Industrial Hygiene Digest

INDUSTRIAL HEALTH NEWS

LITERATURE ABSTRACTS

MEDICAL

ENGINEERING

CHEMICAL

TOXICOLOGICAL

LEGAL

AUGUST, 1963
(Vol. 27, No. 8)

INDUSTRIAL HYGIENE FOUNDATION
MELLON INSTITUTE
4400 FIFTH AVENUE -:- PITTSBURGH 13, PA.

INDUSTRIAL HYGIENE FEATURES

The executive and neurosis is discussed in Abst. No. 710.

See Abst. No. 711 for details on the use of psychotropic drugs by employed persons.

Crushing injuries of the chest are described in Abst. No. 713.

Abst. No. 718 investigates heart disease in drivers of public motor vehicles as a cause of highway accidents.

For a study on oral cancer and occupational health consult Abst. No. 722.

Data on differential mortality from lung cancer by occupation are presented in Abst. No. 724.

Abst. No. 730 presents a study on skin affections caused by hard metal dust.

A new sensitive test for tellurium is described in Abst. No. 741.

Abst. No. 744 is concerned with studies on nickel carcinogenesis.

Information on zirconium scrap burning tests is given in Abst. No. 746.

Asbestosis in non-experimental animals in South Africa is the title of Abst. No. 758.

Abst. No. 759 reports on six cases of talc pneumoconiosis.

The topic of Abst. No. 768 is health hazards from microwave radiation.

Abst. No. 772 presents facts and fallacies of chest fluoroscopy.

Abst. No. 782 describes a rapid field test for cobalt carbonyl.

See Abst. No. 788 for some socio-technical aspects of automation.

FOUNDATION FACTS

NEW MEMBER: The Foundation is pleased to announce another new member:

Pipe Fabrication Institute

NEW REPRINT available upon request: Pneumoconiosis: An Aspect from a Different Angle by Paul Gross, M.D. Diseases of Chest 44, 106 (July 1963).

28th ANNUAL MEETING

OCTOBER 23-24, 1963

TABLE OF CONTENTS

	Page
Dr. Robert B. O'Connor appointed Editor of Journal of Occupational Medicine	i
Trends in Health Programs for Workers in Industry by Dr. L. C. McGee	iii
News Items	1
Coming Events	1
Legal Developments	2
Occupational Disease Statistics	3
Books, Pamphlets and Notices	3
Industrial Medical Practice	4
Skin Diseases and Burns	9
Chemical Hazards	10
Industrial Dusts	15
Physical Aspects of the Environment	18
Radioactivity and X-Radiation	19
Environmental Measurements	23
Community Air Hygiene	24
Management Aspects	25
Accidents and Prevention	26
Index	28

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FEBRUARY, 1961
(Vol. 25, No. 2)

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MELLON INSTITUTE
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EDITORIAL

In the article which follows, Dr. Lemuel C. McGee directs attention to the subject of personal medical care, specifically excluding occupational health and community health programs. Because of increasing industrial concern with group health insurance programs, it is believed that Dr. McGee's article, which originally appeared in the Annals of Internal Medicine in January, 1963, will be of interest to our membership.

TRENDS IN HEALTH PROGRAMS FOR WORKERS IN INDUSTRY*

By

Lemuel C. McGee, Ph.D., M.D., F.A.C.P.

About the Author. Dr. Lemuel C. McGee is Medical Director of Hercules Powder Company, Wilmington, Delaware. He is also Secretary of the American Medical Association Section on Preventive Medicine. He has been a member of the AMA Council on Occupational Health since 1954 and became Vice Chairman in 1962 and Chairman in 1963. Dr. McGee received his Ph.D. degree in biochemistry and physiology in 1927 at the University of Chicago and his M.D. degree from Rush Medical College, Chicago, in 1929. He has been Attending Chief of Medicine of Delaware Hospital since 1949 and visiting Professor of Industrial Medicine at University of Pennsylvania School of Medicine since 1943. He is a Fellow of the Industrial Medical Association, American College of Physicians, American Gastro-Enterological Association, and the American Clinical and Climatological Association; and a Member of the American Industrial Hygiene Association and American Public Health Association. He has authored many articles on industrial medicine and has received the Award of Honor of the American Academy of Occupational Medicine and the Kundsen Award of the Industrial Medical Association.

During the westward expansion of America's economic development, employers in lumbering, mining, railroading, or other activities which brought workers into isolated unsettled areas found it necessary to provide medical facilities. In some instances, the employer assumed the cost, in other instances he devised a method of payment by the recipients for the medical care. One such device was the "check-off" for the doctor and the hospital out of each pay envelope. Sawyer(1) stated that the Southern Pacific Railroad in 1868 organized the first major industrial prepayment program for medical care. During subsequent decades, fraternal organizations, lumber and mining companies, and other groups attempted and gained experience from the trial of various plans for the idea of "spreading the risk" in meeting medical costs.

The prepayment schemes, however, had rather meager growth until J. F. Kimball and Bryce Twitty, who were wrestling with the cost of hospital operations, and the school teachers of Dallas, Texas, who were interested in a collective approach for meeting hospital bills, conferred on this area of common interest in 1929(2). As a result, another child was born to "mother necessity." The child grew during the economic doldrums of the early 1930's and became what is known now as the Blue Cross plan.

Quite an evolution, both in medical economics and medical science, has taken place since the advent of the original Blue Cross plan. Risking oversimplification, one may say that several potent

* Reprinted here by permission from the Annals of Internal Medicine 58, 181-188 (January, 1963).

factors in the evolution are: (1) the concept that no one shall lack adequate medical care (indeed, it seems that it shall be forced on him!); (2) the phenomenal development of new, albeit costly, techniques for diagnosis and treatment; (3) a tax structure which limits the accumulation of individual savings to be applied against a "rainy day"; and (4) the concomitant growth in "fringe benefits" for employees grouped in industries. Some industrial groups find that the mélange of "benefit plans" (ranging from vacations with pay to hospitalization and disability payments) in recent years cost as much as 25 to 30 per cent of the straight-time wages paid. The trend and its acceleration present a major problem due to the situation, since a dollar buys considerably more when spent as a business expense that it can buy when taken from the pay envelope.

Such factors led to rapid growth in plans which provide varying degrees of insurance coverage for medical and surgical care, programs aimed to lighten the economic burden on employees when they or members of their families require such care. The pattern of growth followed such channels as:

1. Monetary assistance from employers.

2. Prepayment insurance plans with monetary or service benefits.

3. Union-operated medical care plans.

   An example of a major labor medical care program is the Welfare and Retirement Fund of the United Mine Workers of America. This fund has paid more than $180 million to hospitals and over $120 million to physicians during the past 10 years(3).

4. Joint management and union medical care plans.

5. Nonindustrial plans.

   These have arisen in private group clinics, consumer cooperatives, and as "community" plans. A prominent community plan, not aligned to an industrial group, is Group Health Insurance of New York (GHI). The Health Insurance Plan (HIP) originated primarily to provide prepayment medical care to employees of the City of New York.

The majority of health and welfare plans in industry have been set up by employers without initiation from organized labor. Employers have shown a preference for plans which provide benefits in dollars rather than in services, thereby avoiding the responsibility for maintaining adequacy in the medical service and keeping its recipients satisfied.

The negotiated health plans have burgeoned largely since World War II. In 1958, 14 million union members and 22 million dependents (representing 29 per cent of all enrollees) were estimated to be covered by plans created during union contract negotiations(4).

In the aggregate, 128 million Americans—72 per cent of the civilian population in the United States—had some form of insurance through voluntary insuring organizations covering hospital expense at the end of 1959(5). Nearly 117 million persons had surgical expense protection, more than 82 million were protected against regular medical expense (benefits to help pay the physicians' fees for nonsurgical care). Loss of income protection (benefits to help replace earnings cut off by disability), provided by insurance company programs or wage continuation plans of the employer, covered more than 43 million wage earners at the end of 1959. Federal governmental agencies are said to provide approximately 30 million persons with complete or partial medical care. This number includes 2.5 million active-duty military personnel and 3.5 million veterans incapacitated by service-connected disabilities(5). Nearly 22 million were insured against major medical expense(6).

Health insurance premiums received by all types of voluntary insuring organizations in 1959 reached a total of $6.7 billion. Health insurance benefits paid to insured persons reached $5.2 billion in the same year. The insuring organizations comprised 737 insurance companies, 78 Blue Cross plans, 68 Blue Shield plans, and over 300 independent plans(6). Along the frontiers of prepaid medical care planning, it is stated that (1) more people need to be covered, (2) extended coverage is needed for long-term chronic illness, and (3) there are important health services which remain to be included (such as diagnostic procedures, rehabilitation services, periodic medical check-ups, and related forms of preventive medicine).

Whereas commercial insurance companies got off to a slow start in the health field, as compared with the Blue Cross-Blue Shield plans, they have moved rapidly in recent years. The commercial companies now write more than half the health coverage in the nation(7). The conflict between 2 philosophies in rating, "community rating" (historically the aim of the "Blue plans") and "experience rating" (incorrectly identified as the commercial insurance method) is creating difficulties which need resolution. One result of the conflicting philosophies is that the "Blue plans" have found it necessary to try out some degree of experience rating to tailor their programs to the needs of "low-use" groups, so as to meet competition. Another trend is seen in the willingness of many employers to pay higher rates for their employees under the "Blue plans" so as to encourage the continuation of community rating. In this way "high-use" beneficiaries, such as retired workers, can continue their medical care coverage at a rate (premiums paid) lower than that justified by their experience treated actuarially, as a separate group. With more people wanting more expensive care, the "high-use" groups will be the first to find the cost of prepayment health coverage beyond their reach, if those groups are rated on an experience basis. Some pragmatists see the community rating principle as the only way under voluntary prepayment plans to offer a built-in subsidy to a poor-risk group. The ultimate outcome of the conflict between the 2 rating philosophies remains to be seen. Possibly a workable compromise can be devised.

Along with the flourishing of voluntary prepayment insurance to cover hospital and medical costs came tough problems of administration of the schemes. Some of these problems relate to the following facts of life:

1. There is much variation in the willingness of the individual to accept his share of responsibility to act for the preservation of his health. The majority of men and women undoubtedly take good health for granted. They are concerned only by its absence, i.e., with loss of health after the event.

2. Efforts toward rehabilitation frequently are neglected. Some patients under disability leave from their jobs sit at home with progressive disease and make little or no effort toward recovery.

3. Sometimes, communications are inadequate between physicians or hospitals concerned with the treatment of the patient and a key representative of industry (physician, personnel officer, or supervisor) on matters of considerable import to the patient. The extent of the patient's recovery, his probable future, the protection of fellow workers, the impact of the working environment (people as well as things) on the patient, should be clearly understood by those concerned in the continuation of efforts for rehabilitation and retraining after the patient is returned to work.

4. Failure to identify and accept emotional illness as a cause for frequent absence from work can delay proper treatment and lead to the misuse of health insurance benefits.

5. Limitations of medical knowledge place a burden on health insurance plans. All human ailments cannot be cured. During our efforts to do the impossible in medical therapy, there is, unavoidably, some over-utilization of the plans.

6. Limitations in the comprehensiveness of health insurance (presumably for good actuarial reasons) through the omission of coverage for diagnostic measures, maneuvers in prevention, and certain chronic disease form a troublesome terrain.

Cost Spiral

The over-all dynamism of the medical care operation not only has gained considerable social and political force, but also has earned the unfortunate tarnish of well-nigh intolerable cost, which, in turn, is insufficiently explained by the inflationary trend of the era. A searching look at costs by those who pay the premiums and by the dispensers and consumers of medical care is overdue.

Medical care items in the Consumer's Price Index (1947-49 base of 100), show an uneven rise during the past decade. Hospital room rates increased 109 per cent; general practitioner's fees, 44 per cent; dentists' services, 35 per cent; surgeons' fees, 26 per cent; prescriptions and drugs, 23 per cent(6).

It is found that the following factors have contributed to increased medical and hospital costs:

1. The development of new and more effective diagnostic procedures and equipment.

2. The discovery of better therapeutic procedures, both medical and surgical.

3. An increased accessibility of medical service and a growing public demand for such service. Improved transportation has made hospital care available to more people. There is less fear of going to a hospital on the part of a large segment of our population who previously thought of the hospital as a place to have an operation or to go to die.

4. The insistence of labor on full payment for "complete" medical care. Falk(4) summarized labor's goals under 5 points:

   a. Comprehensive health care—preventive, diagnostic, therapeutic, and rehabilitative;

   b. High quality, with adequate continuing professional controls;

   c. Good organization for availability, continuity, and economy in the health services, preferably through group practice wherever practical;

   d. Full coverage by insurance, to the maximum extent practical; and

   e. Services and insurance for active, laid-off, disabled, and retired employees and for their dependents.

5. Progressive inflation in the economy of the nation.

6. Wage costs for ancillary health services and the number of employees required have increased (laboratory technicians, nurses, dietitians, and other hospital employees). The number of full-time employees in one Wilmington, Delaware, hospital increased 116 per cent between 1954 and 1958. In 20 hospitals in the Washington, D.C., area, payroll and salary expenditures went from $12.2 million in 1950 to $27.7 million in 1957.

7. The growth of the population understandably has increased the number of hospital admissions. In addition, the rate of admission has increased. Admissions to general hospitals per 1000 population averaged 56.7 per year between 1928 and 1943. For a 12-month period, 1957-1958, the rate was found to be 99.4 per 1000 population.

8. Prolongation of life increases the volume of those disorders of senescence which can be palliated but not cured.

9. The failure to provide sufficient convalescent homes and suitable low-cost units for the care of chronic disease has led to occupancy of beds intended for the diagnosis and treatment of acute disease by patients who should occupy beds of lower unit costs (providing domiciliary and nursing care).

10. Improved economic well-being in the working group and the growth of voluntary health insurance have added to the demand for medical and hospital service. It should be understood that human health has a subjective component, and medicine is not an exact science. Among several persons with the same condition (by objective tests), one may go to work without complaint, another may take to his bed and let nature take its course, another may make an emergency call to his doctor, a fourth may demand admission to a hospital. Some people in the situation just described will go to work if staying home means losing income, will stay at home if benefits are payable. One who would not call the doctor if the doctor's fee is to be paid by the patient will call the doctor if "benefits" are available to pay the fee. The more comprehensive the insurance coverage, the greater is the demand for and the use of the services provided.

11. State, city, and county welfare departments do not pay adequately for indigent patients; the deficits must be absorbed by the hospitals. Pennsylvania has been paying less than half the costs of medical care to welfare clients, New Jersey as little as 20 per cent. A Delaware hospital received $15.50 from tax sources per indigent patient per day, in 1959, against actual costs for hospitalization of $38.00 a day, per patient. Wider use of the provisions of the Kerr-Mills legislation offers hope of improvement in this situation, with more equitable reimbursement to hospitals for their care of the indigent patient.

Cost Reduction

Reduction or control of costs of medical care and hospital service has been proposed through such devices as the following:

1. The use of a mechanism to place on the patient a reasonable degree of responsibility for controlling costs. As an example, certain initial costs could be borne by the patient. Budgetable items could be separated from more serious financial blows by use of "deductibles." These can take various forms: a specified amount of money, a specified number of doctor's visits, a specified number of days of sickness, a specified number of hospital days.

2. The control of inflation in the nation's economy. Our present horizon shows no promise of restraint on the erosion of the purchasing power of the dollar.

3. Gradual reduction in the "installment payment economy" of the nation. Must our contemporary social philosophy be that man should spend what he earns for his pleasures rather than for what he needs? "The American nation spends more for liquor, tobacco, cosmetics, beauty treatments, movies, television and baseball games than it does for medical care. Yet, medical care seems to be the prime target for every social planner"(8).

4. Instructing the beneficiaries and their physicians as to the purpose of prepayment plans, the character of coverage, and the proper utilization of the services provided. Prepayment for hospital and medical expenses creates no new wealth. One who seeks something for nothing meets the disappointing fact that, over-all, less comes back in payments to beneficiaries than originally goes into the insurance premiums. The administrative custodian shall be paid for his work!

Beneficiaries of prepayment, medical, surgical, and hospitalization plans must understand the nature of their insurance benefits, if they are to be saved the illusion that their insurance "pays for everything." Otherwise, a beneficiary concludes that he has been victimized, usually blaming his doctor, who, in turn, blames the seller of the insurance.

5. Use of insurance plans which specify rigid fee schedules for professional service ("service contracts") without the privilege of supplemental charges to patients having larger than average incomes.

It must be noted, in this connection, that the increase in professional fees has been proportionately less than other increases in costs of medical care. "Only a fraction of the higher cost of today's better medical care is chargeable to the doctor"(8).

Fee schedules have a pattern of lagging behind the decreasing value of the currency and the increasing value of the service rendered. The device invites bureaucratic control, dissatisfaction in both the recipients and the purveyors of services, and deterioration in the quality of medical care. In some such plans, strenuous efforts in administration are credited with preventing or limiting these undesirable sequels.

The alternative to rigid fee schedules is adequate voluntary elimination by physicians of the occasional insidious and destructive abuse by means of a small increment to an otherwise usual and acceptable fee, whenever the existence of medical insurance is known to the physician. When the amount of time and effort spent by the physician in the patient's behalf exceeds the "norm", and is required by the exigencies of the illness, a full explanation should be made to the parties concerned (including the insuring "third party").

6. Reduce or eliminate hospital intern and residency training programs. This procedure generally means a reduction in the quality of medical care for the patient. Additionally, there result fewer trained physicians for future practice under this device for cost reduction.

7. Devise a control mechanism which arbitrarily defines the point where further medical service is either unnecessary or socially undesirable. A point where benefits lead to needless absence from work and unneeded hospital and medical care undoubtedly exists, but who has the skill to identify and define that point for mass application?

Numerous studies of the length of hospital stay in relation to the nature of the illness and need for hospitalization have been made. After identification of those patients who have no access to convalescent care (home or other adequate facility), the remaining patients have been found to contribute little to "over-utilization".

A review of hospital admissions (Blue Cross Hospital Service, Indianapolis 1956) showed that admission for obstetrical care, deliveries, and pre- and post-natal conditions was the major diagnostic category (24 per 1000 population) with an average length of stay of 4.6 days. The second most frequent cause for admission was respiratory disease (18.7 per 1000) with average length of stay 3.4 days(9).

The average duration of stay was longest in instances of malignant neoplasms, 15.5 days, which seems not unreasonable. The over-all admission rate for subscribers in the year under study was 115.5 per 1000 population, the average length of stay 7.3 days. About two-thirds of the admissions (78.3 per 1000 population) were for surgery. The average length of stay for surgery was 6.2 days per admission.

These and similar studies on "utilization" do not support the criticism that great numbers of patients are unnecessarily admitted to general hospitals or that appreciable numbers remain too long.

8. Avoid "over-insurance"; i.e., avoid a combination of benefit plans which permits the insured to receive funds in excess of his monetary losses occasioned by the illness.

9. Insist that hospitals be managed on a basis of denying service for which payment is not provided. Most hospitals place efficient financial operation as secondary in importance to community service. The community has come to take its hospital's service for granted. Absorbing the costs of care for patients who cannot pay, providing for the patients left on the hospital doorstep in emergencies, operating outpatient clinics for indigents or minimal fee patients, training nurses, technicians, and physicians—all of this the community expects of its hospitals.

A community hospital does not have closed hours; it must operate 168 hours each week with a staff for each 8-hour shift. A hospital "can be humane or it can be efficient. It cannot be both"(10).

10. Do not purchase expensive medical, surgical, x-ray, anesthetic, and other equipment which will be used rarely, even though the special-purpose gadgets may save a few lives each year. Such apparatus cannot be paid for out of fees charged the few patients needing it.

11. Schedule the laboratory, radiologic, operating room, and related appointments required for the patient so as to minimize the time he remains in the hospital.

12. A proper discharge schedule may avoid an extra day in the hospital for some patients.

13. The insurance coverage of an efficient diagnostic service for outpatients would seem to hold promise of savings through making hospitalization unnecessary. In some such experimental plans, however, the coverage of diagnostic work for outpatients is reported not to have reduced hospital bed utilization rates.

14. Follow up the leads obtained by the hospital "Utilization Committee" from a study of patients' charts for evidence of correctable causes for inexpedient use of the hospital's facilities.

Comment

Some of the cost reduction proposals listed above deserve further study and trial application, other proposals promise little or no help, still others are repugnant to the American way of life, whatever they may accomplish in the balance sheet.

Regardless of the complexity of the problem of controlling the cost of good medical care, that problem is one not to be ignored. What is needed is an acceptable equilibrium between costs and quality of medical care, omitting the frills. To achieve this goal, there must be reasonable freedom for the patient to select the source of his treatment and reasonable freedom for the physician to determine how and where he can best use his skills. The fact that this generation of American citizens has seen phenomenal advances in extending better medical care to more people bespeaks

the importance of 2 things I believe to be true: (1) The vast majority of physicians both desire and work diligently for the extension and wider application of knowledge in health maintenance and disease control. (2) The properly trained physician has no great difficulty in the evaluation of quality of medical care. He knows what is excellent and what is poor medical practice. He is puzzled that his fellow citizens often seem to ignore his competency to judge the quality of medical care. They have shown clumsiness in developing methods of organization and support so as to use, optimally, the physicians' skills and energy.

Until recently, neither industry nor insurance companies have evinced great interest in effective controls over the costs of medical care. There are, undoubtedly, numerous reasons for this "hands off" record. One reason, undoubtedly, is the assumption that economy and quality of medical care are antithetical; another, that cost control is solely a job for the physicians. The latter assumption ignores the minor part that physicians' fees, the only area directly under control of physicians, have played in rising costs of medical care.

Competent students of the subject of extending prepayment plans for medical care to more people are aware of the complexities involved. On the subject of the limitations and unrealism surrounding one fetish, "free choice" of a physician, Somers and Somers note that "historically, there is a good deal of evidence that choice in the medical field, like freedom generally, is in the long run a sturdy support for quality—even though, in the short tun, the results may appear contrary"(4). An acceptable balance between the interests of freedom of choice, quality maintenance, and cost control suitable for general use is yet to be determined. It is a multifaceted problem, possibly one which has no single dramatic solution.

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INDUSTRIAL HYGIENE DIGEST
Literature and News

NEWS ITEMS

698 Accident Prevention Conference.

The American Gas Association will hold its 15th Annual Accident Prevention Conference September 10 and 11 at the Chase Park Plaza Hotel, St. Louis. It will feature symposiums and expanded workshop sessions. Emphasis will be placed on the ideas, materials, and techniques for improving each company's safety record. For further information write AGA, 605 Third Avenue, New York, N.Y. 10016 (Chem. Eng. News 41, 64 July 8, 1963)

699 Sixteenth Annual Symposium on Pulmonary Diseases.

The Sixteenth Annual Symposium on Pulmonary Diseases will be held at Fitzsimons General Hospital, Denver, Colorado, from September 23 through 27, 1963. This Symposium is jointly sponsored by Fitzsimons General Hospital, the University of Colorado School of Medicine, and the American Thoracic Society. Information concerning enrollment may be obtained from the University of Colorado School of Medicine, or from the Program Director, Lt. Colonel Joseph A. Hawkins, MC, Fitzsimons General Hospital, Denver 30, Colo.
(Am. Rev. Resp. Dis. 87, 923 June, 1963)

700 Animal Care Panel to Meet in Los Angeles, October 1-4, 1963.

More than 40 papers on the care, management, procurement, and production of animals used in biomedical research will be presented at the 14th Annual Meeting of the Animal Care Panel, to be held at the Ambassador Hotel in Los Angeles, October 1 through 4, 1963. For information write Mr. Joseph J. Garvey, Executive Secretary, 4 East Clinton St., Joliet, Ill.
(Am. Rev. Resp. Dis. 87, 923 June, 1963)

701 American Cancer Society—1963 Scientific Session.

The 1963 Scientific Session of the American Cancer Society, to be held October 21 and 22 at the Biltmore Hotel in New York City, will consist of a conference on "Unusual Forms and Aspects of Cancer in Man." For further information, write Dr. Roald N. Grant, Director, Professional Education, American Cancer Society, Inc., 521 West 57th Street, New York, N.Y. 10019
(Am. Rev. Resp. Dis. 87, 923 June, 1963)

COMING EVENTS

702	Sept. 2-4.	The Faraday Society, Fundamental Processes in Radiation Chemistry, Notre Dame, Indiana
	Sept. 4-6	Biennial Symposium on Foods, Proteins and Their Reactions, Corvallis, Ore.
	Sept. 4-6	Symposium on Inorganic Fluorine Chemistry, Argonne National Laboratory, Argonne, Illinois

Sept. 5-9	College of American Pathologists, Chicago, Ill.
Sept. 8	Northwest Association of Occupational Medicine and American Industrial Hygiene Association (Pacific Northwest Section), Portland, Oregon
Sept. 8-11	Canadian Agricultural Chemicals Association, 11th Annual Meeting, Mont Tremblant, Quebec, Que.
Sept. 8-13	American Chemical Society, 145th National Meeting, New York, N.Y.
Sept. 9-12	Instrument Society of America, 18th Instrument-Automation Conference and Exhibit, Chicago, Ill.
Sept. 10-11	American Gas Association, 15th Annual Safety Conference, St. Louis, Mo.
Sept. 10-12	Chemical Specialties Manufacturers Association, Chicago, Ill.
Sept. 12-14	Drug, Chemical and Allied Trades Association, Annual Meeting, Pocono Manor, Pa.
Sept. 12-17	Pacific Dermatologic Association, Honolulu, Hawaii
Sept. 15-19	3rd Annual Conference on Pharmaceutical Analysis, University of Wisconsin Extension Services in Pharmacy, Land O'Lakes, Wis.
Sept. 16-18	American Society for Testing and Materials, Committee E-19 on Gas Chromatography, Atlantic City, N.J.
Sept. 20-21	National Rural Health Conference, Hot Springs, Ark.
Sept. 22-28	Society of Chemical Industry, Annual Meeting, New York, N.Y.
Sept. 23-25	17th Tobacco Chemists' Research Conference, Montreal, Quebec, Canada
Sept. 24	Manufacturing Chemists' Association, Chemical Safety Workshop, New Orleans, Louisiana
Sept. 24-25	Society of Cosmetic Chemists, 10th Annual Seminar, Boston, Mass.
Sept. 24-27	International Organization for Standardization, Common Names for Pesticides, British Standards House, London, England
Sept. 25-26	American Medical Association, 23rd National Congress on Occupational Health, San Francisco, Calif.
Sept. 27-Oct. 5	American Society of Clinical Pathologists, Chicago, Ill.
Sept. 29-Oct. 2	American Institute of Chemical Engineers, National Meeting, San Juan, P.R.
Sept. 30-Oct. 2	American Oil Chemists' Society, 37th Annual Fall Meeting, Minneapolis, Minn.
Sept. 30-Oct. 4	12th Clay Minerals Conference, Atlanta, Georgia

LEGAL DEVELOPMENTS

703 Sale of Alkylbenzene Sulfonate Detergents Prohibited.

Prohibition of the sale of alkylbenzene sulfonate (ABS) detergents after January 1, 1965, is part of anti-pollution ordinance recently passed by the Board of Commissioners of Dade County, Florida. The provision would not only prohibit sale of present ABS materials, but would also prohibit new, biodegradable materials which are ABS compounds. The Soap and Detergent Association is taking action to get the board to reconsider its move. The association points out that it would be difficult to prevent people from buying detergents in adjacent counties and bringing them into Dade County, which includes Miami. The association is not objecting to other provisions of the anti-pollution ordinance, but it will try to obtain a rehearing on the detergent section.
(Chem. Eng. News 41, 17 May 13, 1963)

704 To Re-Evaluate Tolerances on Aldrin and Dieldrin.

The Food and Drug Administration (FDA) has set up a scientific advisory panel to re-evaluate tolerances on aldrin and dieldrin. The purpose of the study, says Dr. J. Kenneth Kirk, assistant commissioner of the FDA, is to determine if the scientific information available to date on these two pesticides supports FDA's current limits on their residue on foods or suggests that the tolerances should be changed or eliminated. He says the study is "part of a continuing re-evaluation of all our pesticide tolerances" and was not prompted by the controversy brought on by Rachel Carson's book, "The Silent Spring." Panel members were selected from scientists recommended by the National Academy of Sciences at the agency's request.
(Chem. Eng. News 41, 19 May 13, 1963)

705 Air Pollution Control Bill Approved.

An air pollution control bill has been approved by the House Committee on Interstate and Foreign Commerce. Under H.R. 6815, the federal role would be limited to encouraging cooperative control programs by state and local agencies and to carrying on a national research and development program on air pollution. The bill would also authorize $90 million for a four-year program of grants to local control agencies. (Chem. Eng. News 41, 21 (July 8, 1963)

OCCUPATIONAL DISEASE STATISTICS

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

	Conn. May	Ind. May-June	Pa. June-July	Tenn. May-June	Total
Aggravation lung disease (propane gas)				1	1
Bronchiectasis			1		1
Brucellosis				3	3
Carbon monoxide poisoning (1 death; 1 brain damage)		2		5	7
Dermatitis	31*	1	20	17	69
Emphysema				1	1
Glue solvent poisoning				1	1
Lead poisoning		1			1
Leptospirosis				2	2
Metal fume fever				2	2
Methylene chloride poisoning	1				1
Oxygen deficiency (death)		1			1
Pneumoconiosis			1		1
Respiratory irritation			2		2
Silicosis	2		2		4
Silicosis (suspected)			4		4
Tuberculosis			1		1
Total	34	5	31	32	102

* Causes are listed as follows:

Connecticut: Occupational dermatitis due to oils and greases (and metal cutting compounds) 6; occupational dermatitis due to solvents 6; occupational dermatitis due to other chemicals: alkalies 2, dyes 1, glues 2, miscellaneous 2, multiple chemicals 1, photography chemicals 1, plating chemicals 1, synthetic resin or resin (plastic compounds) 2, vinyl pyridine 1; occupational dermatitis—other: fiberglas 1, infection 2, soaps or detergents 2.

BOOKS, PAMPHLETS AND NOTICES

707 Food Hints for Mature People. More Years to Life—More Life to Years. C. G. King with G. Britt. Public Affairs Pamphlet No. 336. OBTAINABLE FROM: Public Affairs Committee, 22 East 38th Street, New York, N.Y. 10016. 28 pp.(1962). PRICE: 25 cents.

A properly reasoned and seasoned selection of food can mean greater physical comfort, efficiency, and enjoyment for older people. Simple, easy-to-follow advice for people in their

middle and later years is given in this pamphlet by Dr. Charles Glen King with George Britt. Dr. King recognizes that some persons have a mistaken idea that nutrition means a hopeless, boring job of counting calories and balancing nutrients, but that is far from the truth. Nor does he have any sympathy for the food faddists who view selected common foods with alarm and build up ridiculous hopes in less usual products. The "gaudy promises" of these alarmists are no substitute for the common sense of healthful eating. For "how to feel better" the authors offer 14 specific suggestions for good health and good eating. Because of the convincing evidence that overweight is a hazard to health and life, particularly in the years after 60, King pays special attention to the problem of obesity. His recommendations are clear and specific, including a formula for estimating desirable calorie intake as well as one for a decrease in intake if losing weight is necessary. As for the much-discussed factor of cholesterol, King explains what it is, where it is found, and urges that "one should not go to extremes and attempt to avoid a moderate use of animal source foods. This problem of cholesterol is one to be reviewed with a highly qualified physician well versed in biochemistry and nutrition."

708 Quiet Guardians of the People's Health. Nettie Kline. Public Affairs Pamphlet No. 322. OBTAINABLE FROM: Public Affairs Committee, 22 East 38th Street, New York, N.Y. 10016 20 pp. (Jan. 1962). PRICE: 25 cents.

In this pamphlet the author emphasizes such things as the need for "detailed attention to the design and operation of the water supply and sewage systems, incinerators, dairies, ships, trailers, trailer parks, school buildings, hospitals, restaurants," and many other public facilities. "No civilization can thrive" the author points out, "which does not take steps to protect its people from natural stresses, from inhaling or absorbing the parasites that travel from man to man." Among the activities of the Division of Environmental Engineering and Food Protection of the U.S. Public Health Service, Miss Kline lists the following as particularly vital: (1) Sanitary Protection in Interstate Travel. (2) Milk and Food Codes. (3) Drinking Water Standards. (4) Waste Disposal. (5) Shellfish Certification.

709 Health Statistics from the U.S. National Health Survey. Series B-No. 32. Hospital Discharges and Length of Stay: Short-Stay Hospitals. United States 1958-1960. U.S. Department of Health, Education, and Welfare, U.S. Public Health Service. PHS Publication No. 584-B32. 54 pp. (April, 1962). FOR SALE BY: Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. PRICE: 40 cents.

In the United States there are approximately 115 discharges from short-stay hospitals in a year among every 1,000 persons alive at the end of the year. These figures refer to the civilian non-institutional population. The rate of hospital discharges among females, 140.9 per 1,000 persons, exceeds that for males, 87.5 per 1,000 persons. Even when hospitalization for deliveries is excluded, the hospitalization rate for females (99.4 per 1,000) is greater, but the excess is confined to the ages between 15 and 54 years. Excluding deliveries, the rate of hospitalization increases with age from 55 discharges per 1,000 children of ages 5-14 to 154 per 1,000 persons aged 75 years and over. Similarly, the average length of hospital stay increases with age, ranging from 4.7 days to 15.8 days per episode for the age groups mentioned. This report includes hospitalization data by age, sex, geographic region, race, income, and other characteristics of the population. It is based upon data obtained in health interviews during the period July, 1958 through June, 1960.

INDUSTRIAL MEDICAL PRACTICE

710 The Executive and Neurosis. W. Forster. Can. Med. Assn. J. 88, 1244-1246 (June 22, 1963).

Executives are prone to overwork, to need to achieve and to need to compete. The dynamics responsible for this pattern were also the dynamics of the breakdown in 16 executives

with neurosis. Overcompensation for inferiority feelings, often originating in low socio-economic childhood background, and ambivalence to the father with repression of hostility were prominent, the main ego mechanisms of defense being repression and denial. The patients often attempted to turn psychotherapy into discussions and had difficulty in accepting a non-directive approach. -- Author's abst.

711 Use of Psychotropic Drugs by Employed Persons. S. G. Rogg and S. Pell. Ind. Med. & Surg. 32, 255-260 (July 1963).

A survey of 3,042 white-collar employees of the duPont Company was undertaken to determine the proportion of employees who used psychotropic drugs and to study the reasons for their use. The findings were as follows: (1) About one-quarter of the employees surveyed used one or more psychotropic drugs during a 12-month period. (2) Use of the drug increased with increasing age, and was higher among women than men at all ages. (3) The conditions most frequently cited as reasons for taking the drugs were nervousness, insomnia, unexplained tension, gastrointestinal disorders, and hypertension. (4) About one-half took the drugs for less than one month. (5) About 80% of users believe the drugs were beneficial. The percentage was slightly higher among those taking barbiturates and psychic energizers than among those taking tranquilizers. (6) An inquiry into the consumption of alcohol by those who used psychotropic drugs revealed that alcohol consumption increased with age and was greater among persons exhibiting a "free-floating" type of anxiety than among those with psychosomatic conditions. (7) A survey of 3,104 male production workers showed that the proportion of persons using psychotropic drugs in this group was less than that found among white-collar workers. -- Authors' summary

712 Effect of Acute Alcohol Intake on Serum Cholesterol and Lipoproteins. M. Miettinen. Ann. Med. Exptl. Biol. Fenniae (Helsinki) 40, 443-447 (1962). (Annales Medicinae Experimentalis et Biologiae Fenniae (Helsinki), Kalevankatu 11, Helsinki, Finland*).

Twenty-eight men drank in the evening during 3 hours, 1.0-2.4 g. of alcohol per kg. (according to individually estimated tolerance). Blood samples for cholesterol analysis were taken before drinking, 30 minutes after drinking, and on the following morning. Alcohol caused no significant changes in the serum total cholesterol concentration or in the distribution of cholesterol in alpha and beta lipoproteins. -- Aerospace Med. Absts.

713 Crushing Injuries of the Chest. W. A. Wichowski and G. W. Holmes. J. Occ. Med. 5, 307-311 (June 1963).

Severe crushing injuries of the chest present an interesting challenge. The fact that some patients arrive at the emergency room without any external evidence of trauma does not exclude the possibility of a serious or even eventually fatal injury from existing on the inside. These patients need continuous observation with frequent re-examinations for thorough assessment of the altered cardiopulmonary system, which, after all, is the key to a working diagnosis and treatment. Unless this is done, many of these patients will die, not of their primary pathology, but from complications. Exploratory thoracotomy is done only with specific indications, and if done before stability of vital signs, blood volume, and adequate pulmonary ventilation is established incurs a high mortality. The patient can be said to be doing well if: (1) bleeding is controlled; (2) patient is totally resuscitated; (3) tracheobronchial tree is clear of secretions; (4) chest wall is stable; (5) no significant circulatory disturbance exists; (6) pleural space is free of blood and air; and (7) lung has re-expanded or is re-expanding. -- Authors' summary

714 Needed: Specialists in Aerospace Medicine. 1. Research and Development. E. T. Carter and C. E. Billings. New Physician 12, 63-67 (Feb. 1963). (New Physician, 333 N. Michigan Ave., Chicago 1, Ill. *).

This is the first of a series of three papers describing the prerequisites, activities, and opportunities in various phases of aerospace medicine. The characteristics of the work, kinds of problems involved, specific studies and clinical applications, and anticipated questions

* Address not in current List of Periodicals.

with answers regarding careers in the human factors or human engineering branch of aerospace medicine are given in this initial presentation. The recent emphasis on human factors research provides unlimited opportunities at present for specially trained aerospace medical specialists. -- Aerospace Med. Absts.

715 Honeycomb Lungs (Cystic Disease of the Lungs) Report of a Case. J. M. Staron. J. Occ. Med. 5, 357-358 (July, 1963).

The case discussed in this report is of interest because it created a diagnostic problem which was not resolved until the patient expired and a post-mortem examination was performed. Prior to death, a tentative diagnosis of an occupational disease of the lungs (silicosis) was made by the attending physician, a consulting internist, and two noted roentgenologists. However, because of a doubtful corroborating history of exposure and the absence of appreciable changes in roentgenographic findings from June 1948 through June 1955, and in spite of the progressive increase in severity of symptoms, the diagnosis of occupational disease was not accepted as conclusive by several physicians. The pathologists were inclined to consider this case a form of congenital cystic disease rather than an acquired cystic bronchiectasis with emphysema, partly because of the bilateral character of the process and partly because there did not appear to be enough evidence of a chronic inflammatory process and fibrosis to account for these changes. The case was coded as: (a) honeycomb lungs, probably congenital cystic disease, (b) hypertrophy of the right ventricle of the heart (cor pulmonale), and (c) chronic passive congestion of the liver and spleen.

716 Corticosteroids in Aspiration Pneumonia. E. C. Graham and D. Choy. J. Am. Med. Assn. 184, 976-977 (June 22, 1963).

This case report suggests that steroids will play a major role in decreasing the mortality and morbidity in aspiration pneumonia. It is felt that steroids in no way obviate the need for bronchial drainage or for supportive therapy with bronchodilators and antibiotics, however, the use of corticosteroids is advocated to suppress the inflammatory response and prevent bronchial obstruction, especially in cases of liquid aspiration. -- Authors' summary

717 Cardiac Resuscitation in Coronary Artery Disease. A Central Coronary Care Unit. M. Wilburne and J. Fields. J. Am. Med. Assn. 184, 453-457 (May 11, 1963).

A central coronary care unit together with (1) a program of physiologic and closed circuit television monitoring and (2) an organized step-by-step plan of resuscitation in cardiac arrest due to coronary artery disease is described. The program is designed to prevent death from cardiac arrest in the hospitalized patient with acute coronary disease. The physiologic monitoring system includes a continuous oscilloscopic electrocardiogram and digital read-out of arterial pressure or pulse volume simultaneously displayed. Other data also may be obtained. An audiovisual alarm is activated by ventricular fibrillation, cardiac asystole, pre-determined changes in ventricular rate, or pre-selected blood pressure declines. All patients with acute coronary disease are assigned to the coronary care unit. The unit is under continuous supervision of specially trained personnel. -- Authors' abst.

718 Heart Disease in Drivers of Public Motor Vehicles as a Cause of Highway Accidents. Report of a Case with Procedure for Prevention. R. L. Levy, C. E. de la Chapelle and D. W. Richards. J. Am. Med. Assn. 184, 481-484 (May 11, 1963).

The present case, together with the history and post-mortem examination of the driver of the bus, serve to illustrate several significant points: (1) There was a clear history and unmistakable evidence, on examination, of a previous attack of cardiac infarction followed by recurring anginal pain. This man should not have been allowed to resume as a driver, after the first episode. (2) The findings in the heart, at autopsy, illustrate clearly that advanced coronary heart disease is compatible with reasonably good health and adequate functional capacity for work. (3) An individual who has had a coronary attack is more susceptible to further trouble than if he had never had a previous cardiac illness. (4) In a vast majority of instances

the history, if well taken and honestly given, and the physical examination, if sufficiently inclusive and carefully made, will reveal evidence of heart disease, if present. It is not within the scope of this report to consider the medical qualifications of the operator of a private automobile. The driver of a public vehicle has a greater responsibility in that an accident may endanger not only his life, but that of many passengers. It is hoped that the account of this sequence of events may serve to stress the importance of screening with care prospective drivers of public motor vehicles with respect to cardiovascular disease and eliminating by periodic reexamination, those who may have developed such a disorder after hire.

-- Cond. from authors' summary

719 Relationship of Blood and Pulse Pressure to Cardiovascular Status in 100 Aged Individuals. M. L. Brown, M. Rodstein and F. D. Zeman. Am. J. Med. Sci. 245, 676 (June, 1963).

An average of 23 blood pressure determinations per individual over a span of 4 to 5 years was recorded for 100 persons ranging in age from 61 to 99 years. Over this period, there were no significant changes in initial and final average systolic and diastolic blood pressures except for a fall in systolic level in males with significant evidence of cardiovascular disease. When studied as individuals, there was a wide variation in readings. There was a decrease in the number of individuals with initially hypertensive levels and an increase in those with final normotensive levels, which was frequently associated with the onset or exacerbation of congestive heart failure. Systolic hypertension developed in a considerable number of patients without significant evidence of cardiovascular disease and with initially normotensive levels. Wide pulse pressures were related to marked aortic arteriosclerosis and left ventricular hypertrophy and narrow pulse pressures to congestive heart failure and marked electrocardiographic abnormality.

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

720 Diet and Plasma Cholesterol in 99 Bank Men. J. N. Morris, et al. Brit. Med. J. 1, 571 (Mar. 2, 1963).

The hypothesis is widely accepted that the saturated fat content of the diet through the blood cholesterol level is an important factor in the production of ischemic heart disease. In Western countries where ischemic heart disease is frequent, the mean intake of saturated fat and cholesterol levels are both high. There are, however, wide individual differences in fat consumption, and almost nothing is known about the relationships, in individuals, of fat intake to the cholesterol level, and still less to ischemic heart disease. During the past few years male bank clerks, cashiers, and managers ranging in age from 40 to 55 were asked to weigh the food they ate at home during 1 or 2 weeks, and to describe food eaten away from home which could not be weighed. Blood was taken late in the afternoon, after the banks had closed to the public. The blood-cholesterol results might be considered "casual". Results are given for 99 men from 4 banks. The men showed a wide range in food intake and in casual plasma cholesterol. Total fat consumption varied from 84 to 189 g. a day, that of animal fat from 55 to 173 g. a day. The cholesterol level varied from 154 to 324 mg. per 100 ml. All, thus had a high consumption of (saturated) fat, and in nearly all the plasma cholesterol also was high, if the upper level in health is postulated to be in the region of 180 mg. per 100 ml. No close association is evident between what these men ate and their individual cholesterol levels. Diet, thus does not seem to account for the wide range in cholesterol values. This range may be crucial to the chances of developing ischemic heart disease, and other causes should be sought.

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

721 Preliminary Statistical Study of Low Back Pain. M. L. Rowe. J. Occ. Med. 5, 336-341 (July 1963).

Preliminary statistical analysis has been carried out on a small pilot group of male patients with "non-specific" low-back disability, using an inventory method of data collection which seeks to include all known etiological factors. No conclusions are drawn. Some impressions are gained that seem to warrant further study by the method described with a larger series of cases.

-- Author's conclusions

722 Oral Cancer and Occupational Health. R. L. Hayes. J. Occ. Med. 5, 342-347 (July 1963).

Every cancer detection program should include provisions for quality control, and these provisions are particularly important when oral cytology is to be used. Inadequate smears should be repeated and an investigation made to determine the reason for the inadequacy. All smears not clearly negative and a sample of the negative smears should be reviewed to maintain high standards. Similar quality control features should be built into the clinical examination procedures, the histopathology procedures, and the treatment. The method for including an oral cancer detection program in any particular industrial or occupational health program will depend upon the philosophy and operation of the existing program. If a program exists which includes routine examination of the employees, oral cancer detection should be included. If there now is a dental service program sponsored by management or by unions, oral cancer detection should be included. If there is no health program which includes health examination of the employees, such a program should be initiated and should include oral-cancer detection.

-- Author's recommendations

723 The Influence of Smoking on Electromyograms. V. R. Rao and T. H. Rindani. J. Postgraduate Med. (Bombay) 8, 170-172 (Oct. 1962). (Journal of Postgraduate Medicine, Editorial Board, Seth G.S. Medical College & K.E.M. Hospital, Bombay 12, India*).

Electromyographic changes induced by smoking were studied in the small muscles of the hand. The findings of a decrease in the impulse frequency on maximal effort, the appearance of large-size polyphasic elements, and even the appearance of spontaneous activity at rest were seen after smoking in individuals below 35 years of age. They were not marked in older individuals who were habitual smokers. It is suggested that carbon monoxide and nicotine absorbed are responsible for the changes seen. Carbon monoxide contributes to the changes only to a small extent, the major effect being caused by nicotine on the myoneural junction and ganglia.

-- Aerospace Med. Absts.

724 Differential Mortality from Lung Cancer by Occupation. P. E. Enterline and Margaret F. McKiever. J. Occ. Med. 5, 283-290 (June 1963).

Data are presented on mortality from cancer of the trachea, bronchus, and lung for men 20-64 years of age with work experience by occupation for the United States for the year 1950. Precautions are taken to avoid bias in occupational-mortality data which arises because of differences in the way occupational information is collected for census schedules and for death certificates. Two major occupational groups and 11 subgroups are identified with significantly high death rates. There is good agreement between occupations identified in this study and those identified in previous studies.

-- Authors' summary

725 Cigaret Smoking and Pulmonary Ventilation. R. A. McLane. J. Occ. Med. 5, 353-355 (July 1963).

Cigaret smoking by 50 men for 20 or more years reduced their pulmonary ventilatory capacity approximately 11%. From observations on other men, the loss does not appear to be reversible. On the average the smokers weighed less than those in the control group by almost 10%. This observation was interpreted as a sign of interference with the body nutritional processes, the exact mechanism of which is undetermined. Findings in this small group suggest similar studies in large groups would be of great value.

-- Author's summary

726 Prophylaxis of Tetanus in the Oil Industry. L. Dao. J. Occ. Med. 5, 348-349 (July 1963).

This paper presents the author's experience with prophylaxis of tetanus in 6,692 cases in 2 oil fields in Venezuela. The cases included a variety of injuries, wounds, and compound fractures. No cases of tetanus resulted. In any industry where accidents are likely to occur on the job, a program of active immunization against tetanus should be undertaken.

-- Author's summary

* Address not in current List of Periodicals.

727 The Relationship Between Emphysema and Chronic Bronchitis as Assessed Morphologically. W. M. Thurlbeck and G. E. Angus. Am. Rev. Resp. Dis. 87, 815-819 (June 1963).

The association between chronic bronchitis and emphysema was assessed morphologically in 106 necropsies. The amount of emphysema in the lungs of these patients was assessed by one observer who divided the cases into 4 categories which reflected the extent and severity of destructive emphysema present. The degree of bronchial mucous gland hypertrophy was assessed by a second observer using the method described by Reid, and this was used as evidence of chronic bronchitis. The ratio of gland/wall thickness (Reid index) increased stepwise in the 4 groups with increasing amounts of emphysema. The increase in the index was due solely to mucous gland hypertrophy. Chronic bronchitis and emphysema occurred together more frequently than could be accounted for by chance, but they were also found to exist independently.

-- Authors' summary

SKIN DISEASES AND BURNS

728 Psychiatric Treatment of the Neurodermatoses. Sadie H. Zaidens. Ind. Med. & Surg. 32, 261-265 (July 1963).

There are many ways to treat the neurodermatoses; certainly the dermatologist's management with topical medication, tranquilizers, sedatives, vitamins and physical therapy are necessary in addition to psychiatric treatment. Whether the psychiatric treatment will be psychotherapy, psychoanalysis, group therapy, or combined therapy depends upon the patient's needs. Combined treatment—group (or family) therapy combined with either psychoanalysis or psychotherapy—is the best and most effective form. There are no set rules; the ultimate goal is the welfare of the patient. Loyalty to the patient and a warm desire to help him form the foundation of good psychiatric treatment.

-- Author's comment

729 Hazards of Beauty Culture. I and II. G. Hodgson. Practitioner 189, 667-674; 778-787 (Nov.-Dec. 1962).

The world-wide turn-over of the cosmetic industry is estimated at £750 million a year. In view of this enormous usage of cosmetic and toilet articles and the new active synthetic chemicals employed in their manufacture, "more dermatological and toxic risks might be anticipated than actually exist." Some of the literature on the incidence of cosmetic hazards is quoted and some of the problems of control are considered as an introduction to the body of this paper. This contains much detailed information on the nature, composition and mode of action of a large number of cosmetic preparations with descriptions of the actual or potential dermatological and other hazards to health which may be associated with their use. Sections of the papers are devoted to: emulsions, coloring agents and dyes; preservatives; perfumes; artificial tanning and sun-screen creams; bleaching agents; lipsticks; face creams; skin foods; hormone creams; rouge; face and mud packs; face powders; nail preparations of various types; hair and scalp preparations; hair-waving; dyeing and bleaching; setting lotions, lacquers and conditioners; hair and scalp dressings, tonics and brilliantines; deodorants and anti-sweating preparations; depilatories; eye make-up; baby cosmetics and miscellaneous preparations—tooth paste, bath salts and shaving requisites.

-- Bull. Hyg.

730 Skin Affections Caused by Hard Metal Dust. E. Skog. Ind. Med. & Surg. 32, 266-268 (July 1963).

The author has examined workers employed in a hard-metal industry in regard to skin complaints. Hard metal dust was found throughout the industry and the workers came into contact with wolfram (tungsten) tantalum, niobium, titanium, and cobalt. Out of 360 workers, 34 (9.4%) had skin complaints. These were of a mild nature; and there had been only 5 patients who

required sick leave because of them during the past 2 years. The complaints consisted of contact eczema (16), pruritus without skin lesions (8), folliculitis (6), neuro-dermatitis (5). Of the cases of contact eczema 3 were described as allergic and due to cobalt; the rest were considered to have been caused by the primary irritant effect of hard metal dust. -- Author's summary

731 Control of Occupational Dermatosis in a Fur Plant (KMK). A. V. Andreev. Gigiena Truda i Professional Zabolevaniya 6, 59-60 (1962).

The occupational dermatosis described in this short communication appeared in the raw material workshops and dye workshops of a fur plant. It affected the hands and forearms of workers who had frequently to dip into baths containing alkali, sulfuric acid, formalin and other substances, which all had a defatting action on the skin. It was found that the condition appeared most frequently in winter (26.2%) and spring (40.7%). Diagnosis made of the skin conditions were: occupational dermatosis of the hand and forearm 55.3%, occupational eczema 35.9%, "toxidermia" 4.8%, and chrome-ulcers 4%. The ages of persons affected ranged from 18-40 years with varying lengths of service: 42.8% of patients had 1 year's exposure; 22.3% had 1-3 years' exposure; 21.3% had 3-10 years' exposure; and 13.6% had more than 10 years' exposure. The incidence was 4 times greater in women than in men. Preventive measures adopted included further mechanization, health education, protective clothing, better hygienic conditions and skin testing of new employees. Barrier creams were also provided. As a result of these measures the number of cases decreased 74% and days lost on account of disability decreased 74% in 1961 compared with 1960. -- Bull. Hyg.

732 Emergency and Post-Burn Therapy for the Second Degree Burn Patient. J. V. Toews and W. M. Behn, Jr. Ind. Med. & Surg. 32, 286-287 (July 1963).

In an industry with many burn cases, a standard procedure has been devised for the treatment of first and second degree burns. It consists of a combination of conventional treatments: the essentials are initial cold therapy, early whirlpool baths, and the usual ancillary aids. -- Authors' summary

733 Contact-Sensitivity to Gold as a Chronic Papular Eruption. W. B. Shelley and E. Epstein. Arch. Dermatol. 87, 388 (Mar. 1963).

In a case of contact sensitivity to gold trichloride, the clinical appearance and patch test reactions were papular rather than eczematous. This unusual dermal response to a contact allergen is believed to be the result of an antigen-antibody reaction in the dermis. Ordinarily, the reaction is primarily epidermal. -- J. Occ. Med. Absts.

734 Effect of the Laser Beam on the Skin. L. Goldman, et al. J. Invest. Dermatol. 40, 121 (Mar. 1963).

Exposure of skin and eyes of rabbits and skin of man to a laser (light amplification by stimulated emission of radiation) beam produces small but intense burns in pigmented areas. Antilaser protective lenses are available to prevent eye damage. -- J. Occ. Med. Absts.

CHEMICAL HAZARDS

735 Animal Experiments on the Ocular Damage Caused by the Substrate Solutions Used in the Film Industry and Its Treatment. H. Gassler. Z. ges. Hyg. u. ihre Grenzgebiete 8, 965-969 (Dec. 1962). German.

In the film industry the so-called substrate solutions are employed to cause photographic emulsions to adhere to film surfaces. The chief constituents of these solutions are gelatin

and cellulose ester dissolved in concentrated organic liquids which are to some extent very toxic. Their use may be a potential industrial hazard. To study this subject experiments on rabbits were carried out by instilling the substrate solutions into the conjunctival sac. It was found that the subsequent flow of tears brought about precipitation of the solid constituents some part of which adhered to the surface of the eyeball. Permanent damage may result which appear to be caused by the toxicity of the organic solvents and not by the dissolved gelatin and cellulose ester. The treatment which is recommended is to irrigate the eye freely with water to dilute and remove the toxic solvent and to bring about the precipitation of the gelatin and cellulose ester. Later, in about 24 hours, the solids adherent to the eye may be mechanically removed. Complete recovery of the eye was found to occur after some days. -- Bull. Hyg.

736 The Detection and Estimation of Carbon Monoxide. R. W. Tebbet. Ann. Occ. Hyg. (London) 5, 201 (Oct.-Dec. 1962).

Detection and estimation of carbon monoxide are indicated to safeguard the health of exposed workers and to effect controls in various industrial processes. The use of the Siebe Gorman P.S. and M.S.A. detectors is described in the application of colorimetric techniques wherein palladous salts are reduced by carbon monoxide. The 3 main classifications of techniques given for estimation of carbon monoxide include the absorptiometric, oxidation, and physical methods. The second classification is subdivided further into the categories of straight and catalytic combustion; oxidation with Hopcalite, which is a mixture of manganese dioxide and cupric oxide; oxidation with iodine pentoxide; and miscellaneous. Physical methods include mass spectrometry, infrared gas analysis, and gas chromatography. Brief outlines of each method are given. The use of the Sleigh or Haldane apparatus facilitates precise estimation in cases where the range of carbon monoxide exceeds 0.02%. Wösthoff apparatus, capable of accurately measuring one part per million of carbon monoxide is illustrated by a diagram. Infrared gas analysis and an oxidation method using Hopcalite are held satisfactory for use in industrial process controls. -- J. Occ. Med. Absts.

737 A Study of Carboxyhemoglobin Levels in Employees at an Integrated Steelworks. J. G. Jones and D. H. Walters. Ann. Occ. Hyg. (London) 5, 221-230 (Oct.-Dec. 1962).

Blood samples were taken from 57 workers in the blast furnace department of an integrated steelworks at the beginning and end of a shift, and similar samples from 63 workers in the packing department were used as a control group. The subjects were questioned as to symptoms which could be attributed to carbon monoxide poisoning, details of duties, and smoking habits. For purposes of analysis they are divided into 3 groups; non-smokers, those who usually smoked less than the equivalent of 20 cigarettes per day, and those who usually smoked more than this. In every instance the mean per cent saturation with carboxyhemoglobin (COHb) was higher in smokers than in the corresponding category of non-smokers, and was higher in blast furnace workers than in packing workers; it was significantly higher at the end of a shift in the blast furnace department than it had been at the beginning, but in the packing department it remained unaltered. In 23 of the blast furnace workers the COHb per cent saturation increased by 2% or more during a shift, and in one non-smoker it increased by 10%. In only 3 instances, however, did it rise to more than 10% saturation. -- Cond. from Bull. Hyg.

738 The Effects of Carbon Monoxide on Man and Canaries. T. D. Spencer. Ann. Occ. Hyg. (London) 5, 231-234 (Oct.-Dec. 1962).

In British coal mines the traditional method of detecting carbon monoxide is by a canary; the canary is carried in a cage, and its falling from its perch is taken as an indication that the concentration of carbon monoxide is dangerously high. This interesting paper draws attention to the limitations of this method and the dangers of using it. The dangers arise from the fact that although the canary responds more rapidly than does man to those concentrations of carbon monoxide to which it is sensitive, it is unaffected by concentrations below about 5 parts per 10,000 of air and will not fall off its perch in concentrations below about 12.5 parts per 10,000, whereas even in 5 parts per 10,000 a man may collapse within a relatively short space of time; the length of time will depend on his activity. The differences are explained by the fact that the affinity of canary hemoglobin for carbon monoxide is lower than that of human hemoglobin, but the rate of approach to equilibrium is higher. -- Bull. Hyg.

739 The Incidence and Control of Carbon Monoxide Hazards in Industry. S. G. Luxon. Ann. Occ. Hyg. (London) 5, 249 (Oct.-Dec. 1962).

The frequent presence of carbon monoxide in industry and the insidious onset of poisoning by this agent are causes for concern and caution. Carbon monoxide was the major cause of reportable industrial gassing accidents in England from 1958 through 1960. Just over half of the incidents occurred during maintenance work. Control of the problem is considered from two standpoints which include the "precautions when the plant is operating normally, i.e., where the object is to keep the gas inside the plant and to prevent it entering the atmosphere, and secondly, precautions during maintenance when enclosed plant has to be entered and where the situation above is reversed, i.e., the man is inside the plant and the gas must not be permitted to enter." The operation and maintenance of a gas production plant, apparently the major source of gassing accidents, are discussed and key points illustrated with photographs and diagrams. -- J. Occ. Med. Absts.

740 An Apparent Seleniferous Leaf Wax from Stanleya Bipinnata. R. J. McColloch, J. W. Hamilton and S. K. Brown. Biochem. Biophys. Res. Commun. 11, 7-13 (Apr. 2, 1963). (Biochemical and Biophysical Research Communications, Academic Press, 111 Fifth Ave., New York 3, N.Y. *).

Selenium-75 was used as a tracer to demonstrate that selenium is intimately associated with leaf wax from Stanleya bipinnata, a member of the mustard family. Results are reported from studies that suggest, but do not conclusively prove, that selenium is a chemical part of the wax molecules. This would indicate a biochemical adaptation of Stanleya and would suggest that the metabolism of selenium in these plants may differ significantly from that of sulfur.
-- Nuclear Sci. Absts.

741 Tellurium: A New Sensitive Test. H. W. Lakin and C. E. Thompson. Science 141, 42-43 (July 5, 1963).

A new, extremely sensitive method for the quantitative determination of tellurium is based on the induced precipitation of elemental gold from a 6N HCl solution containing gold chloride, cupric chloride, and hypophosphorous acid; the amount of gold reduced is proportional to the amount of tellurium present. As little as 1 nanogram (1 millimicrogram = 1×10^{-9}g) of tellurium gives a measurable reaction with 1 mg. of gold in 50 ml. of solution.
-- Authors' abst.

742 Potassium Perchlorate in Management of Thyrotoxicosis. B. T. Dave. Indian J. Med. Sci. 16, 919 (Nov. 1962).

It is known that thiocyanates and perchlorates reduce the activity of the thyroid by blocking its iodine-trapping mechanism. While potassium perchlorate was considered for the management of thyrotoxicosis, it was not used widely, because it was thought to be less potent and more toxic than thiouracil. However, since it is used, the author tried it as an antithyroid drug in 25 patients with thyrotoxicosis. The initial dose was 250 mg. 4 times daily for a period up to 9 months. It reduced toxic symptoms in all instances. A euthyroid state was induced in 17 of the 25 patients and 10 of the 17 no longer require maintenance therapy, whereas the other 7 do. Of the remaining 8 patients, one died of cardiac failure after showing improvement in toxicity, the other 7 continue to improve. Some patients showed enlargement of the thyroid and increase in the exophthalmos. Both of these effects could be checked by thyroxin. Three patients were operated on successfully, after the toxicity had been controlled. The author emphasizes that when potassium perchlorate is given during the preoperative period, no iodine should be given, because the trapping of the iodine by the thyroid could cause a rebound to toxicity.
-- J. Am. Med. Assn. References and Reviews

* Address not in current List of Periodicals.

743 An Improved Chromatographic Method for Determining Trace Elements in Foodstuffs. J. F. Connolly and M. F. Maguire. Analyst 88, 125-130 (Feb. 1963).

The quantitative paper-chromatographic determination of copper, cobalt, nickel, molybdenum, and manganese in foodstuffs is described. The extraction of the elements after ashing the material has been investigated. The elements are separated as their chlorides on slotted chromatography paper, and are identified colorimetrically. The concentrations are determined by reflectance measurements on the papers, and the results are calculated with the aid of prepared standard graphs. As little as 0.05 microgram of the elements can be determined.
-- Public Health Eng. Absts.

744 Studies on Nickel Carcinogenesis. Alterations of Ribonucleic Acid Following Inhalation of Nickel Carbonyl. F. W. Sunderman, Jr. Am. J. Clin. Pathol. 39, 549-561 (June 1963).

In previous studies, pulmonary carcinomas have been induced in rats by exposure to the inhalation of nickel carbonyl. As a continuation of these investigations, measurements were undertaken of nickel and other trace metals in ribonucleic acid (RNA) from tissues of normal rats and of rats exposed to nickel carbonyl. An ultraviolet spectrophotometric method was devised for the determination of nickel in samples of RNA containing as little as 0.4 microgram of nickel. Measurements of chromium, manganese, lead, tin, and zinc in RNA were made by means of emission spectrography. Rat lung RNA was found to be rich in trace metals and to contain nickel, chromium, manganese, lead, tin, and zinc in quantities that exceed those present in RNA from rat liver, kidney, and skeletal muscle. Acute exposure of rats to nickel carbonyl resulted in an increase in the concentration of nickel in NaCl-precipitable lung RNA and a decrease in the concentration of nickel in NaCl-soluble lung RNA. The concentration of nickel in NaCl-precipitable liver RNA increased following exposure of rats to nickel carbonyl, whereas that in NaCl-soluble liver RNA was not significantly altered. Following inhalation of nickel carbonyl, changes that were consistent with an increase in metal-bonding were observed in the phase-transition curves of NaCl-precipitable RNA from liver and lung. The change that was observed in the phase-transition curve of NaCl-soluble lung RNA was consistent with disruption of hydrogen bonds. There are 65 references in the bibliography. -- Author's summary

745 Contribution to the Diagnosis of Acute Thallium Poisoning. R. Prix and I. Dvorackova. Casopis Lekaru Ceskych 102, 46-51 (Jan. 11, 1963).

The authors describe two cases of acute thallium poisoning. In the first case the clinical symptoms were typical and the course subacute. The diagnosis was confirmed by the detection of thallium in urine and feces. In the second case the clinical picture was not typical and resembled botulism. Alopecia did not develop. Polyneuritis proceeded rapidly, respiratory paralysis and cardiac failure developed. Death occurred on the 8th day after the onset of the disease. The pathological and histological findings are described. Thallium was found in cerebral tissue. The authors draw attention to the clinical picture and particularly to the rapid course of fatal thallium poisoning, the possible confusion with polyneurites of different etiology and to the importance of toxicological examination being carried out in these instances.
-- Bull. Hyg.

746 Zirconium Scrap Burning Tests. Anon. Quart. Natl. Fire Protect. Assn. 56, 110-127 (Oct. 1962). (Quarterly of the National Fire Protection Association, 60 Batterymarch Street, Boston 10, Mass.*).

A series of tests were carried out to obtain information on the fire behavior of scrap zirconium. Fourteen of the 21 tests are summarized. Those omitted duplicated those reported or were unsatisfactory because dryness could not be achieved. It was concluded that the rate of combustion of scrap zirconium chips and turnings tends to increase when the scrap is wet with water or water-soluble oil, with scrap depth, with partial containment, when the per cent of void air space within the pile is increased, as the total amount of scrap ignited increases, and with increasing thickness of individual particles of scrap. The combustion rate was also influenced by the manner in which the scrap was ignited, the location of the exposing flame or heat, and by wind or drafts. -- Nuclear Sci. Absts.

* Address not in current List of Periodicals.

747 A Comparative Study of the Dithizone and Polarographic Determinations for Lead. J. A. Colony, E. C. Knoblock and W. C. Purdy. Am. J. Clin. Pathol. 39, 652-655 (June 1963).

This paper deals with a study of possible interfering ions that result in abnormally high values for lead, as determined by means of the dithizone extraction method. Cobalt, cadmium, and copper were found to increase the spectrophotometric value in comparison with the polarographic determination. Zinc was found to be of no consequence under the conditions of routine extractions. These data indicate that, for the specific determination of lead, the polarographic method is superior to spectrophotometric measurement of dithizone extracts.
-- Authors' summary

748 Vascular System in Lead Poisoning. H. Minden. Intern. Arch. Gewerbepathol. Gewerbehyg. 19, 581-588 (1962). German.

In this paper the author refers to previous published work in which Toppich and Minden reported on functional changes in the vascular system in subacute and chronic lead poisoning (Bull. Hyg. 37, 255, 1962). The extent to which these functional changes are based on definite organic tissue alterations has been described in older and modern papers but these studies have varied in their findings. The work here described was undertaken to investigate this question by animal experiments. Fifteen rabbits were given intravenous injections of 0.3% lead acetate solution over a period of a year. The frequency of the injections was controlled by blood examinations so that the animals should not suffer from marked signs and symptoms of lead poisoning through overdosage of lead. The histological findings at the end of the experimental period are described with some photographs. The tissues examined were of liver, kidney, heart muscle, aorta, brain, adrenals and lung. Of these tissues the kidney showed the most marked pathological changes, which were thickening of the blood vessels, glomerular damage and inflammatory changes. In the heart there was cell infiltration of the myocardium and hypertrophy of the intima.
-- Bull. Hyg.

749 Quantitative Determination of Alkanes in Cigarette Smoke. A. W. Spears, C. W. Lassiter and J. H. Bell. J. Gas Chromato. 1, 34-37 (Apr. 1963). (Journal of Gas Chromatography, 1718 Sherman Avenue, Evanston, Ill. *).

The individual alkanes of cigarette smoke are quantitatively determined in a relatively short time through the use of gas chromatography, column chromatography, and isotope dilution techniques. The presence of both branched and normal isomers from C_{12} through C_{33} is indicated. Gas chromatographic conditions for the separation of these components within 14 minutes are reported and the concentration of individual alkanes from a variety of cigarettes are presented.
-- Public Health Eng. Absts.

750 Carbon Tetrachloride Poisoning: Report of Three Cases with Commentaries. R. Friedman and L. Eales. S. African Med. J. 36, 1067 (Dec. 22, 1962).

Three patients were admitted to a hospital with carbon tetrachloride (CCl_4) poisoning, which was due to inhalation in one and to ingestion in the two others. Two of the patients recovered, but the third died. All three patients had a history of long addiction to alcohol and of recent overindulgence. The first patient removed a grease spot from his trousers with the aid of CCl_4. At first, it was felt that contact was too insignificant to warrant a diagnosis of CCl_4 poisoning. However, it was later established that the exposure took place in a small bathroom under conditions of poor ventilation. The second patient developed pulmonary edema 10 days after admission to the hospital and 13 days after ingestion of CCl_4. After the first 2 days of oliguria the patient's urinary output varied between 420 and 1,050 ml. daily. The diagnostic pitfall of non-oliguric renal failure was not sufficiently appreciated and hence the fluid intake was not restricted. The death of the third patient 3 days after exposure was due to massive necrosis of the liver. Oliguric renal failure was also present. The association of hepatic and acute renal failure should always rise the possibility of CCl_4 poisoning. Serum glutamic oxalacetic transaminase levels may be found to be raised in acute CCl_4 poisoning and are an index

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of the degree of liver damage. The dangers of CCl_4 when used for dry-cleaning are not sufficiently realized. It should never be used in closed rooms without adequate ventilation.
-- J. Am. Med. Assn. References and Reviews

751 Quantitative Determination of Phenol in Cigarette Smoke. A. W. Spears. Anal. Chem. 35, 320-322 (Mar. 1963).

Phenol is quantitatively determined in cigarette smoke by a method involving solvent partition, steam distillation, and gas chromatography. Purity of the isolated phenol and cresols has been demonstrated by spectrophotometry and the accuracy of the method has been established by the use of the isotope dilution technique. Semiquantitatively, the method can be extended to the cresols and other volatile phenols. A new gas chromatographic column has been developed which gives improved resolution of phenolic compounds. Results of phenol analyses on the smoke of commercial cigarettes have been obtained. -- Public Health Eng. Absts.

752 An Unusual Epidemic of Methemoglobinemia. R. R. Johnson, R. Navone and E. L. Larson. Pediatrics 31, 222-225 (Feb. 1963).

An outbreak of secondary methemoglobinemia was directly traceable to an aromatic amino compound present in the soap used for the preparation of enema solutions. This compound, while not itself a producer of methemoglobin, did, under the conditions of use, become converted into a substance which produced methemoglobin. Users of materials containing aromatic amino compounds should be aware of the possibility of such occurrences. -- Bull. Hyg.

753 Poisoning by Bug Poison. A Preliminary Study. M. Viswanathan and K. Srinivasan. J. Indian Med. Assn. 39, 345-349 (Oct. 1, 1962).

Despite its title, this paper is on accidental poisoning by organophosphorus poisons. An account is given of 168 patients (8 of whom died) admitted to the Government Stanley Hospital, Madras, from January 1961 to March 1962. Symptoms were typical of those usually reported in cases of poisoning with parathion and similar compounds. In treatment most reliance was based on atropine, though the authors discuss oxime therapy with pyridine-aldoxime methiodide (P2-AM), which is often more effective. Presumably none was available. The authors point out that numerous preparations with names such as "Folidol" (implicated in 13 cases), "bug tone", "basuddin" and so on are marketed; and the toxicity of the preparations was so little known that several patients took the poison believing it a cure for gastric disorders. In many instances, the authors did not know for certain which organophosphorus poison had been taken. Three case histories are presented. -- Cond. from Bull. Hyg.

INDUSTRIAL DUSTS

754 Pulmonary Tuberculosis Among Woodworkers. S. P. Smith. Scot. Med. J. 8, 25-29 (Jan. 1963). (Scottish Medical Journal, 5 St. Vincent Place, Glasgow C2, Scotland*).

In a series of 166,000 national servicemen who were examined roentgenographically prior to enlistment in the Royal Air Force, the incidence of pulmonary tuberculosis was found to be higher among the men who had worked with wood prior to call-up. Altogether, 269 definite and 457 suspected cases of pulmonary tuberculosis were discovered. The occupational pattern of the whole intake was inferred from a sample of 8,558 men. In this sampling, the incidence of definite pulmonary tuberculosis among wood workers was 0.85% as compared with 0.04% among students, 0.18% among workers in dust-free atmospheres, and 0.25% among dust-exposed

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workers. The proportions were similar among those with suspected pulmonary tuberculosis. This high incidence in wood workers is claimed to be a new discovery and is in contrast to general opinion. -- Am. Rev. Resp. Dis. Absts.

755 Bagassosis and Silicosis in the Philippines. G. D. Dizon, J. B. Almonte and J. E. Anselmo. J. Philippine Med. Assn. 38, 865-872-A (Nov. 1962). (Journal of the Philippine Medical Association, Manila, Philippines*).

In the Philippines occupational history is not frequently considered in diagnosis, and as a result bagassosis and silicosis did not hither to appear in the official statistics. Some 10,000 laborers are engaged in the sugar-cane industry and in one mining company there were 3,222 workers with an exposure to silica dust for 5 to 20 years or more. Attempts have been made to ascertain the incidence of bagassosis. Investigation of clinical records in the hospital of a sugar-cane company in 1954 was not completed as the chest x-ray films were not made available because of company regulations. In 1961, another study was made in workers handling bagasse in a sugar factory and in a paper plant. The results were negative. The clinical records of 4 suspected cases are given. In 1961, a survey was made at a mining company to ascertain the incidence of silicosis. An investigation was made of dust concentrations and the silica content of dust in various processes. The manually operated midget impinger was used. At the same time, the chest x-ray films taken at the periodic examinations of the 3,222 workers were reviewed. Fourteen workers were found to be suffering from silicosis or silicotuberculosis, an incidence of 0.44%. This incidence is low. Case records of 4 workers are given. There is a high incidence of tuberculosis among Filipinos, a fact which may make the diagnosis of bagassosis and silicosis difficult. To counteract the tendency to diagnose tuberculosis without considering the occupational history, the Division of Industrial Hygiene is giving post-graduate courses in occupational health to physicians employed by industrial companies. -- Bull. Hyg.

756 Mycological Examination of Dust from Mouldy Hay Associated with Farmer's Lung Disease. P. H. Gregory and Maureen E. Lacey. J. Gen. Microbiol. 30, 75-88 (Jan. 1963). (Journal of General Microbiology, Cambridge University Press, Bentley House, 200 Euston Road, London NW1, England*).

Small samples of hay were shaken in a perforated drum in a wind of 4.2m./sec.; the liberated dust cloud was sampled with the cascade impactor for microscopical examination, and with the Andersen sampler for identification of organisms in culture. The results of testing batches of hay showed large differences in microbial content. Twenty-eight batches classed as "good hay" gave up to 3 million spores/g. dry wt. hay, mainly Aspergillus glaucus with Cladosporium spp. and Hemispora stellata. Dust blown from 17 batches of "mouldy hay" differed greatly in composition and had from 5 to 250 million spores/g.: abundant forms included A. glaucus, A. fumigatus, A. nidulans, Penicillium spp., Absidia spp., Mucor pusillus, bacteria, many actinomycetes. Fourteen batches of mouldy hay associated with cases of "farmer's lung" disease were generally similar in mould content to the batches of mouldy hay, but had many more spores of Humicola (Monotospora) lanuginosa and A. fumigatus, and were specially characterized by very many actinomycetes. Farmer's lung hays tended to neutrality (averaging pH 7.0, as compared with pH 5 to 6 of other hays), and were rich in thermophilic organisms, commonly with hundreds of millions of actinomycete spores/g., a large proportion of which grew readily at 60°. Hays associated with farmer's lung appear to have heated spontaneously to a higher temperature during maturation than the other hays. Dust from all hays contained particles of higher plants, but there were not obviously more in farmer's lung than in other hays. All types of spores were shown to be potentially able to penetrate to the deeper parts of the lung (especially the spores of actinomycetes, A. fumigatus and H. stellata), but whether these organisms play any part in the etiology of the disease is unknown. -- Public Health Eng. Abstr.

* Address not in current List of Periodicals.

757 Radiology of Some Rarer Dust Diseases. (Barytosis, Asbestosis and Siderosis). C. K. Blum. Scot. Med. J. 7, 478-487 (Nov. 1962). (Scottish Medical Journal, 5 St. Vincent Place, Glasgow C2, Scotland*).

Among 15,000 cases of non-tuberculous chest disease in the Victoria Hospitals Group, Glasgow, were found 7 patients with barytosis, 4 with asbestosis and 13 with siderosis or sidero-silicosis. In the section on asbestosis, radiological changes are described in pleurae and lungs. Six categories of lung changes are described but only 4 patients with asbestosis came to notice. Thirteen cases of siderosis are discussed. A paragraph headed "Haemosiderosis" states that this "has been encountered in iron turners, grinders, molders, fitters, boiler scalers, electric arc welders, hematite iron ore workers and silver finishers", yet the x-ray photographs referred to after this statement are of siderosis and sidero-silicosis. -- Cond. from Bull. Hyg.

758 Asbestosis in Non-Experimental Animals in South Africa. I. Webster. Nature 197, 506 (Feb. 2, 1963).

Asbestosis has been produced in experimental animals, and while Kiviluoto (Acta Radiol. Stockholm, 1960, Suppl. 194) found anthophyllite asbestos fibers in the lungs of a cow from the vicinity of an asbestos mine, there seem to be no other records of asbestosis in non-experimental animals. The author, from the Pneumoconiosis Research Unit in Johannesburg, has examined the lungs of animals living near an asbestos mine or associated process, with the following results: (1) Interstitial fibrosis associated with asbestos bodies and needles was found in the lungs of a donkey which had worked for 10 years hauling ore from an amosite asbestos mine in the Transvaal. Numerous asbestos needles were also found in the lungs of another donkey so engaged for an unknown period. The author notes that Heppleston (Bull. Hyg. 30, 42 1955) found reticulin fibrosis in foci of dust deposits in the lungs of pit-ponies from South Wales; however, no silicotic lesions were found in haulage mules in a South African gold mine. (2) Focal areas of interstitial fibrosis associated with asbestos bodies and fibers were found in the lungs of a baboon which had been shot while raiding a farm in the neighborhood of crocidolite asbestos mills in the north-west Cape Province. It was one of a troop living in the hills near the mills and which had been seen in the vicinity. (3) In connection with work on the relationship of inhalation of asbestos dust to the development of mesothelioma of the pleura, carried out by the Unit (ibid. 38, 151, 1963), surveys of rodents are being made. Among 23 Rattus namaquensis trapped around the mill mentioned above, definite evidence of asbestosis was found in the right lung of 18 rats and probable asbestosis in 3. These rats do not ordinarily move more than 25 yards from their burrows, but the number trapped was far less than might have been expected; mortality appears to be high, but probably not from asbestosis. -- Bull. Hyg.

759 Talc Pneumoconiosis. A Report of 6 Patients with Post-Mortem Findings. M. Kleinfeld, et al. Arch. Environmental Health 7, 101-115 (July 1963).

Six workers who were exposed for an average of 24 years to a dust containing appreciable amounts of talc admixed with tremolite and anthophyllite and containing a small amount of free silica developed a symptomatic form of pneumoconiosis. The major clinical features were chronic productive cough, dyspnea, diminished breath sounds, limited chest expansion, diffuse rales, and clubbing. Dyspnea was the most constant complaint and was progressive. The chest roentgenogram usually disclosed interstitial infiltration of variable degree both basally and in the mid-lung fields with the apices relatively spared. In some cases infiltrations assumed a nodular pattern. Less frequently emphysema with bullae of varying sizes was observed. In some instances, the left cardiac border was partially obscured by pleuropericardial involvement. A most striking feature was the presence of opaque plate-like densities in the region of one or both diaphragms. The most frequent pathological change was diffuse fibrosis containing macrophages with absorbed dust particles. Rather characteristic was the presence of elongated, terminally clubbed bodies, both segmented and unsegmented, in the respiratory bronchioles or imbedded in the fibrous tissue. These bodies were indistinguishable from asbestos bodies seen in asbestosis. The pleura showed dense fibrotic thickening. Hilar adenopathy in 2 cases and laminated nodular fibrosis in one indicate a modified reaction to talc initiated by the presence of free silica. Cor pulmonale was the major complication in 4 of the 6 cases and was the mechanism of death in 3. In general the clinical, roentgenographic, and pathological findings were similar to those observed in asbestosis. However, in contrast to the latter, pulmonary talcosis has not been associated with an increased incidence of pulmonary carcinoma.

-- Cond. from authors' summary

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PHYSICAL ASPECTS OF THE ENVIRONMENT

760 Space Travel: A Suggested Method for Predicting Human Response to Ionizing Radiation. L. T. Odland and S. M. Michaelson. Aerospace Med. 34, 62-66 (Jan. 1963).

The hazards of ionizing radiation to manned space travel are reviewed. Some of the important factors in determining biological injury to ionizing radiation are discussed, and the relation between metabolic and recovery rate is described. It is suggested that an experiment be supported wherein several species of mammals are studied under identical conditions in order to define rates of accumulation and repair of injury caused by ionizing radiation as these relate to species metabolic rate. -- Nuclear Sci. Absts.

761 Damage Risk Criteria for Noise Exposure: Aspects of Acceptability and Validity. A. Cohen. Am. Ind. Hyg. Assn. J. 24, 227-238 (May-June, 1963).

Views toward acceptable noise tolerance standards as expressed in a recent poll of persons interested in various aspects of noise and hearing problems were compared with those noted for the same group in a similar poll taken 10 years ago. There now exists a greater readiness to establish tentative noise exposure limits and also greater agreement as to their actual specification. An evaluation suggested that most of the proposed criteria would be equally effective, in at least the speech frequencies, in minimizing hearing losses. Estimates of tolerable limits for intermittent exposures to broad-band noise were much more variable than those found for continuous noise. Marked differences in opinion regarding tolerable narrow-band noise exposure limits were also noted. -- Author's abst.

762 Noise Attenuation of Ear-Protective Devices. J. C. Webster and E. R. Rubin. Sound 1, 34-46 (Sept.-Oct., 1962). (Sound, 335 E. 45th St., New York 17, N. Y. *)

Five experienced listeners were tested in 3 separate trials using the binaural, absolute threshold-shift psycho-physical method. Audiograms were taken first with open ears and then with various devices (ear plugs, muffs, helmets, and muff-earphone combinations). The results were compared with those obtained from other laboratories and with theoretical values of maximum attainable attenuations. The results indicate that a good fit with ear plugs is more difficult to obtain than with muffs. The Zwislocki resonant plugs were about 5 decibels better than the V-51R and COM-FIT plugs; the latter two plugs were nearly equivalent in attenuation. David Clark muffs gave more attenuation than Willson and Telephonics muffs, the latter giving the least attenuation. Attenuation of the Gentex DR51-4 flight helmet was not effective at low sound frequencies, giving no attenuation at frequencies below 250 cps. The relative importance of head-band force, volume and mass of the earcup, and the adverse effects of wearing eyeglasses under muffs are discussed. Included are representative figures, tables, and charts. -- Aerospace Med. Absts.

763 The Influence of Microwaves on Ionizing Radiation Exposure. S. M. Michaelson, et al. Aerospace Med. 34, 111-115 (Feb. 1963).

Results are reported from studies in dogs on the effect of microwave exposure on response to ionizing radiation. Irradiation with 25,000 r resulted in death within 24 hours in 2 of 10 dogs with a previous history of microwave exposure. Nine of 10 normal, irradiated dogs died in the same period. Neurological manifestations were less severe in the microwave-treated dogs. The results suggest that the possibility of using microwave treatment to counteract or minimize the effects of ionizing radiation should be explored. -- Nuclear Sci. Absts.

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764 Effects of Microwaves on Normal Tissues. C. A. Linke, W. Lounsberry and V. Goldschmidt. J. Urol. 88, 303-311 (Aug. 1962). (Journal of Urology, Williams &Wilkins Company, 428 E. Preston St., Baltimore 2, Maryland*).

Using a standard physiotherapy microwave generator and director, large areas of necrosis were produced in the abdominal organs of rabbits exposed to this form of radiant electromagnetic energy. The animals tolerated the large areas of necrosis well. Liver parenchymal cells were more sensitive to the effects of microwaves than bile ducts and connective tissue of the portal regions. Renal tubular cells were more sensitive than kidney glomerular and stromal cells. Reflecting aluminum foil appeared to adequately shield tissues adjacent to those being exposed (Aerospace Med., Jan. 1963). -- Nuclear Sci. Absts.

765 Electroencephalographic Studies on Persons Working within the Reach of Microwaves. Z. Edelwejn and S. Haduch. Acta Physiol. Polon. 13, 431-435 (May-June, 1962) Polish. (Acta Physiologica Polonica, Panstwowy Zaklad Wydawnictw Lekarskich, Dluga 38/40, Warsaw, Poland*).

A series of periodical examinations were carried out on 120 persons working within fields of high-frequency electromagnetic waves. Case-history analysis and morphological evaluation of the electroencephalographic (EEG) records showed a significantly large number of complaints submitted by individuals exposed to microwaves for more than 3 years. Moreover, there was a distinct preponderance of EEG records with subnormal bioelectric activity in the individuals exposed to microwaves for a period of more than one year as compared to those with less than a year's exposure. Successive EEG investigations under metrazol provocation and photostimulation revealed a significantly greater number of positive test changes in individuals exposed to the microwaves for a period longer than 3 years (Aerospace Med., Jan. 1963). -- Nuclear Sci. Absts.

766 Effect of Microwaves Emitted by a Radar Post on Cataract Formation. W. Pol. Lekarz Wojskowy 38, 318-327 (1962) Polish. (Lekarz Wojskowy (Warszawa), Army Medical Corps, Warsaw, Poland*).

A review is presented on changes in the crystalline lens following microwave irradiation. The results show that short microwaves cause opacities on the anterior lens surface, and long microwaves on the posterior surface. Appearance of the opacities is favored by the presence of diabetes and by the decrease of lens enzymes following irradiation (Aerospace Med., Jan. 1963). -- Nuclear Sci. Absts.

RADIOACTIVITY AND X-RADIATION

767 The Tumor Pathology of Thorotrast in Man (Review of the Literature and New Statistical Data). A. Batzenschlager, et al. Oncologia 28-63 (1963) French. (Oncologia, Verlag S. Karger, A.G. Arnold-Bocklin-Strasse 23-25, Basel, Switzerland*).

An original survey of 22 new cases as well as an extensive review of previously published cases confirmed the carcinogenic action of thorotrast. In 5 of these cases a primary carcinoma of the liver or biliary tract was present, 3 epitheliomas and 2 endothelial sarcomas. This is clearly a much higher level of hepatic carcinoma than in the general male population (2%) or in males with hepatic cirrhosis (9.5% incidence). Thorotrast is taken up mainly by reticuloendothelial cells, so that experimental tumors resulting from injection of colloidal ThO_2 are almost entirely sarcomas. In man, the radiation from ThO_2 deposits may act directly in the malignant transformation of glandular or epithelial cells; on the other hand, it may induce neoplasia secondarily from a toxic effect or sclerotic action of a foreign body. However, the relative rarity of liver sarcomas in the absence of a history of exposure to thorotrast suggests a direct effect of

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ThO_2 radiation in the carcinogenesis of these tumors. Nevertheless, the possibility that it acts as a cocarcinogen cannot be ruled out at this time. There are 100 references to the subject. -- Nuclear Sci. Absts.

768 Health Hazards from Microwave Radiation. J. T. McLaughlin. Western Med. 3, 126-130 (Apr. 1962). (Western Medicine, 1721 W. Olympic Blvd., Los Angeles 15, Calif. *).

Microwaves affect man adversely in at least 4 ways: by raising tissue temperatures to intolerable levels and causing cellular damage or death; emanation of x-rays from microwave equipment is a danger and one to be guarded against; molecular absorption of microwaves may interfere with cellular physiology in an infinite number of ways; and microwaves, directly as heat, or in some other manner, act as stressers and set off the stress reaction with its undesirable sequelae. Experimental work to date demonstrates the danger of exposure to microwaves of 12.25 cm. A review of the existing literature and clinical findings (abnormal capillary fragility, clot retraction, bleeding, and purpura) on a group of people exposed to microwaves are included (Aerospace Med., Jan. 1963). -- Nuclear Sci. Absts.

769 Radiation and the World We Live In. L. S. Taylor. Radiology 80, 359-368 (March, 1963).

Radiation hazards to man and the technical and social problems involved in dealing with them are reviewed. It is pointed out that the basic dilemma at present is the lack of positive knowledge of the specific effects of radiation on man at low or even moderate exposure levels. This severely hampers measures directed at control of radiation exposure. The need for education of the public on radiation matters is stressed. -- Nuclear Sci. Absts.

770 The Hazards of Radiation. E. Teller. Calif. Med. 97, 257-262 (Nov. 1962).

Opinions are presented in support of the contention that the hazards of radiation to man have been greatly exaggerated. -- Nuclear Sci. Absts.

771 Patient Exposure During Fluoroscopy. E. R. Miller, J. Kafafian and F. Maddison. Radiology 80, 477-485 (March, 1963).

An apparatus is described which, when attached to the fluoroscope and calibrated, can be made to read within clinically acceptable limits the energy in square centimeter roentgent applied to the patient during a fluoroscopic session. If the quality of the beam is kept constant during the fluoroscopic session, the dose absorbed by the patient can be read directly in gram rads within clinically acceptable limits. The energy applied to and absorbed by patients during upper gastrointestinal studies, barium enema examinations, and other diagnostic procedures was measured. Experienced examiners using a 5-inch image intensifier gave, on an average, only one-fourth to one-fifth as much radiation to the patient as did the less experienced examiners using a conventional fluoroscope for the same kind of examination. The more experienced examiners did their studies more quickly and with smaller field sizes. Comments are given about the square centimeter roentgen as a unit for patient-exposure. -- Nuclear Sci. Absts.

772 Facts and Fallacies of Chest Fluoroscopy. O. Deutschberger and D. Scherf. Exptl. Med. Surg. 20, 17-30 (March-June, 1962). (Experimental Medicine and Surgery, Brooklyn Medical Press, Inc., P.O. Box 99, Cathedral Station, New York 25, N.Y. *).

A comparison is made of x-ray doses received by patients undergoing chest radiography and cardiac and gastrointestinal fluoroscopy, and the possible hazards of such radiation doses are discussed in relation to the diagnostic benefits of the procedures. Fluoroscopy of the gastrointestinal tract delivers 3 to 5 times the dose given by chest fluoroscopy. Fluroscopy of the chest delivers 5 r under average conditions and 2.5 r under optimal conditions to the patient's skin in the region of the thorax during one routine examination. The biological effect of

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this dose computed for the volume of the entire body corresponds under average conditions to whole-body irradiation with 0.1 r or 1/50 of the threshold dose. Average monthly dose received in fluoroscopic work is estimated to be 0.1 r. It is suggested that since fluoroscopy of the chest can be performed with 1/50 of the yearly threshold dose, there is no hazard with regard to producing tissue injuries, carcinogenesis, or genetic changes. In fluoroscopy of the chest the ovaries receive 0.014 r. It was concluded that routine fluoroscopy for the diagnosis of cardiac diseases cannot be considered unnecessary because it gives unique information, often unobtainable by other methods of examination, and for the diagnosis of cardiac diseases in adults, fluoroscopy of the chest should be performed routinely. However, fluoroscopy in infants and young children should be restricted for any region to special cases. Fluoroscopy of the chest can be performed safely and many times within the limits of the recommended threshold dose provided that the fluoroscope meets with the prescribed safety specifications and the examiner is properly trained. -- Nuclear Sci. Absts.

773 Extensive Necrosis after Radiation for Cancer. J. E. Bennett and D. Carter. Arch. Surg. 86, 1061 (June, 1963).

Extensive parietal radionecrosis may develop over a period of many years after radiation therapy for cancer. Pain or ulceration, or both, are presenting symptoms. Treatment consists of wide excision with pedicle flap replacement. Adjacent rotational or advancement flaps are preferable and can be used on the scalp and torso. Transposition flaps from nearby normal regions may be used for the neck and extremities. The flap design must allow for wound retraction after excision of the involved area. Careful preoperative planning, meticulous operative technique, and observation in the early postoperative period will minimize complications. -- J. Am. Med. Assn. References and Reviews

774 Radiation Burns. G. K. Lewis and S. Landa. J. Intern. Coll. Surgeons 37, 237-259 (March, 1962).

The injurious effects of radiation, particularly in skin as a result of radiotherapy, are reviewed. Nine case histories are cited in which severe dermatitis and ulceration resulted from radium or x-ray treatment of generally benign conditions. Plastic surgical repair in these cases is described. Treatment of injury to vital internal organs resulting from external irradiation or damage to the skin, such as erythema, is determined by the area of damage and severity of the pathologic changes. Such effects as acute radiodermatitis, atrophy of the skin, indolent ulcers, and other surface or subcutaneous lesions, however, are progressive and should be recognized early. They require surgical excision and grafting before serious ulceration or malignant changes occur. -- Nuclear Sci. Absts.

775 Loss, Recovery, and Activity Control of a Radium Capsule. H. Luethy. Atompraxis 9, 51-52 (Feb. 1963) German. (Atompraxis, Verlag G. Braun Gmbh. Karl-Friedrich- Sta. 14-18, Karlsruhe, Germany*).

The loss of a 20-mg. radium preparation (1mm. Pt filter) which was contained in a catheter is reported. Through the negligence of untrained personnel the catheter landed in the waste disposal. The radium unit was exposed to a temperature of 1000°C in the incinerator, and was finally found intact in the rubbish pit. The emanation loss caused a brief 4% decrease in activity, but a month later activity had returned to normal. -- Nuclear Sci. Absts.

776 Radiation Protection of Dental Personnel. A. Trubman. J. Am. Dental Assn. 65, 751-754 (Dec. 1962). (Journal of the American Dental Association, 222 E. Superior St., Chicago 11, Ill. *).

Responsibilities of dentists in reducing exposure to themselves and their assistants below the maximum permissible limit (0.1 r per week) are discussed. Modifications of equipment suggested for reducing occupational radiation exposure to dental personnel are: filtration to a total of 2.5 mm. of aluminum should be used in units operating above 70 kvp and 1.5 mm.

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for those operating up to 70 kvp; a lead jacket should be inserted in the housing to prevent excessive leakage, if necessary; collimation by means of a lead diaphragm should be used to reduce the diameter of the primary beam at the tip of the cone to 3 inches; and the timer cord should be of sufficient length to permit the operator to be at least 6 feet away from the primary beam and patient during exposure. Modifications of technique suggested to reduce exposure are: shields or screens should be used where the minimum distance of 6 feet cannot be maintained; the operator should assume a position that will enable him and assisting personnel to be back of the primary beam, or if this is not possible, the position should be at right angles to the beam and preferably behind the patient; exposure times should be kept to a minimum while still obtaining good roentgenograms; and the path of the primary beam should be directed toward an outside wall. Film badge service is recommended as an inexpensive, simple means to determine whether, through fault of equipment or technique, personnel are receiving excessive radiation. -- Nuclear Sci. Absts.

777 Radiation Regulations. G. H. Whipple. Health Phys. 9, 221-224 (Feb. 1963).

A number of psychological, social, and technological factors have given an importance to the regulation of radiation exposure scarcely justified by the threat, immediate or potential, which radiation poses to human safety. Starting with the recommendations of the ICRP and the NCRP, advisory bodies have produced codes, regulations, standards, guides, and laws. As these become more specific, detailed, and restrictive, the health physicist working for an AEC licensee has less opportunity to exercise technical judgment and more need to understand and follow the letter of the law. Radiation protection regulations from six points of view are reviewed: the producer, the public, the regulator, the user, the worker, and the health physicist. -- Nuclear Sci. Absts.

778 The Role of the U.S. Public Health Service in Stimulating State and Local Radiological Health Programs. R. I. Pierce and R. H. Goeke. Health Phys. 9, 225-228 (Feb. 1963).

Under the Constitution, the responsibility for health protection is vested in the States. Therefore, the role of the Public Health Service in stimulating State and local radiological health programs is limited to consultation, program planning, assignment of personnel to the State program, loan of equipment, training of personnel, and providing funds through a system of matching grants. This paper discusses each of these functions and stresses the Public Health Service goal of building up strong radiological health capabilities in the States.
-- Public Health Eng. Absts.

779 The Role of Forward Medical Support in Handling Masses of Casualties in Active Nuclear Warfare. J. A. Sheedy. Military Med. 127, 147-154 (Feb. 1962).

Some facts and opinions are presented relative to the operational problem of handling situations wherein masses of casualties occur on the nuclear battlefield. To visualize this problem, a situation is assumed in which a battle group is inactivated by a nuclear weapon and initially a maximum number of living casualties would result. A hypothetical situation is envisaged in which a 20-kt nuclear weapon is detonated in an air burst near the center of formation of an infantry division deployed under combat conditions. The extent of casualties and their routing through medical units are discussed in detail. The medical and tactical considerations are outlined together with the advantages and disadvantages of each course of action. It was concluded that under the conditions of active nuclear warfare, situations resulting in masses of casualties can be anticipated. -- Nuclear Sci. Absts.

780 Fallout: What a Hospital Can Do About It. G. W. Peck. Can. Hosp. 39, 46-93 (June, 1962). (Canadian Hospital Association, 25 Imperial St. W., Toronto 7, Canada *).

Protection of hospital patients and personnel from fallout resulting from thermonuclear war is discussed, and a description is given of plans that are being developed to examine and assess the requirements for protected units in hospitals, both new and existing.

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Pilot studies of Canadian hospitals indicate that, within the scope of existing buildings, much can be done to adjust the hospital program to cope with fallout hazards. Also, provision can be made for shielding the essential functions of the hospital, and for continuing the vital services of a hospital during a period of gross radiation hazard. Procedures are developed to enable local authorities to evaluate the fallout shelter potential of existing hospital structures, and guidance is also provided for the improvement of both radiation shielding and general habitability. Tabulated data are provided showing the space requirements for various categories of hospital shelter occupants and for operating facilities. Floor plans, showing maximum utilization of space yet providing a high degree of protection to hospital occupants, are illustrated. Hospital facilities provided for in the emergency plans include ventilation, power, and illumination supply, food preparations, sanitation (sewage, garbage, and waste disposal) and storage of drugs and other medical supplies. -- Nuclear Sci. Abstr.

ENVIRONMENTAL MEASUREMENTS

781 Ozone Analysis with the Mini-Adak II. D. F. Adams. J. Air Poll. Control Assn. 13, 88-90 (Feb. 1963).

Three methods for the determination of ozone are compared. The buffered potassium iodide method, the phenolphthalein method, and the sodium diphenylaminesulfonate (NaDS) were used with the Mini-Adak II instrument. A brief discussion of instrumentation is presented. Details of reagent preparation, flow rates, etc., are described. A brief discussion of interferences is presented with emphasis on nitrogen dioxide. The buffered potassium iodide reagent is not suitable for use with the Mini-Adak analyzer; however, the other two methods are readily adaptable to continuous analysis with this automatic analyzer. In automatic analysis the difficulty with the buffered iodide method comes from the loss of iodine and the consequent low results. The applicable NaDS and phenolphthalein methods are comparable, but the phenolphthalein method is slightly preferred. -- Public Health Eng. Abstr.

782 A Rapid Field Test for Cobalt Carbonyl. J. H. Fanney, Jr. Am. Ind. Hyg. Assn. J. 24, 245-252 (May-June 1963).

The carbonyls of cobalt have been known since 1908, and used in petroleum and chemical processes for a number of years as catalyst. In the absence of human toxicity data for the cobalt carbonyls, it has been recommended that atmospheric levels be kept below 0.001 ppm, for an 8-hour day, 40-hour week, based on the similarity of toxic properties of cobalt and nickel carbonyl. As with nickel, a short-term exposure to 0.1 ppm of cobalt hydrocarbonyl or its decomposition products could probably be tolerated for a maximum of 4 hours, provided several days have elapsed between isolated exposures, and that such exposures to not occur regularly that is, not more than a few times per year. The author has developed a field spot test method to detect the presence of cobalt hydrocarbonyl or its decomposition products in air at the 0.1ppm level. The sample is collected on a resin-impregnated filter which is then treated with buffer, chelating indicator, and acid. The intensity of the color developed is a function of the cobalt content of the filter. The filters are compared visually with permanent color standards.

783 Spectrophotometric Analysis of Aldehydes in the Los Angeles Atmosphere. A. P. Altshuller and S. P. McPherson. J. Air Poll. Control Assn. 13, 109-111 (March 1963).

The applicability of the chromotropic acid method for formaldehyde and the 4-hexylresorcinol method for acrolein is now well established. The 3-methyl-2-benzothiazolone hydrazone method (MBTH) for aliphatic aldehydes appears promising as a routine procedure for atmospheric snalysis. The results obtained for aldehydes are largely in agreement with those obtained the previous year at the same sampling location. -- Public Health Eng. Abstr.

784 A Colorimetric Determination for 1, 1-Dimethylhydrazine (UDMH) in Air, Blood, and Water. Mildred K. Pinkerton, et al. Am. Ind. Hyg. Assn. J. 24, 239-244 (May-June 1963).

The use of 1, 1-dimethylhydrazine (UDMH) as a propellant material has prompted numerous investigations into its toxic properties and its pharmacological effects. Studies within these areas have been made more difficult by the lack of satisfactory procedure for identification of UDMH in biological materials. A simple, rapid colorimetric procedure is described for measuring microgram quantities of UDMH in blood and water. The method, with minor modification, has also been adapted for analysis of air samples. The report provides a calibrated range for analysis of 1-60 micrograms UDMH per milliliter fluid and of 2.5-50 ppm in air; its useful range may be considerably extended by manipulative dilution techniques. The test has additional, limited qualitative application to the analysis of urine.

785 A Drum-Pump Continuous Sampler for Airborne Dusts. G. E. Winder. J. Sci. Instr. 39, 618-620 (Dec. 1962).

The "drum-pump" sampler described collects a single sample on a filter paper over a period of up to 8 hours, the rate of aspiration being about one-third of a liter per hour. A size selection device rejects particles larger than "respirable size". The instrument was designed for use in the working places of coal mines and is self-contained and portable. The novel design of water-sealed pump employed may find other applications. -- Bull. Hyg.

COMMUNITY AIR HYGIENE

786 Air Pollution Problems and Control Programs in the United States. J. J. Schueneman. J. Air Poll. Control Assn. 13, 116-125 (March 1963).

Data from air pollution studies and surveys and information relating to trends in population, fuel use, industrial activity, refuse disposal, and urbanization are analyzed to produce an estimate of the number of communities and people exposed to varying degrees of air pollution. Trends for the past and future are indicated. Interjurisdictional problems are briefly described. Air pollution control programs at the local and state level are examined with respect to budgetary support, staff, and scope of operations. These programs are balanced against the magnitude of current problems. It is concluded that much more extensive programs are needed at the state and local level. Suggestions and observations are made with respect to the need for public support for air pollution programs; state and Federal grants for local program support; and the nature of state, local and interstate air pollution control activities and legislation. -- Public Health Eng. Abstr.

787 Contribution of Solvents to Air Pollution and Methods for Controlling Their Emissions. R. L. Chass, C. V. Kanter and J. H. Elliott. J. Air Poll. Control Assn. 13, 64-72, 96 (Feb. 1963).

The authors estimate that 22% of the organic pollution in the Los Angeles area comes from the use of organic solvents. Various sources for this pollution are described. Recovery systems and their relative costs are presented. The authors estimate that 90% or more of the solvent pollutant can be economically recovered. Depending on how the recovered solvents are used, a net savings or, in some cases, an insignificant annual loss may result.
-- Public Health Eng. Abstr.

MANAGEMENT ASPECTS

788 Some Socio-Technical Aspects of Automation. F. E. Emery and J. Marek. Human Relations 15, 17 (Feb. 1962). (Human Relations, Tavistock Publications, 11 New Fetter Lane, London EC4, England*).

A medium-sized British power plant moved to an automation setup. The most striking feature of this change was its smoothness, notable particularly for the absence of labor-management tensions which might have been expected, not only from the technological changes, but in such changes as the disappearance of incentive pay. Some economic factors may have contributed to this smoothness of change since both the external market and internal operation were rather stable compared to an engineering firm also studied. However, the crucial feature appears to have been the manager's value orientation. This was a belief that "technical and economic considerations were not a sufficient ground on which to time the introduction of major technological change", and that "they would not accept savings that were made at the expense of sacking staff." There was a "prior and unhurried negotiation" regarding expected conflicts of interest and a record of finding appropriate jobs within the plant for employees displaced by technological change. The actual changes involved in automation are reviewed. At the operator's level these include increases in complexity of processes, decreased tolerances, and separation from the actual process by automatic controls. The operator has the frustration, but also the satisfaction, of a wider intellectual or conceptual grasp of the processes he is controlling. He must make quicker and more complex judgments interspersed through long periods of watching and waiting. At the supervisor's level, the job becomes one of logistics and an increase in technical knowledge approaching that of the professional engineer. Monitors take over the constant features of supervision, which becomes an on-call function at times of crisis.

-- J. Occ. Med. Absts.

789 Upward Communication in Industrial Hierarchies. W. H. Read. Human Relations 15, 3 (Feb. 1962). (Human Relations, Tavistock Publications, 11 New Fetter Lane, London EC4, England*).

In small groups which have been studied, motivational and attitudinal factors influence the accuracy of communication, particularly of negative matters, from lower to higher echelons. The lower seek to maintain good relations by passing upward pleasant information rather than the unpleasant facts of errors or difficulties. Such a restriction may spoil the efficiency of an industrial organization. Fifty-two middle executives in 3 American industrial organizations were studied in relation to their 52 immediate superiors. Three areas were tested: the executive's aspirations toward promotion; the trust they felt for their immediate superior; and the degree of influence over their reputation and promotion this superior seemed to them to possess. Findings indicated that the stronger the executive's own needs for advancement the less accurately would he report difficulties and problems. This inaccuracy would be lessened by a high degree of trust, and increased by a low degree of trust. Less clearly, the executive's accuracy would be further diminished by a superior seen as highly influential. The factor of trust appears most significant of the three. Previous findings for small groups are thus confirmed for formal, large-scale organizations. One implication is that successive levels of filtration or blockage lead to ineffective decision-making "at the top," as well as to "the 'fog of uncertainty' that characterizes executives work." On the other hand, such filtration may indicate that some difficulties are being satisfactorily dealt with at the appropriate level, rather than being passed along.

-- J. Occ. Med. Absts.

790 Levels of Knowledge of Requirements as a Motivational Factor in the Work Situation. T. Tomekovic. Human Relations 15, 197 (Aug. 1962). (Human Relations, Tavistock Publications, 11 New Fetter Lane, London EC4, England*).

Motivational factors are important in influencing output; these include good supervision, group decision-making, and group morale. A pilot study of the performance of school

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pupils doing arithmetic addition is presented. The situation is simple and precisely controllable; the task clear, practiced, and familiar. During a 6-day experiment, several independent variables were introduced on the fourth day when the influences of practice had become negligible. Two groups had the wrappers on their books changed. A third group was given an explanation of the reasons for the task instructions. A fourth group was given this explanation, then encouraged to discuss it and to make decisions about how to carry out the task. These discussions remained centered on the task at hand. An attempt was made to diminish the factor of competition by saying, "Work as well as you can", rather than, "as hard as you can." The results are treated by statistical analysis and by a total logical analysis of the experiment. Conclusions are: (1) The explanation of job instructions motivates higher output, but not to a statistically significant degree. The lack of insistence on competition may have slowed this group. (2) The addition of group discussion and job-centered group decision-making promotes a significantly increased work output, both as compared to the group that received only instructions and change of wrappers and the group that received instructions and explanation of instructions. There were no differences in quality of output. The experiment confirms the productiveness of democratic, but task-centered, supervisory process, as contrasted with an autocratic approach.
-- J. Occ. Med. Absts.

ACCIDENTS AND PREVENTION

791 Clinical Problems in Aviation Medicine. Medical Factors in Non-Fatal Aircraft Accidents. D. L. Urschel. Aerospace Med. 34, 547-549 (June 1963).

Under the auspices of the Indiana chapter of the Flying Physicians Association, 96 pilots involved in non-fatal aircraft accidents in the state of Indiana during 1960-1961 were interviewed and their answers tabulated in this report. In only 5 cases was any significant medical or physical factor involved in the accident. It seems from this work that current physical condition occupies a secondary role in the production of most aircraft accidents. Training, judgment, and mental attitude appear to be fields in which most progress can be hoped for in the prevention of these episodes. -- Author's summary

792 The Role of the Physician in the Investigation of Aircraft Accidents. O. K. Niess, et al. J. Am. Med. Assn. 184, 701-704 (June 1, 1963).

Experience of physicians, especially those in the armed forces, has demonstrated the important contribution the medical profession can make to aviation safety. Many complex factors are involved in the investigation of an air disaster and careful planning is important for the physician in overcoming obstacles that may be encountered. Collection and correlation of medical data with other factors relating to an accident are of paramount importance. The disciplines of pathology and toxicology play key roles in accident investigation. Only by gathering detailed data from each accident can the responsible safety agencies document their requirements for the materiel and the operational changes needed to make flying safer. -- Authors' abst.

793 The Role of the Physician in the Prevention of On-Duty Accidents. W. Jend, Jr. J. Occ. Med. 5, 331-335 (July 1963).

In the broad sense, accidents are fundamentally a medical problem. Now that the skills of safety education have effectively made their contributions to accident prevention, further major progress would seem to center in the doctor-patient relationship. The skills of the medical profession may be used to help the individual patient, and the individual physician, better understand himself and gain insight into the relationship of the stresses and strains of life to both accidents and the infinitely greater number of near misses. As experience is accumulated and shared by physicians as they deal with individual patients, a body of knowledge will be developed which will benefit society in general. -- Author's summary

794 Applied Psychology and Prevention of Industrial Accidents. P. R. Bize. Arch. maladies profess. 23, 349 (June 1962) French.

We live today under the sign of the machine—"blind, commanding, inflexible"; accidents exact a greater human toll than tuberculosis and syphilis. In France, 2 million accidents in one year resulted in 20 million workdays lost and 1,795 deaths, or 4.9 deaths per day. Forty-seven per cent of accidents are attributable to false moves on the part of the worker. Applied psychology bears on (1) the selection of the right workman for the right job, by testing of aptitudes, attitudes, and motivations; (2) on promotion; (3) on reclassification of the handicapped; and (4) on detection of those least disposed to accidents. Of those involved in accidents, the essential problem for study concerns those who played some active part in their accident. Analysis indicates an increased disposition to accidents in the young, in women, though their accidents are less severe, and in those of dull intellect. Psychological tests imposing a time limit, particularly perceptual tests, are found to discriminate between accident-free workers and those involved in accidents. Review of different studies of accident proneness repeats the finding that the same minority of workers is consistently involved in the majority of accidents. How to track this minority down in a predictive way? In the Paris public transportation system, psychological techniques point to certain constellations of drivers who tend to be involved in accidents: (1) the well-endowed who are uninhibited and impulsive; (2) the awkward, rigid, spastic; (3) those subject to emotional cycles; (4) the unhealthy, due to aging, illness, and debility; and (5) problem drinkers. A suggested company program for accident prevention is proposed.
-- Cond. from J. Occ. Med. Absts.

INDEX

Accident(s)
applied psychology and prevention 794
non-fatal aircraft 791
role of physician in
aircraft 792
prevention 793

Aerospace medicine
need for specialists 714

Aircraft
medical factors in accidents 791
role of physician in accidents 792

Air pollutants
aldehydes, analysis for 783
solvents 787

Air pollution
problems and control programs 786

Alcohol
effect on serum cholesterol 712

Aldehydes
spectrophotometric analysis 783

Alkanes
determination in cigarette smoke 749

Allergy(ies)
gold trichloride 733

Amino compounds
and methemoglobinemia 752

Asbestosis
in non-experimental animals 758

Atomic explosions, warfare
fallout
protection of hospital patients 780
role of forward medical support 779

Automation
socio-technical aspects 788

Bagassosis
in the Philippines 755

Beauty culture
hazards of 729

Blood
diet and plasma cholesterol 720

Book(s)
food hints for mature people 707
quiet guardians of people's health 708
survey, U.S. Natl.
hospital discharges and length of stay 709

Burns, emergency therapy 732

Canaries
effects of carbon monoxide on 738

Cancer
lung, mortality by occupation 724
oral and occupational health 722

Carbon monoxide
carboxyhemoglobin levels in steelworks 737
control of hazards in industry 739
detection and estimation 736
effects on man and canaries 738

Carbon tetrachloride
3 cases of poisoning 750

Carcinogenesis
nickel carbonyl 744

Cholesterol
and diet in bank men 720

Cobalt carbonyl
rapid field test for 782

Corticosteroids
in aspiration pneumonia 716

Dental personnel
radiation protection 776

Dermatitis, dermatosis(es)
control in a fur plant 731
hard metal dust 730
hazards of beauty culture 729
treatment of neurodermatoses 728

1,1-Dimethylhydrazine
determination 784

Dust sampling, samplers
drum-pump continuous 785

Ear
protective devices 762

Emphysema
and chronic bronchitis 727

Executive and neurosis 710

Eye
hazards in film industry 735

Fallout shelters
and hospital service 780

Farmer's lung
mycological examination of dust 756

Film industry
eye hazards in 735

Fluoroscopy
facts and fallacies 772
patient exposure during 771

Foodstuffs
determination of trace elements 743

Fur plant
control of dermatitis in 731

Gold trichloride
as contact allergen 733

Hearing loss
damage risk criteria 761

Health
survey, U.S. Natl.
hospital discharges and length of stay 709

Heart disease
cardiac resuscitation 717
in drivers of public vehicles 718
relationship of blood and pulse pressure 719

Honey-comb lungs (cystic disease) 715

Insecticides
poisoning by 753

Laser
effect on eye and skin 734

Lead
determination, dithizone method 747
poisoning, vascular system in 748

Low back
statistical study of pain 721

Lungs
cystic disease (honey-comb) lungs 715

Methemoglobinemia
from aromatic amino compounds 752

Microwaves
cataract formation 766
effect(s) on
ionizing radiation 763
normal tissues 764
electroencephalographic studies 765
health hazards 768

Nickel carbonyl
carcinogenesis 744

Nutrition
food hints for mature people (bk. rev.) 707

Ozone analysis
with the Mini-Adak II 781

Phenols
determination in cigarette smoke 751

Pneumoconiosis
radiology of some rarer 757
talc 759

Pneumonia (aspiration)
use of corticosteroids 716

Potassium perchlorate
in thyrotoxicosis 742

Psychiatry
executive and neurosis 710

Psychology
communication in industrial hierarchies 789
motivation factor in work situation 790
use of psychotropic drugs 711

Public health
quiet guardians of (bk. rev.) 708

Radiation (ionizing, nuclear, x-ray, etc.)
effects of microwaves on tissues 764
hazard(s) 770
burns from radiotherapy 774
chest fluoroscopy 772
to man 769
of microwaves 765, 768
necrosis after radiation 773
space travel 760
influence of microwaves 763
microwaves and cataracts 766
protection, dental personnel 776
regulations 777

Radiological health programs
role of U.S. Public Health Service 778

Radiology
of rarer dust diseases 757

Radium
loss and recovery of capsule 775

Selenium
in leaf wax of Stanleya Bipinnata 740

Silicosis
in the Philippines 755

Smoking
effect on electromyograms 723
and pulmonary ventilation 725

Solvents
as air pollutants 787

Space flight
radiation hazards 760

Talc pneumoconiosis 759

Tellurium
a new sensitive test 741

Tetanus
prophylaxis in oil industry 726

Thallium poisoning 745

Thorotrast
tumor pathology 767

Trace elements
determination in foodstuffs 743

Trauma
crushing injuries of chest 713

Tuberculosis
among woodworkers 754

U. S. Public Health Service
and radiological programs 778

Woodworkers
tuberculosis among 754

X-ray(s)
patient exposure during fluoroscopy 771

Zirconium
scrap burning tests 740