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Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

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INDUSTRIAL HYGIENE FOUNDATION

MELLON INSTITUTE

4400 FIFTH AVENUE -- PITTSBURGH, PA. 15213



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INDUSTRIAL HYGIENE FEATURES

A broad experience in therapy with hyperbaric oxygen is reviewed in Abst. No. 1133.

Abst. No. 1135 discusses the early recognition and management of emotional distress in executives.

Abst. No. 1142 surveys in-plant care of ocular injuries.

Abst. No. 1145 reports on strokes in young women using oral contraceptives.

Data on the relation between change of blood pressure and age are presented in Abst. No. 1146.

Abst. No. 1152 reviews bronchogenic carcinoma factors in survival.

Abst. No. 1153 reports on carmine as a source of nosocomial salmonellosis.

Abst. No. 1155 studies fatal opportunistic fungus disease.

Some observations on the acceleration of healing with zinc sulfate are made in Abst. No. 1157.

Abst. No. 1163 devotes some attention to dermatitis in animals.

Three cases of lead poisoning from drinking soft water are described in Abst. No. 1181.

Consult Abst. No. 1185 regarding information on Los Angeles Rule 66 and exempt solvents.

Mushroom worker's lung is described in Abst. No. 1188.

The pulmonary hazards from exposure to glass fibers are reviewed in Abst. No. 1192.

Abst. No. 1193 is concerned with the effects of barometric pressure fluctuations on the activity of laboratory mice.

Some hazards of hyperbaric chambers are presented in Abst. No. 2005.

FOUNDATION FACTS

STAFF ACTIVITIES: Dr. Robert T. P. deTreville, IHF Managing Director addressed a delegation of Soviet scientists from the Ministry of Health of the USSR. The group visited Mellon Institute and the University of Pittsburgh Graduate School of Public Health December 4-5, during their tour of United States research facilities under a cultural exchange agreement. Dr. Paul Gross, Director of IHF Research Laboratory, spoke on "Experimental Lung Cancer Produced with Chrysotile Dust" at a Seminar December 14 at the University of Florida School of Medicine, Gainesville, Florida. (See new reprint below).

ENGINEERING DISCUSSIONAL: The Fourth Engineering Discussional on "The Control of Environmental Health Hazards" will be held January 9-11, 1968 at Holiday Motor Inn (Sewickley). Subjects to be covered during the Discussional (which is for representatives of member companies only) are: "Health Hazards and Their Control in Pilot Plants", "Illumination", "Laboratory and Fume Hood Ventilation", "Engineering Aspects of Threshold Limit Values", "Filters and Filter Testing". Mr. N. V. Hendricks of Standard Oil Company (N.J.), member of the IHF Engineering Committee and Chairman of this year's Discussional program, has arranged a most interesting and useful program with outstanding speakers and discussants.

IHF WORKSHOP ON THRESHOLD LIMIT VALUES: IHF Chemical-Toxicological Committee will sponsor its 3rd Workshop on TLVs February 1-2, 1968. This time the location will be the Kettering Laboratory, University of Cincinnati. Attendance at the Workshop is not restricted to IHF members this year; therefore, an invitation is being extended to all those who have data to present or who are concerned with the setting and validating of TLVs. (See attached Chemical-Toxicological Bulletin No. 7 for additional information).

NEW REPRINT AVAILABLE UPON REQUEST: "Experimental Asbestosis—The Development of Lung Cancer in Rats with Pulmonary Deposits of Chrysotile Asbestos Dust," Paul Gross, Robert T. P. deTreville, Ethel B. Tolker, Marianne Kaschak, and Mary Ann Babyak. Arch. Environ. Health 15:343-355, September 1967.

FROM THE STAFF OF THE FOUNDATION TO READERS OF THE DIGEST
HAPPIEST HOLIDAY GREETINGS

HHBB-0020265

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IN RE: ALBRAMS
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EDITORIAL

Announcement has been made previously, at the Annual Membership Meeting on October 10, concerning negotiations between Industrial Hygiene Foundation and the University of Pittsburgh to provide for continued utilization of IHF's Research Laboratory facilities following the completion of the merger creating Carnegie-Mellon University, since it appeared unlikely that Mellon Institute would continue its lease on the third floor of the Old Mellon Building on the Pitt campus (presently designated as the University of Pittsburgh's Physics Building).

Several alternatives were considered by the Foundation's Board of Trustees, but the most attractive and feasible procedure was the continued utilization of the approximately 7,200 square feet of experimental laboratory floor space currently used by a transfer of the contract arrangement from Mellon Institute to the University of Pittsburgh. Under the agreement just consummated, should IHF be asked to vacate its present facilities, the University of Pittsburgh has agreed to provide suitable and acceptable space elsewhere. New University health research laboratory construction being planned for completion in about 1972 appears to be the most promising future site, if and when such a move becomes necessary.

It is well known that Mellon Institute has, from the earliest conception of IHF in 1935, provided the assistance needed to keep the Foundation going. In the negotiations cited above, also, the Foundation's membership should appreciate that Mellon Institute was a major asset in assisting in establishing this new relation with the University of Pittsburgh.

Thus effective January 1, 1968, our Laboratory, without interruptions to program or change of location, becomes a newly created "Industrial Hygiene Research Unit" supported by IHF within the Department of Occupational Health of the University of Pittsburgh's Graduate School of Public Health. The Laboratory's present staff will become employees of the University of Pittsburgh.

For the immediate future, the Administrative activities of the Foundation will continue to operate from Mellon Institute, but our previous over-all contract covering both laboratory and office operations will be modified to cover only the office functions; that is, the Managing Director and Office Manager, Industrial Hygiene Digest, publications, membership, etc, will continue to use the Institute facilities and all matters pertaining to the business activities of the Foundation should be referred to this address.

INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

1121 Industrial Nurses.

The number of nurses working in industry outside the traditional physician-nurse pattern may surprise you. In the spring of 1965 The Division of Occupational Health, United States Public Health Service, published a study bearing on this matter. On the basis of a survey answered by almost 10,000 industrial nurses, it was found that only one-fourth of the nurses work with a full-time physician, that is, one who is on duty 35 or more hours a week. Furthermore, the survey indicated that a third of these 10,000 nurses work without any physician being regularly present at the plant.

-- Am. Assn. Indust. Nurses J. 15, 15 (Jan. 1967).

-- J. Occ. Med. 9, 352 (July, 1967).

1122 The Toll.

The economic loss from traffic accidents reached \$1,125,900,000 for the month of July, according to estimates of the Insurance Information Institute. This represents an increase of \$27 million over June but about \$125 million below July, 1966. The cost to the nation was lower this year because there were fewer deaths, even though both the number of accidents and the number of injuries increased about 6% over last year's figures. Traffic deaths totaled 4,880 in July this year. The traffic accident cost to the country for the first seven months now stands at \$6,912,250,000, which is a rise of nearly \$125 million from the 1966 figure. Traffic injuries for the seven months rose from 1,806,260 to 2,049,062. The economic loss figures include such factors as lost wages, medical expenses, property damage and the service cost of insurance.

-- Safety Maint. 134, 8 (Nov., 1967).

1123 How Industry Can Survive Noise Control.

Industry will have to learn to live with the increasing governmental regulations in the area of noise control and hearing protection. An environmental health consultant, William R. Bradley, has suggested the following program. Industrial technicians should cooperate with governmental authorities in preparing noise codes (to prevent the writing of ordinances or laws by people with little or no knowledge of the science of noise). Industry must be prepared with noise analysis data and employee hearing tests data to fight fraudulent occupational hearing loss claims. Industry must survey its noise exposures to see if a noise problem really exists in any of its processes. Excessive industrial noise must be reduced. In short, noise control need not be either an economic or engineering burden if industry assists in furthering its objectives.

-- Safety Maint. 134, 8 (Nov. 1967).

1124 Leprosy Warning.

The possibility of an increase in leprosy cases in the U.S. as a result of the war in Vietnam was warned by Chapman H. Binford, M.D., chief of the microbacterial diseases branch of the Armed Forces Institute of Pathology. South Vietnam has more than 70,000 cases of leprosy, according to World Health Organization.

-- AMA News 10, 1 (Oct. 30, 1967).

1125 Uranium Mill Tailings.

A project to evaluate the health hazards from piles of uranium mill tailings is being developed jointly by the Atomic Energy Commission and the Public Health Service. The joint project will help states and industry to evaluate emissions of radon from the tailings. The agencies will develop techniques for sampling air for radon content and to determine the effects of covering the piles with earth or paving materials.

-- Chem. Eng. News 45, 43 (Nov. 13, 1967).

COMING EVENTS

- 1126 Jan. 11-12 Rocky Mountain Academy of Industrial Medicine (3rd Annual Institute of Industrial Medicine), Aspen, Colorado.
- Jan. 17 Association for the Advancement of Psychoanalysis, New York, New York.
- Jan. 17-18 American Rheumatism Association, (Interim Meeting), Baltimore, Maryland.
- Jan. 18-20 National Conference, the Community and Emergency Medical Services, San Francisco, California.
- Jan. 19-20 American Society for Surgery of the Hand, Chicago, Illinois.
- Jan. 20-25 American Academy of Orthopaedic Surgeons, Chicago, Illinois.
- Jan. 24-25 Health Physics Society, Mid-year Topical Symposium (Sponsored by the Savannah River Chapter) "Environmental Surveillance in the Vicinity of Nuclear Facilities", Augusta, Georgia.
- Jan. 24-27 American Group Psychotherapy Association, Chicago, Illinois.
- Jan. 29-31 Society of Thoracic Surgeons, New Orleans, Louisiana.

LEGAL DEVELOPMENTS

1127 Illness Linked to Air Pollution in Beryllium Suit.

"A Reading, Pa. jury awarded damages of \$109,160 on October 23, 1967 to Mr. and Mrs. Wilbur F. Heck in a suit against The Beryllium Corporation. The Hecks charged that defendant's beryllium ore refinery and alloy plant, by polluting the community air with beryllium dust, had caused Mrs. Heck, a local resident, to contract berylliosis, a chronic lung illness. The verdict concluded a second trial of the case ordered by the Pennsylvania Supreme Court after the lower court set aside a 1964 jury award of \$110,000. Medical testimony for plaintiffs at the retrial attributed Mrs. Heck's illness to community air pollution added to earlier exposure to contaminated work clothing and possibly abetted by the stress of pregnancy. Defense experts, without contesting the diagnosis, contended that the clothing contact in 1942 and 1943 alone caused Mrs. Heck to become ill in 1960 and that berylliosis is typically a disease of individual susceptibility and long latency. The issue of negligence was restricted to periods after March 30, 1950, the date of an AEC recommendation that concentrations of beryllium in plant neighborhoods be held to a monthly average of 0.01 micrograms of beryllium per cubic meter of air. Applying Sutton's equation to assumed source strengths, an expert for plaintiff calculated concentrations up to 0.1 micrograms at 1951 and 1952 Heck residences three and four miles from the plant. Defendant's expert contested these calculations for failure to include such steps as an adjustment for the "swing of the winds". Net effect of the omissions, according to the defense, was to inflate the plaintiffs' numbers by a factor of nineteen which, if corrected, would reduce the 0.1 figure to 0.005 and the other values in proportion. The case is subject to judicial review after transcription of the voluminous record of the eleven-day retrial."

-- Beryllium Corporation Communication to Industrial Hygiene Digest

1128 Employment Discrimination.

A bill to bar discrimination in employment because of age has been approved by the Senate. S. 830 would bar such discrimination by employers, employment agencies, and labor unions. However, bona fide seniority systems or employee benefit plans are exempt. Reason for the exemption is to permit employers to hire older workers without necessarily including them in employee benefit programs. A similar bill was approved earlier this month by the House Committee on Education and Labor. As a result, chances are that Congress will approve the proposal.

-- Chem. Eng. News 45, 43 (Nov. 13, 1967).

1129 Licensing Clinical Laboratories.

The details of federal licensing for clinical labs will be settled in a conference between House and Senate. In the version of the Health Partnership Amendments bill passed recently by the Senate, certain clinical laboratories would be exempt from federal licensing provided the licensing body has been approved by the Government and has accreditation standards at least as tough as the Government's. The House-approved version exempts from the licensing provisions labs operated by pathologists. The American Chemical Society opposes this kind of blanket exemption. The chances are the conferees will approve the Senate version of the licensing procedure.

-- Chem. Eng. News 45, 43 (Nov. 13, 1967).

1130 Generic-Name Drugs.

Senator Long's proposal to encourage the use of generic-name drugs under medicare was killed by the Senate Finance Committee. The Louisiana Democrat's proposal would have reimbursed patients only for the cost of generic-name drugs even though therapeutically equivalent trade-name drugs were prescribed. In lieu of this, the committee, in marking up the Social Security Amendment bill, approved a two-year study by the Department of Health, Education, and Welfare on the probable impact on the drug industry and the medical profession of a policy discouraging prescribing drugs by their tradenames.

-- Cond. from Chem. Eng. News 45, 43 (Nov. 13, 1967).

BOOKS, PAMPHLETS AND NOTICES

- 1131 A Strategy for a Livable Environment:* A Report to the Secretary of Health, Education, and Welfare; June 1967. The Task Force on Environmental Health and Related Problems, U.S. Department of Health, Education, and Welfare, Washington, D.C. 20201. AVAILABLE FROM: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. 90 pp. PRICE: 60 cents.

The 140 million Americans who live concentrated on 10 percent of the Nation's land area must now take vigorous action to clean up the environment. As the facts become clear, the public will be shocked at the price it is paying for its affluence. But, if it is obvious that one way to halt the contamination of the environment is to prohibit automobiles, stop the generation of electricity and shut down industry, it is just as obvious that this way is impossible. What is possible is to find ways to eliminate contamination at its source. Or, next best, to capture a pollutant and use it in a nonharmful way; or, finally, to bring the level of pollution down to a point compatible with the requirements of human health and welfare. The Department of Health, Education, and Welfare should have primary responsibility for protecting Americans from all the threats to their environment. The Department should approach environmental health problems from two directions. First, action must be taken against the most serious existing problems, and second, an environmental protection system must be created that offers a means to identify emerging environmental hazards and prevent them from getting out of hand in the future. This Report deals with these two approaches to eliminating or bringing environmental problems under control. It includes 34 principal recommendations; ten of these are action goals, ten deal with the creation of an environmental protection system, and the remainder are miscellaneous recommendations which support the goals and system. Among the ten Action Goals covering the areas which the Task Force felt deserve the highest priority today, one which may have far reaching effects on industry in a manner similar to FDA licensing of drugs and food additives, is mentioned as follows: Materials, metals, and chemicals in ever-increasing abundance and complexity come to the market place with no previous analysis of their toxic effect upon the environment. This cannot be permitted to continue. Therefore this goal is: A materials, trace metals, and chemicals control effort to establish, by 1970, human safety levels for synthetic materials, trace metals, and chemicals currently in use, and prohibit after 1970 general use of any new synthetic material, trace metal, or chemical until approved by the Department of Health, Education, and Welfare. The Task Force finds that adequate occupational health and safety services are not sufficiently available to American workers, and that the well-being of our people and the strength of our economy would be greatly enhanced if such services were instituted in all places of employment. Therefore, the Task Force recommends an effort to extend, by 1970, preventive services to 100% of the employed population at its work place.

* Also popularly called "The Linton Report".

- 1132 Occupational Disease in California—1965. State of California, Department of Public Health, Bureau of Occupational Health. 45 pp. (1967). Copies are available free upon request as long as the supply lasts from the Bureau of Health Education, California State Department of Public Health, 2151 Berkeley Way, Berkeley, California. 94704.

This 1965 review, the first of its kind since 1960, summarizes in some detail 26,837 doctors' reports of occupational disease from among the nearly 5.5 million workers covered by the California Workmen's Compensation Act. Less comprehensive reports were published in the

intervening years. Most occupational disease reports fell into the categories of skin and eye conditions and chemical burns. The causative agents most frequently mentioned were poison oak, acids and solvents. Respiratory conditions and systemic effects due to toxic materials, while less frequent, tend to be more severe; of all workers with occupational disease, the proportion of workers losing time from work for these conditions is almost twice that of all workers. One-third of the 558 reports of systemic effects of toxic materials in 1965 implicated agricultural chemicals. Although relatively few reports were received concerning such classical hazardous agents as carbon monoxide (58 reports), lead (55 reports), carbon tetrachloride (31 reports) and mercury (26 reports), these are significant because the principles of environmental control for all of these have been well understood for a long time and they indicate the need for education and enforcement. The use of atomic energy in industry, the introduction of new tools and machines and the mechanization of processes and services have increased the risk to such hazards as noise, vibration and ionizing radiation. Among all major industry groups, agriculture, as usual had the highest rate of occupational disease (13.5 reports per 1,000 workers); followed by manufacturing, 7.8; and construction, 7.7. Rates for production workers within manufacturing fluctuated from 2.8 reports per 1,000 workers in ordnance to 39.9 per 1,000 workers for the chemical industry.

Chemical and allied products accounted for nearly 90 percent of the total of 1,226 occupational disease reports. The most frequently identified causative agents were acids, 16 percent of the cases; solvents, 11 percent; agricultural chemicals, 9 percent; alkalis, 8 percent; gases 5 percent and plastics 5 percent. Chemical workers in this series had a somewhat higher proportion of respiratory conditions and systemic effects (poisoning) due to toxic materials than workers in general. Most of the reports of poisoning among chemical workers implicated organic phosphate pesticides. Gases, solvents and agricultural chemicals were most frequently mentioned on reports of respiratory conditions due to toxic materials. Production workers in rubber and miscellaneous plastic products had the second highest rate in manufacturing (21.3 reports per 1,000 workers). Plastics accounted for 15 percent of the 509 cases reported for production and nonproduction workers in this group; solvents for 13 percent; dust, 10 percent; and acids, 6 percent. Dermatitis, conjunctivitis and chemical burns were the most frequently reported conditions. The proportion of reports attributed to respiratory conditions was 7 percent, or nearly one and a half times the proportion of respiratory conditions for all manufacturing workers in this series.

Another high-rate manufacturing industry was electrical machinery, equipment and supplies with 19.0 reports per 1,000 production workers. These workers manufacture electrical measuring instruments, test equipment, transformers, motors, generators, carbon and graphite products, household appliances, electric lamps, etc. The production workers accounted for over 90 percent of the 1,942 reports for this industry. Acids, solvents, plastics, metals and dust were frequently implicated. Skin problems, chemical burns and eye conditions constituted over 90 percent of the reports. These three conditions are most frequently listed for all industries. Workers in fabricated metal products, another high-rate industry, 17.5 occupational disease reports per 1,000 production workers, produce a variety of metal products including cans, hand tools, general hardware, nonelectrical heating apparatus and plumbing fixtures, structural steel, metal doors, sash, frames, sheet metal work, screw machine products. The industry also includes shops where plating, galvanizing and coating of metal takes place. As for almost all manufacturing categories, acids were implicated most frequently with 26 percent of the 1,352 reports of occupational disease among all workers in fabricated metals. Solvents were second with 12 percent; followed by metals and their compounds, 9 percent (chromium plating compounds, zinc and nickel were most frequently identified); petroleum fractions, 7 percent; and alkalis, 6 percent. The uses and limitations of the occupational disease reporting mechanism in the surveillance of occupational health are discussed.

Methods proposed in the Frye Report (see Editorial in November 1966 Industrial Hygiene Digest), will be developed by the Bureau: sample monitoring will provide current information about the work environment. Questions which can be answered by sample monitoring concern the number of workers exposed to a given hazard and the extent and adequacy of the controls used to protect them. For example, how many workers in California are being exposed to beryllium and with what degree of safety is this chemical being used? From these findings, recommendations can be made for improvement in controls leading to prevention of occupational disease. Also, a systematic analysis of technological trends, will permit the staff to anticipate occupational health problems and determine the direction of surveys and other studies. Epidemiological and other statistical methods are techniques already widely used in the Bureau of Occupational Health.

-- Abstracted from Summary & Text of Rept.

Editor's Note: Interested readers should also read The Linton Report, which is reviewed in this issue (item 1131).

-- R. T. P. deT.

INDUSTRIAL MEDICAL PRACTICE

- 1133 Hyperbaric Oxygen: A Review of Treatment in Eighty-Three Patients. J. H. Duff, et al. Can. Med. Assn. J. 97, 510-515 (Sept. 2, 1967).

A broad experience in therapy with hyperbaric oxygen has been reviewed. For patients with gas gangrene, the results in this and other series suggest that hyperbaric oxygen is a worthwhile addition to current therapy. Although carbon monoxide poisoning is becoming rare in Canada, two patients so affected improved dramatically when given oxygen at 3 atmospheres pressure. Both made a complete recovery. The necessity of a hyperbaric chamber for the treatment of decompression sickness is undisputed. This condition is an increasing industrial and recreational hazard. In the treatment of patients with chronic infections such as leg ulcers, the use of hyperbaric oxygen is less impressive, although further trials in this area are indicated. In the treatment of carcinoma, the results of treatment with a combination of hyperbaric oxygen and radiomimetic drugs are also equivocal and trials are still in progress. Hyperbaric oxygen was not found to be of benefit in the treatment of ischemia and gangrene or in patients in shock. In respiratory distress syndrome transient improvement was achieved but all three infants died. There are 21 references.

-- Authors' conclusions

- 1134 Industrial Hygiene Problems Within Research Laboratories. P. G. Rentos and E. J. Baier. Public Health Repts. 82, 72-74 (Jan., 1967).

Evaluations of research installations in Pennsylvania have been and are being conducted to assess the character of operations in terms of immediate hazards to personnel and to gain knowledge about future stresses and air-contamination hazards in the manufacturing and service industries.

-- Public Health Eng. Absts.

- 1135 Early Recognition and Management of Emotional Distress in Executives. L. E. Himler. J. Occ. Med. 9, 336-338 (July, 1967).

Despite the strenuous demands on personality function and the heightened tensions under which executives work, there is no mental disorder peculiar to this occupational level, nor is there need for any therapeutic approach different from that given to other patients in whom symptoms of emotional distress are identified. Many minor symptoms of tension, anxiety, or stress are alleviated successfully in the course of regular medical contacts or periodic health examinations. When there is evidence of more severe or chronic emotional distress, the physician in industry will employ accepted techniques of emotional first-aid. This will provide the short-term support that may be required while the patient's symptoms are being fully evaluated. Consultation with the patient's private physician or other designated consultants will determine the course to be pursued relative to referral to specialists in the mental health field.

- 1136 Prognosis for Severe Psychiatric Disabilities Incurred in Naval Service. E.K.E. Gunderson and R. J. Arthur. J. Occ. Med. 9, 327-335 (July, 1967).

Psychotic and neurotic patients who were retired from the naval service with disabling psychiatric disorders were followed up for 5 years by means of medical and Physical Evaluation Board records. The employment records of these patients indicated that a large proportion were able to make constructive work adjustments in the community 3-5 years after retirement. Diagnosis and clinical symptomatology were found to be highly related to rated degree of disability at the time of retirement while employment status and remission of symptoms were highly related to later disability ratings. A number of demographic variables were significantly related to diagnosis. Certain social background factors, such as race and education, appeared to have short-term effects upon the employment records. There are 11 references.

-- Authors' summary

- 1137 Social Drinking and Blood Alcohol Levels. W. J. Pryor. New Zealand Med. J. 65, 689 (1966).

An arbitrary level of blood alcohol, above which it would be an offense to drive a motor vehicle, should be set sufficiently high to allow for a wide individual variations in alcohol tolerance. Almost a bottle of wine in the course of an evening with the appropriate amount of food is necessary before the 100-mg. level suggested by the British Medical Association is reached.

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

- 1138 Spectrum of Myopathy Associated With Alcoholism: I. Clinical and Laboratory Features. G. T. Perkoff. *Ann. Internal Med.* 67, 481-492 (Sept., 1967).

A spectrum of myopathy is found among chronic alcoholic patients. Studies are reported of 29 alcoholics without muscular symptoms, one additional patient with an acute reversible myopathy with muscle cramps, one patient with gross myoglobinuria, and 10 with chronic myopathy. The patients with acute myopathy had features of chronic myopathy after recovery from their acute abnormalities. The clinical features in them and in the ten patients who presented with chronic myopathy included proximal and diffuse muscle atrophy and weakness, frequently progressive and often associated with muscle tenderness. A more stable form with proximal wasting unassociated with tenderness also was observed. In the acutely ill patients and in the alcoholics without muscular complaints, elevated serum creatine phosphokinase levels and reduced ability to raise blood lactic acid levels in response to exercise were noted. In patients with chronic myopathy the biochemical changes were similar but less striking and less consistent. Abstinence from drinking was associated with improvement in every instance.

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

- 1139 Spectrum of Myopathy Associated With Alcoholism: II. Light and Electron Microscopic Observations. G. Klinkerfuss, et al. *Ann. Internal Med.* 67, 493-510 (Sept., 1967).

Eight skeletal muscle biopsies were obtained for electron microscopy from patients with myopathy associated with severe alcoholism. Five additional biopsies were examined only by light microscopy. In the acute phase, myofilaments and myofibrils were separated by an expanded sarcoplasm. The myofilaments were disorganized, initially at the I band but with severe degrees of intracellular edema the A band also became disorganized. In the chronic form individual fibers were small and rows of nuclei were found. Intracellular edema was less pronounced but mitochondria contained dense inclusions and filaments resembling the A band myofilaments collected in large aggregates. The morphologic features of acute lesions probably are best explained by altered membrane permeability leading to intracellular edema and disorganization of mitochondria and myofilaments. Filaments of the I band become fragmented and disappear whereas the A band myofilaments are retained in aggregates for prolonged periods. Morphology of the chronic phase reveals the preceding destruction of fibers plus extensive regeneration.

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

- 1140 Longitudinal Pancreaticojejunostomy in Alcoholic Pancreatitis. W. D. Cox and W. J. Gillesby. *Arch. Surg.* 94, 469 (1967).

A hospital in the Chicago slums near Skid Row, where the alcoholics consume "smoke" made with paint and varnish remover, treated 350 patients with what might be labeled alcoholic pancreatitis. Using strict criteria (history of alcoholism, amylase levels of more than twice the normal values, absence of biliary disease and hyperparathyroidism), 86 patients were reviewed, 32 of whom had pancreaticojejunostomy. Their indications for this operation were: history of two or more recurrences, pancreatic calcification associated with symptoms, pancreatic insufficiency, and malabsorption or presence of a pseudocyst. Although pancreaticojejunostomy was sometimes followed by complications such as postoperative fistulas, it was found to provide adequate pancreatic drainage and to prevent recurrence of pancreatitis. Obstructive jaundice and pain were relieved. Pancreatic exocrine function returned within about six months. Though none of the patients stopped drinking, none were readmitted for a recurrent attack of pancreatitis during a follow-up period of eight to 48 months.

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

- 1141 Occult Temporal Arteritis: Common Cause of Blindness in Old Age. J. F. Cullen. *Brit. J. Ophthalmol.* 51, 513-525 (August, 1967).

Review of a substantial number of cases shows that temporal arteritis in its occult form is a common cause of blindness in elderly people and appears to be more common than the classical variety. A raised erythrocyte sedimentation rate is a good guide to the diagnosis although not absolute. All patients with ischemic optic neuritis should be presumed to be suffering from occult temporal arteritis until proved otherwise. In 10% of patients with central retinal arterial occlusion the cause is occult temporal arteritis. Biopsy of the superficial temporal artery is the only way to prove or exclude the condition. Involvement of fellow eye is prevented by early treatment.

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

- 1142 In-Plant Care of Ocular Injuries. S. L. Fox.
J. Occ. Med. 9, 358-365 (July, 1967).

The subject is discussed under the following headings: Types of injury, Eyelid, Contusion, Foreign Bodies, Chemical, Thermal Burns, and Dislocation of the Crystalline Lens. A large number of ocular injuries are of a relatively minor nature, but few can be treated adequately even in the well-equipped and properly staffed first-aid facility of most industrial plants. The most important function of the in-plant nurse or first-aid personnel, therefore, is the prompt recognition of these injuries and the proper handling of the patient until he is placed in the hands of the ophthalmologist. Not infrequently, the ultimate degree of restoration of ocular function, as well as the cosmetic end result of the treatment, will depend to a large extent on the quality and promptness of the in-plant first-aid measures which were administered. There are two major requirements: the first being a thorough recording of the history—when, where, how, and why the accident occurred. This information, as well as interpretative comments about the nature of the work the patient was doing at the moment of injury, should be relayed to the ophthalmologist. In addition, the medical record of the employee should be reviewed for prior eye injury and visual acuity determination, and this information also promptly forwarded to the ophthalmologist. The second requirement is the recording of the visual acuity, with and without correction, before the eyes or eyelids are manipulated. Many persons have no realization of defective vision in one eye until the occasion arises to test each eye separately after an injury. Medico-legally, it is of the utmost importance to have a record of visual acuity immediately prior to treatment for the protection of the first-aid personnel, as well as the physician. If it is not possible to use a vision-testing chart, one may use a newspaper or telephone book to obtain some evidence of how much vision is present. If the patient's condition precludes the recording of even this rough estimate of the visual acuity, this should be noted on the chart. The periodic recording of the visual acuity during the subsequent course of treatment serves as a valuable guide and prognostic aid. The author has seen many instances of unrecorded progress where visual acuity, immediately after the injury and before treatment, was quite good in the injured eye, and although the eye healed and visual acuity obviously improved, the patient later claimed a decrease in visual acuity for purposes of establishing a compensation claim. The minimum requirements of equipment, surgical supplies, and drugs necessary for the emergency care of eye injuries are listed. There are 10 references.

- 1143 Influenza in Canada. J. C. McDonald.
Can. Med. Assn. J. 97, 522-527 (September 2, 1967).

Influenza epidemics in Canada during the last 40 years are well defined in time and severity by the usual mortality statistics and by sickness-absence figures from the Labour Force Survey and the federal civil service. However, until recently, there has been little virological information to supplement these findings and much more is needed. Influenza A has probably been the most important cause of sickness and mortality, with epidemics every two or three years; influenza B has caused lesser outbreaks at about seven-year intervals and there have been no large outbreaks of influenza C. Two-thirds of the excess mortality in recent years was in persons 65 years of age and over, but the remaining one-third was distributed fairly evenly. About half the excess mortality was ascribed on the death certificate to non-respiratory causes but in perhaps half of these, death was probably hastened by less than one year. Compared to other countries, Canada has had only slightly lower mortality than the United States but very much lower—perhaps one-seventh—than Britain. There are 15 references.

-- Cond. from author's summary

- 1144 Cardiovascular Studies on Former Endurance Athletes. K. Pyorala, et al.
Am. J. Cardiol. 20, 191-205 (August, 1967).

Sixty-one former champion endurance runners or cross country skiers, 40 to 79 years of age, were submitted to a thorough evaluation of the cardiovascular system. A control group of 54 nonathletes of the same age were submitted to similar studies. Both the mean systolic and diastolic blood pressures of the athletes (137/87 mm Hg) were significantly lower than those of the controls (147/92 mm Hg). There was no difference in the serum cholesterol level or in the hemoglobin concentration of the blood between the two groups. Coronary heart disease was diagnosed in 17 of the 54 controls and in 15 of the 61 athletes. Eight control subjects, but only two athletes, had had symptoms of coronary disease. The current physical activity was greater in the athletes than in the controls. There were fewer nonsmokers and more heavy smokers, as well as exsmokers in the control group than in the group of athletes. Among men aged from 40 to 69, the electrocardiogram, by Minnesota Code, showed in 5 of 49 controls and in 1 of 55 athletes Q or QS patterns indicative of old myocardial infarction. Healthy athletes had a larger maximal QRS vector, a larger roentgenologic heart volume, a lower heart rate during exercise, and consequently a higher calculated maximal oxygen uptake, than the controls.

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

- 1145 Strokes in Young Women Using Oral Contraceptives. M. Cole.
Arch. Internal Med. 120, 551-555 (November, 1967).

Six cases of brain infarction in young women associated with the use of oral contraceptives are reported, five having occurred within one year. Other factors known to cause strokes in this age group are absent. The risk of a stroke in persons using oral contraceptives appears to be enhanced, especially in the presence of vascular disease, hypertension, or migraine. The indications for using oral contraceptives should be carefully weighed in each case, and consideration should be given to the possibility of serious side effects. There are 8 references.

-- Author's summary

- 1146 Relation Between Change of Blood Pressure and Age. W. E. Miall and H. G. Lovell.
Brit. Med. J. 2, 660 (1967).

Data obtained from the longitudinal surveys of arterial blood pressure in two general population samples were used to examine the relation between change of blood pressure, the mean pressure attained, and age. It was shown, by multiple regression analysis of change of pressure on mean pressure and age, that in these populations changes in pressure during intervals of 10 and 8 1/2 years are highly significantly related to mean pressures, but only indirectly related to age. This implies that aging plays no direct part in determining the rate of change of pressure; age appears to play a part solely because the blood-pressure changes are positive and increase with higher pressures. If change of pressure is determined by attained pressure, this would explain the observation that some individuals and some races show no apparent increase of pressure with age, and would partially reconcile the conflicting views on the nature of unexplained hypertension. However, the evidence has shown only association, not causality. (After authors' summary.)

-- Can. Med. Assn. J. Abst.

- 1147 Factors Associated With Increased Prevalence of Diabetic Retinopathy: A Clinical Survey. A.J. Szabo, A.G. Stewart, and G.E. Joron. Can. Med. Assn. J. 97, 286-292 (August 5, 1967).

The prevalence of retinopathy was determined in 324 diabetics who had their disease for more than 10 years. This was correlated with the accumulated clinical and laboratory data in the patients' records. Severity of retinopathy increased linearly in adult diabetics with increase in the average fasting blood sugar. Increased prevalence of retinopathy was observed in patients who had frequent glycosuria, hyperglycemia, diastolic hypertension, proteinuria, bacteriuria, elevation of blood urea nitrogen and acute onset of diabetes. It also increased with the duration of the disease. Obesity, parity, serum cholesterol levels and different parameters of arteriosclerosis did not correlate with retinopathy in this group of patients. There are 16 references.

-- Authors' summary

- 1148 Cancer of the Oral Cavity. F. Jacobsson and G. Martensson.
Nord. Med. 78, 1145-1151 (September 7, 1967).

In Sweden about 20,000 new cases of cancer are diagnosed yearly. In about 500 (2.5%) cases, the disease involves the lips, salivary glands, cavity of the mouth, or pharynx. Cancer of these sites often runs an insidious symptom-free course and in many cases the disease has reached too advanced a stage when the patient appears for examination. Early detection of pathological processes in the mouth is of greatest importance.

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

- 1149 Extensive Cancer of the Lip. R. H. Jesse.
Arch. Surg. 94, 509 (1967).

Surgical therapy is preferred to radiotherapy for cancer of the lip for certain categories of patients at the M.D. Anderson Hospital in Houston, because the climate makes it almost impossible for active people to stay out of the sun. Operation is recommended for infiltrating cancers producing leukoplakic or precancerous changes of 40% or more of the lip, recurrences after irradiation, for younger patients who will be subjected to exposure to the sun and wind over many years, and those with cervical metastases or possible mental nerve or mandibular involvement. Radiotherapy is recommended for elderly patients who will not have prolonged outdoor exposure. Replacement of the excised tissues by pedicle graft has been acceptable and short periods of hospitalization have proved an advantage.

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

- 1150 Clinical Pharmacologic Study of Chemotherapy and X-Ray Therapy in Lung Cancer. T. C. Hall, et al. *Am. J. Med.* 43, 186-193 (August, 1967).

The addition of the chemotherapeutic agents actinomycin D and 5-fluorouracil, given with x-ray in a dosage regimen sufficient to produce definite but tolerable gastrointestinal and marrow toxicity, did not increase the percentage of patients with carcinoma of the lung showing shrinkage of lesions in the irradiated field. There was no evidence of a more rapid onset of shrinkage of the tumor or of an additive effect at subtotal doses of x-ray. Toxicity was not correlated with responses induced. Patients classified as responders to therapy lived longer than those classified as nonresponders.

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

- 1151 Effects of Tobacco Smoke on Lung Tissue as Measured by Electron Spin Resonance. J. R. Rowlands, D. G. Cadena, Jr., and A. L. Gross. *Nature* 213, 1256-1258 (March 25, 1967).

This method enabled lung tissue to be directly exposed to cigarette smoke in a manner similar to normal smoking and resulted in the observation of distinct changes in the lung tissue as measured by electron spin resonance.

-- Public Health Eng. Absts.

- 1152 Bronchogenic Carcinoma Factors in Survival. G. A. Higgins and G. W. Beebe. *Arch. Surg.* 94, 539 (1967).

The only patients with lung cancer who survive five years are those treated by surgical excision. No beneficial effects had been demonstrated from any of the chemotherapeutic drugs in doses used in the Veterans Administration Surgical Adjuvant Cancer Chemotherapy Group, which includes 23 hospitals. The probability of death following curative resection is highest in the immediate post-operative period and thereafter declines rapidly, approaching, but not quite reaching, the mortality for persons of comparable age, sex and race in the general population. Of the clinically curative resection group dying within 30 days, 26% were found to have residual disease at autopsy. The five-year survival rate of the curative resections was 25%. Of the 40 characteristics analyzed, only 13 showed relationships to long-term survival and these had to do with the age of the patient and the extent of the disease. Though right pneumonectomy had a much higher operative mortality than lobectomy, five-year survival rates were the same. Cell type did not exert any significant statistical influence. The size of the lesion is quite unrelated to the probability of death from lung cancer in the first five years after curative surgery. Nor was the length of history a factor in survival. The extent of the disease as determined by the pathological examination is the overriding factor in determining long-term survival.

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

- 1153 Carmine as a Source of Nosocomial Salmonellosis. D. J. Lang, et al. *New Engl. J. Med.* 276, 829 (1967).

A hospital epidemic of *Salmonella cubana* is reported in this paper. The infection was traced to the use of contaminated carmine dye. Additional unrelated cases of infection with this rarely reported bacterium were simultaneously recognized. Carmine, used widely as a coloring principle in foods, drugs and cosmetics, is derived from an insect source, and epidemiological factors suggest that human infection may have occurred sporadically for years. Investigations stimulated by recognition of nosocomial outbreaks have revealed contamination of several food products. The failure to recognize *S. cubana* may in part be traced to the failure of bacteriology laboratories to employ appropriate biochemical and serologic procedures. Caution is urged in the prescription and liberal use of items administered to hospitalized patients and others at great risk.

-- Can. Med. Assn. J. Abst.

- 1154 Immunologic Studies of Pigeon Breeder's Disease. J. N. Fink, J. J. Barboriak, and A. J. Sosman. *J. Allergy* 39, 214-221 (April, 1967).

Immunological reactions of patients with pigeon breeder's disease were studied during a symptomatic and an asymptomatic phase of the illness. The decrease in severity and recovery from the illness were accompanied by a decrease in the intensity of skin reactivity and diminution in titer of gamma G-antibodies to various pigeon antigens. There are 13 references.

-- Authors' abst., Public Health Eng. Absts.

- 1155 Fatal Opportunistic Fungus Disease. G. F. Parkhurst and G. D. Vlahides.
J. Am. Med. Assn. 202, 279-281 (October 23, 1967).

Fatal disseminated mycotic disease has been seen with increasing frequency since the introduction of steroid and cytotoxic drugs, medications that apparently interfere with the immunologic defenses of the host. These mycoses are most often associated with malignant tumors, especially leukemia and lymphoma. Of 14 significant fungus infections found at autopsy, *Phycomycetes* was found in six. Thrombosis and infarction caused by the fungus were seen in multiple organs, most commonly in the lungs, heart and kidney, and were a major contributory cause of death.

-- Authors' abstr.

- 1156 Surgical Treatment of Mycotic Infections of the Lung. J. A. S. Wilson and D. D. Munro.
Can. Med. Assn. J. 97, 166-173 (July 22, 1967).

A limited but interesting group of patients with pulmonary mycotic infections, including *nocardiosis*, *cryptococcosis*, *aspergillosis*, *coccidioidomycosis* and *histoplasmosis*, were treated by operation. The diagnosis was established either before operation by culture of the fungus or after the operation by identification of the fungus using either special tissue stains or cultures from the surgical specimens. Patients with *histoplasmosis* constituted the largest group. Those requiring operation had either *histoplasmoses*, lymphadenopathy with compression of the adjacent structures, or chronic cavitary lesions. The results of operation were gratifying. No complications were due to the mycotic infection (one patient developed a *staphylococcal empyema*) and there were no postoperative deaths.

-- Cond. from authors' summary

- 1157 Acceleration of Healing With Zinc Sulfate. W. J. Pories, et al.
Ann. Surg. 165, 432 (1967).

Zinc is intimately involved in protein synthesis and cellular respiration, but metabolic studies have become possible only recently with the advent of sophisticated chemical techniques. After the accidental discovery in rats of zinc as a potent factor in healing, a controlled study of dietary zinc supplements on wound healing in man was undertaken. Young airmen who had wounds resulting from excisions of pilonidal sinuses were given 220 mg. of zinc sulfate three times a day. The wounds of the control group healed in $80.1 \pm SE 13.7$ days, the wounds of the zinc-medicated group in $45.8 \pm SE 2.6$ days. The rate of wound closure was also accelerated by almost three times. Those on zinc therapy showed cleaner, pinker and healthier granulations. The effect was small in the first 15 days but much greater during the second half of the healing period—that is, in the epithelialization phase. Zinc is the metal moiety in a number of essential enzyme systems. It has been shown that it is desirable to give zinc to the patient during periods of wound healing. It has been demonstrated that zinc is an important consideration in patients with severe burns and postoperatively. The element is absorbed and excreted by the small intestine. It is probable that wound dehiscences, poor healing and frequent hypoproteinemia may be related to low zinc stores.

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

- 1158 Comparative Evaluation of Antibacterial Soaps. E. Jungermann, et al.
J. Am. Oil Chemists' Soc. 44, 232-234 (April, 1967).

Two antibacterial soaps and an antibacterial detergent were examined for their effectiveness in inhibiting the growth of a large number of bacteria. A soap containing equal parts by weight of hexachlorophene and 3,4,4'-trichlorocarbanilide was more effective than a detergent containing hexachlorophene only and a soap containing a mixture of equal parts by weight of 3,4',5-tribromosalicylanilide, 3,3,4'-trichlorocarbanilide, and 4,4'-dichloro-3-(trifluoromethyl) carbanilide. A total of 27 bacteria, including 12 pathogens, was used. There are 7 references.

-- Abst. cond., Public Health Eng. Absts.

- 1159 Wool, Cotton and Hygiene. T. A. Pressley.
Med. J. Australia 1, 550-551 (March 18, 1967).

The major factor in determining the survival times of *Staph. aureus* and *E. coli* was the relative humidity of storage and not the textile on which the organisms were held. The type of textile exerted a minor, but significant effect. *Staph. aureus* showed a longer survival time on wool than on cotton, whereas *E. coli* survived better on cotton than on wool. There are 13 references.

-- Public Health Eng. Absts.

- 1160 Sanitation Problems in Food Vending Machines. S. H. Hopper.
J. Milk Food Technol. 29, 372-373 (December, 1966).

Sanitation problems arise from the manner in which a machine is operated. Good food in good condition put into a vending machine will stay that way if the machine is kept clean and in first class working order.

-- Public Health Eng. Absts.

- 1161 Experiments on the Communion Cup. Betty C. Hobbs, Jill A. Knowlden and Anne White.
J. Hyg. 65, 37-48 (March, 1967).

Results show that the common communion cup may serve as a means of transmitting infection. The disinfectant action of wine was found to be negligible. There are 9 references.

-- Public Health Eng. Absts.

SKIN DISEASES AND BURNS

- 1162 Comparative Anatomy and Physiology of the Skin. W. Montagna.
Arch. Dermatol. 96, 357-363 (October, 1967).

Skin protects the organism from injury, maintains its homeostasis, adapts it to its environment, enhances or forms locomotory devices, secretes substances that attract or repel, and fashions certain purely ornamental structures.

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

- 1163 Contact Dermatitis in Animals. G. H. Muller.
Arch. Dermatol. 96, 423-426 (October, 1967).

Contact dermatitis (primary irritant and allergic types) in animals has recently received attention, probably due to the increased interest in comparative dermatology. In dogs the areas affected are those that are sparsely covered with hair or that are hairless. Only when the offending agent is a liquid are hairy regions involved. In its natural habitat the skin of animals is adequately covered to protect it from the environment. The incidence of contact dermatitis increases as more of the protective covering is lost, as it is in some domestic animals. In addition, increased exposure of domestic animals to the myriads of potential sensitizers in man's environment favors development of contact dermatitis. It is frequently impossible to find the offending contactant in animals; relief depends on administering corticosteroids topically and systemically.

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

- 1164 The Shapes of Infectious Disease Lesions in the Integument of Plants, Animals and Humans. A Dermatologist's Point of View. R. Jackson. Can. Med. Assn. J. 97, 573-579 (Sept. 9, 1967).

This paper illustrates the various geometric shapes produced by infectious diseases in the integument of plants, animals and humans. Three basic patterns are found: the circle and its variants, the linear and the diamond. The factors determining the shapes of lesions formed by these infectious diseases are: local anatomical features; local immune mechanisms; general immune mechanisms and general hypersensitivity state; adequacy of nutritional elements; and the amount and basic nature of the infecting agent. These factors are discussed and examples are given illustrating the role of each. Considering the many different types of infectious diseases in the integument of plants, animals and humans, it is remarkable that there are so few basic shapes and that almost always a particular disease produces a characteristic shape. There are 8 references.

-- Author's summary

- 1165 Allergy to Chromium, Nickel and Cobalt. S. Fregert and H. Rorsman.
Acta Dermato-Venereol. 46, 144-148 (1966).

Because of reports that patients with allergic eczematous contact dermatitis due to metals are often allergic to more than one metal, 5,416 patients suspected of having contact dermatitis were given patch tests to chromium, nickel and cobalt to investigate the possibility of cross sensitization between these metals. The investigation revealed that co-existing allergy to these metals is due to the occurrence of several allergenic metals in sensitizing objects rather than due to cross-sensitization. Of the 261 males found allergic to one or more of these

metals, 88% were allergic to chromium as compared to 13% of the 277 female patients who reacted to tests. Seventy-seven per cent of the females were sensitive to nickel as opposed to 10% of the males.
-- J. Occ. Med. Absts.

- 1166 Incidence of Skin Diseases Among Leather Workers in Kampur. J. Chandra and K. C. Sahu. Indian J. Dermatol. 11, 134 (July, 1966).

Leather manufacturing is a basic Indian industry. The authors constructed a questionnaire which was circulated among 9,089 workers in 24 tanneries. The return information was focused among 6,681 workers in 13 tanneries. The maximum incidence of dermatologic disease occurred in the rainy season. In the total survey, the authors adjudged 51 cases of occupational dermatoses as follows: dermatitis (34 patients), 66.7%; ulcers of the hands or feet (10 patients) 19.65%; involvement of nails (4 patients), 7.84%; leukoderma (3 patients), 5.88%. It was concluded that the incidence of dermatoses in the Indian leather industry was 3.83% a level considered by the authors to cause no great concern.
-- J. Occ. Med. Absts.

- 1167 "Creeping Eruption" Treated by Thiabendazole. M. J. Miller and G. R. Maynard. Can. Med. Assn. J. 97, 860-861 (September 30, 1967).

Invasion of the human skin by larvae of the dog and cat hookworms (Ancylostoma caninum and A. braziliense) causes an intensely pruritic skin eruption with characteristic linear, serpiginous and progressive trails. This disease, variously termed "creeping eruption", "cutaneous larva migrans" and "beach worm", is widely distributed in the tropics and subtropics and frequently reported from the Caribbean littoral and certain of the islands. Infection with these parasites appears to be favored by contact with sand and sandy beaches. The use of thiabendazole for the treatment of a patient with "creeping eruption" in Barbados who had proved refractory to all other forms of treatment is described. There are 5 references.
-- Authors' introduction

- 1168 Scalp Pustules Due to Corynebacterium Acnes. H. I. Maibach. Arch. Dermatol. 96, 453-455 (October, 1967).

This report describes a specific pustular infection of the scalp. Frequently misnamed as staphylococcal folliculitis, it is due to Corynebacterium acnes. The discrete, turgid, pustules occur over the entire scalp, but not prominently over the posterior and lateral scalp. Erythematous papules and erythema are occasionally intermingled. Gram stain of pus reveals numerous pleomorphic intracellular and extracellular rods. Treatment consists of prolonged tetracycline therapy. It is considered the scalp analog of pustular acne.
-- J. Am. Med. Assn. References & Reviews

- 1169 Epidemiology and Public Health Significance of Ringworm in Animals. W. Kaplan. Arch. Dermatol. 96, 404-408 (October, 1967).

An imposing number of fungi have been incriminated as agents of ringworm in man and lower animals. Individual dermatophytes differ considerably in their host range and importance as incitants of disease in man. From an epidemiologic standpoint these organisms can be classified into the following three groups: zoophilic, geophilic, and anthropophilic. Zoophilic dermatophytes are basically lower animal pathogens, but most have the ability to infect humans. Geophilic dermatophytes are soil fungi that have the additional capacity to cause ringworm in some species of lower animals and also in man. Anthropophilic dermatophytes are primarily adapted for parasitism of man, but some species occasionally cause ringworm in animals. The principal agents of ringworm in animals are discussed individually in terms of their host range and patterns of spread among susceptible host species. The public health significance of these infections in animals is presented.
-- J. Am. Med. Assn. References & Reviews

CHEMICAL HAZARDS

- 1170 Range-Finding Toxicity Data for 43 Compounds. W. E. Rinehart, Marianne Kaschak and E. A. Pfitzer. Industrial Hygiene Foundation, Chemical-Toxicological Series, Bull. No. 6, 11pp. (1967).

Short-term toxicological research findings on 43 compounds are presented in tabular form. An explanation is given of interpreting the animal data in terms of approximate hazard to man. There are 8 references. -- Public Health Eng. Absts.

- 1171 Factors Affecting the Formation of Sulphur Trioxide in Flame Gases. A. B. Hedley. J. Inst. Fuel 40, 142-151 (April, 1967).

This paper is concerned solely with the formation of sulfur trioxide in flame gases and does not discuss its formation due to catalytic oxidation by stationary surfaces over which the gases pass. Thermodynamic considerations are briefly presented as well as a discussion of previous work on sulfur trioxide formation in flames which is divided into enclosed and unenclosed flame studies. In a section on the kinetics and mechanisms involved, the role of oxides of nitrogen as a homogeneous catalyst, and airborne ash particles as a heterogeneous catalyst, are discussed. The importance of residence time, and temperature of gases in combustion appliances is emphasized and the paucity of information available on suitable reaction rate data is indicated. -- Author's abst., APCA Absts.

- 1172 Beryllium Carcinogenesis: I. Inhalation Exposure of Rats to Beryllium Sulfate Aerosol. A. L. Reeves, D. Deitch, and A. J. Vorwald. Cancer Research 27, Pt. 1, 439-443 (March, 1967).

The results of an inhalation exposure of 150 rats for 72 weeks at a mean concentration of 34.25 micrograms of Be/cu.m. in the form of a beryllium sulfate aerosol are reported. The average lung weight toward the end of the exposure was 4.25 times normal. The two gradually developing pathologic processes were: an inflammatory response characterized by an accumulation of histiocytic elements forming clusters of macrophages in the alveolar spaces and also a proliferative response, progressing from early epithelial hyperplasia of the alveolar surfaces, through metaplasia and anaplasia to lung cancer. The first tumors were found in 9 months and the incidence was 100% in 13 months. All tumors were alveolar adenocarcinomas with some focal intermixture of other types. Three of 56 tumors reached a very large size comparatively early. Females appeared to be more vulnerable to the exposure than males in terms of attritional mortality and body weight loss. It is recalled that the attack rate of industrial berylliosis in humans is also higher in women than in men. -- APCA Absts.

- 1173 Beryllium Carcinogenesis: II. Pulmonary Deposition and Clearance of Inhaled Beryllium Sulfate in the Rat. A. L. Reeves and A. J. Vorwald. Cancer Research 27, Pt. 1, 446-451 (March, 1967).

The deposition and clearance of the beryllium sulfate from a group of rats exposed to 34.25 micrograms of beryllium per cu.m. for 72 weeks in the form of a beryllium sulfate aerosol is reported. At 36 weeks there was a concentration plateau which was interpreted as an equilibrium between deposition and clearance. The clearance mechanisms included not only the solubility of intrapulmonary precipitates, but also certain host-dependent factors involving the lymphatic route primarily. Females were less efficient in utilizing this clearance route which resulted in slower removal of pulmonary beryllium deposits, lower accumulation of inhaled material in the regional lymph nodes, and earlier morbidity and mortality. Only about half of the original pulmonary load was cleared rapidly; the remainder remained in the lungs for longer periods and later became incorporated into the nuclei of certain pulmonary cells and was involved in a carcinogenic challenge. The beryllium assays made by spectrographic beryllium analysis are reported for the lungs, tracheobronchial lymph nodes, and blood. The ultimate site of beryllium in the organism appears to be the skeleton although temporary deposits were noted in the liver. The inhaled beryllium which is retained in the lungs for long periods is of greater significance from the viewpoint of pulmonary carcinogenesis. -- APCA Absts.

- 1174 Chronic Beryllium Lung Disease: Disease in Search of Work History. H. C. Neu and R. Schreiber. N.Y. State J. Med. 67, 1184-1187 (May, 1967).

A case history of chronic pulmonary beryllium disease is presented with the notation of the 15-year latent period and the demonstration of the value of lung biopsy and chemical analysis to document the disease. The patient was admitted to the hospital in September 1964 complaining of 4 years of progressive dyspnea. Her work history showed an exposure from 1930 to 1945 in a neon light factory sealing tubes and spraying fluorescent coatings. On biopsy, the lungs were found to be firm and leathery with granulomas of 0.1-0.4 cm. size scattered over the entire lung. Analysis of the lung for beryllium showed 0.64 microgram/g. of lung tissue. Since the radiologic picture is compatible with a wide variety of diseases which cause similar pulmonary insufficiency, it is essential that tissue be analyzed histologically and chemically. Although there is little objective improvement during steroid therapy, the subjective changes are remarkable. This patient went from a state of dyspnea on the least exertion to essentially normal activity. The chest pain disappeared and the appetite returned. The ultimate prognosis is poor with frequent pneumothoraces and eventual cor pulmonale, although the effect of steroid therapy on this prognosis is not yet settled. -- APCA Absts.

- 1175 A Method for Detecting Cadmium Poisoning in Fish. D. I. Mount and C. E. Stephan. J. Wildlife Management 31, 168-172 (January, 1967).

Subacute exposures of bluegills to cadmium sulfate dissolved in water were made at sublethal concentrations for periods up to 90 days. Acute exposures of bluegills and brown bullheads were made at lethal concentrations. In living fish, the accumulation of cadmium never exceeded 130 micrograms/gram of gill tissue based on dry weight, but in fish that died of acute cadmium poisoning, the accumulation of cadmium was a minimum of 150 micrograms/gram of gill tissue. The data suggest that acute cadmium poisoning can be detected by measuring cadmium in the gill tissue. There are 10 references.

-- Authors' abst., Public Health Eng. Absts.

- 1176 Chelation Therapy in Acute Iron Poisoning. S. Leikin, P. Vossough, and F. Mochir-Fatemi. J. Pediat. 71, 425-430 (September, 1967).

A highly specific iron chelating agent, deferoxamine, was used in association with supportive therapy in 14 children with acute iron intoxication of mild to moderate severity. Serum iron levels and iron excretion of these patients were compared with those of eight patients receiving only supportive therapy. Both groups showed a rapid drop in serum iron levels. Urinary excretion of iron increased in patients receiving deferoxamine. The children all recovered.

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

- 1177 Essential Trace Metals in Man: Zinc, Relation to Environmental Cadmium. H. A. Schroeder, et al. J. Chronic Diseases 20 (4), 179-210 (1967).

Surveys of zinc and cadmium in the environment of man by atomic absorption spectrophotometry which involved analyses of food, waters, foliage, and tissues of animals are reported. Human tissues from 13 areas of the world were assayed by emission spectrography. Zinc is omnipresent and is one of the most abundant of the essential trace elements in the human body with its concentration in the soft tissue in the same range as that of iron. The zinc is stored in striated muscle which contains 5/8 of the total body pool. The highest concentrations of zinc are in the prostate, liver, and kidney and lowest in the ectodermal tissues such as the brain, lung and spleen. Renal cadmium and zinc are intimately related and their mean concentration increases with age up to the fourth decade of life and declines after the seventh. A high ratio is consistent with a shortened life-span. Wild animal tissues contain approximately the same concentration of zinc as do human. The daily intake of zinc is estimated at 8-13 mg. and cadmium at 200-500 micrograms with considerable variations according to the sources and types of food and water. Cadmium is found mainly in the endosperm of wheat and rice and zinc is concentrated in germ and bran. Refining of wheat flour and polishing of rice results in a lessened intake of zinc in relation to cadmium. High Cd: Zn ratios in the kidneys of rats and men are associated with arterial hypertension. Sources of cadmium in food and drink thus become important in public health. -- APCA Absts.

- 1178 An Improved Method for the Determination of the Total Lead Content of Gasoline. R. Moss and K. Campbell. *J. Inst. Petrol.* 53, 89-93 (February, 1967).

A rapid method for the determination of lead in gasoline is described. The determination is based upon a cold extraction of the tetraalkyl lead compound from the gasoline by means of aqueous iodine monochloride solution, followed by volumetric determination of the lead. Specialized equipment is unnecessary and the precision and accuracy obtained are considerably better than those quoted for existing standard methods. -- Authors' summary, APCA Absts.

- 1179 The Determination of Trace Amounts of Lead in Crude Oil and Petroleum Products. K. Campbell and R. Moss. *J. Inst. Petrol.* 53, 194-198 (May, 1967).

A method is given for determining trace lead concentrations in petroleum products. The lead, in whatever form it is present, is extracted from the organic material with aqueous iodine monochloride solution and determined colorimetrically as the dithizonate. Lead concentrations ranging from ppm to ppb can be determined by this method, which can be applied to a wide variety of petroleum products. No special apparatus is required. Traces of tetraalkyl lead present in crude oil can be determined rapidly after preliminary distillation of the crude.

-- Authors' summary, APCA Absts.

- 1180 Screening Lead Workers for the Presence of Stippled Erythrocytes. R. L. Clark, J. H. Jones, and J. F. Jones. *J. Clin. Pathol.* 20 (2), 166-169 (1967).

The possibility of false low results from the technique of counting the number of red cells showing basophilic stippling to detect lead intoxication is investigated. The number of the stippled erythrocytes in the blood of lead workers showed a marked fall when the blood is taken into an anticoagulant. The affected erythrocytes probably became altered in some way as the result of contact with anticoagulants so that their stippling was lost or was no longer demonstrable. While urinary coproporphyrin estimations have been suggested as a more sensitive index of excessive lead absorption, enumeration of the stippled cells is still widely used for screening lead workers. Although the nature of the reaction of lead in the erythrocytes is by no means clear, it is generally accepted that stippled cells are reticulocytes in which the basophilic material has been modified in some way. It has been shown that more stippled cells are found in the marrow than in the peripheral blood, which suggests that lead has its main effect on the red cell precursors than on the circulating erythrocytes.

-- APCA Absts.

Editor's Note: Also see Industrial Hygiene Digest Abstract 371, April, 1966 on "Concentration of Lead in Bone in Plumbism".

- 1181 Lead Poisoning From Drinking Soft Water. A. P. C. Bacon, et al. *Lancet* 1, 264-266 (February 4, 1967).

Three cases of lead poisoning are described: in one, the diagnosis had been missed for 12 years. In each instance the cause was long-term ingestion of soft water that had eroded lead from the inside of lead pipes bringing water to their houses. There are 9 references.

-- Authors' abst., Public Health Eng. Absts.

- 1182 Toxic Liver Damage From Ethionamide. E. Kuntz, H. Liehr, and W. Pfingst. *Deut. med. Wochschr.* 92, 1718-1722 (September 22, 1967).

Two personal cases suggested that ethionamide is an indirectly hepatotoxic substance. It may cause both hepatocellular damage (toxic hepatosis or toxic hepatitis) and hepatocanicular jaundice with intrahepatic cholestasis. Pre-existing liver damage apparently increases the hepatotoxic effect of ethionamide, but in a given case the good tuberculostatic effect of this drug should not be dispensed with. Careful control with suitable liver function tests is urgently recommended.

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

- 1183 Two Cases of Acro-Osteolysis Occurring in Men Engaged in the Polymerization of Vinyl Chloride. D. K. Harris and W. G. F. Adams. *Brit. Med. J.* 3, 712-714 (September 16, 1967).

Acro-osteolysis occurred in two men engaged in the polymerization of vinyl chloride. The bones affected are the terminal phalanges of the fingers and the sacro-iliac joints, but in one case the patella and in the other the phalanges of the feet are involved. The condition is accompanied by Raynaud's phenomenon and skin lesions, sections of which are shown. The condition may be related to scleroderma.

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

- 1184 Absorption and Translocation of Dieldrin by Forage Crops. W. B. Wheeler, et al.
J. Agr. Food Chem. 15, 231-234 (March-April, 1967).

Quantitative relationships have been established among various levels of dieldrin in sand and in soil and the concentrations found in the aerial portion of wheat, corn, orchard grass, and alfalfa grown in these substrates under controlled environmental conditions. Plants grown in sand contained levels of dieldrin 2 to 6 times higher than plants grown in soil. A second cutting of the same wheat plants revealed a higher accumulation of the insecticide than the first cutting. Finally, the general distribution of dieldrin within young wheat plants was determined by chemical analysis. Plants used for forage were capable of absorbing and translocating dieldrin from the substrates in which they were grown. There are 12 references. -- Authors' abst. cond., Public Health Eng. Absts.

- 1185 Los Angeles Rule 66 and Exempt Solvents. E. C. Larson and H. E. Sipple.
J. Paint Technol. 39, 258-266 (May, 1967).

Rule 66 adopted by Los Angeles County Air Pollution Control District on July 28, 1966, is designed to control emission of photochemically reactive volatile organic substances into the atmosphere. Although both are important and regulated, emphasis is placed on the type of compound rather than quantity of the emission. A limited amount of non-exempt solvents can be used, but it will be expedient to utilize exempt solvents wherever possible. According to the Rule an exempt solvent can contain a maximum of 20% of photochemically reactive compounds consisting of: (1) 5% v maximum olefinic or cycloolefinic unsaturation; (2) 8% v maximum of aromatics having eight or more carbon atoms to the molecule except ethylbenzene; or (3) 20% v of a combination of toluene, ethylbenzene, ketones having branched hydrocarbon structures or trichloroethylene. Thus, primary attention is focused on aromatic content of paint solvents. Exempt mineral spirits and VM and P naphthas will contain less than 20% of complying aromatics. High solvency naphthenic base stocks will help offset the solvency of the displaced aromatics. These exempt solvents will be entirely adequate for long oil alkyds and many medium oil alkyds. But where greater solvency is needed, as in short oil alkyds, vinyls, epoxies, and the like, oxygenated compounds such as alcohols, ketones, and esters must be incorporated in the solvents. Rule 66 is already in effect for installations of new equipment. Existing operations will come under control in three stages beginning on July 1, 1967, for the large consumer. Finally, the rule involves the application of both industrial and architectural coatings. -- Authors' summary, APCA Absts.

INDUSTRIAL DUSTS

- 1186 Removing Solid and Mist Particles From Exhaust Gases. N. Morash, M. Krouse, and W. P. Vosseller. Chem. Eng. Progr. 63, 70-74 (March, 1967).

This article reports the results obtained when an irrigated, thin, felted fiber filter is used to remove a mixture of fine titanium dioxide pigmentary particles and sulfuric acid mist particles from the exhaust gases of pigment calciners. Four references are given.

- Authors' abst., Public Health Eng. Absts.

- 1187 Primer on Fabric Dust Collectors. H. E. Friedrich.
Air Eng. 9, 26-31 (May, 1967).

This look at the types of fabric collectors available for air pollution control and product recovery should indicate that, although they are by no means capable of handling all air pollution problems, they can solve many dust collection problems where properly applied. All cleanable industrial fabric filters are capable of giving very high collection efficiency (99.9% by weight) and can operate over a range of airflow resistances depending on air-to-cloth ratio. For equal collection efficiency and resistance, commercial units may vary in size, operating, and maintenance requirements, but generally they will cost alike on a totally owned basis and will have closely similar power requirements. -- APCA Absts.

- 1188 Mushroom Worker's Lung. A. Sakula.
Brit. Med. J. 3, 708-710 (September 16, 1967).

A characteristic illness developing in workers on mushroom growing farms is described. In four cases constitutional and respiratory symptoms similar to those seen in farmer's lung developed following the inhalation of dust liberated from disturbance of compost on which mushrooms are cultivated. In sensitive workers, symptoms developed a few hours after exposure, and chest radiographs revealed diffuse miliary mottling. Precipitins to thermophillic actinomycetes (present in the compost) were demonstrated in the serum of two cases—*Thermopolyspora polyspora* and *Micromonospora vulgaris*, respectively. Similar serological findings are present in farmer's lung, and it is concluded that mushroom worker's lung is merely a variant of farmer's lung. -- J. Am. Med. Assn. References & Reviews

- 1189 Experimental Asbestosis. The Development of Lung Cancer in Rats With Pulmonary Deposits of Chrysotile Asbestos Dust. P. Gross, et al. Arch. Environmental Health 15, 343-355 (September, 1967). (Reprints available from Industrial Hygiene Foundation).

One hundred and thirty-one rats were exposed to chrysotile asbestos, finely milled, in an exposure chamber for six hours a day, five days a week for a maximum of 62 weeks. Dust concentrations were very heavy, ranging from 42 to 146 mg/cu m (average 86 mg/cu m). About half the animals exposed also had intratracheal application of caustic (lye) to reduce lung clearance and maximize dust retention and pathogenicity. Also, 64 additional animals were given intratracheal injections of chrysotile dust, 14 receiving single doses and the remainder multiple injections of 3.5 mg each. Controls consisted of 30 untreated, unexposed animals and 15 rats treated with caustic but unexposed to asbestos. Designed to study asbestosis, the most important findings of the investigation related to lung tumor production. Other investigators have not been successful in producing lung cancer experimentally in rats with chrysotile. Tumor incidence was high. Of those surviving 16 or more months (ie, after appearance of the first tumor) 31% had primary malignant tumors of the lung. Occurrence in rats treated with lye was 48%, twice the rate of those exposed but not treated with caustic. Malignant pulmonary tumors included adenocarcinomas, fibrosarcomas, and squamous cell cancers as well as a mesothelioma and a mucinous adenocarcinoma. A number of pulmonary lymphoblastomas which occur spontaneously in rats were not counted. Also, atypical metaplasia, not manifestly malignant, was commonly noted. Multicentricity of malignant lesions was observed in several animals. Results of this study support the unitarian concept of tumor origin from alveolar cells. Despite extreme exposure conditions, diffuse asbestosis was not seen. Fibrosis observed was multifocal, centered in the proximal portion of primary lobules with normal appearing tissue intervening. Cancer production with chrysotile in this study appears to involve trace metals introduced during hammer milling which increased nickel, chrome, and cobalt. Previous investigators have not reported subjecting their dusts to hammer milling. The increase in content of trace metals after milling was as follows: nickel, 82%; cobalt, 145%; chrome, 34%. Analysis of the worn hammer of the hammer mill revealed a nickel content of 2,338 µg/gm of sample. This finding, if validated by further studies, should provide an important aid to guide industrial hygiene controls of potential health hazards. There are 13 references.

- 1190 Asbestosis and Neoplasia. I. J. Selikoff, et al.
Am. J. Med. 42, 487-496 (April, 1967).

The prediction that asbestos-induced neoplasms will rival cigarette-induced lung cancer in the next several decades is reviewed as well as the present state of our knowledge of the role of asbestos in pulmonary asbestosis lung cancer, mesothelioma, other neoplasms, and pleural calcification. The progression of asbestos disease without continued exposure and the diagnosis of asbestos disease are reviewed also. All of the conditions arising from asbestos are slow in developing. The neoplasms now encountered in both industry and in the general public are the result of the inhalation of asbestos associated with the limited asbestos production of 30 years ago. The neoplasms associated with the present utilization of and exposure to asbestos will not be evident until the 1990's. From 50 tons a year 90 years ago, the world production is now 4 million tons a year. Asbestos has been described as the fiber with a half life of infinity. In at least 1/4 of the adults who die in the U.S. and other industrial countries, asbestos bodies are found in the lung. At present, in most cases, neither pulmonary fibrosis nor neoplasia is associated with the asbestos now being found postmortem. There

are many questions which have to be answered such as: whether different kinds of fibers exert the same biological effects; the nature of the dose-disease relationship; sources and extent of environmental contamination; the range of industrial exposure; the range of neoplastic effects of asbestos exposure; and whether asbestos bodies may not sometimes result from mineral fibers other than asbestos.

-- APCA Absts.

- 1191 Fiber Glass. Chemistry and Technology. C. P. McCord.
J. Occ. Med. 9, 339-344 (July, 1967).

Fiber glass, like all common forms of glass, is a chemically inert substance. It possesses no known toxic properties. On a mechanical basis, spicules may abrade the skin leading to superficial and transitory irritation. Among fiber glass makers, particularly new workers who are most exposed, skin irritation occurs, but is not remarkable. Although free silica is a major primary ingredient of the batch before melting, no free silica occurs in the glass fibers or in the ultimate products. Silicosis is not a fiber glass hazard. The present consensus is that, because of the particle size, fiber glass is not respirable, and thus unlikely to reach the alveoli of the lungs, but it may reach the tissues of the upper respiratory tract. In animal experiments the introduction of fiber glass particles into the respiratory tract has failed to provoke pneumoconiosis. However, some minor tissue changes have been observed, chiefly reflecting a foreign-body reaction. Fiber glass is not a known carcinogen. Animal experimental work with fiber glass particles introduced into the lungs has failed to provoke lung cancer. No clinical cases of lung cancer have been traced to fiber glass as the source. A fair number of chemicals in ancillary use in fiber glass production may possess some harmful properties. As example, the number includes partially polymerized resins of phenol formaldehyde, urea formaldehyde and epoxies, and fluorides, and trichloroethylene. Such substances involve the fiber glass makers, whose exposures are not contemplated in this presentation, but do not carry over to secondary fabricators, to installers, or to consumers. All considered, fiber glass, on a relative basis, is one of the least harmful substances known to industry.

- 1192 Pulmonary Hazards From Exposure to Glass Fibers. A. N. M. Nasr.
J. Occ. Med. 9, 345-348 (July, 1967).

The results from animal experiments and human experience with respect to the effects of fibrous glass upon the respiratory tract have been reviewed. The opinion that inhalation of glass fibers may result in irritation of the upper respiratory tract, with no prospect of significant pulmonary involvement, is repeatedly encountered in the literature. The size of the glass fibers in common application and their tendency to form felt-like masses upon any object with which they come in contact probably prevent inhaled glass fibers from penetrating into the pulmonary alveoli. Three cases in which exposure to fibrous glass was associated with the development of inflammatory lung disease have been reported by individual authors. In those cases the illness was acute, and infection played the major role. A case of bronchial asthma in association with exposure to fibrous glass has been also reported. In all four cases, no appraisal was made concerning other air contaminants that may have been present in the work environment. In a limited number of workers who had been exposed for years to glass fibers, cardiac and pulmonary-function studies revealed no functional impairment. As far as could be ascertained from a search of the American and European literature, available evidence indicates that fibrous glass is a relatively inert material with no fibrogenic or other significant toxic properties. There are 23 references.

-- Author's summary

PHYSICAL ASPECTS OF THE ENVIRONMENT

- 1193 Barometric Pressure Fluctuations: Effects on the Activity of Laboratory Mice. R. L. Sprott.
Science 157, 1206-1207 (September 8, 1967).

Fluctuations in naturally occurring levels of barometric pressure appear to be an important determinant of activity in laboratory mice. In three experiments, activity was higher after increases in barometric pressure than it was after decreases. When the barometric pressure remained relatively stable, intermediate levels of activity were observed. -- Author's abst.

- 1194 Metabolic Reactions to Work in the Desert. K. Klausen, et al.
J. Appl. Physiol. 22, 292-296 (February, 1967).

In hot, dry environments, the oxygen consumption showed no significant change with sub-maximal work and decreased significantly with maximal work. The decrease with maximal and higher levels of submaximal work very likely reflects an insufficient blood supply to the working muscles. There are 11 references.

-- Public Health Eng. Absts.

- 1195 Reactions of Men and Women to Repeated Exposure to Humid Heat. K. P. Weinman, et al.
J. Appl. Physiol. 22, 533-538 (March, 1967).

To obtain more detailed information on human adaptability, experiments investigated the thermoregulatory, circulatory, and metabolic responses of young male and female college students to compare their reactions under the influence of repeated exposure to a standard work load and hot-humid environment. The results suggest sex differences in acclimation mechanisms. There are 19 references.

-- Public Health Eng. Absts.

- 1196 Accidental Exposure to Freezing: Clinical and Laboratory Observations During Convalescence From Near-Fatal Hypothermia. E. A. Phillipson and F. A. Herbert.
Can. Med. Assn. J. 97, 786-792 (September 23, 1967).

A 50-year-old man was accidentally frozen. The patient's core temperature on admission to the hospital was 25°C. (77°F.), and on superficial inspection he appeared to be near death. Cardiovascular, acid-base, electrolyte, respiratory, hematologic and neurologic studies were performed at 25°C. during a rapid rewarming phase and during the convalescent period. The principal cardiovascular findings at 25°C. were bradycardia and hypotension. A severe metabolic acidosis, attributable to excess lactic acid, was noted at 25°C. It is believed that impairment of the blood buffer capacity and the renal and respiratory compensatory mechanisms contributed to the severity of the acidosis. Following rewarming, a systemic alkalosis developed which was accompanied by greatly elevated levels of serum sodium and chloride, with decreased renal excretion of these electrolytes and increased excretion of potassium. The chief respiratory complication at 25°C. was a lack of response to metabolic acidosis. Delivery of oxygen to the tissues was also probably impaired. After rewarming, bronchopneumonia developed, necessitating early tracheostomy and the maintenance of a vigorous tracheobronchial toilet. Anemia, resulting from mild hemolysis and relative failure of the bone marrow, was present during the first three weeks. Neurological studies at 25°C. revealed profound central nervous system depression, muscular rigidity and electromyographic evidence of shivering. Subsequently the patient developed signs of memory loss, expressive dysphasia, swallowing difficulty, and peripheral neuropathy. A follow-up study nine months after admission demonstrated only neurological defects and partial loss of extremities due to the original cold injury. There are 29 references.

-- Cond. from authors' summary

- 1197 Air Conduction Thresholds For High Frequencies. L. Vassallo, J. Sataloff, and H. Menduke.
J. Occ. Med. 9, 353-357 (July, 1967).

High-frequency thresholds (10,000, 12,000, and 14,000 cps) were obtained in adults, aged 20-49, with no history of exposure to noise levels deemed harmful to hearing according to present-day knowledge. The greatest change in thresholds occurred at 14,000 cps with the exception of the female group, aged 20-29 years, in which hearing showed no diminution in the frequencies tested. On the average, the male subjects had slightly poorer thresholds for the 3 high frequencies tested than did females of comparable age. Findings in this study (for similar age groups) were, in many ways, comparable to those in a larger study recently reported, even though the method of coupling the high-frequency transmitter to the ear was not similar. Comparing data from independent studies in which similar equipment was used also yielded similar findings. There appears to be some disagreement, however, in reported thresholds at 12,000 and 14,000 cps in subjects, aged 11-18 years and those who are 20-29 years old; that is, the younger subjects in an independent study had thresholds equal to the older group in this study. It is apparent that more investigative effort is needed for standardizing high-frequency instruments. There are 17 references.

-- Authors' summary

- 1198 Laser Radiation Causes Irreparable Eye Damage. W. T. Ham, Jr.
Chem. Eng. News 45, 23-24 (October 23, 1967).

Laser radiation can irreparably damage the human eye. The observable damage is usually a retina burn, which can lead to a total loss of central vision, according to Dr. William T. Ham, Jr., chairman of the department of biophysics at the Medical College of Virginia. Q-switched lasers are the most dangerous, Dr. Ham says, while some continuous-wave lasers, such as small helium-neon lasers, can be harmless. Because of these hazards, Dr. Ham favors controls on laser use. New York and Illinois already have laws aimed at reducing the number of laser accidents. However, it is feared that some laws may be written too hastily, denying lasers to legitimate users. Ham points out that many research groups are studying laser safety and that enough data are becoming available to set up meaningful regulations. Among those studying laser safety are groups at Stanford Research Institute, Stanford University Medical School, American Optical Co., New York University, Zaret Foundation, and at Brooks Air Force Base.

- 1199 Protect the Eye From Laser Hazards. L. A. Medici.
Safety Maint. 134, 18-20 (November, 1967).

To meet the problems of laser safety and to find workable solutions, industry must rely on the teamwork of three specialists: the plant physician, the laser worker, and the safety director. Many doctors are acquainting themselves with the hazards that laser research poses. They are insisting that a thorough eye examination be given to each new laser worker. These eye examinations should be continued at regular intervals, with a written record to protect the company against unjust compensation claims. Most important, such examinations keep a close check on the danger of a gradual eye injury due to repeated laser beam bombardment. Repeated eye injuries, detected by regular vision checks, could indicate the need for complete revamping of laser operating procedures.

RADIOACTIVITY AND X-RADIATION

- 1200 Radiostrontium Absorption in Man: Suppression by Calcium and by Sodium Alginate.
A. Hodgkinson, et al. Can. Med. Assn. J. 97, 1139-1143 (November 4, 1967).

Calcium chloride and sodium alginate, administered orally, have been shown to inhibit the intestinal absorption of radiostrontium by adult human subjects. Sodium alginate also inhibited the absorption of radiocalcium but to a less extent than radiostrontium. Measurements of fecal magnesium, iron, copper and zinc indicated that sodium alginate also inhibited the absorption of these metals. Maximum inhibition of radiostrontium intake was observed when sodium alginate was administered simultaneously with the isotope. Alginate samples having a relatively high guluronic/mannuronic acid ratio were slightly more effective in binding strontium, magnesium and calcium than those having a low guluronic/mannuronic acid ratio. The affinity of sodium alginate for ferric iron, strontium, calcium and magnesium decreased in the order $Fe > Sr > Ca > Mg$, the binding of one molecule of these elements being accompanied by the release of two or three molecules of sodium, depending upon the valency. Binding was dependent upon pH, being virtually abolished below pH 3.0. It is concluded that the binding of metallic ions by sodium alginate involves an ion-exchange mechanism. There are 27 references.

-- Authors' summary

- 1201 Accumulation of Zinc-65 From Prolonged Consumption of Columbia River Fish. R. F. Foster and J. F. Honstead. Health Physics 13, 39-43 (January, 1967).

Fish caught down river from the Hanford reactors were eaten once each week for more than one year. The accumulation of Zn-65 in the consumer was measured each week in a whole-body counter to trace the build-up and follow the seasonal trend. A maximum body burden of about 130 nCi Zn-65 was reached on day 104 and again on day 310. After the initial build-up toward equilibrium, the body burden approximated 7 times the weekly intake. The reduction of Zn-65 body burden following the last meal of Columbia River fish was observed for 511 days, indicating an effective half-life of 162 days. There are 8 references.

-- Authors' abst. cond., Public Health Eng. Absts.

ENVIRONMENTAL MEASUREMENTS

- 1202 Evaluation of a Visual Color Comparator Method for Determination of Atmospheric Nitrogen Dioxide. S. Hochheiser and G. A. Rodgers. Environ. Sci. Technol. 1, 75-76 (January, 1967).

The performance data of a visual color comparator for NO₂ determination was compared with data obtained from a spectrophotometer. The color comparator was found suitable for analyses of liquid samples containing more than 1 and less than 7 micrograms of NO₂. Four references are given. -- Public Health Eng. Absts.

- 1203 Comparison of Methods for the Determination of Benzo(a)pyrene in Particulates From Urban and Other Atmospheres. E. Sawicki, et al. Atmospheric Environ. 1, 131-145 (January, 1967).

Some of the factors compared are precision, accuracy, man-hours of work and total analysis time. Specific recommendations are given for methods by means of which a high order of selectivity, a maximum amount of information, a considerably reduced analysis time, or a low cost of analytical operation are possible. The use of the relatively low cost fluorimetric procedure is achieved with the loss of simultaneous characterization. There are 20 references. -- Abst. cond., Public Health Eng. Absts.

- 1204 Determination of Trace Amounts of Organic Lead in Air. Composite Sample Method. L. J. Snyder. Anal. Chem. 39, 574-578 (May, 1967).

The method consists of collecting a large air sample (100 to 200 cu.m.) by passing it through an activated carbon scrubber for a period of 2 to 4 days. Organic lead collected in the activated carbon is decomposed, extracted from carbon and colorimetrically measured by a single extraction dithizone method. Interference from particulate lead is eliminated by effective filtration prior to collecting organic lead. Eight references are given.

-- Abst. cond., Public Health Eng. Absts.

PREVENTIVE ENGINEERING

- 1205 Hazards of Hyperbaric Chambers. W. G. Trapp. Can. Med. Assn. J. 97, 227-228 (July 29, 1967).

Recent fire accidents in simulated space vehicles have raised the question of similar hazards in a hyperbaric chamber. A variety of factors markedly reduces the risk of working in a hyperbaric chamber; among these are sprinkler systems and the fact that the chamber itself is filled with compressed air. The patient receives pure oxygen through a closed system and expired oxygen is removed from the breathing system by a separate suction. Any escaping oxygen is washed out of the chamber by large-volume ventilation. Faithful adherence to decompression regulations has successfully prevented any symptoms of the "bends" due to exposure to compressed air. Toxic effects of pure oxygen under pressure have been much lower than anticipated as long as the pressurization has been kept below 3 atmospheres absolute.

-- Author's summary

COMMUNITY AIR HYGIENE

- 1206 Some Constituents of City Smoke. G. R. Clemo. Tetrahedron 23, 2389-2393 (May, 1967).

An interest in the complementary action of cigarette smoke and the neutral constituents of city smoke prompted this study of the isolation and identification of the aromatic hydrocarbons collected on cotton filters through which air had been drawn for 10-12 weeks. Chromatography on an alumina column of the neutral portion of the atmospheric soot which had been eluted from the cotton filters with a light petroleum gave a number of nitrogen-free hydrocarbons from which the crystalline 1, 3, 5-trinitrobenzene complexes were prepared. Identification was based on infrared, ultraviolet, and mass spectrometry as well as on the melting points. Pyrene, 3-methylpyrene, 1,2-benzpyrene, triphenylene, chrysene, 1,12-benzperylene, and picene were isolated and identified. The 3,4 benzpyrene was identified, but

not the nonaromatics which formed the bulk of the neutral portion. Mass spectrometry showed that the most volatile fraction of the light petroleum extract contained a series of 10 compounds with molecular weights from which a base, $C_{13}H_{15}N$, has been isolated. -- APCA Absts.

- 1207 Smog—Its Origin. G. T. Smith.
Rocky Mt. Med. J. 64, 55-58 (March, 1967).

Volatile materials produced by vegetation may be responsible for smog as well as man-made products. It has been calculated that one billion tons of volatile organic substances (terpenes) are released per year by vegetation over the surface of the earth. Throughout the world the terpenes are present in the air at concentrations of 2-20 parts per billion. It has been postulated that the dissipation of terpenes passes through the same cycle as that of gasoline vapors in producing a pollution haze. These blue hazes are seen especially in the mountain and desert regions of the U.S. There is some evidence to suggest that these terpenes may be toxic. In Reno, Nevada there was a close correlation between the occurrence of asthma attacks and the concentration of terpenes in the air as determined by monitoring with a gas chromatograph. White rats exposed to 40-60 ppm of alpha terpene became lethargic in 10 minutes. Symptoms progressed through agitation, staggering, and finally convulsions in 25 minutes with death in 30 minutes. At autopsy, the rats had focal loss of tracheal mucosa, pulmonary edema, and cerebral edema. The adult guinea pigs weighing more than the rats died on the first exposure in 35-45 minutes. The pilot study showed that alpha pinene is toxic in high concentrations to both humans and laboratory animals. The investigation is being continued to study the long term effects of lower concentrations found in nature to determine if pulmonary lesions are produced by prolonged exposure. -- APCA Absts.

- 1208 New Flue-Gas Scrubbing System Reduces Air Pollution. I. S. Shah.
Chem. Eng. 74, 84-86 (March 27, 1967).

Flue gases from the recovery boiler that enter the 2-stage system consisting of evaporator, scrubber, separator, and cooling tower are 99% + cleaner and 500° to 600° F. cooler when vented to the stack. -- Public Health Eng. Absts.

- 1209 The Use of Ammonia to Eliminate Acid Smuts From Oil-Fired Plant. P. Etoc.
J. Inst. Fuel 40, 249-251 (June, 1967).

The process of injecting ammonia into the flue gases from oil-fired boilers was developed initially to reduce the corrosion of low-temperature heat exchange surfaces by condensed sulfuric acid. It has been shown that sulfuric acid condensation is also a necessary precursor to the formation of acid smuts on these and other cold surfaces, such as chimney and duct walls. This paper describes the successful elimination of these smuts by injecting gaseous ammonia or ammonia solution into the flue ways of industrial and central heating boilers. -- Author's abst., APCA Absts.

- 1210 Air Pollution Control by Direct Flame Incineration in the Paint Industry. D. M. Benforado.
J. Paint Technol. 39, 265-266 (May, 1967).

Experience shows that direct-flame incineration is an effective and reliable method for controlling air pollution due to objectionable fumes and odors. The incorporation of heat recovery equipment reduces operation costs to acceptable levels and makes direct-flame incineration a practical control process. -- APCA Absts.

- 1211 Ozone Variability in Mountainous Terrain. J. J. B. Worth, L. A. Ripperton, and C. R. Berry.
J. Geophys. Res. 72, 2063-2068 (April 15, 1967).

Data from field studies have shown that the ozone concentrations in a complex environment do not exhibit the same mean values at mountain top and valley sites. The occurrences of the maximum value for the two types of sites are approximately 180° out of phase, the mountain-top maximum occurring at night. Their relative concentrations vary by a factor of 3 or 4. Ground-level NO_2 concentrations were comparable to reported values. The NO/NO_2 ratio was approximately 0.65. There are 10 references.

-- Authors' abst., Public Health Eng. Absts.

- 1212 SO₂ Pollution: The Next 30 Years. F. A. Rohrman, B. J. Steigerwald, and J. H. Ludwig. Power 111, 82-83 (May, 1967).

A study on potential increased emissions of SO₂ in the future and the extent to which the projected levels can be reduced through future emission-control technology is reported. The predictions and calculations are based on the degree of control now applied.

-- Public Health Eng. Absts.

MANAGEMENT ASPECTS

- 1213 Heart Cases Under Workmen's Compensation Laws. L. J. Warshaw. J. Occ. Med. 9, 349-352 (July, 1967).

The author discusses the subject under the following headings: Existing Heart Disease, The Question of "Strain", Compensability, Employer Liability, Interpretive Differences, and Legal Assessment. He concludes that workmen's compensation is a system designed fundamentally to help an injured worker heal his wounds, and to help him and his dependents maintain themselves with dignity until he can be restored to the status he appeared to display prior to his disablement. It would indeed be a wretched paradox if, through our attempt to help him, we induced an additional injury that may be significantly greater than the one for which compensation is being sought. Every individual who is in any way connected with a compensation case should keep constantly before him as the goal—not what's the most I can get out of it, nor how can I escape most cheaply—but a decision that is maximally advantageous to the injured man and, at the same time, equitable to his employer and all the others who are involved. If this were done routinely, many of our problems would evaporate leaving the way clear for a more concerted and less emotional attack on those that remained to be solved. There are 8 references.

ACCIDENTS AND PREVENTION

- 1214 Drowning in Paint. M. I. Gold and R. M. Ollodart. J. Am. Med. Assn. 200, 645-647 (May 15, 1967).

Two workers, with questionably effective protective masks, were scouring at the bottom of a giant, unventilated paint vat with naphtha solvent when they were overcome. The two men fell, face first, into 10 inches of paint residue and drowned. There are 6 references.

-- Public Health Eng. Absts.

- 1215 Rectal Perforation by Electronic Thermistor in an Unconscious Patient. A. D. Amar. Can. Med. Assn. J. 97, 186-187 (July 22, 1967).

Rectal perforation by a thermometer, which caused the death of a 10-day-old infant, was recently reported by Wolfson. (Am. J. Diseases Children 111, 197 (1966). The present case report is of a patient who was comatose following a brain injury, and whose rectum was perforated during treatment by an electronic thermistor. It is hoped that this report may stimulate others to indicate whether this is more than an extremely rare mishap. If so, an alternative method of monitoring the temperature in unconscious patients should be considered.

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