

IN RE: ABRAMS

November 1992



Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

APRIL, 1966
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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

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INDUSTRIAL HYGIENE FOUNDATION OF AMERICA, INC.

MELLON INSTITUTE, 4400 FIFTH AVENUE

PITTSBURGH, PA. 15213

April, 1966

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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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 Fiberglass 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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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 min
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	Ethyleneimine	5	-	30
Carbon disulfide	100	-	30				
Carbon monoxide	400	-	15				
Carbon tetrachloride	25	-	30				

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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)

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(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.

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 Science 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 Pathogene Human Exposure to Asbestos; Industrial Populations, Community Studies, Dust Controls and Standards; Clinical Studies of Pulmonary Asbestosis; Asbestos and Neoplasia; Experiment; Epidemiology, and Diffuse Mesothelial Tumors; and Problems and Perspectives. Appendix presents the findings of the working group on Asbestos and Cancer, under the general heading 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 pathologic 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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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 or 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. La Plasse. *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

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 technique 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 abst.

- 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%. Smoke 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 nutritional 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.

- 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 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. Abstr.

- 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 mechanism 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 discipline. 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 biliary 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 hepatitic reaction resembling viral hepatitis, possibly represent immunologic injuries. The difference between these two reactions may be only quantitative, as they should be considered as variants of the same group.
-- Ann. Rev. Resp. Dis. Abstr.

- 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 Kaslo
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

- 353 Progress in Tetanus Prophylaxis: The Advent of Human Antitoxin. B. J. F. Percy. 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 abstr.

- 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 allergen 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. Abstrs.

- 356 Hemodynamic Effects of Nitroglycerin in Patients With Coronary Heart Disease. B. Christensson, T. Karlfors, 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. Abstrs.

- 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 homologs 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. Monaford 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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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 Rl 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 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. Pogoyan. *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

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

An attempt was made to determine the effect of small concentrations of carbon disulfide on immunological reactivity of the body and on morbidity with temporary disability in workers at a rayon factory. A drop in general immunological reactivity and a rise in morbidity rate 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. Ab

- 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). Ital.

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. Ab

- 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 use of insecticides throughout Quebec Province with emphasis on occupational health hazards at 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 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 phosphorus 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 phosphorus 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

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. In the authors' opinion that this baghouse is properly applied to the cleaning of waste gases in a single oxygen-lanced open hearth furnace.

-- Authors' ab

- 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 1961 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 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 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 prevalence of the disease.

-- Authors' ab

- 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 I/2); 64% of such workers would have been diagnosed as normal.

-- Author's ab

- 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. Whether it may be a serious disease is beyond question. Staines and Forman (1961) recorded the prevalence 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 conclusion

- 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' absts.

- 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 Mineeraali, 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 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 work 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 Abstr

- 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 Abstr

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. Abstrs

- 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. Abstrs

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. Abs

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. Abst

- 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

- 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 recce 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. Ab

- 413 What Does It Cost to Desulfurize Fuel Oil? L. S. Galstaura, 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

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