Methyl acrylate	25	-	30
Methyl bromide	20	-	5
Methyl cellosolve	50	-	30
Methyl chloride	100	-	5
Methyl chloroform (1,1,1-trichloro- ethane)	1,500	-	5
Methylene bis phenyl- isocyanate (MDI)	-	0.25	5
Methyl mercaptan	20	-	5
Methyl styrene	100	-	30
Nickel carbonyl	0.04	-	5
Nitric acid	15	-	5
Nitrogen dioxide	25	-	5
Ozone	1	-	30
Perchloroethylene	200	-	30
Phosgene	1	-	5
Propyl alcohol	400	-	30
Selenium compounds (as Se)	-	0.3	30
Styrene Monomer	100	-	5
Sulfur dioxide	20	-	5
Sulfuric acid	-	3	5
1,1,2,2-Tetrachloro- ethane	10	-	30
Tin (inorganic com- pounds)	-	5	30
Toluene	600	-	30
Toluene-2,4-diiso- cyanate (TDI)	0.02	-	5
Trichloroethylene	200	-	30
Vanadium (V ₂ O ₅ dust and/or fume)	-	0.5	30
Vinyl chloride	500	-	5
Xylene	300	-	30
Zinc oxide fume	-	10	30

^a Parts of vapor

per million parts of air by volume at 25°C and 760 mm. Hg. pressure.

^b Milligrams of d

ume, or mist per cubic meter of air.

03122086



MR. HARRY M. BOWMAN, Assistant to the General Manager of the Reaction Motors Division of Thiokol Chemical Corporation in Denville, New Jersey, has been elected to the Industrial Hygiene Foundation Board of Trustees.

Mr. Bowman's activity and participation in the Industrial Hygiene Foundation dates back only nine years but has ranged from a speaker at the 1960 Annual Meeting, to membership on the Chemical-Toxicological Committee, to Chairman of the Policy and Planning Committee, to membership on the Board of Trustees.

Mr. Bowman was with Bakelite Company from 1939 to 1954 before he joined Reaction Motors as Research Spectroscopist. In 1956 he became Supervisor of the Chemistry Administration Section where industrial safety and hygiene became one of his major concerns; in 1957 he was named Manager of the Research Operation and Plans Department where the industrial safety and hygiene responsibility expanded to the totality of the Research complex; in 1961 he was appointed Director of the Nuclear Technology Department; and in 1962 he assumed his present position as Assistant to the General Manager.

Mr. Bowman is author of a number of published articles and is past Vice President of the Society for Applied Spectroscopy; past President of the Association for R & D Administration; Chairman of the Speakers Bureau of the Coblenz Society; past Assistant Chairman and current Director of the New Jersey Section of the American Astronautical Society; State Chairman of the New Jersey Council for Research and Development; and member of the Air Force Association, American Ordnance Association, American Association for the Advancement of Science and Seminar Leader for the American Management Association.

He was awarded his B.S. in Physics from New York University and has done graduate work at the New York University, Stanford University Graduate School of Business and Fairleigh Dickinson University.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

315 Safeguard and other Antibacterial Soaps.

Soaps containing antibacterial agents are offered for the prevention of body and perspiration odors and for the prevention of some bacterial skin infections. The antibacterial drugs most often added to soaps and detergents are hexachlorophene and halogenated carbanilides and salicylanilides. Hexachlorophene and a chlorinated carbanilide are the antiseptics in Dial soap (Armour); a brominated salicylanilide is the antiseptic agent in Lifebuoy (Lever Bros.). Safeguard (Procter & Gamble), the newest of such soaps, contains two carbanilides and two salicylanilides. An antibacterial soap may possibly be useful in helping prevent cutaneous infections in machinists, packing-house workers, persons working with petroleum oils, and greases, and others who are especially subject to such infections. There is no soap, antibacterial or otherwise, known to be effective in the treatment of bacterial skin infections. Moreover, there is no scientific support on biological or medical grounds for the routine removal of harmless microbial flora from normal skin. One reason antibacterial soaps should not routinely be used where there is no special need for them is that any antiseptic may act as a skin sensitizer. Hexachlorophene has been known to cause allergic contact dermatitis, although no reports of photosensitivity reactions have thus far appeared. Two well-documented cases of photosensitivity reactions to the salicylanilide present in Lifebuoy soap were recently reported, with cross-photosensitivity to another salicylanilide (S. Epstein and T. Enta, JAMA, 194:1016, Nov. 29, 1965). Since Safeguard contains salicylanilides, physicians should be alert, especially in the summer, to its potential for causing photosensitivity reactions. A few cases of such reactions to Safeguard have already been observed.

-- The Medical Letter 8, 10-11 (Feb. 11, 1966)

316 Bee Stings and Antibodies.

Sera drawn from 39 beekeepers, stung an estimated 50-2,000 times per week, contained a significant titer of hemagglutinating antibodies, investigators from the State University of New York at Buffalo report. These substances, reactive to either bee venom or sacless body antigens, were not present in eight of nine beekeepers stung less than ten times per week. Hemagglutinins probably reflect the well-known immunity to stings found in such persons, Robert E. Reisman, M. D., and associates reported to the American Academy of Allergy.

-- J. Am. Med. Assn. 195, 45 (Mar. 7, 1966)

317 Medical Records.

Keeping good medical records can be a problem for small industrial plants, whose medical department frequently consists of at most one industrial nurse, who may be without physician guidance or supervision. Yet there is a great potential contribution to the health and safety of American workers in the keeping of good medical records, the more so since the majority of workers are employed by small companies. Accordingly, the AMA's Council on Occupational Health has prepared a "Guide to the Development of an Industrial Medical Records System." Single copies are available without charge from the Department of Occupational Health, American Medical Association, 535 North Dearborn Street, Chicago, Illinois 60610.

-- J. Am. Med. Assn. 195, 10 (Mar. 7, 1966)

318 Travel for Toxicologists.

The U.S. Public Health Service, Division of Accident Prevention, will furnish travel funds for about three dozen forensic toxicologists to go to Copenhagen, Denmark, to attend the Fourth International Meeting in Forensic Medicine. The meeting will be held August 15 to 18. Funds will cover transportation via a charter flight, five days per-diem support, and half of the plane fare from the home of the recipient to point of take-off of the nearest charter flight. Write M. F. Mason, Parkland Memorial Hospital, Dallas, Texas 75235 for further information.

-- Chem. Eng. News 44, 74 (Feb. 21, 1966)

319 Public Health Service.

An overhaul of the Public Health Service (PHS) is among the measures proposed by President Johnson in a recent message on health and education. "At present, the personnel system of the PHS is inadequate to recruit and retain the talent needed for its rapidly changing and expanding role," said the President. Thus, his reorganization is designed to recruit and hold good research and administrative talent in such agencies as the National Institutes of Health. In education, the President proposes to "guarantee the opportunity for education beyond high school on ability to learn rather than ability to pay." Mr. Johnson urges for fiscal 1967: \$458 million for college construction grants; \$200 million in loans for graduate and undergraduate students; and \$30 million in student loans. -- Chem. Eng. News 44, 29 (Mar. 7, 1966)

320 New Lead Toxicity Studies.

A Public Health Service (PHS) team will go to Wenatchee, Washington, for another look at the group of orchard workers studied for lead poisoning 25 years ago. The 1,200 workers were heavily exposed to lead arsenate during the 1930's but PHS found no apparent evidence of toxicity. Now PHS plans to determine whether subsequent lead-related ailments have cropped up in both surviving and deceased Wenatcheans. In another study, already under way, PHS is adding further data to its 1964 three-city study of lead pollution from auto exhaust. It seeks to examine the health of those with higher than normal blood levels of lead in Cincinnati, Philadelphia, and Los Angeles. -- Chem. Eng. News 44, 21 (Feb. 28, 1966)

COMING EVENTS

- | | | |
|-----|---------------|---|
| 321 | May 1- 3 | American Society for Clinical Investigation, Atlantic City, N. J. |
| | May 1- 5 | International College of Surgeons (U. S. Section), Houston, Texas |
| | May 1- 5 | American Society for Microbiology, 66th Annual Meeting, Los Angeles, Calif. |
| | May 3- 4 | Association of American Physicians, Atlantic City, N. J. |
| | May 3- 5 | 21st Purdue Industrial Waste Conference, Lafayette, Ind. |
| | May 7- 8 | Academy of Psychoanalysis, Atlantic City, N. J. |
| | May 8-13 | Society of Photographic Scientists and Engineers, Annual Conference, San Francisco, Calif. |
| | May 9-11 | Association of American Feed Control Officials, Chicago, Ill. |
| | May 10 | Society of Cosmetic Chemists, New York, N. Y. |
| | May 10-14 | American Association on Mental Deficiency, Chicago, Ill. |
| | May 11 | American Cancer Society (Scientific Session), San Francisco, Calif. |
| | May 11-13 | American Institute of Chemists, Annual Meeting, New Orleans, La. |
| | May 12 | International Congress on Catalysis, Spring Symposium, Princeton, N. J. |
| | May 12-13 | 3rd Annual National Colloquium on Information Retrieval, University of Pennsylvania, Philadelphia, Pa. |
| | May 15-18 | American Institute of Chemical Engineers, 59th National Meeting, Columbus, Ohio |
| | May 16-20 | American Industrial Hygiene Association, Annual Conference, Pittsburgh, Pa. |
| | May 18-20 | Synthetic Organic Chemical Manufacturers Association, General Meeting and Spring Outing, Hershey, Pa. |
| | May 22-25 | American Thoracic Society, San Francisco, Calif. |
| | May 22-26 | American Orthopaedic Association, Colorado Springs, Colo. |
| | May 22-26 | Institute of Food Technologists, 26th Annual Meeting and Industrial and Technical Exhibit, Portland, Ore. |
| | May 26-28 | American Association for Cancer Research, 5th Annual Meeting, Denver, Colo. |
| | May 26-28 | American Gastroenterological Association, Chicago, Ill. |
| | May 29-June 2 | Special Libraries Association, Minneapolis, Minn. |
| | May 30-June 1 | American Ophthalmological Society, White Sulphur Springs, West Va. |
| | May 30-June 2 | American Urological Association, Chicago, Ill. |

LEGAL DEVELOPMENTS

322 Clean Water Bill.

Tough new enforcement measures highlight the President's clean water bill (S. 2987). Under it, the Government would virtually assume "cease-and-desist" powers over industries believed to be imminently endangering public health and welfare or marring natural beauty and recreational values. It would authorize the Justice Department to call a halt to effluent flow into streams. Other stiff provisions would enable inspectors to enter offending plants

(with penalties for entry refusal), require metering of effluent discharge as the basis for local clean water taxation, require registration of all potential polluters, empower the Government to call abatement conferences on intrastate pollution without the consent of governors, and eliminate six-month intervals between federal abatement actions.

-- Chem. Eng. News 44, 29 (Mar. 7, 1966)

BOOKS, PAMPHLETS AND NOTICES

- 323 Biological Effects of Asbestos. New York Academy of Sciences. 2 East Sixty-third Street. New York, N. Y. 10021. 766 pp. (December 31, 1965). AVAILABLE FROM: New York Academy of Sciences. PRICE: Not given.

This series of papers is the result of a conference held by the New York Academy of Sciences on the same subject (October 19-21, 1964), covering the following general areas: Asbestos Materials in Modern Technology; Lung Tissue and Mineral Matter: Problems of Pathogenesis; Human Exposure to Asbestos: Industrial Populations, Community Studies, Dust Controls and Standards; Clinical Studies of Pulmonary Asbestosis; Asbestos and Neoplasia: Experimental, Epidemiology, and Diffuse Mesothelial Tumors; and Problems and Perspectives. Appendix 1 presents the findings of the working group on Asbestos and Cancer, under the general headings of Epidemiology, Pathology, Physics and Chemistry. It is recommended that the relationship of different types of asbestos and tumorigenesis be studied in exposed populations on an international basis; that the importance of dosage (concentration and duration of exposure) be evaluated; and that the question of progression following removal from exposure be studied with full consideration of cancer mortality as well as morbidity from asbestosis in populations no longer exposed to the dust. Conversely, all cases of diffuse mesothelial tumors of pleura and peritoneum should be investigated by standardized pathological techniques for presence of asbestos to establish any association with asbestos or other factors. Criteria for pathological diagnosis are discussed. Hyaluronidase is mentioned as being often present in mesothelial tumors and where present is a valuable diagnostic aid, but as it is not invariably found in histochemical and chemical tests in the presence of mesothelioma, it should not be the sole diagnostic criterion. Other diagnostic pitfalls, such as encountered in use of exfoliative cytology and tissue culture are also mentioned. Need for more precisely planned experimental studies is emphasized and recommendation is made for creation of pathology reference panels to help establish standards for pathological classification. Appendix 2 reviews in detail the status of compensation for dust diseases of the lungs under State Workmen's Compensation laws. The cost of dust diseases is heavy when compared to the cost of all occupational disease, but not in comparison to the total for all accidental injuries and occupational diseases combined. Correction of certain inequities in payment of medical benefits and compensation of workers with occupational diseases is recommended. Appendix 3 presents in tabular form statistics on asbestos production, updating data in the U. S. Bureau of Mines Information Circular of 1959 to 1962 and data on other countries up to 1963 is present.

- 324 Official FDA Tolerances. NAC News and Pesticide Review 24:3. 23 pp. (February, 1966). AVAILABLE FROM: National Agricultural Chemicals Association, 1155 15th Street, N. W. Washington, D. C. 20005. PRICE: 25 cents per copy (minimal charge of \$1.00).

This issue of NAC News and Pesticide Review is the 12th annual revision of the official FDA tolerance for pesticides, listed by crop categories. Incorporated are all of the changes, additions, or deletions that have been officially announced from the time the Miller Pesticide Residue Amendment was enacted into law in 1954, up to and including December 31, 1965. Also included in this issue are lists of (1) tolerances established under the Food Additives Amendment, (2) common, chemical and/or trade names of pesticides and (3) inert ingredients which are exempt from the requirements of a tolerance. This issue provides a ready (and fairly up to date) reference for those with uses for such information without the necessity of continually referring to the Federal Register from which the list was compiled. Since the Federal Register is, however, the official means of communication for such information, the issue cannot serve in lieu of the Federal Register in cases of error.

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- 325 Proceedings of the Conference on Atmospheric Contamination in Confined Spaces. Dayton, Ohio, March 30, 31 and April 1965. Aerospace Medical Research Laboratories. 317 pp. (February, 1966). AVAILABLE FROM: Chief, Input Section, Clearinghouse for Federal Scientific & Technical Information (CFSTI), Sills Bldg., 5285 Port Royal Road, Springfield, Virginia. 22151. PRICE: Not Given.

This report is a complete compilation of the papers presented and the proceedings of the Conference on Atmospheric Contamination in Confined Spaces, sponsored by the Aerospace Medical Research Laboratories and held in Dayton, Ohio on 30, 31 March and 1 April 1965. Major technical areas discussed included continuous inhalation exposure techniques, statistical methods for evaluation and interpretation of exposure data, minimum criteria for continuous exposure studies and toxicological qualification of space cabin materials.

- 326 Bioastronautics and the Exploration of Space. Proc. 3rd International Symposium, San Antonio, Texas. Nov. 16-18, 1964. T. C. Bedwell, Jr., and H. Strughold, editors. Published December, 1965. 642 pp. AVAILABLE FROM: Chief, Input Section, Clearinghouse for Federal Scientific & Technical Information (CFSTI), Sills Bldg., 5285 Port Royal Road, Springfield, Va. 22151. PRICE: Not Given.

In November 1964, the Aerospace Medical Division of the United States Air Force Systems Command, Brooks Air Force Base, Texas, held the third "International Symposium on Bioastronautics and the Exploration of Space," assisted by the Southwest Research Institute, San Antonio, Texas. (Industrial Hygiene Digest, Foundation Facts, 28:12, Dec. 1964). This symposium is focused on manned space flight, and therefore is primarily concerned with the life and performance capability of the astronauts; nevertheless, the program of such a conference cannot be confined to the life sciences alone; rather, the "space environment-man-machine" complex requires the inclusion of technology, astrophysics, and astronomy, earth-based and space-bound. In addition to this interdisciplinary approach, international cooperation is very desirable. In the present developmental stage of astronautics (1965) such a combined effort of different disciplines and various countries has to be concentrated not only on the Earth-Moon area, but also should extend to the neighboring planets: Mars and Venus; and it must include theory, laboratory experimentation, experiences in actual space flight, and planning for the future. The table of contents includes: Meteoroids and Dust, Solar Flares and Prediction, Ranger Exploration of the Moon, The Atmospheric Environments of Mars and Venus, The Use of Extraterrestrial Resources to Advanced Interplanetary Flight, Primordial Organic Chemistry and the Origin of Life, The Hostile Kinetic Environment on Sea, On Land, In the Air and In Space, Orbital Flight Experiences, Space Ophthalmological Problems, Observation Under Spaceflight Conditions: Some Results and Problems, Photographic Exploration of the Earth from Orbital Distances, A Computerized System for Space Technology Evaluation and Program Planning, Effect of Inert Gases in Cabin Atmospheres, Considerations for Research on Cabin Atmospheres, The Labyrinth and Space Flight, Circulatory Aspects of Manned Space Flight, Medical Investigations on Spaceships "Vostok" and "Voskhod", Biodynamic Response of the Human Body, Men and Machines: Perspectives from the History of Flight, Space Radiobiology Training and Operations—A Concept, Biologic Investigations on Spaceship "Vostok" and "Voskhod", A New Approach for Studying the Effects of Cosmic Radiation on Human Skin, Cytokinetic Effects of Proton Irradiation, Significance of Circadian Rhythms for Space Flight, Animals as Precursors to Man in Space, Applications of Knowledge Resulting From Bioastronautic Aspects of the Space Effort, The X-15 Program, Project Gemini Medical Aspects, Manned Orbiting Laboratory: Operational Aspects, Medical Aspects, The LIL Project of the International Academy of Astronautics, and Summary and Final Remarks are made by Col. Frank M. Townsend.

- 327 Closing the Gaps in the Availability and Accessibility of Health Services. The 1965 Health Conference of the New York Academy of Medicine. Published in Bull. N. Y. Acad. Med. 41, No. 12, 1197-1401 (Dec. 1965). AVAILABLE FROM: The New York Academy of Medicine, 2 East 103 Street, New York, N. Y. 10029. PRICE: \$2.00.

The 1965 Health Conference of The New York Academy of Medicine was planned with the idea of providing a national forum for critical and responsible discussion of some basic health-care issues confronting the nation. The process of planning for tomorrow's health care must be based upon careful analysis not only of the form and content of the services themselves, but also of the underlying social, economic, and medical trends that determine the need and engender the demand for health care. Talks by outstanding authorities covered the following important areas: Today's Gaps in Health Care and Barriers to Service, Voluntary Financing Mechanisms, The Changing Roles of Government in Health Affairs:

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Implications for the Future, New Dimensions for Meeting Health Needs and Conference Summary. In his concluding remarks, Dr. David D. Rutstein, Professor and Chairman, stated: Almost every discussion during this conference revealed a distressing lack of professional leadership. The most important conclusion of this conference is that the professionals must provide the leadership to make sure that the decisions in closing the gaps of medical care will be based on the firm foundation of science and knowledge. Of course, the pressures of a complex society and of the public will have their effect on the shape of medical-care legislation, but it is for us to accept the professional responsibility for defining the alternatives and their significance. Such leadership will demand medical statesmanship of high order, directed clearly to the single goal of decreasing disease, disability, and untimely death in the United States.

INDUSTRIAL MEDICAL PRACTICE

- 328 Periodic Health Examinations Using an Automated Multitest Laboratory. M. F. Collen. J. Am. Med. Assn. 195, 830-833 (March 7, 1966).

If periodic health examinations are to be provided to large numbers of people at a reasonable cost, the use of an automated multitest laboratory has several advantages: (1) improved efficiency of service to patients through close integration of many test procedures; (2) improved efficiency for physicians by providing, with the first office visit, a large amount of information about their patients; (3) improved quality control with automated equipment; (4) improved economy by providing at least four times as many tests for the same cost and at a greater speed; (5) earlier possible detection of a wider range and greater number of unsuspected diseases among apparently healthy people; the concept of health evaluation in addition to disease detection becomes possible by providing the physician with a more comprehensive profile of the individual patient's physiological state; and (6) computer data processing and computational capabilities permit multivariable epidemiologic research heretofore not possible.

- 329 Trainability of Old Men. A. M. Benestad. Acta Med. Scand. 178, 321-327 (Sept. 1965).

Thirteen old men, aged 70-81 years, volunteered in a training program involving treadmill exercise for five to six weeks. The training resulted in a decrease of the heart rate, oxygen uptake relationship. This indicates an improved work efficiency. There was also noted a significant rise in blood volume and total amount of hemoglobin, and a tendency to enlargement of cardiac volume. These findings are assumed to be beneficial reactions. They are, together with the reduced heart rate, interpreted as the cause of a greater oxygen pulse and a possible greater stroke volume. Thus the final result is an improved pumping capacity of the heart. The training did not affect the aerobic work capacity. The influence on the mental well-being, however, was a marked response to the training. -- Aerospace Med. Absts.

- 330 Work Performance Ratings of Former Psychiatric Patients. N. J. Cole, D. R. Shupe, and R. B. Allison. J. Occ. Med. 8, 1-4 (Jan. 1966).

The psychoneurotic group under study in this investigation proved to be indistinguishable from their matched controls in rated work ability; essentially the same respective numbers earned subaverage, average, and superior ratings within a given vocational category. While the schizophrenic subgroup, evaluated on the same basis, showed a greater tendency to earn subaverage work ratings than did their controls, two-thirds of these employees still earned average of superior work ratings. These findings cast doubt on the gloomy outlook held by some people, both mental health professionals and employers, concerning the general employability of any former psychiatric patient. -- Cond. from authors' conclusions.

- 331 New Data Concerning the Influence of Ethyl Alcohol on Human Visual Thresholds. G. Verriest and D. LaPlasse. Exptl. Eye Res. 4, 95-101 (June, 1965).

Sixteen abstinent and 24 moderately drinking male subjects have been submitted twice to an elaborate and standardized test run, involving measurements of threshold luminance during the course of dark adaptation, during glare in the dark adaptation, during glare in the dark adapted state, and after glare in the dark adapted state, as well as measurements of threshold luminance for ten visual acuities belonging to the scotopic and mesopic ranges, and measurements of the pupillary diameter under photopic conditions. In every subject of each group one test run was done under control conditions, and the other after an alcohol ingestion giving rise to a blood alcohol concentration of about 0.065%. The great majority of the paired

mean results obtained in this way do not differ significantly, so that our experience contradicts other authors' statements claiming on obvious visual disturbance from blood alcohol concentrations as low as 0.045%. However, the few significant differences we obtained suggest that the resistance to glare is slightly diminished in a very late stage, and that abstinent subjects might be more prone to sustain their performance by an increase of vigilance.

-- Aerospace Med. Absts.

- 332 The Combined Effects of Ethanol and Amphetamine Sulfate on Performance of Human Subjects. Lolita Wilson, et al. Can. Med. Assn. J. 94, 478-484 (March 5, 1966).

The combined effects of ethanol and amphetamine (benzedrine) on the performance of selected tests were evaluated. No differences were shown between the effects of ethanol-amphetamine and ethanol-lactose on the performance of balance, skipping, Minnesota manipulation, Purdue peg board, Maudsley Personality Inventory, pursuit rotor or digit span tests; but ethanol plus amphetamine produced less impairment of performance of coding, mental addition, and trail making tests than did ethanol plus a placebo. Ethanol increased the errors in performance of the Wonderlic Personnel Test, but the simultaneous administration of amphetamine did not reduce this effect. Conversely, amphetamine reduced the test-retest reliability of the Wonderlic Personnel Test, but alcohol appeared to counteract this effect of amphetamine. These experiments indicate that, when ethanol and amphetamine are used together, each drug modifies some of the effects produced by the other in a manner that cannot be predicted on the assumption that a depressant versus stimulant competition is operative. -- Authors' abst.

- 333 The Working Capacity of Subjects From An Exhibition Crowd. R. J. Shephard and Anne M. Pelzer. Can. Med. Assn. J. 94, 171-174 (Jan. 22, 1966).

A standard bicycle ergometer test was performed on 60 male volunteers at the Canadian National Exhibition. Most were drawn from Toronto and its environs, and "white-collar" workers predominated. Ages ranged from 19 to 61 years. The Astrand nomogram was used to predict the oxygen uptake of the 45 subjects with a normal resting pulse rate. The older subjects had a lower oxygen uptake than Scandinavian office workers, particularly relative to body weight. This conclusion is subject to the limitations of a nonrandom sample, but seems independent of the professional-class bias. Almost all subjects exceeded the "ideal" body weight. Working capacity was 20% greater in subjects taking regular exercise than in those who were inactive. -- Authors' abst.

- 334 The Electrolyte Composition of Normal Adult Sweat. C. A. Coltman, Jr., and R. J. Atwell. Am. Rev. Resp. Dis. 93, 62-69 (Jan. 1966).

The difficulties and criticisms of the use of the sweat test in the adult are reviewed. Much of the problem appears to be related to a lack of standardization of technique. This report presents data for the standardization of a simple technique for sweat collection, using cellulose sponge and pilocarpine iontophoresis. A large series of normal adults showed a range of values somewhat smaller than that suggested by other authors. There are 58 references.

-- Authors' summary

- 335 Objective Determination of Bone Calcium Levels. J. M. Dick. Aerospace Med. 37, 136-139 (Feb. 1966).

A study was conducted to determine the amount of bone calcium loss during two weeks of simulated weightlessness. Urine calcium levels were determined at the beginning and the end of the test. X-ray films utilizing the wedge technique were also taken of the os calcis at these same times. A net loss of approximately 2gms. of urinary calcium was noted during this period. The x-ray wedge technique did note a change in the os calcis, but it is questionable if such a slight change is statistically significant. It was concluded from this study that the calcium loss that would be incurred by two weeks of weightlessness would be minimal. If one extrapolates the above data, it is estimated that six to 12 months exposure can be safely tolerated without any detrimental or permanently damaging effects. -- Author's abst.

- 336 The Echocardiogram. An Ultrasound Technic for the Detection of Pericardial Effusion. A. J. Moss and F. Bruhn. New Engl. J. Med. 274, 380-384 (Feb. 17, 1966).

By means of an ultrasound technic, echocardiograms were obtained on 35 control subjects and eight patients with clinically suspected pericardial effusion. In the control group a single echo recording from the posterior ventricular wall was successfully obtained in 33 subjects. A double posterior-surface echo indicative of pericardial effusion was observed

in all eight patients with suspected pericardial fluid. Significant pericardial effusion was confirmed by special roentgenographic studies in seven of the eight patients. The echocardiogram appears to be a simple, innocuous and relatively accurate clinical technic for the detection of pericardial effusion. There are ten references. -- Authors' summary

- 337 Electronystagmography: Its Clinical Application. J. Farkashidy.
Can. Med. Assn. J. 94, 368-372 (Feb. 19, 1966).

Nystagmus is a phenomenon of considerable physiological significance and one of the most important expressions of vestibular disease. Electronystagmography (ENG) makes possible the exact recording of the eyeball movements and the quantitative assessment of the various parameters of nystagmus, spontaneous or induced, with obvious advantages in the differential diagnosis of neuro-otological disorders. The principles and methods of this procedure are demonstrated and analysis of ENG tracings in illustrative clinical cases is shown.

-- Author's abstr.

- 338 Racial Differences in Incidence of Chronic Bronchitis: Preliminary Report. D. Massaro, A. Cusick and S. Katz. Am. Rev. Resp. Dis. 92, 94 (1965).

The incidence of chronic bronchitis in a group of hospitalized male veterans was 34%. Smokers of all ages had a significantly greater incidence of this disease than non-smokers. Increasing age was not nearly as closely associated with an increased incidence of chronic bronchitis as was increased cigarette smoking. Of interest was the greater prevalence of chronic bronchitis in whites than in Negroes. This difference was true for all age groups studied and also for subjects closely matched in smoking habits. Negro non-smokers had significantly less bronchitis than white non-smokers, whereas Negro smokers did not have a higher incidence of the disease. These data suggest, in the population studied, that host factors, race-dependent, are operative in the etiology of this disease. -- Can. Med. Assn. J. Absts.

- 339 A Double-Blind Study of the Effectiveness and Specificity of Injection Therapy in Ragweed Hay Fever. F. C. Lowell and W. Franklin. New Engl. J. Med. 273, 675 (1965).

From a clinic population of about 500 patients careful selection was made of clear-cut cases of ragweed hay fever. All this group of 24 kept a careful record of symptoms from March until the end of October 1963. Extracts were prepared identical in appearance except that half contained no ragweed. All patients had previously been treated in former years, all believed they were receiving ragweed extract, and personnel giving the injections likewise had no knowledge as to whether or not individual patients were receiving desensitization therapy. From March through July there were no significant differences in symptoms between the two groups. With the onset of the ragweed season there was a very distinct and significant improvement in the group receiving ragweed extract as compared with the controls indicating that the effect of injection therapy with ragweed pollen is a specific one.

-- Can. Med. Assn. J. Absts.

- 340 Pulmonary Function Testing in Geriatric Surgical Patients. E. Rothfeld, et al.
Diseases of Chest 47, 20-25 (Jan. 1965).

The incidence of serious postoperative complications is higher in geriatric patients than it is in the younger ones. It has been shown that these problems are usually related to pre-existing disorders, rather than to the surgery itself. Pulmonary complications are among the most common postoperative difficulties in this age group. This study dealt with a series of patients over 65 years of age. It demonstrated the superiority of simple pulmonary function testing (using equipment available in most community hospitals, and requiring less than 20 minutes per patient) to clinical and roentgen evaluations in predicting postoperative pulmonary complications.

-- Am. Rev. Resp. Dis. Absts.

- 341 Nutrition and Palatability with Special References to Obesity, Myocardial Infarction, and Other Diseases of Civilisation. John Yudkin. Lancet 1, 1336-1338 (June 22, 1963).

With the extensive and rapidly increasing knowledge of food technology, it is now possible for the food manufacturer to separate palatability from nutritional value. As a result, man is increasingly exposed to foods of high palatability but of low or undesirable nutrition value. There is evidence that this distortion of the diet plays a part in the increased incidence of obesity and dental caries, and also perhaps in the increased incidence of myocardial infarction.

peptic ulcer, diabetes, and other diseases. The relative incidence of myocardial infarction in different countries is more closely related to the consumption of sugar than to the consumption of fat, or animal fat (Yudkin 1957). An increase in sugar consumption appears to be the chief dietary change in Yemenite Jews after they have settled in Israel, when they are increasingly likely to suffer not only from myocardial infarction but also from diabetes mellitus (Cohen, et al., (1961)).

REFERENCES

- Cohen, A. M., Bavly, S., Poznanski, R. *Lancet* 2:1399 (1961).
Yudkin, J. *Lancet* 1:645 (1956).

- 342 Perspectives in Nutrition. Effect of Changes in Retail Food Supplies on Heart Disease.
Mohamed A. Antar, et al. *Am. J. Clin. Nutr.* 14, 169-178 (Mar. 1964).

Heart disease is now the main cause of death in the United States. In 1960, 659,410 persons died of all forms of heart disease, accounting for 38.7% of all deaths. Arteriosclerotic heart disease, including the coronary type, claimed the greatest number of lives comprising about 75% of all deaths from cardiac disease. The results of animal and human experimentation have suggested that changes in the diet may be partially responsible for the increased incidence of arteriosclerotic heart disease. Keys and his associates have proposed that a large intake of dietary fat may be a cause of atherosclerosis. On the other hand, Kinsell, et al., and Jolliffe have demonstrated that high intakes of polyunsaturated fatty acids will lower the concentration of serum cholesterol. Therefore, it is generally concluded that the high rate of consumption of saturated fat in the United States, especially since the introduction of hydrogenated vegetable oils, is responsible, at least in part, for the increase of coronary heart disease. Scattered reports, on the other hand, suggest that carbohydrates may have a possible role in the development of this disease. Changes in the American diet over the last seventy years have been analyzed with particular emphasis on the sources of fats and carbohydrates in the light of the increasing incidence of coronary heart disease. The main changes have been (1) a considerable decrease in the consumption of total carbohydrates with a greater progressive decline in the intake of complex carbohydrates from flours, cereals, and potatoes, and a concurrent dramatic increase of simple sugars, especially in the first part of this century; and (2) a slight increase in total fat consumption contributed mainly by the increase of unsaturated fatty acids. The increase in polyunsaturated fatty acids has surpassed the increase in the saturated ones and consequently the ratio has increased about 37% since 1909. Obviously these data do not fit the hypothesis that low ratios of polyunsaturated to saturated fatty acids in the food supply contribute to the increased incidence of coronary heart disease in the United States. The changes which have occurred in the type of dietary carbohydrates, however, may be a factor.

- 343 Rheumatism in Foundry Workers. J. S. Lawrence, M. K. Molyneux, and I. Dingwall-Fordyce.
Brit. J. Ind. Med. 23, 42-52 (Jan. 1966).

In order to investigate loss of work from rheumatic diseases in the metal trades, employees in ten foundries were questioned. Of 325 foundry workers aged 35 to 74 years, who had worked at least ten years on the foundry floor, 299 were examined clinically and radiologically for evidence of rheumatic disease. Radiographs of the hands, knees, and dorsal and lumbar spine were taken as a routine, and the pelvis was included in those aged 45 and over. A comparison was made with a control series of radiographs, from men, matched for age, in a random population sample examined earlier in the town of Leigh. Rheumatic complaints in general were less frequent in the foundry workers than in the random sample, and the foundry workers less often gave a history of prolonged incapacity (three months or more) due to this cause. Radiological evidence of disc degeneration in the lumbar spine, however, was more frequent in the foundry workers than in the controls and was of greater severity. Further, the foundry workers more commonly had symptoms and signs of lumbar disc prolapse. On the other hand, the controls had more osteo-arthritis of the hips and knees and lost more work from pain at these sites. This was associated with a difference of body habitus, obesity being less frequent in the foundry workers. Foundry workers directly exposed to hot conditions did not have less back or leg pain than those not so exposed despite a greater prevalence of disc degeneration. Measurements of air temperature, humidity, and radiant heat were made in a foundry while pouring was in progress. The air temperature rose from 18°C. to 26°C. (64.4°F. to 78.8°F.) and the humidity ranged from 70% to 54%. The mean intensity of radiation incident on the clothed surface of a foundry worker was 0.12 watt/sq. cm. This was compared with conditions during therapeutic exposure to radiant heat. The radiant heat under conditions of "heat therapy" varied between 0.16 and 0.37 watt/sq. cm. The possible influence of radiant heat on the prevalence of rheumatic complaints is discussed.

- 344 Is There a Way of Preventing Arteriosclerosis? G. Hartmann.
Schweiz. med. Wochschr. 95, 555 (1965). German.

The author outlines a procedure for the evaluation of patients who are high-risk candidates for developing arteriosclerosis, and lays down a plan for the correction of these risk factors. The risk factors which have to be considered are hypertension, hyperlipemia, overweight, smoking, diabetes mellitus, inadequate physical activity, mental stress and a familial history of the disease. Correction of most of these risk factors will rest with the family physician. Establishing the presence of hyperlipidemia is conveniently done by determination of the beta lipoprotein levels. -- Can. Med. Assn. J. Absts.

- 345 The Physician's Incomplete Guide to Atherosclerosis. I. H. Page, J. G. Greene, and A. L. Robertson. Ann. Internal Med. 64, 189-203 (Jan. 1966).

The authors have attempted to summarize for physicians some current thinking about the causes and proposed treatments for atherosclerosis. After only some 30 years of progressively increasing interest, solutions to these problems cannot be expected. But enough evidence has now accumulated to delineate clearly many of the areas requiring intensive study. It appears profitable to think of atherosclerosis as a "disease of regulation" in a person hereditarily conditioned. Its prevention must begin at birth. In a disease so widespread, prophylaxis must take precedence over treatment. The time has come for more extensive and penetrating studies of the cellular elements of the arterial wall, coagulation mechanisms, and experimental control of environmental factors. The heart and blood vessels should be studied in their entirety and not be artificially partitioned according to man-made disciplines. There are 27 references. -- Authors' summary

- 346 Drug-Induced Liver Disease: A Penalty for Progress. H. Popper, et al.
Arch. Internal Med. 115, 128-136 (Feb. 1965).

A revised classification of drug-induced hepatic injury is proposed after study of 155 cases. The groups proposed are: (1) poison injury exemplified by carbon tetrachloride; (2) uncomplicated cholestasis, exemplified by anabolic steroids; (3) nonspecific drug hepatitis with or without cholestasis, exemplified by chlorpromazine and PAS; (4) viral hepatitis-like reaction, exemplified by iproniazid and pyrazinamide, (5) drug-induced steatosis, exemplified by tetracycline, and (6) reactive hepatitis, associated with drug-induced diseases of other organs. Drugs which produce cholestatic jaundice in some persons cause a subicteric injury to the bile secretory apparatus of the liver cells in all persons. It is proposed that a superimposed hypersensitivity reaction to the same drug leading to nonspecific drug hepatitis results in the development of the commonly seen cholestatic drug hepatitis with jaundice. Both nonspecific drug hepatitis and the hepatic reaction resembling viral hepatitis, possibly represent immunologic injuries. The difference between these two reactions may be only quantitative, and they should be considered as variants of the same group. -- Am. Rev. Resp. Dis. Absts.

- 347 The Association of Alcohol and Tobacco With Cancer of the Mouth and Pharynx.
A. Z. Keller and M. Terris. Am. J. Public Health 55, 1578-1585 (Oct. 1965).

A study of 598 cases of cancer of the mouth and pharynx, and an equal number of age-matched controls, admitted to the three Veterans Administration hospitals in New York City from 1953 to 1963, demonstrates that: (1) Cancer of the mouth and pharynx is associated with cirrhosis of the liver. (2) This cancer is associated independently with heavy alcohol consumption and heavy smoking. (3) A marked deficit in its occurrence is found among Jews. These findings are consistent with the conclusion that both heavy alcohol consumption and heavy smoking are independently and significantly related to cancer of the mouth and pharynx. There are 31 references. -- Authors' summary

- 348 Smoking Habits, and Disease in Minnesota. E. C. Hammond, L. Berglund, and Ruth Kaslow.
Minn. Med. 48, 44-50 (1965).

The smoking habits in relation to the physical complaints of 31,733 Minnesota men aged 40 to 89 are reported. The mortality and hospitalization experience of this group during the first 35.5 months after they were enrolled as subjects in a prospective epidemiological study is presented. The findings are in good agreement with those previously reported in other epidemiological studies. Cigarette smokers report physical complaints (particularly cough, shortness of breath, and loss of appetite) more frequently than nonsmokers, and have far higher death rates than nonsmokers. Among cigarette smokers, the frequency of physical

complaints, the frequency of hospitalization, and the death rate increase with amount of cigarette smoking and degree of inhalation of the smoke and are higher among cigarette smokers who started to smoke early in life than among those who started to smoke late in life. Death rates from lung cancer, cancer of certain other sites, emphysema, and coronary artery disease were found to be higher in cigarette smokers than in nonsmokers. The data presented lead to the conclusion that cigarette smoking constitutes a major health hazard in Minnesota as well as in other parts of the world. -- Public Health Eng. Absts.

- 349 Pulmonary Parenchymal Defects in Dogs Following Prolonged Cigarette Smoke Exposure. J. A. Hernandez, A. E. Anderson, Jr., W. L. Holmes, and A. G. Foraker. Am. Rev. Resp. Dis. 93, 78-83 (Jan. 1966).

Greyhounds were exposed daily to high concentrations of cigarette smoke in inhalation chambers. Degree of parenchymal disruption and expansion in paper-mounted macrosections was then statistically compared with controls. Individual defects were examined microscopically. Lungs from control animals demonstrated significant amounts of naturally occurring disease; lungs from the "smokers" showed an even greater degree of parenchymal damage, especially in those subjected to smoke for longer periods. Microscopically, these lesions were intimately related to an inflammatory component and closely resembled lesions of human emphysema. The results of this investigation should be taken with certain reservations in relation to the problem of smoking and emphysema because of the differences in the patterns of smoke exposure that were employed with the dogs and those associated with the habit in man. Twelve references are given. -- Authors' summary

- 350 Experimental Pulmonary Aspergillosis. H. Sidransky, E. Verney, and H. Beede. Arch. Pathol. 79, 299 (March, 1965).

Mice were infected with Aspergillus Flavus by inhalation of aerosols containing viable spores. Whole body x-irradiation, cytotoxic drugs, dietary disturbances, and transplanted tumors were employed to ascertain their effects on susceptibility of mice to A. flavus infections. Pulmonary aspergillosis was more frequently fatal in the experimental animals than in the controls. Mice with leukemia (L 1210) who received x-irradiation, cortisone, or cyclophosphamide developed more frequent and severe pulmonary aspergillosis than animals with leukemia alone. Nonleukemic animals getting the same treatments had a lower incidence of fatal pulmonary aspergillosis. -- Am. Rev. Resp. Dis. Absts.

- 351 Leptospirosis in Wisconsin. Virginia Allen, Suzanne Sueltmann, and A. S. Evans. Am. J. Public Health 55, 1936-1944 (Dec. 1965).

The experience of the Wisconsin State Laboratory with leptospirosis has been reviewed: 4,134 specimens were examined over a period of ten years. The greatest number of agglutination-lysis titers at 1:100 or higher occurred in 1960. High titers of 1:1,000 or greater were found only in the suspected group and the packing house workers. The distribution by year, occupational group, and serotype is presented. There are 22 references. -- Authors' summary

- 352 Flies and Disease. B. Greenberg. Sci. American 213, 92-99 (July, 1965).

The author describes his research work on the common housefly (Musca domestica), the stable fly (Stomoxys calcitrans), and some species of blow flies. He conclusively showed that Salmonella species were harbored by flies and that the migratory capability of flies was great. Determination of whether flies could deliver enough bacteria to set up an infection was attempted, but results were inconclusive. Microorganisms were shown to be essential to the nutrition of the larva, but when the adult stage was attained, most of the bacteria were left in the pupa case by the emerging fly. The digestive tract of the fly maggot is primarily alkaline except for the midgut, which has a pH of 3-3.5. Although the midgut is only one-tenth of the tract's length, it destroyed excessively large numbers of bacteria. The nature of the acid has not been determined. The interaction of a mixed bacterial flora such as Salmonella and Proteus in the fly gut needs further study. The author suggests that research on this symbiotic relationship of fly and bacteria may well lead to a better understanding of infectious diseases.

-- Public Health Eng. Absts.

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- 353 Progress in Tetanus Prophylaxis: The Advent of Human Antitoxin. B. J. F. Perey.
Can. Med. Assn. J. 94, 437-441 (Feb. 26, 1966).

Injections of tetanus antitoxin of animal origin frequently cause serious disability and some times death. Despite worldwide knowledge of these effects, millions of prophylactic injections of equine tetanus antitoxin are given annually, and it is continually proposed that the dosage be increased in order to obtain "higher protective" levels in the serum, a procedure which would increase the incidence and severity of reactions. Furthermore, equine antitoxin frequently fails to prevent tetanus. Tetanus antitoxin of human origin is available which carries no risk of complications and confers a higher degree of immunity more quickly than equine antitoxin. The cost of treating reactions to horse serum, together with the financial loss incurred by work absence, far outweighs the cost of human antitoxin. In the author's opinion, the use in this country, (Canada) of antitoxin of animal origin is no longer medically acceptable and may well prove legally indefensible. There are 77 references.

-- Author's abst.

- 354 Prevention of Allergic Immunization Reactions. J. Kawchak. J. Occ. Med. 8, 21-23 (Jan. 1966).

The procedure of administering oral chlorpheniramine permitted the author to immunize a large number of travelers to foreign countries who had histories of allergy to substances in vaccines. On follow-up, none of these individuals demonstrated any evidence of allergic reaction. The 8mg. repeat-action tablet is easily administered just prior to immunization, and for most patients the antihistaminic activity of this one tablet last long enough so that no other administration is required. A review of 95 cases of patients with a history of sensitivity to allergenic substances showed that, with the aid of the prophylactic measure described, all were able to receive recommended immunizations without untoward reactions either to the allergens in the vaccine or to the antihistamine.

-- Author's conclusions

- 355 The Effects of Nitroglycerin and Amyl Nitrite on Arteriolar and Venous Tone in the Human Forearm. D. T. Mason and E. Braunwald. Circulation 32, 755 (1965).

In spite of the widespread use of nitroglycerin and amyl nitrite for relieving the pain of angina pectoris, considerable controversy still surrounds the mechanism of action of these two drugs. It has been proposed that they improve the relationship between coronary blood flow and the oxygen requirements of the heart by a direct dilating action on the coronary arteries, or that they diminish the oxygen requirements of the myocardium by diminishing the external work of the heart. Much of the confusion concerning the actions of these drugs has arisen from the assumption that nitroglycerin and amyl nitrite have similar effects. In order to determine whether the peripheral circulatory actions of nitroglycerin and amyl nitrite might play a role in their therapeutic effects, the actions of these drugs on both the resistance and capacitance vessels of the forearm of normal human subjects were determined, and the results of these studies are described in this report. The authors emphasize that, since amyl nitrite and nitroglycerin have directionally opposite effects on the venous bed, the efficacy of both of these drugs in angina pectoris can obviously not be explained by their effects on veins alone. Inhaled amyl nitrite results in a sudden and marked arteriolar dilatation, and it is probable that the coronary vessels participate in this response. As a consequence of this arteriolar dilatation, systemic pressure declines markedly, thus also reducing myocardial oxygen requirements. It seems likely that the salutary clinical effects of this drug result from a combination of these two actions.

-- Cond. from Can. Med. Assn. J. Absts.

- 356 Hemodynamic Effects of Nitroglycerin in Patients With Coronary Heart Disease. B. Christensson, T. Karlefors, and H. Westling. Brit. Heart J. 27, 511 (1965).

The hemodynamic effects of 0.5mg. nitroglycerin sublingually were determined at rest and during exercise on a bicycle ergometer with the patient supine or sitting on the bicycle. Arterial blood pressure, cardiac output and oxygen consumption were measured. At rest the cardiac output and stroke volume decreased after nitroglycerin. A moderate tachycardia and a slight decrease in mean arterial pressure occurred. After nitroglycerin, exercise in the supine position was performed with a lowered cardiac output and stroke volume and a higher calculated arteriovenous oxygen difference. These effects were more pronounced in the sitting position. In the opinion of the authors, the results obtained give strong support to the view that nitroglycerin may relieve angina pectoris by reducing the work of the heart. Some subjects studied were thus able to perform an exercise which normally caused severe anginal pain, with a cardiac output that was not much different from that at rest when they were free from pain. The reduction of cardiac output must mean that the exercise during nitroglycerin was performed with a high arteriovenous oxygen difference. Nitroglycerin might thus be regarded as a drug that makes the circulatory system more economical as regards flow and pressures.

-- Can. Med. Assn. J. Absts.

- 357 Equine Centrilobular Emphysema. With Further Observations on the Pathology of Heaves. F. D. Foley and F. C. Lowell. *Am. Rev. Resp. Dis.* 93, 17-21 (Jan. 1966).

The inflated lungs of four horses with heaves ("broken wind") were studied. Advanced chronic bronchiolitis was found in three of the four, in accord with an earlier report. However, in contrast to previous experience, one horse was found to have widespread emphysema, predominately of the centrilobular type, as the major pathologic feature. The relation of these findings to asthma, chronic bronchitis, and emphysema in man is discussed. Nine references are given.

-- Authors' summary

- 358 Naturally Occurring Emphysema, the Fine Gross and Histopathologic Counterpart of Human Emphysema. R. F. McLaughlin, Jr., and D. W. Edwards. *Am. Rev. Resp. Dis.* 93, 22-25 (Jan. 1966).

Uncertainty exists with regard to the occurrence of chronic pulmonary emphysema in the horse. Recent investigations describe only isolated cases of bronchiolitis; however, true emphysema has not been found. Pathologic examination of the lungs of the horses in this study revealed that they contained lesions identical to those found in the lungs of the seven emphysematous human subjects that were used for comparison purposes. These lesions differed greatly from those seen in equine bronchiolitis. The comparative cause of emphysema has not yet been systematically investigated in mammals. The horse, however, is an animal in which emphysema, identical to that seen in man, can be studied, as it occurs naturally and experimentally. There are 24 references.

-- Authors' summary

- 359 An Evaluation of the Physical Response of Malignant Tumour Implants to Pulsed Laser Radiation. J. P. Minton, et al. *Surg. Gynecol. Obstet.* 121, 538 (1965).

Various experimental tumors responded differently to a high-energy pulse of laser radiation. Tumors with a highly dense collagen matrix may undergo very little physical change from a pulse of laser radiation, whereas other tumors devoid of a dense collagen matrix may completely disappear during a laser impact. However, each type of tumor may be killed by pulsed laser radiation independent of its physical response. Future experimental work may be of significant value in providing guide lines for the permanent destruction of human tumor implants by pulsed laser radiation.

-- Can. Med. Assn J. Absts.

SKIN DISEASES AND BURNS

- 360 Strong Alkali Burns of the Eye. J. A. Stanley. *New Engl. J. Med.* 273, 1265-1266 (Dec. 2, 1965).

Alkali burns of the eye, with their rapidly blinding sequelae, rank with the most disastrous of household accidents. Numerous alkali products are found in the average home. Clear ammonia water is a common adjuvant to the housewife's armamentarium of cleaning agents, being widely used diluted in the dishpan and floor pail and "straight" to cleanse ovens and toilet bowls. Caustic soda (lye or sodium hydroxide) is the major active ingredient of the homemaker's favorite remedy to open slow or clogged drains. With the increasing popularity of alkali cleaning products it is important that the public and the physicians charged with their emergency care be alerted once again to the hazard of alkali burns of the eye and that the vast superiority of preventive measures be emphasized. The tragedy of a strong alkali burn of the eye is intensified when the near hopelessness of its late treatment is realized. Nearly unique is the person who receives a direct spillage of concentrated strong alkali to the eye and possesses the presence of mind and the information to lavage immediately at the tap or shower for a sufficient period to escape an irreparable burn of the cornea. Rather, the rule is for severe blepharospasm, tearing and forceful rubbing of the eye to take place while the patient loses precious minutes calling a physician who, not being informed of the exact nature of the chemical, may request the patient to go to the emergency ward of a nearby hospital or to the doctor's office, where he arrives with burned corneas beyond effective therapy. Prevention of blindness secondary to alkali burns of the cornea could best be served by removal of caustic soda drain cleansers to the exclusive care of a family member who is knowledgeable in safety precautions and by removal of the common household ammonia bottle to the trash, with the substitution of safer specialized products for specific cleaning jobs. For the inevitably severe sodium and ammonium hydroxide burns of the eye it is urged that the patient immediately flush the eye or eyes with a copious and continuous stream of water directly from the bathroom shower or nearest faucet until a physician arrives and sees that an effective lavage has been continued without interruption for about thirty minutes.

- 361 Electrical Injuries. W. Mills, Jr., W. E. Switzer, and J. A. Moncrief.
J. Am. Med. Assn. 195, 852-854 (March 7, 1966).

Electrical injuries constitute an important, distinctive, but often poorly understood, variety of trauma. In our complex society, and home utilization of electric power, we are continually faced with a significant incidence of electrical accidents, and their morbidity and mortality are high. It has been estimated that approximately 1,100 electrical fatalities now occur annually in this country. Most physicians are aware that electrical burns differ from ordinary thermal injuries of other etiologies, but the specific manner in which they are dissimilar is frequently not understood. Electrical burns present certain distinctive pathological and clinical features, knowledge of which is important for their proper management. The emergency treatment of electrical injuries consists of freeing the victim from the electrical contact, appropriate precautions being taken by the rescuer to prevent electrical injuries to himself, and cardiac or respiratory resuscitative efforts or both as dictated by the clinical situation. Following emergency therapy and hospitalization, electrical injuries are then managed in essentially the same manner as are ordinary thermal injuries with the exception of the treatment of the local burn wounds. While most surgeons are in agreement that some form of excisional therapy is the best method of managing the local burn wounds, this is not unanimous, and there is a wide divergence of opinion with reference to the timing of excisional therapy. The authors' current method of treatment of the local burn wounds consists of a first excision performed between the third and fifth day after the injury, usually followed by one or two additional debridements before all devitalized tissue has been removed and autografting is feasible. Cutaneous homografts are frequently employed for temporary coverage after each debridement and prior to final autografting.

- 362 Effectiveness of Dilute Aqueous Silver Nitrate in the Treatment of Major Burns.
W. W. Monafó and G. A. Moyer. Arch. Surg. 91, 200 (1965).

Inanition and bacterial colonization of the wound are two principal causes of mortality from burns. Continuous dressing with 0.5 silver nitrate has been found to be extraordinarily effective in preventing the growth of pathogenic bacteria without interfering with either spontaneous epithelialization or the growth of split-thickness skin grafts. The wet dressings simulate baths, and with this technique the authors report that there has been a major decrease in mortality and in contractures. Use of 0.52 silver nitrate stains everything, but argyria has not occurred and antibiotics appear to be unnecessary. Being hypotonic, the dressings can syphon off extracellular minerals, and dietary supplements are indicated. It is suggested that most burns are second degree and are made third degree by bacterial enzymes. The use of 0.5% silver nitrate appears to be successful because it prevents this bacterial worsening.

-- Can. Med. Assn. J. Absts.

- 363 Resin Dermatitis in a Car Factory. H. O. Engel and C. D. Calnan.
Brit. J. Ind. Med. 23, 62-66 (Jan, 1966).

An outbreak of dermatitis in a car assembly factory is described; it affected 50 workers who handled rubber weatherstrips coated with an adhesive. The adhesive was found to contain para-tertiary butyl phenol (PTBP) formaldehyde resin. Of those patch tested 70% gave positive reactions to the adhesive and 65% to the resin. Improved methods of handling and personal protection succeeded in arresting the occurrence of dermatitis. Barrier creams gave no protection in these circumstances. The episode illustrates the different preventive control methods which have to be tried when dealing with a simple skin hazard which cannot be abolished.

-- Authors' abst.

- 364 Vesiculobullous Dermatitis from Tobacco Smoke. F. E. Cormia and P. F. deGara.
J. Am. Med. Assn. 193, 141 (1965).

Allergic sensitivity to tobacco is very rare. A 35-year-old printer with a chronic vesiculobullous dermatitis observed a marked flare of his dermatitis after smoking 1-1/2 packs of cigarettes. When he stopped smoking, the dermatitis cleared. Several types of tobacco caused flares after smoking, and a skin test with tobacco extract gave a positive wheal and flare reaction.

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

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- 365 Penicillin Hypersensitivity and Haemagglutinating Antibodies in Workers at a Penicillin Factory. E. Rudzki, B. Cukasiak, and W. Leszcynski. *Acta Allergol.* **20**, 206-214 (1965).

A group of 331 workers in a penicillin factory were skin tested with penicillin-G for immediate and delayed sensitivity, and hemagglutinating antibodies were measured in their serums. The series included 86 allergic cases which were primarily contact-sensitive to penicillin. Of the allergic workers, 10% showed immediate and 8% showed delayed reactions, and in the nonallergic group 3% gave immediate and 3% gave delayed responses. Low titers of hemagglutinating antibody were detected in 5% of the total group; the frequency and titer were about the same in allergic and nonallergic workers. Antibody and skin tests did not correlate; nor did the period of employment play a role in whether or not the worker gave positive responses. The main correlation occurred between degree of exposure and positive skin reactions. Workers heavily exposed to penicillin air-contamination gave most of the positive skin responses. Antibody responses were not related to degree or frequency of exposure. -- J. Occ. Med. Absts.

- 366 The Charming of Warts. G. H. V. Clarke. *J. Invest. Dermatol.* **45**, 15 (1965).

The author comes to the conclusion that there is no real evidence that magic or suggestion has any effect on warts. The dramatic cures sometimes reported are probably the result of the magic ritual coinciding with the end of the wart's natural life. The fact that some investigators have reported successes, with few exceptions, appears to be due to their not having used adequate controls. The spontaneous cure of warts is commonly of quite a high order (30%), and this further permits misinterpretation of the data. These results are of the same order as the placebo response in which a 35% rate of cure can be obtained. The placebo effect has been demonstrated in such conditions as postoperative pain, headache and anxiety. These are all conditions which are susceptible of spontaneous remission. The placebo effect may remove the symptoms of a disease but would not seem to eventuate a cure of disease. In the removal of warts, which are virtually symptomless, the disease is actually cured.

-- Can. Med. Assn. J. Absts.

CHEMICAL HAZARDS

- 367 The Ultrastructural Effects of Carbon Monoxide Inhalation on the Rat Lung. A. H. Niden and H. Schulz. *Arch. Pathol. Anato. Physiol.* **339**, 283-292 (1965).

Rats were exposed to air mixtures containing 0.5% to 1.0% carbon monoxide for 13 to 137 minutes. The pulmonary changes consisted of: (1) swelling of alveolar epithelial cell mitochondria and nucleus, (2) capillary endothelial and alveolar epithelial swelling, and (3) capillary platelet thrombosis. Due to the swelling of the epithelium the alveolar lining was damaged and the basement membranes of the capillaries were no longer covered with epithelium. As a result of the marked swelling of endothelium and epithelium lumen the capillaries and alveolar spaces appeared to be narrow slits. The concentration of inhaled carbon monoxide was more important in producing these changes than the level of blood CO-Hb, or the duration of exposure to carbon monoxide. The results suggested that carbon monoxide has a direct effect on pulmonary tissue. There are 18 references.

-- Aerospace Med. Absts.

- 368 Hydrogen Sulfide Darkening of Exterior Paint. H. C. Wohlers and M. Feldstein. *J. Air Poll. Control Assn.* **16**, 19-21 (Jan. 1966).

Chemical and visual tests are described to determine the presence of hydrogen sulfide darkening of exterior paint. Instrumentation is described to detect air concentrations of hydrogen sulfide. Literature references on hydrogen sulfide darkening of paint are reviewed. Results of paint darkening episodes in the San Francisco Bay Area are described. The time-concentration relationship (dosage) for non-health air pollution effects of hydrogen sulfide is presented. There are 21 references.

-- Authors' summary

- 369 A Comparison of Changes in Pulmonary Flow Resistance in Healthy Volunteers Acutely Exposed to SO₂ by Mouth and by Nose. F. E. Speizer and N. R. Frank. *Brit. J. Ind. Med.* **23**, 75-79 (Jan. 1966).

On separate occasions, healthy male volunteers were exposed either by nose or by mouth to one of two concentrations of sulfur dioxide, 15 and 28ppm. Exposure to sulfur dioxide lasted ten minutes. Pulmonary flow resistance (R1) was measured by the esophageal catheter method, and the lung volume was measured by a modification of the gas-compression method;

when sulfur dioxide was administered by nose, nasal flow resistance (Rn) was measured by means of a catheter placed in the posterior pharynx. The increase in R1 was greater when sulfur dioxide was administered by mouth than when it was administered by nose. Similarly, irritative symptoms of the posterior pharynx and chest were more common during exposure by mouth. These findings suggest that the mouth is less effective than the nose as an absorptive surface for sulfur dioxide.

-- Authors' abst.

- 370 Fecal Excretion of Iron and Tin by Men Fed Stored Canned Foods. D. H. Calloway and J. J. McMullen. *Am. J. Clin. Nutr.* 18, 1-6 (Jan. 1966).

Packaged military rations (C ration) were stored at 1°C. (33.8°F.) and 37°C. (98.6°F.) for 20 months prior to feeding to human subjects for successive 24-day periods. Storage for an excessive time at the unusually elevated temperature increased the iron and tin content of the ration from 30 to 80 and 200ppm (dry solids), respectively. Fecal excretion accounted for all the tin ingested, and for about 80% of the iron from a control diet and the ration stored at cold temperatures (1°C.) but only for 54% of the 64 mg. daily intake of iron provided by the ration stored at 37°C. A relationship of iron absorption to marginal pyridoxine intake is suggested.

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

- 371 Concentration of Lead in Bone in Plumbism. M. P. Westerman and W. N. Jensen. *New Engl. J. Med.* 273, 1246-1250 (Dec. 2, 1965).

Descriptions of lead poisoning include repeated observations that persons or animals with apparently similar exposure may have different degrees of severity of symptoms. The ability to make accurate measurements of lead concentrations in the environment, body tissues and fluids has provided more precise means for examining the relation between the development of symptoms and the exposure to lead. The simple semiquantitative methods for the detection of certain intermediate compounds of porphyrin or heme synthesis that are present in increased amounts in the tissues or excreta in plumbism indicate biologic abnormality in lead exposure. The differentiation of lead exposure and lead intoxication has been made in clinical, industrial and legal terms but has not been precisely described in terms of cytologic, biochemical or cell-organelle damage. It seems probable that damage to cells exists with or without overt symptoms or signs of disease. The reasons for the differences in symptomatic, biochemical or cytologic responses observed when human beings or animals are exposed to lead are still largely unknown. Some of the possibilities are that the degree of abnormality is related to differences in total body lead, to the tissue distribution of lead, to concentrations within certain cells or subcellular organelles or to genetically determined differences in enzymatic or nonenzymatic proteins. Observations were made to describe the distribution of lead in various tissues and to determine whether localization in certain tissues or body fluids might be closely related to the symptomatic, biochemical or cytologic differences. Concentrations of lead in bone, blood, and urine before and after a chelation load were measured in 12 persons exposed to lead in the performance of their work in a bathtub-enamel factory. One of the 12 was studied at regular intervals for more than three years. The observations reported suggest that determinations of lead in the bone marrow may be a useful aid in the evaluation and management of patients with plumbism or exposure to lead. There are 33 references.

- 372 Chronic Manganism: Preliminary Observations on Glucose Tolerance and Serum Proteins. M. Hassanein, et al. *Brit. J. Ind. Med.* 23, 67-70 (Jan. 1966).

An intravenous glucose tolerance test was carried out in 11 patients with chronic manganese poisoning. Prolonged reactionary hypoglycaemia was observed. The underlying mechanism is discussed. It may be due to a disturbance of the hypothalamo-pituitary-adrenal axis. In seven of these patients total serum proteins were estimated and were separated electrophoretically. The albumin:globulin ratios were lower in patients than in controls. There were significant reductions in serum albumin concentrations and increases in concentrations of alpha₁ and beta globulins.

-- Authors' abst.

- 373 The Joint Action of Small Concentrations of Acetone and Phenol in the Atmosphere on Man. U. G. Pogosyan. *Gigiena i Sanit.* 30, No. 7, 3-9 (1965). Russian.

The paper contains the results of an experimental study on the effect of phenol and acetone jointly present in inhaled air. A study of the reflex effect of micro-concentrations of acetone and phenol on the human body revealed a complete summation of their effects. In a three-month-long chronic poisoning test, the author observed the general state, the behavior, and

weight kinetics of experimental animals. The author also investigated the motor chronaxy of the muscle-antagonists and the activity of the blood cholinesterase and determined the amount of coproporphyrin and certain vitamins (C, B₁, B₂, and N-methylnicotinamide) in the urine. Concentrations of acetone and phenol ten times the recommended one-time maximum permissible concentration cause shifts in the motor chronaxy of muscle-antagonists, shifts in cholinesterase activity, and an increase of coproporphyrin and certain vitamins in the urine. The author concludes that the daily average maximum permissible concentration of acetone and phenol jointly present in the air should not exceed the one-time maximum concentration.

-- Public Health Eng. Absts.

374 Untoward Reactions to Lysergic Acid Diethylamide (LSD) Resulting in Hospitalization.

W. A. Frosch, E. S. Robbins, and M. Stern. *New Engl. J. Med.* 273, 1235-1239 (Dec. 2, 1965).

In 1938 A. Stoll and A. Hofmann, of the Sandoz Research Laboratories, succeeded in synthesizing LSD along with a number of related alkaloids of the ergonovine type. However, it was not until April, 1943, that Hofmann discovered the hallucinogenic properties of this substance. In the 1950's LSD and other "hallucinogenic" compounds were studied extensively because they were thought to produce symptoms mimicking schizophrenia. It is now clear that there are significant differences: the spectacular visual illusory phenomena and perceptual distortions induced by the hallucinogenic compounds are not typical of schizophrenia. However, the depersonalization, which some nonpsychotic subjects display under the influence of higher doses of these drugs, is strikingly similar to what may be seen in acute schizophrenic reactions. LSD has become increasingly popular among a group of people who are seeking to enrich their artistic and aesthetic awareness and among many who are hoping to increase their selfawareness in a "rational" and rapid fashion without undergoing the stress, work and expense associated with psychotherapy. As a result of indiscriminate, widespread use of the drug, there has been a sudden upsurge in the number of patients admitted to Bellevue Psychiatric Hospital because of adverse reactions. Three types are described: acute panic reactions; recurrence of symptoms in a period of abstinence after multiple ingestion; and prolonged psychosis. The immediate prognosis in the first group is good, but there are no longrange follow-up results. The patients of the other two groups showed some impairment of performance at the time of last contact. There are 15 references.

375 Acute Renal Failure Due to Carbon Tetrachloride Poisoning. V. K. Nielsen and J. Larsen. *Acta Med. Scand.* 178, 363-374 (Sept. 1965).

Five subjects with acute renal failure following acute intoxication with carbon tetrachloride (CCl₄) have been treated since 1958. Detailed case reports are given. Four patients developed protracted oliguria, necessitating treatment with the artificial kidney. Renal function was restored to normal in all patients. Because of diagnostic difficulties a careful inquiry into the possible exposure to CCl₄ is advised in every case presenting concomitant gastrointestinal, hepatic, and renal symptoms of uncertain origin. The value of active treatment, including dialysis, in cases of CCl₄ poisoning with renal failure is illustrated by the authors' results as well as by a review of the literature. Among 128 cases, collected from the literature of the last decade, 120 presented renal failure, 44 were dialyzed, and the overall mortality was 17%. Among 77 cases, published between 1939 and 1953 (i. e., from a period during which hemodialytic treatment of uremia had not yet gained widespread usage), 74 presented renal failure, and the overall mortality was 36%. Despite the improved prognosis following the introduction of hemodialytic management of renal failure due to CCl₄ poisoning, this intoxication is, however, still an important public health hazard. For most purposes CCl₄ could readily be replaced by other, less toxic, chemicals. There are 36 references.

-- Aerospace Med. Absts.

376 Hepatotoxicity of Inhaled Trichloroethylene and Tetrachloroethylene: Long-Term Exposure. B. Kylin, I. Sumegi, and S. Yllner. *Acta Pharmacol. Toxicol.* 22, 379-385 (1965).

The hepatotoxicity of trichloroethylene and tetrachloroethylene was studied in mice submitted to long-term exposure by inhalation. Duration of exposure was four hours daily for six days a week over periods of 1, 2, 4, and 8 weeks. Effects on the liver were evaluated by histological examination and determination of extractable liver fat. The most conspicuous histological change consisted of fatty degeneration. With trichloroethylene this lesion was slight even at a concentration of 1,600 ppm, but with tetrachloroethylene it was massive at as little as 200 ppm. Neither liver cell necrosis nor cirrhosis was discernible. On the basis of these findings the hygienic threshold for tetrachloroethylene is discussed. There are ten references.

-- Aerospace Med. Absts.

- 377 General Immunological Response and Disease Incidence in Workers Exposed to the Action of Carbon Bisulphide. L. M. Kashin. *Gigiena i Sanit.* 30, 23-26 (June, 1965). Russian.

An attempt was made to determine the effect of small concentrations of carbon disulfide on the immunological reactivity of the body and on morbidity with temporary disability in workers in a rayon factory. A drop in general immunological reactivity and a rise in morbidity rate were observed in workers exposed to the action of carbon disulfide at concentrations both above and below the maximum permissible level (10mg./cu.m.). A relationship was demonstrated between the state of general immunological reactivity and that of morbidity with temporary disability; the morbidity rate dropped with a rise of body reactivity. -- Aerospace Med. Absts.

- 378 Dynamic Investigation of Adrenal Cortex Function in Subjects with Symptoms of Benzol Poisoning. A. Cavalleri and A. Salvadeo. *Lavoro Umano* 17, 165-171 (April, 1965). Italian.

The adrenocortical function was studied in eight patients between 20 and 59 years of age with hematological symptoms of benzene poisoning, and compared with data from an equal number of normal subjects between the same ages. Basal values of 17-ketosteroids and 17-hydroxycorticoids excreted in the urine were found to be almost identical. The response to exogenous corticotrophin (ACTH) was lower in subjects with symptoms of benzene poisoning, but the difference was not statistically significant. These data indicate that no significant change in adrenocortical function occurs during benzene poisoning. -- Aerospace Med. Absts.

- 379 Hazards of Insecticide Applications in Quebec. Z. Jegier. *Can. J. Public Health* 56, 233-238 (June, 1965).

A comprehensive two-year study was made commencing in 1962 by the Research Institute of Industrial Hygiene and Air Pollution of the School of Hygiene, University of Montreal, of uses of insecticides throughout Quebec Province with emphasis on occupational health hazards and routes of entry such as oral, respiratory, and dermal in persons applying insecticides by outdoor and indoor spraying. Although indoor applicators were frequently exposed to above current threshold limit values, the maximum recorded exposure value was but 1.4% of the toxic dose (systox) because of the short duration of the spraying cycle (Durham and Wolfe procedure on dermal LD₅₀). Carelessness and unfamiliarity with the dangers of toxic materials were encountered throughout the survey. Indoor spraying in greenhouses and cattle barns, and its effect on professional exterminators in various areas, such as restaurants and hospitals that utilized lindane vaporizers were investigated. In outdoor applications, both ground applicators and aircraft pilots were surveyed for respiratory and dermal exposures. Respiratory exposures were calculated from: (1) air concentration values and an assumed lung ventilation of 444 liters per hour; and (2) from respiratory filter pad deposits. Dermal exposures were determined by absorbent pad collections (Berkow's method). Mean respiratory exposures to malathion, sevin, parathion, and guthion during air blast spraying were 0.08, 0.29, 0.03 and 0.26 mg./hr., respectively. Pilots' mean respiratory exposure to endrin was calculated as 0.01 mg./hr. Only 11% of workers used respirators; 48% had no protection whatsoever. A hospital kitchen test on continuous vaporization of lindane disclosed a threshold limit value of above 0.78 mg./cu.m. The necessity of vigilance during application and with regard to chronic rather than acute effects is indicated by the study. There are 11 references.

-- Public Health Eng. Absts.

- 380 An Approach to the Separation, Identification, and Determination of at Least Ten Organophosphate Pesticide Residues in Raw Agricultural Products. D. F. McCaulley. *J. Assn. Offic. Agr. Chemists* 48, 659-665 (June, 1965).

This paper describes the preliminary developments of a method that permits relatively rapid qualitative determination of residues of a number of common phosphate pesticide compounds. Extraction is followed by vacuum sublimation, gas-liquid chromatography, and infrared analysis. A wide variety of vegetables and fruits can be analyzed by the general procedure.

-- Public Health Eng. Absts.

- 381 Sequelae of Acute Organic Phosphate Poisoning. I. R. Tabershaw and W. C. Cooper. *J. Occ. Med.* 8, 5-20 (Jan. 1966).

A group of 235 individuals reported by California physicians as occupationally poisoned by organic phosphate insecticides during 1960 was selected for a study of possible sequelae. Follow-up was carried out three or more years after acute poisoning. Of the 235 individuals, 175 (74%) were located and 117 (50%) were examined. Of the 117 individuals examined, 114

were regarded as having had definite organic phosphate poisoning. After appraisal of the course of the acute illness, six were graded as having had severe poisoning, 54 moderate, and 54 mild. Interrogation and examination of the 114 individuals disclosed that 43 had complaints which persisted more than six months after poisoning and that 33 still had complaints. These complaints fell into several major categories: optic, gastrointestinal, cephalalgia, cardiorespiratory, neuropsychiatric, and miscellaneous. Eight individuals complained of continued disturbed vision: six attributed it to the acute episode. In four the difficulty involved only near vision and was diagnosed as presbyopia; another had nonincapacitating visual field defect tentatively diagnosed as due to basilar arterial insufficiency unrelated to poisoning. Intolerance to the odor of pesticide preparations was mentioned by 20 subjects. It was manifested by nausea, vomiting, headache, or other symptoms. The general conclusion is that a study of this type would have detected serious sequelae of high incidence, but would not reveal minor aftereffects or those of low incidence, especially if related to specific compounds, high exposures, or highly susceptible individuals. Needed are additional longitudinal studies of people after severe poisonings.

-- Cond. from authors' summary

INDUSTRIAL DUSTS

- 382 Application of Polyurethane Foam Filters for Respirable Dust Separation. J.F. Roesler. J. Air Poll. Control Assn. 16, 30-34 (Jan. 1966).

Polyurethane foam was incorporated as a prefilter on standard hi-volume samplers of the National Air Sampling Network (NASN) in an exploratory study. The foam selectively filtered particles of various sizes. The characteristics of the particles passing through the foam approached the respirable size fraction as defined by reports of the Atomic Energy Commission. The respirable fraction was then collected on a glass-fiber filter. Parameters such as pore size and thickness of the foam, air flow rates, and loadings were studied to determine their effects on the filtration of "respirable" dust. Ambient air was the particulate source, and sizing was accomplished by an Andersen sampler coupled with nephelometric analyses. Some sizing was also done microscopically. The foam was evaluated at several locations to account for possible variations in ambient air over areas of different industrial complexity.

-- Author's abst.

- 383 An Acoustic Particle Counter—Preliminary Results. G. Langer. J. Colloid Sci. 20, 602-609 (Aug. 1965).

The detection of dust particles in air by an acoustic phenomenon is described. The particles are passed through a sensor in which they are gradually accelerated to about 100m./sec., and then the particles are suddenly projected into a wide exit cavity. At this point a pressure pulse is generated by a particle and gives an audible click. The sound pulse lasts two to 20m./sec., depending on the entrance design, and has an optimum signal-to-noise ratio of 50/1. This sensor in its present state detects particles down to five microns with no change in signal amplitude with size. It has been applied in the laboratory to count ice crystals in supercooled clouds. Seven references are given.

-- Public Health Eng. Absts.

- 384 An Inertial-Type Particle Separator for Collecting Large Samples. W.D. Conner. J. Air Poll. Control Assn. 16, 35-38 (Jan. 1966).

A two-stage inertial-type particle separator has been developed for collecting large size-selective samples of particulates on filters. The sampler operates at a flow rate of 1.4 cubic feet per minute and may be run for extended periods without change in collecting efficiency. The particle size cut of the sampler is at a diameter of 1.4 microns; separation of greater than 90% is obtained for particles below 0.80 micron and above 2.0 microns. The sampler was calibrated with monodisperse polystyrene latexes. Data are presented to relate the separating efficiency of the sampler to its separation parameters.

-- Author's abst.

- 385 Oxygen-Lanced Open Hearth Furnace Fume Cleaning with a Glass Fabric Baghouse. R.A. Herrick, J.W. Olsen, and F.A. Ray. J. Air Poll. Control Assn. 16, 7-11 (Jan. 1966).

This installation, the only application of a baghouse in oxygen-lanced open hearth fume cleaning in the United States, is considered a success. After the equivalent of ten months continuous service, less than 2% of the 800 bags have been replaced because of possible wear. Operating experience, compared to the electrostatic precipitators in another open hearth shop at the Sparrows Point plant, shows that power costs is no more than if a precipitator had been

installed, and operating and maintenance expenditures are markedly less. Outlet dust loading has been measured at 0.0007 grains per cubic foot. The relationship of gas volume to pressure drop differs by less than 10% from the prediction based on a pilot scale study. It is the authors' opinion that this baghouse is properly applied to the cleaning of waste gases from a single oxygen-lanced open hearth furnace.

-- Authors' abst.

- 386 Byssinosis in the Waste Cotton Industry. I. Dingwall-Fordyce and J. G. O'Sullivan. Brit. J. Ind. Med. 23, 53-57 (Jan. 1966).

This paper is of some historical interest. It describes an investigation to determine whether byssinosis occurred among workers in the waste cotton industry. It was undertaken in 1950 at the instigation of the Minister of National Insurance. The materials used in the industry were (1) cotton that had been previously spun, and (2) waste material discarded during the preparations for spinning higher grades of yarn. A proportion of raw cotton was sometimes blended with the waste. Twenty-two mills, representative of the industry, were surveyed. All men in these mills, who were over 35 years of age and with at least ten years' exposure to cotton dust, were seen. The investigations included a work history, a clinical examination, an assessment of effort dyspnea, and a chest radiograph. There were 140 men who had never been exposed to any dust hazard other than waste cotton. In this group were found seven (5%) men with disabling byssinosis and 35 (25%) men with lesser degrees of the same disease. There were also 15 (11%) men with bronchitis or emphysema without byssinosis. Thus it was established that byssinosis did occur in the waste cotton industry. Insurance cover, under the National Insurance (Industrial Injuries) Act, 1946, was subsequently extended to workers in the waste cotton industry. The survey provided no evidence that either the type of waste cotton processed or an admixture of raw cotton played a significant part in the etiology or incidence of the disease.

-- Authors' abst.

- 387 Discriminant Function Analysis as an Aid to the Diagnosis of Flax Byssinosis. J. D. Merrett. Brit. J. Ind. Med. 23, 58-61 (Jan. 1966).

A simple discriminant function in four variates (area of mill, average number of cigarettes currently smoked per day, a complex of dyspnea, cough, and wheezing grades, and occupation) was derived to discriminate between non-byssinotic (grade 0) and byssinotic (grades I and II) preparers. This function diagnosed 14% of non-byssinotics as byssinotic and 35% of the byssinotics as non-byssinotic, giving a total misclassification rate (24.5%) that agreed closely with the theoretically expected rate (26.4%). Similar misclassification rates were found in a randomly selected check sample of preparers. The function did not diagnose accurately preparers with early byssinosis (grade 1/2); 64% of such workers would have been diagnosed as normal.

-- Author's abst.

- 388 Farmer's Lung: A Review. J. Watkins-Pitchford. Brit. J. Ind. Med. 23, 16-23 (Jan. 1966).

The disease of farmer's lung is probably as old as the settled agrarian civilizations of temperate climates and has probably been responsible for serious ill-health through the ages. That it may be a serious disease is beyond question. Staines and Forman (1961) recorded the length of illness in 111 cases; in 44 of these there was more than three months' incapacity, and five patients were still incapacitated after a year. The assessment of the final disability after recovery from the illness showed that, out of 121 cases, 35 were judged to have a moderate or severe disability in following their regular occupations and ten in doing other jobs. Only 51 were judged to have been left with no disability at all. If the "speculative incidence" in the British Isles of about 1,000 cases a year put forward by these authors is correct, it seems that about 580 persons a year are left with some assessable disability and about 290 of these experience a moderate or severe disability in following their regular occupations. Such estimates of the total yearly incidence in the British Isles cannot, of course, be used as an indication of the number of successful claims that may be expected from the disease being prescribed under the Industrial Injuries Act. Broadly speaking, persons eligible to claim industrial injuries benefit are confined to those who are employees, and the evidence so far available suggests that a significant proportion of sufferers from farmer's lung are to be found among self-employed persons and their families. The disease normally presents a distinct clinical picture and, with the aid of the history and ancillary investigations, it can be diagnosed in the majority of cases with reasonable certainty. Difficulty may be encountered in those patients who have a chronic nonspecific lung disease of some duration and on which some degree of pulmonary disability due to farmer's lung becomes superimposed. However, even in these patients it should be possible to recognize the presence of serum precipitins against suitable extracts of moldy hay, and the decision as to how much of the disability should be attributed to farmer's lung will be assisted by further investigating the distensibility and diffusing capacity of the lungs.

-- Author's conclusions

- 389 Observations on the Relationship Between Quartz Cytotoxicity and Fibrogenicity While Testing the Biological Activity of Synthetic Polymers. H. W. Schlipkoter and E. G. Beck. Med. lavoro 56, 485-493 (June-July 1965).

After illustrating the cytotoxic action of quartz and the mechanism of action of polyvinylpyridine-N-oxide, the authors discuss in detail cell culture experiments carried out to obtain further information on the cytotoxic effect of quartz and to test different protective substances. Experiments with protecting polymers, carried out in parallel *in vitro* and *in vivo*, should demonstrate whether experiments on cell cultures may replace trials on experimental animals. The results obtained do not support this possibility, as in some cases the observations *in vivo* and *in vitro* are at variance. The causes for such disagreements are discussed. -- APCA Absts.

- 390 The Retention of High and Low Rank Coals in Rats' Lungs. J. W. Skidmore, et al. Ann. Occ. Hyg. (London) 8, 182-192 (May, 1965).

The prevalence of coal workers pneumoconiosis appears to be higher in high rank than in low rank coal mines. Two experiments were carried out to test whether rats inhaling dust of high and low rank coal at equal concentrations, take up and retain the high rank coal more than the low rank coal. The results did not show any sign of such an effect and it is concluded that a similar effect in man is unlikely. Certain differences in the results of the two experiments are described and discussed. -- APCA Absts.

- 391 Lysosomal Enzymes in Relation to the Toxicity of Silica. J. S. Harington and A. C. Allison. Med. lavoro 56, 471-484 (June-July 1965).

Several studies have shown that damage to the macrophage by silica is a prerequisite for the subsequent fibrosis caused by this dust. The present study concerns the nature of the primary damage to the cell by silica and emphasizes the importance of lysosomes and phagosomes (or phagocytic vacuoles) in this process. The experimental evidence indicates that silica particles are taken up into phagosomes in the cytoplasm of the macrophage. Once taken up, the silica, either directly (by surface action) or by the release of silicic acid in a confined situation, damages the membrane of the phagosome in such a way that the hydrolytic enzymes secreted into it by lysosomes during phagocytosis are released into the cytoplasm of the cells. This results in autolysis and the eventual death of the cell. The damage to the phagosomal membrane is believed here to be the primary site of damage to the cell by silica. -- APCA Absts.

- 392 Intratracheal Injection Into Rats of Size-Graded Silica Particles. B. Goldstein and I. Webster. Brit. J. Ind. Med. 23, 71-74 (Jan. 1966).

An experiment is described in which suspensions of size-graded silica particles of less than one micron, one to three microns, and two to five microns nominal size ranges and of equal surface area (600 sq. cm./ml.) were injected intratracheally into rats. After four months the rats were killed and the lungs were examined histologically for the grade of fibrosis and chemically for the silica and collagen content. The results were analyzed statistically and it was found that, under the experimental conditions described, the degree of fibrosis produced by the two large size fractions was more than that produced by the under one micron particles and was apparently related to the quantity (by weight) of the silica injected or the size of the particles and not to the surface area. -- Authors' abst.

- 393 Observations on Pollution Caused by Asbestos. A. Laamanen, L. Noro, and V. Rainio. Occupational Medical Foundation and Institute of Occupational Health, Annual Report 1964, Helsinki, 1965 pp. 41-42.

The quarrying of asbestos in Finland has a tradition of approximately 50 years. The production is nowadays about 15,000 tons of antophyllite asbestos. In his work on non-occupational endemic asbestosis, published in 1960, Dr. R. Kiviluoto mentioned that in approximately 500 persons living around the quarries calcifications of pleura were found in x-ray examinations. Dr. V. Rainio, who at present is studying further the incidence of pleural calcifications among the population around the quarries, has mentioned that 1300 additional cases have been found. Dr. Kiviluoto, however, estimates that approximately ten per cent of the population living around the quarries might have pleural plaques. At the request of Dr. V. Rainio and the Finnish asbestos company, Suomen Mineraali, the Institute of Occupational Health has performed some air pollution studies around quarries, trying especially to find out the presence of asbestos in the air. In the following there are some preliminary observations. The first survey was made between August 20—November 28, 1961, and

samples were taken at 13 points around the quarries. A second survey was made between June 25—November 29, 1963. The results of these surveys are presented and are available upon request.

- 394 Certain Immunobiological Shifts in Asbestosis. F.M. Kogan, A.A. Gerasimenko, and G.I. Bunimovich. *Gigiena i Sanit.* 30, 34-40 (May, 1965). Russian.

Long-term inhalation of asbestos dust brought about a fall of the immunobiological reactivity of the body and, probably, its allergic responses. There was a most distinct inhibition of the complement titer. The changes of the complement titer preceded the onset of clinical and x-ray symptoms of pneumoconiosis. The study of the immunobiological reactivity of persons sick with asbestosis, caused by the inhalation of chrysotile-asbestos and anthophyllite-asbestos, showed that in the first case the reactivity was inhibited to a greater extent. This was noted in the clinical course of asbestosis as well. Persons sick with asbestosis and those working under conditions of high dust content of the air presented lesions peculiar to auto-immunologic disease: rise in the alpha-globulin content and anti-complement activity of the serum.

-- APCA Absts.

- 395 Electron Microscope Studies of Asbestos in Man and Animals. J. M. G. Davis. *Med. lavoro* 56, 521-529 (June-July 1965).

In both guinea pig and human lung material the formation of asbestos bodies has been shown to be an intracellular process. The first sign of asbestos body formation is the accumulation of dense granules approximately 60 Å in diameter around the asbestos fiber. It is suggested that these granules represent ferritin material. Usually the asbestos body coating consists of a single dense layer of ferritin, but often a whole series of layers of varying density is present. The outermost zone of these bodies often consists of an irregular layer of radially arranged fibrous material but occasionally the whole body coat consists of these fibers which have a diameter of 50-60 Å. From the evidence of this study it would appear that the well known segmentation of asbestos bodies can be of two types. In one the segmented appearance is due to the deposition of the body coating in separate globules, and in the other it is due to the splitting of a previously smooth coat.

-- APCA Absts.

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 396 Recent Findings in the Pathogenesis of Decompression Sickness (Dysbarism). A. T. K. Cockett, R. M. Nakamura, and J. J. Franks. *Surgery* 58, 384-389 (Aug. 1965).

A recent review of human decompression sickness pointed out that one-third of the reported cases suffered from hemoconcentration. This prompted the authors to document this apparent loss of plasma volume by measuring intravascular fluid shifts in experimental animals before and after decompression. Mongrel dogs were used as experimental animals. After suitable catheters had been placed in the animals, they were placed in the overcompression-decompression chamber and were overcompressed to six atmospheres absolute. The increase in barometric pressure was seven pounds (psi) per minute. After a stabilization period of 60 minutes the animals were decompressed at a rate of seven pounds (psi) per minute. The plasma volume decreased from four to 38% up to 5-1/2 hours after removal of seven dogs from the decompression chamber. The role of the bubble formation with progressive reduction in blood pressure is discussed in the slower deaths of ten animals. Bone marrow emboli were found on routine histologic sections of all the animals who were autopsied. Nevertheless, the exact pathophysiologic mechanism of dysbarism remains obscure according to the authors.

-- Cond. from Am. Rev. Resp. Dis. Absts.

- 397 The Effect of Joint Action of Noise and Vibration on the Vibration Sensitivity of Adolescents. A. I. Tsysar. *Gigiena i Sanit.* 30, No. 6, 30-36 (1965). Russian.

The authors studied the effect produced from work with electric and pneumatic instruments on the vibration sensitivity of adolescents and the extent of the noxious effect produced by various parameters of vibration. The adolescents were highly sensitive to the action of noise and vibration factors: a rise in the threshold value of the vibration sensitivity was noted in case of a comparably short service record and a short term of work with the instruments. In the course of a work day, changes of the vibration sensitivity occurred mainly in insignificant and moderate rises of its threshold values, which are evidently connected with changes in the functional state of the vibration analyzer.

-- Public Health Eng. Absts.

- 398 Effect of Climatic Conditions on Chronic Irradiation with Ultra-High Frequency Energy. A. Ia Loshak. *Gigiena i Sanit.* 30, 18-23 (June, 1965). Russian.

In workers exposed to ultra-high frequencies during work in hot climates, the functional disturbances were noted more often than in workers on the same projects in temperate climates. The combined effects of high ambient temperature and ultra-high frequency radiation affected primarily the nervous system, which showed asthenic character. It is recommended that selection of workers for such projects should be done after a strict medical examination. The personnel on the job should undergo physical examinations twice a year. Supervision of working conditions should be carefully observed, in order to assure the safety of each person.

-- Aerospace Med. Absts.

- 399 Effect of Ultra-High Frequency Radiation on the Formed Elements of Blood. G.G. Lysina. *Gigiena i Sanit.* 30, 95-96 (June, 1965). Russian.

Soviet workers exposed to ultra-high frequency radiation while on electronic projects often complain about malaise, headaches, irritability, dizziness and general fatigue. Clinical examinations disclosed functional disturbances characteristic of dystonia of the parasympathetic system. Laboratory tests showed basophilic stippling and reticulocytosis, which indicated the disturbance of normal poiesis of red blood cells. This condition is usually found in cases of industrial poisoning, such as lead, benzene, mercury, and bismuth. This condition precedes development of hypochronic anemia. In 30% of investigated cases the sedimentation rate was decreased. No leucocytosis was present. The results suggested the necessity of periodic medical examination of all personnel directly connected with ultra-high frequency projects.

-- Aerospace Med. Absts.

RADIOACTIVITY AND X-RADIATION

- 400 Radiation and Other Risks. F.D. Sowby. *Health Physics* 11, 879-887 (Sept. 1965).

Today's maximum permissible levels for radiation exposure have been arrived at over a period of some 40 years, by a process of fairly arbitrary judgments combined with increasing practical operating experience. At first the levels were intended to provide safe working conditions, but gradually this concept came to be replaced by that of "permissible" doses, or levels of radiation carrying an associated risk that was acceptable to the exposed individual and to medical authorities. More recently the International Commission on Radiological Protection has emphasized the need to balance the risk of the radiation against the benefits of its use. Since radiation is but one of many agents involving a risk, the extent of the action taken to control it should be in reasonable proportion to the magnitude of its risk. An attempt has been made, therefore, to indicate the magnitude of some other risks in our society, so that when more quantitative data are available on the dose-effect relationship for radiation, it might be possible to relate acceptable radiation risks to other risks of society. There are 23 references.

-- Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 401 Emissions from Carbureted and Timed-Port Fuel Injected Engines. R.C. Stahman and A.H. Rose, Jr. *J. Air Poll. Control Assn.* 16, 15-18 (Jan. 1966).

A comparison was made between the exhaust emission characteristics of a popular make car when equipped with the stock carburetor and when equipped with a timed-port fuel injection system. A brief optimization study was made to adjust the spark timing and fuel flow characteristics to minimize emissions. Performance and economy were compared between the fuel injected and carbureted versions. Emission measurements of carbon monoxide, carbon dioxide, and hydrocarbon were made in road tests by proportional sampling and through the California Cycle by continuous nondispersive infrared instrumentation.

-- Authors' abst.

- 402 The Determination of Acetone in Air. H. F. Wald. *Analyst* 90, 422-428 (July, 1965).

Acetone vapor acts as a narcotic and is relatively nontoxic (maximum permissible concentration in air is 1,000 ppm by volume, or 2,370 mg./cu.m.), but it is used so liberally in industry that it can become hazardous. Various devices are available for determining the concentration in air, including direct-reading indicator tubes and combustimeters. The indicator tubes, which lack in sensitivity and accuracy, only give "spot" readings over short periods of time.

Combustimeters, though quite sensitive and accurate, are not specific and suffer considerable interference from other inflammable vapors. The most versatile methods are those in which the contaminated air is passed at a known rate through a device that quantitatively removes the acetone in such a way that it may later be determined. In a recent investigation, the method suggested by Elkins was tried. In this method, the acetone was adsorbed onto silica gel, then desorbed into water and determined. Since recoveries of acetone were low, the method was reinvestigated and the results showed that activated silica gel is an efficient adsorption medium for sampling acetone vapor. For the determination, the acetone can be completely desorbed with normal sodium hydroxide, but not with water. Complete recovery of acetone can be achieved at atmospheric concentrations up to 4,000 mg./cu.m. There are 16 references.

-- Public Health Eng. Absts.

COMMUNITY AIR HYGIENE

- 403 Research in Air Pollution: Current Trends. J.H. Ludwig and B.J. Steigerwald. Am. J. Public Health 55, 1082-1092 (July, 1965).

Current research in air pollution is classified by types of research and organizations conducting and funding this research. The more important problems under investigation are discussed in terms of present efforts and future needs. Principal areas include: medical-biological research, air quality criteria, vehicle emissions research, atmospheric chemistry and physics, meteorology, and control methods research.

-- Public Health Eng. Absts.

- 404 Regional Air Pollution Warning System. T.A. Glenn, Jr. J. Air Poll. Control Assn. 16, 22-24 (Jan. 1966).

The proposed warning system was developed by the New York-New Jersey Co-operative Commission on Interstate Air Pollution and has been submitted to the States of New York and New Jersey for their consideration. The Interstate Sanitation Commission will be given the responsibility for co-ordinating the monitoring of contaminants and would have the authority to call a watch based on weather forecasts and concentration of contaminants. The Commission would advise the Commissioners of Health of New York and New Jersey of the monitoring information from all co-operating agencies and the possible need for an alert. The standards used by the states as a basis for calling air pollution alerts are discussed and the action planned for each alert level.

-- Author's abst.

- 405 Air Pollution Control. P.W. Hildebrandt. J. Milk Food Technol. 28, 127-130 (April, 1965).

This paper reviews early history of associating "bad" air with suspected diseases. The increase in urbanization has exposed the fallacy of the limited air concept and calls attention to comparative needs of air with other life necessities. The national economic loss from air pollution is estimated at \$4 to \$12 billion annually. The environment of man and his manner and methods of living are discussed as contributors to the present air pollution problems which are complicated and cannot be solved hurriedly. It is pointed out that the cost of neglect far exceeds control expenditures and that education of the public that air is not unlimited, per usual, is urgent. The most effective program is apparently at the local level.

-- Public Health Eng. Absts.

- 406 Measurements of Emissions at Heavy-Duty Boilers for Solid Fuels. W. Thieme. Staub 25, 226-230 (June, 1965). German.

Emission measurement of heavy-duty solid-fuel boilers are reported. The dust measuring methods, test conditions, boiler design, and mode of test operations are considered. The results show that the dust emission is a function of boiler load and that it increases with increasing output. The emitted dust consisted mainly of fly ash and small amounts of coke.

-- Public Health Eng. Absts.

- 407 Measuring Non-Steady Flow in Industrial Vents. C.I. Harding, E.R. Hendrickson, and R.S. Sholtes. J. Air Poll. Control Assn. 16, 12-14 (Jan. 1966).

Satisfactory methods of measuring non-steady flow in two types of industrial vents have been presented. These have been field tested and found to be workable. The photo-pitot traverse technique should be used primarily for calibration purposes with a single impact tube used for actual sampling work. The nozzle section is light enough that it can be handled whenever

sampling is actually done at various ports in a plant. The nozzle can be used for discharge points while the venturi section can be used at intermittent points in a pipe network. No claim is made that these are highly sophisticated techniques, rather that they are simple and useful in obtaining a solution to a rather thorny problem. -- Authors' summary

- 408 A Modified Total Combustion Analyzer for Use in Source Testing Air Pollution.
M.J. Bolduc and R.K. Severs. *Air Eng.* 1, 26-29 (Aug. 1965).

A portable carbon monoxide, carbon dioxide, and hydrocarbon gas analyzer is described. Analyses are made by separation of the gas components, total catalytic oxidation of eluted components, and concentration measurement by a non-dispersive infrared analyzer. Examples are given of the application of the device. Results compared with flame ionization data collected from the same sources generally show good agreement. Six references are given. -- Public Health Eng. Absts.

- 409 Inhalation of the Photochemical Smog Compound Peroxyacetyl Nitrate (PAN). L.E. Smith.
Am. J. Public Health 55, 1460-1468 (Sept. 1965).

The acute toxicity of ozone has been demonstrated to be strikingly enhanced when animals, during exposure to non-injurious levels of ozone, are concurrently subjected to intermittent exercise. The results of the present experiment demonstrated a significant effect of the pollutant PAN upon the oxygen uptake of the subjects occurred when they were exposed to the additional stress of exercise. Therefore, future investigators who study the problem of the effect of pollutants upon the respiratory efficiency of man would be advised, wherever possible, to include the phase of exercise in their experimental design. There is now evidence available which conclusively demonstrates that smog—especially the specific smog compound PAN—is causally associated with the extensive damage of plants. The recent unpublished work of Campbell and associates at the Air Pollution Research Center at Riverside has also shown that PAN is lethal to mice at certain concentrations. The results of the current study demonstrate that PAN can significantly affect the oxygen uptake of human beings during exercise and the maximal expiratory flow-rate during the recovery phase following exercise. -- APCA Absts.

- 410 Kinetics of Vapor-Phase Hydrocarbon-Ozone Reactions. J.J. Bufalini and A.P. Altshuller.
Can. J. Chem. 43, 2243-2250 (1965).

The reaction of nine olefinic and aromatic hydrocarbons with ozone in the vapor phase have been investigated in static and dynamic systems. Some of the rate constants for the olefin-ozone reactions are in good agreement with previously published data, whereas others are larger than values previously reported. Rate constants for *trans*-2-butene-, isobutene-, and ethylene-ozone reactions were measured between 30° and 100°C. The activation energies for the reaction of ozone with *trans*-2-butene, isobutene, and ethylene are 0.2 ± 0.3 , 2.8 ± 0.4 , and 4.2 ± 0.4 kcal/mole, respectively. In general, the reactions of hydrocarbons with ozone are nonstoichiometric. These reactions do appear to be second order, however. The rates of reaction between alkyl benzenes and ozone are too low to be of importance in air pollution studies. There are 19 references. -- Public Health Eng. Absts.

- 411 Concentration and Recovery of Atmospheric Odor Pollutants Using Activated Carbon.
D.L. Brooman and E. Edgerley, Jr. *J. Air Poll. Control Assn.* 16, 25-29 (Jan. 1966).

Activated carbon filters were used to concentrate atmospheric mixtures of acrolein, methyl sulfide, and n-propyl mercaptan. Removal efficiency and carbon capacity for each of the odor compounds were investigated using two different carbons, Cliffchar (4-10 mesh) and Barneby-Cheney (C-4). A closed system was devised to establish a known atmospheric odor concentration for each filter run. Solvent extraction techniques were employed to desorb and recover the odor compounds from the carbon filters. All quantitative analyses were conducted with gas liquid chromatography utilizing the hydrogen flame ionization detector. The removal studies conducted indicate that the efficiency of removal of a carbon filter is essentially 100% up to the point of filter breakthrough. This breakthrough point is governed by the filter's capacity for a particular compound. This study indicated that the filter capacity is dependent both on the type of carbon employed and the particular odor compound adsorbed. Solvent recovery of the odor compounds from the carbons varied from 0 to 4.5% for the mercaptan up to 96 to 98% for acrolein. Percent recovery was found to vary for a given odor compound with different carbons and for a given carbon with different odor pollutants. -- Authors' abst.

03122111

- 412 Sulfur Removal: For Air Pollution Control. T. T. Frankenburg.
Mech. Eng. 87, 36-41 (Aug. 1965).

Sulfur removal from fuel and flue gases is discussed, with emphasis on processes that recover a usable sulfur byproduct. No process appears profitable as yet. Removal of sulfur from coal by use of centrifugal and magnetic forces are discussed. Wet and dry separations from flue gas are considered. Among the separation methods mentioned are gas scrubbing, adsorption, and catalytic gas-phase oxidation. The author discusses the possibility of removing sulfur from both coal and flue gas, so that final effluents meet air pollution standards and overall processes are economical. -- Public Health Eng. Absts.

- 413 What Does It Cost to Desulfurize Fuel Oil? L. S. Galstaun, et al.
Chem. Eng. Progr. 61, 49-58 (Sept. 1965).

Although sulfur dioxide has long been considered a major air pollutant, only recently has it been recognized as a health hazard in concentrations found in urban atmospheres. Recent statistical studies have shown a strong correlation between atmospheric sulfur pollution and respiratory illness. Investigators in both the United States and England have shown that the buildup of pollution during periods of air stagnation can cause illness and death, especially to the aged and those suffering from chronic impairments of the lungs or heart. The toxicity of sulfur dioxide appears to be increased by the presence of many aerosols found in urban air, and there is evidence that the rate of conversion of sulfur dioxide to the more toxic sulfur trioxide can be high in stack plumes and when dispersed in the atmosphere. The purpose of this study was to establish realistic costs that might result if restrictions were placed on the sulfur content of residual fuel oil manufactured in the United States. The results of an economic study of the cost of producing low sulfur fuel oil are discussed. A linear programming analysis was used to evaluate possible refinery schemes. Manufacture of low sulfur residual fuel oil requires an incentive pricing of 42 cents to 65 cents per barrel above fuel oil produced without sulfur restriction. There are 14 references. -- Public Health Eng. Absts.

- 414 Size Distribution of Sulfur-Containing Compounds in Urban Aerosols. F. L. Ludwig and E. Robinson. J. Colloid Sci. 20, 571-584 (Aug. 1965).

Sulfur-compound aerosols in urban atmospheres are considered by some to be significant factors in public health. Particle size may be an important parameter in the effects of these aerosols, i. e., respiratory effects on guinea pigs of zinc sulfate and zinc ammonium sulfate particles have been shown to be size-dependent. A program was instituted to measure size distributions of particulate sulfur compounds using the Goetz Aerosol Spectrometer, which had been successfully employed in size studies of lead aerosols. Much of the program was devoted to adapting aerosol spectrometer techniques to the specific problem of sulfur-compound size determinations. Subsequently, size distributions were obtained at two Los Angeles and two northern California locations. An aerosol spectrometer was used to determine the size distribution of sulfur-containing particulate materials in urban areas of northern and southern California. Based on a limited number of summer daytime samples, a typical Menlo Park size distribution had a mass median diameter of about 0.3 micron with upper and lower quartiles at about 0.9 and 0.1 microns respectively. A typical Pasadena size distribution would be about 0.1 micron larger. The diameters given are for equivalent unit-density spheres of the same settling velocities as the sampled particles. There are 12 references. -- Public Health Eng. Absts.

- 415 Contamination of a Laboratory Building by Air Filters. M. Blumer.
J. Am. Assn. Contamination Control 4, 13, 15 (Sept. 1965).

Air filters, impregnated with high boiling phthalates, were found to be the source of air contamination in a marine research laboratory. After moving to a newly constructed building, gas chromatographic analyses of hydrocarbons in sea water samples became too complex and airborne contamination was suspected. When the contaminant was identified and the source of the contamination was located, the laboratory's fresh air filters were replaced with fiber-glass filters, backed with activated carbon filters. A waiting period of seven months was required before the phthalate residues were reduced to a less volatile level. Desorption from walls and ducts or introduction from other parts of the building could account for the remaining contamination. -- Public Health Eng. Absts.

03122112

ACCIDENTS AND PREVENTION

- 416 Farm Safety. G.S. Wilson. Brit. J. Ind. Med. 23, 1-15 (Jan. 1966).

Accident and safety are related terms; the higher the accident rate in any industry, the greater is the need for safety measures designed to prevent accidents. This article discusses the accident and safety problems in agriculture, which includes horticulture and forestry. There is still a tendency among townspeople to think of the countryside as peaceful and tranquil, a place where nothing happens very quickly and far removed from violent death or crippling injury. This pleasant rustic picture has undergone a striking change in the last 30 years owing to considerable agricultural mechanization and the development of chemical pesticides, which have brought new dangers to those who live and work on the land. Although men have readily adapted themselves to new machines and methods, they have not proved as able to recognize new dangers and learn how to guard against them. In consequence, accidents have increased to such an extent that the whole industry has realized the need for positive preventive measures. In this country (England), it is generally accepted that an employer of labor has a responsibility to provide safe working conditions for those he employs. Farm safety legislation goes a little further and usually requires an employer to provide necessary safeguards, with the added requirements on the worker to make use of them. It is a feature of accident prevention work that it never reaches a stage when it can be regarded as complete. Even when a reduction in accidents has been achieved, the effort must be sustained or the trend will be quickly reversed.

-- Author's abst.

- 417 Accident Prevention in the Cowshed. W. Mainzer. Brit. J. Ind. Med. 23, 24-27 (Jan. 1966).

Work accidents were studied at two agricultural settlements in the Haifa area. Most of the accidents were caused by farm animals, particularly by cattle, a fact which is in agreement with a general statistical survey conducted by the Department for Occupational Health of the General Federation of Labour in Israel. However, in the present investigation it was found that the accident rate in cowsheds was more than ten times higher among the members of a co-operative smallholders' village (Moshav Ovdim) than it was at a collective settlement (Moshav Shetufi) of the same numerical size. Searching for the basic factors involved, it was discovered that the main reason for this striking difference in accident frequency was the faulty design of the small cowshed at the individual farms of the co-operative settlement, which, lacking adequate protective measures, exposes the farmer to close contact with the animals throughout almost all stages of dealing with them. It is concluded that accidents from handling cattle can be prevented by adhering strictly to the principle of eliminating direct contact between man and animals in the construction of the cowshed and its annexes.

-- Author's abst.

- 418 The Safety of Drivers with Chronic Disease. L. Ysander.
Brit. J. Ind. Med. 23, 28-36 (Jan. 1966).

Six hundred and twelve drivers with chronic disease, mainly diabetes, cardiovascular disease, renal disorders, and diseases of the sense organs, were investigated with regard to the frequency of road accidents and serious driving offenses during a ten-year period. Road accidents directly caused by the disease or its treatment occurred in 4 (0.8%) cases, all due to hypoglycemic attacks in insulin-treated diabetics. A comparison was made between the investigation series and a control series identical with regard to number, sex, age, and duration of license-holding. About 50% of the drivers in each series were asked about their exposure to traffic; this proved to be similar in both series. The percentages of drivers experiencing road accidents were 4:1 in all investigation series and 7:7 in the control series. The corresponding figures for road accidents and serious driving offenses taken together were 9.8% and 15.3%. The conclusion is drawn that any increased risk to road safety constituted by drivers with specified chronic disease may be satisfactorily offset by the restrictions applied in Sweden in the granting of licenses to these drivers.

-- Author's abst.

03122113

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