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INDUSTRIAL HYGIENE NEWSLETTER

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INDUSTRIAL HYGIENE DIVISION



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This publication is free to persons interested in the field of industrial hygiene. To be placed on the mailing list, write to Industrial Hygiene Division, U. S. Public Health Service, Bethesda 14, Md.

Approved by Director, Bureau of the Budget, as required by Rule 42 of the Joint Committee on Printing.

A MODERN CONCEPT OF INDUSTRIAL HYGIENE

The basic function of industrial hygiene is to make workers healthy and keep them so. On this there is universal agreement. And yet, is the orientation of most of us such as to simplify our task? Is our approach to the problem the most fruitful one? It has been suggested that an evaluation of our efforts may be helpful.

Occupational Disability Earliest Concern

Historically, industrial hygiene grew up in response to the problems of the prevention and treatment of the most dramatic of workers' disabilities—occupational injuries and diseases. It was only natural that this should have been its origin; and that it should have been in part identified, in the beginning, with official agencies charged with improving the welfare of workers. During the years, a formidable body of knowledge has been accumulated in traumatic surgery, industrial toxicology, mental hygiene, dentistry, nursing, engineering, morbidity statistics and related fields. A corps of specialists has been trained to apply and to add to this new knowledge. These experts have made, and are making a vital contribution to workers' health. They must be

encouraged, and their opportunities expanded, in proportion to the greatly accelerated technological advance of our industries. But is there more that can be done?

Ninety Percent of Disability Is Nonoccupational

Through studies on disability and absenteeism, it has been demonstrated that about 90 percent of workers' disability is nonoccupational in origin. For every day lost due to industrial diseases and accidents, 15 are lost as a result of ordinary adult illnesses. These lost days have quantitatively much more of an adverse effect on our economy than those in the first category. Is the problem of keeping workers healthy being attacked on all fronts when emphasis is laid on promoting in-plant medical services for the control of occupational disability? Has the role of general medical care as an instrument of preventive medicine been appreciated fully?

Barriers to Medical Care

One of the barriers to adequate medical care for the worker is his lack of knowledge in matters of health. We

in industrial hygiene attempt to solve this problem by encouraging such activities as health education, nutrition programs and periodic physical examinations. When an illness or defect is discovered, the worker is usually referred to his private physician. We also encourage the plant medical service to give workers advice on nonoccupational illnesses—short of actually treating them, save for minor conditions and emergencies. These preventive measures have accomplished a great deal in improved health of workers. The problem is of such magnitude, however, that the surface has hardly been scratched.

The fundamental barrier to adequate medical care is an economic one. The average wage earner cannot afford the best modern medical care—at least not when he has to pay for it on an individual basis. Several well-known studies on the costs of medical care, some by the United States Public Health Service, have demonstrated this fact.

Types of Medical Care Programs

Certain far-seeing industrialists have known this for years. Some have encouraged mutual sick benefit associations, operating on the insurance principle, to help protect their workers

against loss of wages during illness (indemnification plans). Others have established direct service organizations like the Endicott-Johnson Workers Medical and Relief Department, or, more recently, the Permanente Foundation Health Plan for workers in West Coast shipyards.

Organized labor also knows the relationship between medical care and the ability to pay for it; and has shown an increasing awareness in the past few years. Working on the premise that the worker's health is his only capital, unions have felt that the promotion of prepayment plans for spreading the risk of medical care costs is their legitimate function. They started out with plans which were financed entirely by union members, through dues or special assessments. Recently, however, the trend has been to make employer participation a demand in collective bargaining.

Recent Trends

Hundreds of contracts have been negotiated on this basis during the last few years. Many of these plans operate through commercial insurance companies by indemnifying workers for various types of sickness and medical care costs. Many others purchase hospitalization benefits through the Blue Cross, which is a modified type of service organization. An exception is the Labor Health Institute of the St. Louis Joint Council, United Retail, Wholesale and Department Store Employees, CIO. This is a comprehensive plan for medical care, including physicians' services in the home and health center. It is financed entirely by management (which contributes 3½ percent of the pay roll) and administered by a board of trustees on which both management and labor are represented.

Official agencies, too, have been active for some years in sponsoring proposals to help people budget the costs of medical care. It is quite clear, however, that organized labor and many industrialists are not waiting for official action. They are moving ahead with their own health insurance programs. If we in industrial hygiene intend to attack the problem of industrial disability at its core, it is imperative that we at least familiarize ourselves with this movement.

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Division's Activities Expand

Accordingly, Dr. J. G. Townsend, Chief of the Industrial Hygiene Division of the United States Public Health Service has appointed Dr. Lee Janis as an associate in industrial medical care administration. Dr. Janis is a medical officer who has had experience in administering medical care programs. One of his chief functions is the study and evaluation of existing and proposed programs for general medical care of industrial workers. The quality of the medical services available to workers under these plans is receiving special attention. In addition, the Division feels that it is important to investigate methods by which such plans may be integrated with the traditional type of in-plant medical service for occupational diseases and injuries. Emphasis is being laid on the small plants, which employ the vast majority of workers in this country. A consultation service has also been established. All interested persons and agencies with problems in industrial medical care administration are invited to write to the Division.

Atlanta Industries Strive for Health Center

On Industrial Health Day, which was a part of Health Week sponsored by the Atlanta, Ga., Chamber of Commerce, a round table panel was held for the purpose of organizing an Atlanta health center. This Center is to provide services to certain of the local industries which were represented at the meeting. In addition to the industrialists, the following persons were present at the meeting: Dr. Harold R. Hennessy, American Medical Association; Dr. E. W. Brown, Capt. (Ret.) USN; Dr. J. G. Townsend, United States Public Health Service; Miss Eunice Chapman, R. N., Winder Manufacturers' Health Clinic; Dr. L. M. Petrie (chairman), director, division of industrial hygiene, Georgia Department of Public Health; Dr. Howard Strong, United States Chamber of Commerce; Dr. Hugh Wood, Dean of Medicine, Emory University; Mr. Cherry Emerson, Dean of Engineering, Georgia School of Technology; and others.

Maine is 41st State to Give Industrial Hygiene Service

Following the enactment of an occupational disease law, the State of Maine has established a division of industrial hygiene within the bureau of health, department of health and welfare.

Mr. Elliot Hale, who has been acting chief of the sanitation division, has accepted the responsibility of inaugurating the industrial hygiene work. Mr. Hale is well qualified for the work, having assisted in a survey of industrial establishments in Maine 8 years ago to determine the need for an industrial hygiene program at that time.

About one-third of the industrial population of Maine is employed in manufacturing plants of which textile mills and clothing factories predominate. The leather industry, logging, sawmills, furniture manufacture, paper and printing also employ a large group. Personal services, which include laundries, beauty parlors, and filling stations, keep about 25,000 people busy. On the basis of the 1940 labor census, 55 percent of the 330,421 industrial workers are employed in industries with potential health problems.

During the first year of industrial hygiene service to the industries of Maine, Mr. Hale will give advice and assistance to as many plants as possible. He will also add to the laboratory and library equipment preparatory to increasing the staff in the near future.

Texas Holds Short Course for Industrial Hygienists

For initial orientation of new employees and as a refresher for the older personnel, an intensive 50-hour short course with particular emphasis on sanitation in industry was conducted by the Texas State Department of Health. In addition to the staff in the industrial hygiene section, others in attendance included: Mr. G. K. Edge of the Baytown Refinery of the Humble Oil and Refining Co., Mr. Harvey Mobley, Industrial Hygienist with the Houston city health department, and Mr. Thad Patrick and Mr. E. C. Nelson of the Bureau of sanitary engineering.

Are Cold Wave Solutions Hazardous to the Skin?

Numerous questions are received and answered by the Industrial Hygiene Division, United States Public Health Service. When a timely problem of wide interest is presented, the answer will be printed here. Special questions may be submitted for this purpose by NEWSLETTER readers.

Question: Does a potential health hazard exist for beauty parlor operators and home users who handle cold-wave solutions and if so, what protection can you suggest?

Answer: Most cold-wave solutions contain ammonium thioglycollate, a derivative of thioglycollic acid. Both of these chemicals are primary skin irritants, especially in strong concentrations. Beauty parlor operators whose hands come in continued contact with its irritant action when they give cold-wave treatments should be protected by wearing rubber gloves.

Women getting cold waves in beauty parlors should have the forehead and face well protected either by towels or grease so that the first or reducing solution (ammonium thioglycollate) will not touch the skin of the face and forehead. The solution should be carefully applied to the hair so that a minimum amount touches the scalp.

Cold-wave solutions sold in stores to be used at homes usually are not as strong as those sold for use in beauty parlors and there is less likelihood of developing a dermatitis from them. Nevertheless, the user should protect herself in the same manner as described above for those getting cold waves in beauty parlors. The use of cold-wave solutions for 15 or 20 minutes on the hair should be followed by the use of water to wash the solution off the hair.

If the cold-wave solutions are used with the proper precautions described above they will not harm the hair any more than other methods of permanent waving. For the protection of the operator and the patron, explicit directions should be printed on bottles of cold-wave solutions.



“SCIENTIFIC SLEUTHS SEEK HEALTH HAZARDS”

“State Hygiene Experts Use Airplane in Work of Examining Industrial Plants for Occupational Diseases.” This head and subhead were spread across a full page story in the Sunday Magazine section of the *Arkansas Democrat*, published at Little Rock. Two pictures illustrated the story. One of them showed the two chemists, equipped with portable testing instruments, ready to leave in Captain McQuary’s plane. The other photograph showed Dave Morton, Jr. using an Orsat gas analyzer.

Quoting the *Arkansas Democrat*: “Looking for gremlins that threaten

health is the work of the Industrial Hygiene Division of the State Board of Health. In charge of the work is Capt. William A. McQuary of the United States Public Health Service, who is assigned to the Health Department. As far as is known, Captain McQuary is the only State industrial hygienist who goes to work in an airplane. Part of his job is checking working conditions affecting the health of any person employed in industry any place in the State.

“Many of the investigations are made at the request of factory owners or



Photographs by courtesy of
Arkansas Democrat, Little Rock

Medical Men From Other Countries Visit U. S. P. H. S.

Physicians from China, Norway, France, England, and other countries are coming to the United States in increasing numbers to exchange views with medical men here and learn of new developments in medical research, education, and practice.

Dr. I. C. Yuan, director of the Institute of Epidemiology, National Institute of Health, Nanking, China, was one of the most recent visitors. He spent several days in Washington conferring with leaders in his special field and allied fields of interest, including industrial hygiene.

During the fall months, other visitors who consulted with staff members of the Industrial Hygiene Division, United States Public Health Service, were Dr. Walter M. Cantidia, a dermatologist from Brazil; Dr. Arne Bruusgaard, from Oslo, Norway; Dr. Ronald E. Lane, University of Manchester, Manchester, England; Dr. Chen Yu Lien, who is studying at Johns Hopkins under the auspices of the American Bureau for Medical Aid to China; Dr. A. Fryberg, from the State Health Department, Queensland, Australia; Dr. André Salmon, Professor of National Conservatory of Arts and Trades of Paris, and Dr. Eyv Thiss-Evensen, Porstrunn, Norway.

TEXAS

Personnel.—A reorganization of industrial hygiene activities of the bureau of sanitary engineering has been effected. The responsibility for coordination of this work was assigned to Mr. Martin C. Wukasch. Other new employees in Industrial Hygiene include: Mr. D. B. Knudson, Mr. Sam R. Venable, and Mr. W. T. Ballard, all chemical engineers. Laboratory activities, which are the responsibility of the Bureau of Laboratories, are under the supervision of Mr. A. D. Potter, chief chemist who is assisted by Mr. W. B. Wardlow, chemical engineer.

managers interested in keeping their employees well and on the job. However, a number of other people, including the employees, labor unions, insurance companies, and the State labor department also put in requests for Captain McQuary and his assistants to come around and look over factories and industrial concerns. They request that surveys be made to determine whether a job is safe hygienically, or if occupational diseases are lurking nearby."

Brief descriptive stories illustrative

of the work done by the Division of Industrial Hygiene make up the interesting article. It was written in simple terms, understandable to the average reader, and told in vivid picturesque style that captures and holds the interest.

Every State and city industrial hygiene staff can tell similar experiences which make good reading. And every industrial worker and manager needs to know about the services of his division. With reporters always on the hunt for story material, the answer is obvious.

U s e W h a t Y o u H a v e

Before you go through the process of preparing new information materials, why not check back through the pamphlets and posters already in print to make sure you are using them to the fullest.

Let us check through the publications produced in Washington, D. C., to remind you of possible uses. You may want to do the same with your own State publications.

First, there is the **Industrial Hygiene Newsletter**. Do you know if all plant managers, physicians, nurses, dentists, engineers, safety men get it? Do plant labor management safety committees, executives of business groups, and labor unions receive copies? If you send the names of people who need this publication to the Industrial Hygiene Division, United States Public Health Service, we shall send them sample copies.

How many plant operators in your State have seen a copy of **At Your Service**? How many plant nurses, physicians and engineers have this handy guide to services available from State industrial hygiene divisions? It is best to use this pamphlet as a followup after an introductory conference or after a showing of **Capital Story** or some other film or exhibit on industrial hygiene. But you might also send a copy of the

pamphlet to those plant managers you do not have time or opportunity to reach personally.

Have all industrial nurses and physicians in your State received sample copies or a small supply of the **Workers Health Series** pamphlets and posters and the **Jenny on the Job** posters? Industrial nurses have reported an acute need for such materials written especially for industrial workers. Many who are new to the field may not know about the availability of these pamphlets and posters.

Another outlet for these popularly written pamphlets are labor organizations. Unions show increasing interest in the health and welfare of their members. Union meetings are sometimes partially devoted to health problems. This is a good opportunity to distribute materials. You may also be able to make arrangements to publicize the pamphlets in union papers. They may want to run reproductions of the posters or excerpts from the pamphlets giving credit to the source.

Outline of an Industrial Hygiene Program is intended for all those industrial managers who have displayed interest in setting up a program. It contains the facts for study. It, too, might be sent as a follow-up after an introductory conference.

Do you use exhibits as often as you can? Some States have displayed the exhibit titled **Teamwork: Industrial Hygiene Services for Small Plants** with great success at State fairs. Businessmen's groups should also be given an opportunity to see it, and as a follow-up should receive **Success Story in Industrial Health**.

Do you show the exhibits on industrial dermatoses to groups of physicians and nurses? Dermatoses creates the greatest number of occupational ills and there is a real need to reach physicians and nurses with the latest findings in the research on this subject.

Capital Story has also been popular with professional groups. Show it to physicians, nurses, and engineers, to students in schools of medicine, dentistry, engineering, and nursing, who may be interested in entering the industrial hygiene field, and to industrial workers themselves who usually like to know about the services available for their protection.

A complete list of materials produced by the United States Public Health Service appeared in the October issue of the **Newsletter** together with information about their prices and where they can be obtained.

Metcalf speaks on "Recent Advances in Atmospheric Hygiene"

"Air-cooled hospital ships have become a recognized necessity in tropical areas," said Comdr. E. E. Metcalf (M. C.) USN of the Naval Medical Research Institute, Bethesda, Md., when he spoke to members and guests of the Washington-Baltimore Section, American Industrial Hygiene Association, at the first fall meeting. Commander Metcalf explained that medical officers have reported that high temperatures and humidity are major factors in prolonging disability and in increasing mortality in the sick and

injured. "Even healthy men subjected continually to high temperatures show a large loss of fluid and salt and increased pulse rate indicative of vascular stress," he said.

Experiments were set up at the institute to study the effect of hot as contrasted with cool sleeping quarters on men working during the day in hot environments. The group resting in cooled quarters showed better over-all performance. From another carefully controlled experiment, it was concluded that men 18 years of age can tolerate an effective temperature of 90° for at least 30 days with very little evidence of deterioration. However, they do so at a somewhat higher physiological cost which might lead to deterioration with longer exposures. Commander Met-

calf explained that heat rash, which invariably develops under these conditions, can be prevented by daily part-time cooling of 12 hours or less.

Other tests were performed to study the effects of recirculated air conducted for periods as long as 72 hours in a sealed laboratory room and for periods as long as 60 hours in submarines along side of a dock, and 50 hours in a submarine at sea.

An important finding with reference to carbon dioxide exposure was that the present limit of 3 percent of carbon dioxide and 17 percent oxygen can be changed to 5 percent carbon dioxide and 13 percent oxygen with the maintenance of an effective oxygen pressure in the lungs, blood and tissue.

An investigation of the question of

RECENT ADVANCES IN TOXICOLOGY

Lawrence T. Fairhall

Dr. Lawrence T. Fairhall of the United States Public Health Service has made an evaluation of the known facts regarding the physiological action of some of the newer metals and their compounds as separate entities. Through the courtesy of the British Journal of Industrial Medicine, Dr. Fairhall has presented in the two preceding issues, brief discussions of cobalt and cadmium, and presents here information on beryllium. Bibliographies on these subjects may be obtained from the managing editor, INDUSTRIAL HYGIENE NEWSLETTER.

BERYLLIUM

A few articles have been added to the recent literature concerning the industrial hazards associated with the production of beryllium, but during the past 3 years no work has been reported on the physiological action of beryllium itself. Shilen, Galloway, and Mellor, in 1944, reported the health hazards incident to the extraction of beryllium. Kress and Crispell have reported cases of chemical pneumonitis in men working with fluorescent powder containing beryllium. Van Ordstrand, Hughes, De Nardi, and Carmody have recently reported the dermatological and other effects which they have observed in the

beryllium industry during the past 4 years, and which were reported under the heading of "beryllium poisoning." The fatal cases described in this report resulted from chemical pneumonitis. A similar chemical pneumonitis developed in an additional 33 workers at various occupations in these plants. While the hazard due to dust and fume that existed in the plants was undeniable, the term "beryllium poisoning" is a misnomer, since no toxic action can be directly attributed to the beryllium ion itself, and the beryllium in these cases merely acted as an adjuvant.

In connection with the manufacture of fluorescent lamps, a number of cases, which were designated as sarcoidosis, were reported in 1943 in the Massachusetts area. Since beryllium oxide is one of the constituents of the fluorescent powder, and since very little was known concerning the toxicity of beryllium, this substance was suspected as the etiological factor in the production of sarcoidosis.

The inhalation of beryllium sulphate dust was shown to be injurious to guinea pigs (67 percent mortality in one exposure) in experimental work reported by Hyslop et al. in 1943; but when the more neutral potassium beryllium sulphate was substituted the animals were able to tolerate much larger doses (no mortality in large doses daily for 7

days). Later experimental work, using rabbits as experimental animals, has confirmed this earlier finding.

Beryllium sulphate is so extensively hydrolysed that hydrogen is evolved when zinc is placed in a solution of the salt. It is understandable that the inhalation of beryllium sulphate dust would prove strongly irritating owing to the local production of sulphuric acid in contact with the delicate tissue of the lung substance. The production of a pneumonitis in the victim exposed to such irritating material is readily understood.

Potassium beryllium sulphate, on the other hand, is soluble in cold water, is nearly neutral in reaction, and yields all the reactions characteristic of the beryllium ion. It is not bound as a complex which might be expected to have different properties from other beryllium salt solutions. If beryllium were a protoplasmic poison, both beryllium sulphate and potassium beryllium sulphate should show similar effects.

With reference to the ulceration produced by beryllium sulphate entering cracks in the skin—a condition which occasionally occurs with employees handling this material—it would be of interest to try the effects of beryllium salts of more inert acids, such as beryllium citrate or beryllium malate.

odors, which is a real problem on board ship, indicated that physiologically, odors affect the appetite, efficiency and morale of all hands. Since weight and space are critical aboard ship, a minimum quantity of outdoor or replenishment air must be supplied to these spaces if air conditioning is to be incorporated in the design of ships. Very valuable findings resulted from this experiment.

An associated problem concerning high temperatures frequently encoun-

tered in the Navy, according to Commander Metcalf, is the loss of body fluid by the men. The use of salt tablets is a standard practice, but it is a common complaint of men using them that they are made nauseated by their ingestion. Work proceeded in developing a tablet that would have a prolonged effect or a slower rate of disrupting. Finally, it was found that by using cellulose acetates or nitrates an impregnation of the salt tablets was achieved that would give a uniform prolonged

disrupting time, approximately 80 minutes. This tablet caused very little distress. It is now in the process of receiving Federal specifications.

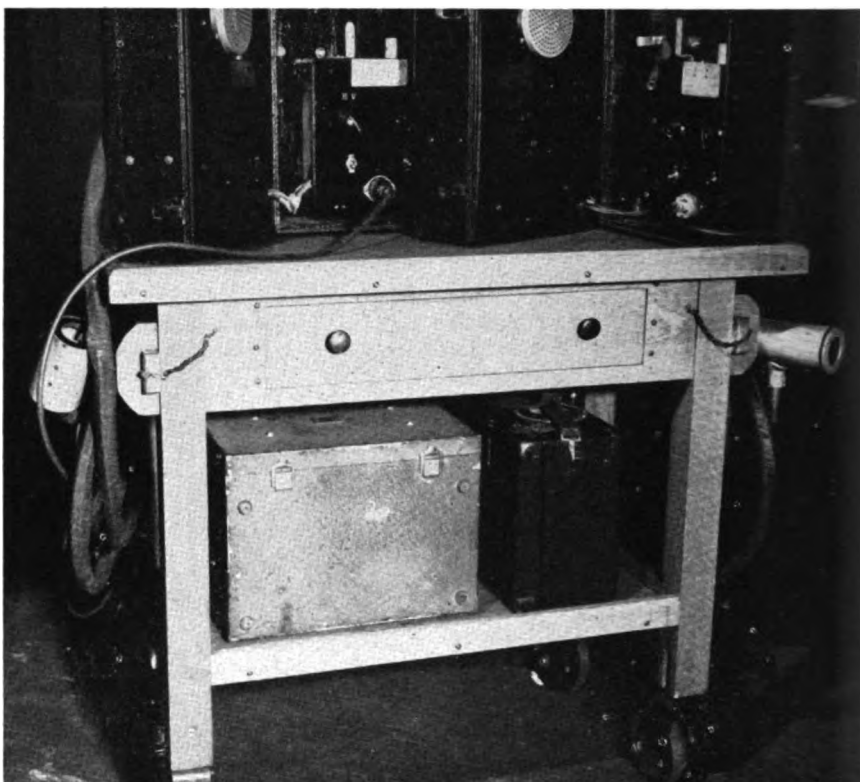
Commander Metcalf pointed out that many problems in atmospheric hygiene await solution. He said, "It is conceivable that surface ships, submarines and aircraft will operate all over the world for protracted periods of time, and great ingenuity is necessary to provide adequate healthy living spaces for our men."

MOBILE, COLLAPSIBLE LABORATORY AND FIELD TABLE DESIGNED BY U. S. P. H. S. ENGINEER

In making a comprehensive survey of industrial plants it is sometimes necessary to spend several days taking atmospheric samples. In plants which have a large floor area the transporting of equipment from one sampling location to another is very tiring when done manually. To conserve the time of field personnel and to minimize fatigue, a mobile, collapsible table was designed by George D. Clayton, Senior Assistant Engineer (R), United States Public Health Service, to transport sampling equipment from one location to another. This table has been used under field conditions and has proved a very definite aid.

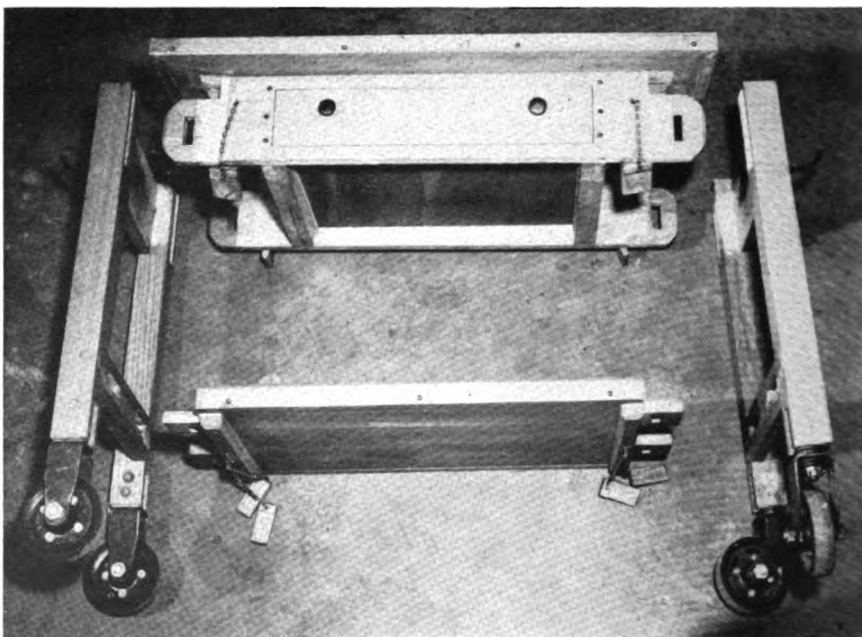
The table is designed so that it can be assembled and disassembled rapidly and easily. The size of the table is such that it will fit in the trunk compartment of most automobiles along with the other field equipment. It is constructed of seasoned oak, stained, and then waxed. No paint or varnish is used as it is thought this would hinder the assembling and disassembling process. One-inch ledges are placed around the top and shelf of the table to prevent the dropping of small objects on the floor. Electrical cords and rubber hoses may be hung on hooks which are provided on either end of the table. A drawer is provided in the top section to carry stop watches, notebooks, and small tools. The principle of wedges is used in the construction of the table, as this principle is found most satisfactory in providing strength for the table while in use and for ease in disassembling it. Four and one-half inch ball bearing casters were used, as 6-inch casters were not available at the time this table was constructed. Six-inch casters would provide easier rolling on rough flooring and should be used if they can be obtained. The two casters on the front of the table are stationary and the back two are swivel. However, it is felt that all four casters should be swivel to allow the table to be maneuvered in a smaller area.

Detailed drawings of the table are available on request from the Industrial Hygiene Division, United States Public Health Service, Washington 25, D. C.



Time and energy are saved for the engineer when using this quickly assembled table.

Exploded view of mobile table designed for industrial hygienists to carry atmospheric testing equipment while making detailed studies in large plants.



IT HAPPENS TO US TOO

The fact that State industrial hygiene engineers do not have a monopoly on unorthodox assignments was proved recently when the United States Public Health Service received an urgent call from the Treasury Department, Washington, D. C. To corner the cause of a nauseating odor was like finding the proverbial needle in a haystack for the Superintendent of the Treasury Building. Day after day, employees complained of the sickening odor, and workmen hunted for the source of the smell. It was reported first from one corner of the building, then another. No one could identify the offending odor. After the sewer mains were flushed and all inside suspected corners were scrubbed, some one suggested that the smell seemed to come through the windows from the outside, perhaps from the grass. So the grass was sprayed. The staff breathed a sigh of relief, sure the cause has been found.

The next day came the usual complaint. Finally, engineers from the Industrial Hygiene Division were called in. They identified the odor as stale illuminating gas, then looked for a possible leak. In the yard in front of the building had been two pillars through which conduits were run for lights. The light standards had been cut off and the openings capped. In the marble base, through cracks in the masonry, the gas escaped and entered through the windows of the Treasury Building, to the discomfort of many an employee. Emergency squads were called in to unearth the original leak in the gas main, and the Superintendent of the building wrote on his telephone pad, for future reference, the number of the Industrial Hygiene Division, United States Public Health Service.

WISCONSIN WANTS CHEMIST

The industrial hygiene unit of the Wisconsin State Board of Health needs a chemist, a graduate of a recognized college with a major in chemistry. He must have at least 3 years of professional experience in analytical chemistry and research. The salary ranges from \$260 to \$310 a month.



A. S. A. Publishes Booklet

"How much electricity in a kilowatt hour? What is portland cement? Will a radio bought in New York plug into a San Francisco outlet? Is the hand signal for "stop" the same on all construction jobs? The answer to these problems is—standards, a common language for performance and acceptability."

With the above paragraph as an introduction, the American Standards Association explains its purpose and program in an attractively illustrated booklet called "Voluntary Standards."

In layman language the definition of standards and what they mean to consumers and management is made clear.

The American Standards Association is a federation of 96 national trade, technical, and governmental groups, in which over 600 organizations are represented, each one contributing to the committee work which is necessary for setting up standards.

Copies of this publication are available from the American Standards Association, 70 East Forty-fifth Street, New York 17, N. Y.

A. S. A. DEVELOPS STANDARD FOR TRICHLOROETHYLENE

The American Standard Allowable Concentration of Trichloroethylene has been announced as follows: 200 parts per million parts of air by volume, corresponding to 1.07 mg. per liter at 25 C and 760 mm Hg for exposures not exceeding a total of 8 hours daily.

S T A T E A N D L O C A L N E W S

CALIFORNIA

Personnel.—Dr. J. W. Hough has been transferred from the Oklahoma Health Department to the Bureau of Adult Health, California Department of Public Health.

LOS ANGELES, CAL.

Babbitt Bearings Mfg.—Following a request by management, an engineering study was done in a plant engaged in the manufacture of babbitt bearings. These bearings contained an appreciable amount of lead, and the management was interested in determining the atmospheric concentration of lead dust and fumes in the workroom. The result of the study showed potentially dangerous concentration of lead dust and fumes at certain operations, and recommendations for control were submitted to the management.

LOS ANGELES COUNTY, CALIF.

Personnel.—Mr. Carroll Pernell has resigned from the Maryland Division of Industrial Health to accept a similar position with the Los Angeles County Division of Industrial Hygiene. Mr. Pernell will have his headquarters in the new laboratory used cooperatively by the State, county and city industrial hygienists.

FLORIDA

Personnel.—Dr. E. G. Riley has been appointed acting director, Division of Industrial Hygiene, Florida State Board of Health.

GEORGIA

Laboratory.—New laboratory facilities for the Division of Industrial Hygiene are under construction. This will include three analytical rooms, balance room, storage rooms, offices, etc.

Personnel.—Mrs. R. H. Fetz, biochemist, reported for duty with the division October 15th. Positions are open for engineers, chemists, and other scientifically trained personnel. These positions carry starting salaries of \$2,880 to \$4,800 a year. Mr. William E. McCormick has resigned his position as engineer with this Division to accept a position with B. F. Goodrich Co., Akron, Ohio.

Britains Visit Georgia.—A British delegation from the United Kingdom's Scientific Mission met with division staff members to learn of methods of mining and processing kaolin in Georgia. This group was made up of Professors W. R. Jones and W. W. Varvill of the Imperial College at London, and Mr. T. K. Rees, British Board of Trade. In addition to studying American production methods of kaolin and clays, these men were interested in industrial hygiene as applied to the control of dust and the investigation of dusty operations.

DETROIT, MICHIGAN

X-ray Exposure.—Several members of the Detroit bureau of industrial hygiene attended a staff conference of resident physicians at Herman Kiefer Hospital. The subject under discussion was exposure to X-rays and radioactive materials in hospitals and industrial plants. The meeting was climaxed by a display and explanation of the use of the bureau's Geiger-Mueller counter and Victoreen Minometer for locating and evaluating the source and degree of X-ray exposure.

Chemists Trained.—Since January 1, 1946, the offer of the Detroit Bureau of Industrial Hygiene to train plant personnel in laboratory procedures for the determination of lead in urine has been accepted by five industrial plants which have sent chemists and technicians for training periods ranging from 1 to 2 weeks. It is felt that one advantage to be gained by this endeavor is a general uniformity regarding this determination which will aid in solving any individual problems which might arise.

MICHIGAN

Personnel.—The addition of a ventilating engineer and a draftsman to this division has greatly strengthened the work of the staff. Management, labor, and consulting engineers who are responsible for industrial installations are most appreciative of the services of these two men. In addition to technical drawings showing detailed ventilation installations, demonstration units were prepared as an educational feature for plant engineers in order to demonstrate the value and the prin-

ciples of good exhaust ventilation. Industry welcomes more detailed engineering assistance and is, therefore, showing a greater willingness to cooperate in getting control measures installed in the most effective and economical manner.

OREGON

In-plant Medical Program.—Considerable time has been spent with the personnel managers of two of Oregon's largest industries, a knitting mill and a food processing plant. At present, they have a common medical service bureau. This Division is encouraging and assisting them in the development of an extensive in-plant medical program. This would include employment of a physician as medical consultant to supervise the activities of their nurses and to do pre-employment physical examinations. The prospect for consummating these plans is very encouraging.

TENNESSEE

Pottery Study.—A pottery specializing in the manufacture of hand-painted tableware and employing approximately 1,000 people was studied for potential health hazards. An exposure to lead was found at a large dipping machine where a ceramic finish containing 15 percent lead was applied. It was recommended that the enclosure in which the ceramic finish was applied be equipped with exhaust ventilation and that the wooden boards on which such ware was transported be thoroughly cleaned with wet cloths after each use. The rotary kilns were equipped with exhaust ventilation which appeared adequate to prevent the escape of volatilized lead compound into the breathing zone of the workers.

A silicosis hazard was found in the batch making room of the slip house. Adding three percent moisture to a 75-25 silicafeldspar mixture as recommended by the Industrial Hygiene Foundation gave promise of adequately safeguarding the worker against the inhalation of dust therefrom. The addition of only 1.25 percent moisture resulted in a 60 percent decrease in the dust exposure of the workers.

"ABSENTEEISM AND DENTAL DISEASES"

(Editorial from the *Journal of the American Dental Association*, September 1, 1946)

Absenteeism, which became an acute problem during the war when man-hours were needed for production, has many causes. In its chronic state, absenteeism is related in large degree to ill health. This has led to the widespread development of industrial medical programs and, in a much smaller degree, to industrial dental programs. In the past few years, under initiative provided by the Committee on Economics and the Industrial Dental Committee of the Council on Dental Health of the American Dental Association and the American Association of Industrial Dentists, the subject has been explored and some advances have been made. These advances could be made more rapidly if there were more comprehensive studies on the relation between dental diseases and industrial absenteeism. In this issue, Puffer and Sebelius report on absenteeism in Tennessee industrial plants caused by diseases of the teeth and gums. Their findings are of interest and point to the need for considering dental problems in industry more seriously.

Puffer and Sebelius found that in 1 year, in a group of 5,988 employees in industry, there were 283 absences as a result of diseases of the teeth and gums. The average length of these absences was 4.4 days, making a total loss of more than 1,200 employee-days for the entire group. Twelve percent of the 283 absences were 8 days or longer in duration, with an average severity rate of 18.9 days. Absenteeism of this order has a high cost both to the individual and to industry when compared to the cost of effective dental prevention and treatment. The authors quote Heacock as noting that "the rate for dental disability in one industry was almost on a parity with that for tuberculosis."

As a result of their study, the authors recommend (1) that more fact-finding surveys be made to demonstrate graphically the need for dental service in many plants; (2) that a better understanding of the role and purpose of industrial dental service is needed; (3) that the findings and treatment of the dental service in industry should be closely integrated with the other services affecting the general health of the individual.

Improved Camera Advantageous for Industrial X-Raying

Two new types of reflecting camera are being demonstrated in Bethesda through the courtesy of the Tuberculosis Control Division, United States Public Health Service. The speed of these cameras is six and seven times as great, respectively, as that of the Zeiss f:1.5. On the camera constructed for 70 mm. film, the actual aperture ratio is f:0.72; on the one constructed for 35 mm. film, f:0.68. The image definition and the resolving power of these cameras far exceed those rendered by the usual type of lens objectives.

It appears probable that the introduction of these new high quality cameras into the field of industrial X-raying would prove very advantageous, in view of the extended life of the X-ray tube and the superior optical quality obtained by the reflecting type of instrument.

An X-ray cinematograph with an aperture ratio of f:0.5 has also been developed. With this camera it is possible to record arteriography of the brain at a speed of 64 frames per second, by employing a negative with a speed of 27 degrees and by not exceeding a peak value of 90 kilovolts on the X-ray tube. Used in conjunction with the new high voltage X-ray tubes, this cinematographic camera opens the field for obtaining motion pictures of moving solids, such as the cylinders in an automobile engine.

"Health Education in Industry—the Nurse's Part"

Ruth E. Grout, associate professor, public health and education, University of Minnesota, has written an article, titled "Health Education in Industry," for *Nursing in Industry*, October, 1946, a publication for Minnesota nurses issued by the department of health.

Professor Grout says in her introduction, "Health education is an essential part of every industrial health program. Health education supplements and makes effective health services and health regulations, just as safety education is needed in conjunction with the

Industrial Chemists Trained in U. S. P. H. S. Laboratory

Requests from State divisions to give chemists specialized training in the Industrial Hygiene Division Laboratory, United States Public Health Service, are the rule rather than the exception. During the past 12 months, 10 men from 8 States and 2 other countries have received personal instruction and practical experience in laboratory techniques peculiar to the analyses of industrial materials. Instruction in operating specialized equipment, such as the polarizing microscope, is usually included in the training. Care is taken to give the men the type of problems to solve which they are likely to encounter in their own States or countries. Laboratory demonstrations for chemical procedures for analyses of metal fumes, siliceous dusts, solvents such as those found in paints and lacquers, and other special contaminants are a part of the training.

The unusual facilities of the Washington laboratory which are unavailable in many universities and most State laboratories, make it a favored training school for chemists specializing in industrial hygiene. Visitors spend from a day to six weeks in the laboratories and offices of the Division. Those who received instruction during the past year are: Mr. Rudolph Lewis, Alabama; Mr. Mario Storlazzi, Washington; Dr. Herman Chinn, Florida; Mr. J. A. Gonzalez, Puerto Rico; Dr. Jorge S. Bandeira de Melo, Brazil; Mr. Robert Avery, Kansas; Mr. P. W. Jacoe, Colorado; Mr. D. B. Brinton, Utah; Dr. J. F. Shrontz and Mr. Patrick Owens, students from Johns Hopkins University.

provision of safeguards and the enforcement of safety regulations. Helping people to do things for themselves through education has more lasting effects than doing things for them through services alone, or forcing them to do things against their will through regulations. The educational approach helps the worker to understand the importance of good health and creates in him a willingness to improve his own health practices.

New Personnel Added to Staff

Changes on the staff of the Industrial Hygiene Division, United States Public Health Service, have been unusually numerous during the past several months, primarily because of shifting positions that follow the close of a war.

When district consultants were appointed, Senior Surgeon (R) Walter E. Doyle was assigned to districts 4 and 9. Surgeon H. T. Castberg was transferred from the California Department of Public Health where he was chief of the bureau of adult health to head the Office of Field Investigations at headquarters in Washington.

Harry E. Seifert, Senior Sanitary Engineer (R), who had been in charge of the engineering activities of the division, was appointed district consultant for the seven State and local units in district 2. S. A. Scientist Clyde M. Berry was made Chief of the Engineering Section.

Dohrman H. Byers, S. A. Scientist, who has been in the United States Public Health Service since 1941 and served on New Jersey, Massachusetts, and Montana industrial hygiene staffs, has recently been transferred to the Engineering Section in Washington. Also assigned to the Engineering Section is W. Stewart Kuttler, S. A. Engineer (R), in training at present with the Connecticut Department of Health, Bureau of Industrial Hygiene. Mr. Kuttler has been on loan to UNRRA for the past 2 years.

New members of the medical staff are Surgeon (R) Harry Heimann, S. A. Surgeon A. Link Koven, S. A. Surgeon (R) Lee D. Janis and Ass't. Surgeon Ralph T. Behling. Dr. Heimann has been in charge of the Syracuse, N. Y., branch office of the New York Department of Labor, Division of Industrial Hygiene and Safety Standards, for the past 3 years. Dr. Koven has been located in Jefferson City, Mo., where he was chief of the industrial hygiene service for Missouri. Dr. Janis has been administering the medical program for migratory workers in the Labor Branch of the Production and Market-

ing Administration, United States Department of Agriculture. Dr. Behling, who is new in the United States Public Health Service, has been assigned to the Office of Dermatology.

Grace A. Donovan, Jr. Assistant Nurse Officer (R), was transferred from the surplus properties program in New York to the Nursing Section. When field studies are in progress, Miss Donovan will participate as the nurse member of the team.

Robert M. Hyman, formerly with the Army Medical Library, has taken over the responsibilities of the reference room of the Division.

Detroit Staff Confers on Interferometry

Several owners and would-be owners of portable gas interferometers met on October 2, 1946, at the bureau of industrial hygiene of the Detroit department of health to discuss interferometry and compare instruments on known gas mixtures in the laboratory's pressure gasometer.

Attending the meeting were William R. Bradley and Robert F. Stamm of the American Cyanamid Corp.; Warren A. Cook and Lloyd E. Gordon of the Zurich Insurance Co.; Edward E. Dart, G. H. Collins and R. A. James of the Chrysler Corp.; Frank A. Patty of the General Motors Corp.; and J. B. Gisclard and W. G. Fredrick of the Detroit bureau of industrial hygiene.

Dr. Stamm gave an excellent mathematical description of the principles of interferometry and a method for calibrating the instrument for air-vapor mixtures of any organic liquid, the density and index of refraction of which is known, without need for the tedious preparation of synthetic air samples. The details of this method, which is based on the Lorentz-Lorenz equation, will be published soon.

Inasmuch as portable interferometers have for many years been available only from the Zeiss Co. in Jena, now in the Russian zone of occupation, it was decided to make an organized effort to induce an American company to manufacture the instrument.

Pennsylvania Studies Dry Cleaning Industry

Health hazards of the dry cleaning industry are being investigated in an engineering study conducted in the Pittsburgh district by the Pennsylvania bureau of industrial hygiene. A preliminary survey has shown that approximately 180 dry cleaning plants are in operation in the 9-county area of the district. Of this number 100 plants use petroleum distillate as a solvent for cleaning purposes. The remaining 80 use the so-called synthetic unit process in which carbon tetrachloride, trichlorethylene or perchlorethylene is the solvent. The synthetic unit is said to be engineered for the use of this type of solvent. When the work is completed a summary of the findings will appear in the INDUSTRIAL HYGIENE NEWSLETTER.

What to do with the Bodies?

Strange odors and swarming flies were humdrum complaints in the health department of Houston, Tex. When a call for help came from a grease rendering plant, asking "What'll we do with the bodies?" the industrial hygienist who answered the S. O. S. was not prepared to see a yard full of dead cattle minus their hides.

According to the story, a trainload of cattle that had been dipped, which is customary procedure before they are sent into another state, started dying in large numbers. Death was caused, it was said, by "arsenic" used in the dip. By the time the cattle had reached Houston, 158 head had died, and the rendering plant did not have facilities to care for such a large number.

Mr. Harvey W. Mobley, the industrial hygienist, suggested that the animals should be "embalmed" with 35 percent formaldehyde and sprayed with formaldehyde solution which would stop odors and flies.

CHRISTMAS GREETINGS