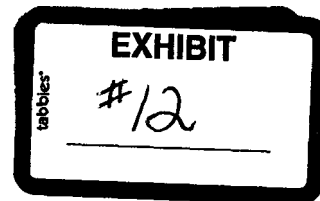
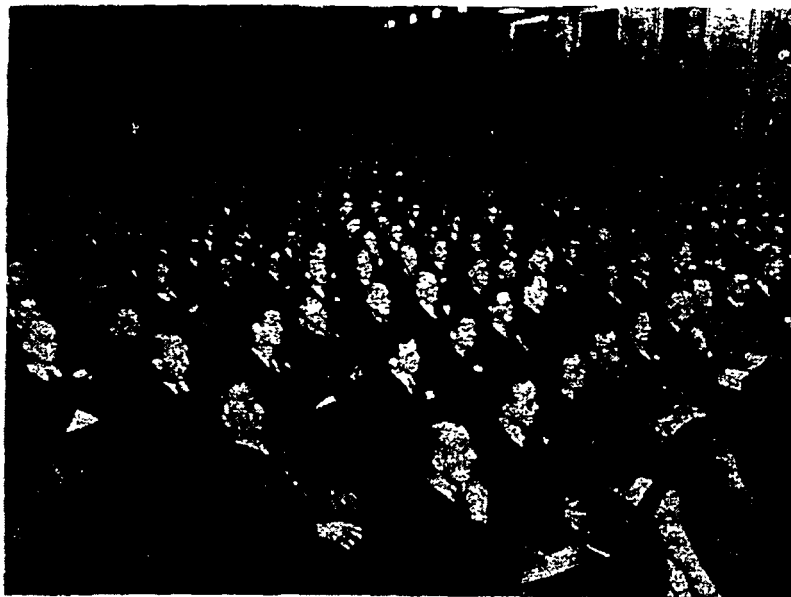


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More than 450 persons attended the 10th annual meeting of the Industrial Hygiene Foundation at Mellon Institute. Maj. Gen. Lewis B. Hershey, selective service director, opened the session with a discussion of the veteran and his relation to industry.

GOOD HEALTH FOR INDUSTRY

Industrial Hygiene Foundation Holds Tenth Annual Meeting

WILLIAM R. BRADLEY, Industrial Hygienist, American Cyanamid Co., New York, N. Y.

A decade of progress and accomplishment in maintaining the health of men and women in industry marked the Industrial Hygiene Foundation's tenth annual meeting. A challenging thought prevailed throughout the conference that as the wartime industrial production turned the corner through reconversion into new production avenues there occurs no reconverting of industry's health program, but an expanding opportunity to attack the many new problems now arising which have an important bearing upon the health and well-being of those gainfully employed.

Executives, physicians, engineers, chemists, hygienists, lawyers, and plant managers of the member companies of the Industrial Hygiene Foundation gathered at Mellon Institute in Pittsburgh Nov. 14 and 15 for the foundation's tenth annual meeting. Among the problems discussed were those arising when the disabled veteran is placed back at work, those resulting from medical studies and from new clinical and toxicological findings, problems in applying control of industrial health hazards, in coordinating various management groups toward a full health program, and problems of a legal and compensation nature.

John F. McMahon, managing director of the Industrial Hygiene Foundation, opened the conference with a report of the

expanding scope of the organization's activities. These included more than 56 industrial plant surveys for the maintenance of healthful working conditions, according to Mr. McMahon. "Damage to the health of workers on the home front, and especially to men in supervisory roles in industry," he said, "is one of the untold stories of the war. Cases of high blood pressure, heart disorders, and strokes have mounted particularly." Continuing, he stated:

An important development of the war has been the expanding concept of the all-important industrial health field. Once a narrow specialty in industry—that was the first aid and pill stage—industrial health has become synonymous with manpower maintenance and the efficient well-being of people at work. And this

includes mental as well as physical health. The trouble maker and the grouchy may be cases for the Medical Department. Industrial health in its manifold aspects, fundamental for human relations which in turn is the basis for good industrial or public relations. How can you have good industrial relations, for instance, without good physical working conditions? Or, in fact, too often taken for granted, has been too much attention to things and insufficient attention to people who make things, with their hands and their ideas.

Mr. McMahon accepted the Navy certificate of achievement which was awarded the foundation in recognition of work done to preserve the health of those in war production.

Major General Lewis B. Hershey, Director, Selective Service System, delivered the keynote address of the meeting, speaking on the subject "Industry Needs the Veteran". General Hershey declared:

Industry need not regard its relationship with the returning veteran only as duty, but as an opportunity; an opportunity to use the veteran's fitness, training and eagerness to participate in American production.

Veterans are young, the great majority of them in their teens and early twenties. They are well above the average in physical fitness, because selection requires fitness, and the veterans' life in the armed forces has increased their physical

industry's care of the veteran but to cooperate closely with industry.

"If criticism of the Veterans Administration is that it isn't active enough, part of it is due to the fact that they are confronted by situations which should have been planned three or four years ago," General Hawley said.

Medical Techniques

A preliminary report on a foundation field study for the purpose of analyzing policies and procedures of industrial medical departments, how they are administered, and what results are obtained, was given by C. O. Sappington, M.D., industrial health consultant. The full report is to cover several hundred different plants, involving an industrial population of over one million persons and includes both large and small plants in 30 different states with diversified manufacturing. The full report will constitute a fair statistical sample of what is going on in industrial medical departments over the nation.

One phase of this investigation deals with the effects of reconversion in its relation to employee health. Summarizing these effects, Dr. Sappington outlined:

1. The temporary reduction of working forces may be reflected in a temporary reduction of professional medical personnel. However, many industrial plants will enlarge and rebuild their departments during this adjustment period.

2. Reliable business figures indicate that only 25% of business plants need entire reconversion.

3. There seems to be a decided reduction in the number of health complaints, probably because of relief from pressure of war production and the general anxiety generated by war. The results show a reduced incidence of nervous indigestion, insomnia, cumulative fatigue, and nervous exhaustion, as well as the finding of progressive lowering of blood pressure readings in employees of 45 years of age and over.

4. On the other hand, in some quarters there has been an increase in the incidence of occupational disease in plants which have had no such experience during the years of the war emergency. This may be due to the laying off of professional personnel and termination of employment of others.

5. Thus far experience with placement of returning veterans has been favorable, for the most part.

6. In most cases industrial health programs will be maintained in the postwar years.

7. The increased interest in industrial health services by organized labor groups will oblige management to give increasing attention to healthful working environment. There is no question that medical services in industry will play a greater part in industry' management concepts than ever before.

Diagnosis of Silicosis

L. U. Gardner, M.D., director, the Saranac Laboratory; A. G. Cranch, M.D., Industrial Toxicology Department, Carbide and Carbon Chemicals Corp.; L. E. Hamlin, M.D., medical director, American Brake Shoe Co.; and O. A. Sander, M.D.,



The Navy's certificate of achievement, a new award for production achievement or services given, was presented to the Industrial Hygiene Foundation at the opening of the meeting. Capt. Ernest W. Brown, Director of Industrial Hygiene Research, Bureau of Medicine and Surgery, Navy Department, Washington, hands the certificate to Managing Director John F. McMahon.

member, Foundation's Medical Committee collaborated in discussing "Accurate Diagnosis of Silicosis—Possible Sources of Error". In opening this discussion, Dr. Gardner stressed:

The diagnosis of silicosis rests on three bases, a history of adequate exposure to free silica dust, the demonstration of a characteristic nodular pattern in an x-ray film of the chest, and a physical examination which reveals very few abnormal signs in most uncomplicated cases. One's objective may make him forget that not one, but all three of these factors are essential to the diagnosis. From the lawyer or the physician representing a claimant for compensation we hear that the plaintiff must have silicosis because all of his industrial life has been spent in an industry whose atmosphere contains so many million particles of free silica dust. Yet a glance of the claimant's x-ray films may show nothing to support the contention. From the roentgenologist or the internist of an urban medical center comes the diagnosis of silicosis because the film reveals a generalized nodular pattern and the subject reports that he has worked at a dusty job. Neither roentgenologist nor internist is in a position to obtain the details of the occupational history that will indicate whether the dust contained significant quantities of free silica.

Alluding to the pitfalls in the diagnosis of silicosis, Dr. Gardner continued:

Unless there is proof that the subject has been exposed to free silica dust for periods measured in years we have no right to assume that a nodular x-ray pattern is indicative of silicosis. Such patterns may be produced by other causes; some of them the result of inhaled materials other than free silica, some to infections or systemic diseases which should be disclosed by a thorough physical examination.

Among these conditions is the so-called arc welders' siderosis. All substances of high atomic weight are opaque to x-ray and in sufficient local concentration they cast shadows on a film. Examples of such substances are the compounds of barium and the rare earth minerals. On the other hand, organic iron from the blood

may at times cast nodular shadows which simulate silicosis. Perhaps even a more striking example of the effect of the blood is seen in the films of men who have been trapped underground in mine explosion. In them the x-ray films demonstrate the sudden appearance of the fine nodular pattern but this disappears again after a month or so.

Another disease is now being recognized which superficially resembles nodular silicosis. This is pulmonary sarcoidosis, apparently a tubercle-like infection of unknown cause. This disease occurs here and there throughout the population at large but has frequently been attributed to pulmonary irritants of industrial environments. I recall one case from a rayon mill, one from an asbestos plant, and another in a graphite mine.

Recently a considerable number have been found in industries using beryllium and its compounds. It has not occurred every plant using these materials. It has not been possible to reproduce sarcoidosis with beryllium compounds in animals. Much must be done before it can be concluded that sarcoidosis is an industrial disease.

Dr. Gardner also mentioned the condition commonly nicknamed "Wheatens" which he described as multiple tiny calcifications occurring in the lung tissue.

Here the x-ray reveals nodules, often scattered throughout both lungs, but the nodules are of unusual density and the distribution is not uniform. It is assumed that they represent healing of some form of infection whose nature is still unknown. It could not be tuberculosis for these people have never been sick. The cases are not common along the Ohio River and Missouri and Kansas.

The knowledge that such lung conditions exist should make us more cautious in diagnosing silicosis, particularly in cases from industries where environmental conditions are unfamiliar or not clearly defined. More progress would be made if roentgenologists would merely report shadow pattern as nodulation with the qualification that this could be interpreted as silicotic in origin if supported by a history of adequate exposure to silica.



Michael Supa, blind, overcame his own handicap to become the supervisor of physically handicapped personnel of the International Business Machines Corp. With Mrs. Supa he is talking to Maj. Gen. Paul R. Hawley, acting surgeon general of the Veterans' Administration, one of the principal speakers

Dr. Cranch described cases which had arisen in his experience, in which the diagnosis of silicosis was made on the basis of x-ray findings, but without regard to the working conditions and in the absence of significant exposure to silica dust. The type of case occurred in a group of men exposed to dust from milling rare earth oxides and chlorides used in core materials for illuminating carbons. One of these men had had influenza and chronic bronchitis. A compensation board, according to Dr. Cranch, awarded total disability from silicosis although his symptoms were not typical. Another man had a similar x-ray picture following an attack of influenza, according to Dr. Cranch, but the compensation board decided that the man had silicosis, although refused to grant compensation because there was no evidence of disability.

Other cases have come up as the result of physical examinations by Draft Boards. One man in his early 20's had only seven weeks of plant exposure, where he had occasion to load one or two bags of mica into the mill daily. He was considered unacceptable by the draft board on account of advanced silicosis. Subsequent examination showed decrease and disappearance of shadows. After months the x-ray picture showed no evidence of nodulation or linear markings. During the two years of study the boy grew well and had no clinical symptoms. The case was finally diagnosed as Boeck's sarcoid," Dr. Cranch reported. Another case," stated Dr. Cranch, "was diagnosed as silicosis, based upon an x-ray picture later proved to be a case of mitral stenosis, a heart condition, where the shadows were due to inadequate blood circulation."

Dr. Hamlin described the work of miners and burners in the foundry where available, free silica dust in the environment was very low. He said that for several years they had been concerned with chest x-ray findings among some of the men because of the pattern of nodules observed in the roentgenogram, yet

the clinical aspects and history of occupational exposure were inconsistent with the present conception of silicosis. In closing the discussion of possible sources of error in the accurate diagnosis of silicosis, Dr. Sander explained:

The term pneumoconiosis simply means dust added to the lungs. Contrary to a fairly common interpretation, it does not necessarily indicate fibrosis in the lungs. Similarly, the term siderosis describes lungs in which iron oxide dust has been deposited and is without any implication so far as fibrosis is concerned. This meaning is contrary to Jenkins' original use of the word in describing cases of actual silicosis with concurrent deposition of iron oxide. Only two known substances, silica and asbestos, qualify as fibrosis-producing agents. Others may be shown to produce secondary fibrotic action, but none are known today.

The Engineering Control

Newer methods for the accurate measurement of an industrial silicosis hazard were presented in a joint paper by F. R. Holden and E. C. Hyatt, members of the Industrial Hygiene Foundation staff. In discussing the nature of dusts which may enter the lungs of those individuals employed in dusty places, Dr. Holden said:

We believe that the particle size composition of dust has not received attention commensurate with its importance. During the early classic studies on silicosis the composition of dust was determined by the analysis of samples of settled dust (so-called rafter samples). This practice seemed logical as material which had settled on ledges and rafters had reached those positions after floating through the air. Later it was proven that it is impossible to judge the chemical and mineralogical composition of the dust that actually gets into the lungs of exposed workers by analyzing either the parent material or rafter samples.

Dust particles 5 microns or less in diameter, much too small to be seen with the unaided eye, were designated by Dr.

Holden as those which could be breathed into the lungs. He explained that where exposures to dusts containing free silica are to be measured an accurate appraisal involves analysis of only the respirable portion of the total atmospheric dustiness. Recognizing that the analysis for free silica in a dust sample is always reported on a per cent by weight basis, he said, "The presence of one 50-micron particle would have as much effect on the analysis as would 1,000 5-micron particles. It was therefore logical to modify our techniques to include separation of the air-borne dust samples into two size fractions at the 5 micron level."

Dr. Holden explained the new dust sampler designed by the foundation to accomplish satisfactory particle size dust separation during exposure studies in industrial work places. Under their procedure, air from the breathing zone of men and women at work can be sampled. Their studies thus far show a remarkable variation between the free silica content of respirable dust and that of total air-borne dust which in turn varies with the type of dust involved.

W. C. L. Hemeon, Industrial Hygiene Foundation staff member, concluded the first days session of the conference with a report of findings from the foundation's plant surveys. In discussing the pottery industry he reported:

It has been held that dusty floors are a major source of atmospheric dust in potteries. We have proved conclusively that the dust kicked up into the air by plant traffic in potteries is insignificant compared with other causes. We fully agree that a clean plant with clean floors is good business and we advocate it, but it is important to understand that it does not contribute materially to silicosis hazards, at least in the pottery industry. Between 10 and 15 years ago certain potteries requested their flint suppliers to add small quantities of water to the material in order to reduce the dust from handling. The practice was inaugurated and mechanical difficulties were overcome within 2 or 3 years and it is now common.

Legal Considerations

Problems of a legal nature entering into the maintenance of industrial health were discussed by Theodore C. Waters, Mullikin, Stockbridge and Waters, and chairman of the foundation's legal committee, by Ivan Sabourin, also a member of the foundation's legal committee and by Albert Pike, Jr., assistant actuary, Life Insurance Association of America. Mr. Waters declared:

It is impossible to predict the trend of federal legislation in the field of industrial health, but there is an increasing demand on the part of labor for the appropriation of federal funds to assist state agencies in the administration of compensation and labor laws for the benefit and protection of employees. Industry must assume additional responsibilities that will be imposed by these laws, and it will continue to be good business to promote programs for the protection of industrial health, so that the cost of compensation

may be decreased and that better industrial relations may be attained.

During the present year all of our state legislatures have been in session except Kentucky, Mississippi, and Virginia, and a flood of legislation was introduced designed to liberalize compensation acts providing compensation for accidental and occupational disease injuries. There are now 16 states and the District of Columbia that provide for general coverage for occupational disease injuries, and 16 states wherein schedule coverage is provided. Several important bills dealing with industrial health have been introduced and are now pending in the Federal Congress.

Michigan has amended its statute to provide that all employers subject to the provision of the compensation act shall furnish to their employees without charge a complete physical examination at regular intervals, and shall furnish to the employee a true copy of the medical report when the presence of silicosis, pneumoconiosis, or other dust disease is found. Minnesota has amended its statute by requiring annual medical examination of employees exposed to the hazards of silicosis and asbestosis, the cost of such examination to be divided equally between employer and employee. Reports of such examinations, together with x-ray films and other original exhibits are required to be filed in the office of the commission, making the reports a public record.

Reporting on "Canada and Compensation", Mr. Sabourin explained:

Provincial workmen's compensation boards came into life as early as 1914. Compensation laws are in force in eight of the nine Canadian Provinces. These laws are administered by a Workmen's Compensation Board in each Province. It can be said that these boards are autonomous in character, having exclusive and final jurisdiction on the facts and on the law, save in two Provinces, Nova Scotia and New Brunswick, where, on law or jurisdiction, appeal may be had to Supreme Court with permission of a judge. This final and autonomous character of Canadian Boards (which bar, therefore, interference from the courts) is a feature of the system. Generally speaking we can say that in Canada all interested parties and, particularly, industry and labor, have been satisfied with the operations of our Workmen's Compensation Boards.

Mr. Pike discussed health insurance and sick benefit plans to compensate for wage loss, now in operation in several eastern states. He reported that such plans in force today have both good and poor features, and as sickness indemnification is a very complex field, there has not yet appeared an entirely satisfactory and workable program. Mr. Pike said:

In my opinion the crux of the problem is to get the sick employee back to work as soon as his health permits. Responsibility for recovery falls in large part upon the doctor, but relative freedom from financial worry helps too. However, while bearing in mind the necessity for seeing to it that a sick worker does not return to work too soon just because he needs money, the payment of over-liberal cash benefits during sickness may actually postpone psychological recovery. A disabled worker may really be well again but won't admit it, perhaps not

even to himself, particularly if his material needs are well taken care of by sick benefits which will stop as soon as he goes back to work.

In summary Mr. Pike said:

Health insurance is a complex field. The problem involved of providing adequate hospital and medical care is to a large extent entirely separate from the problem of compensating for wage loss during sickness. However, the problem of medical and hospital care can never get very far away from the problem of securing the services of the doctors and the hospitals. Compensation for wage loss, on the other hand, involves very little of the service of the doctor but a lot of employer-employee relationship. What we need to recognize is that in cash sick benefit programs the employed group is the natural, and hence proper, unit of administration, and that wages and sick benefits must be closely integrated in each company according to the actual conditions existing there, rather than according to over-all average conditions existing throughout some broad area such as a whole state.

Management Section

Reports of management groups on their activities contributing to the solution of health problems affecting industry's workers were given by Alex W. Dann, executive vice president, Dravo Corp.; Major John M. Stockton, Sn.C., director, industrial health education, Headquarters, Air Technical Service Command; Andrew W. Phelps, vice president in charge of purchasing, Westinghouse Electric Corp.; and C. F. Burris, safety manager, International Business Machines Corp.

Emphasizing that better working conditions promote better work Mr. Dann stated:

Managements of enterprises, with our own among them, increasingly support expenditures and arrangements which have the purpose of promoting better health and further freedom from bodily injury and good work surroundings for those on the payroll and, indirectly, for the families of those employed. Consideration for other fellow, a humanitarian impulse and consideration for the stockholders or self interest provide mixed but sufficient motives and assure continued progress in the attention to health and safety, which has shown a really startling advance in the last 30 years and very gratifying to those who are interested in improvement of our free enterprise system.



In the operations of their companies Mr. Dann said they took advantage of opportunities which arose to provide better job surroundings. These included expansion of cafeteria service resulting in retention of employees who otherwise might have gone elsewhere, installing full hospital facilities in areas where such were found inadequate, ventilation control in tunneling operations and heating and ventilating for shipbuilding all of which increased production.

Putting sick absenteeism data to work paid dividends for Major Stockton's group of civilian employees who were a part of the service organization of the Army Air Forces at Wright Field. He reported:

Sickness and injury absenteeism problems were prominent from the start so a complete absenteeism record system was initiated to define the causes. Information gained from interviews with these sick absentees soon fitted into a pattern: ill-trained or not at all trained supervisor; personnel; inadequate transportator housing, and wages; and personal obligations that could not be arranged or completed outside of working hours, were few of the most common complaints.

Their findings under a comprehensive study of cause and effect resulted in the institution of a presenteeism program which brought a satisfactory solution to the many problems.

All medical absenteeism problems were handled through the industrial medical service with its network of aid station, centralized dispensaries, and emergency hospitals. The personnel department through interviews and investigation screened other absenteeism cases for cause and developed remedies. Plant health and safety hazards were detected and corrected by industrial hygiene and safety personnel. Health education on plant and home health problems were also initiated.

Mr. Phelps presented many contributions which a plant purchasing department is able to make in industrial health maintenance. Mainly these involve gathering pertinent data as to the health significance of products which the company purchases and inaugurating a system of coordination between the medical and industrial hygiene groups in their plan for placing such information directly into the hands of employees who use and handle these products.

Plant foremen are the key men in maintaining healthful work places in the plant, according to Mr. Burris. He said:

Our company regards employees as its greatest business asset. There are no financial restrictions or limitations insofar as the health and welfare of workers are concerned. We believe industrial hygiene is indispensable for successful operations. Inasmuch as plans are being made for better peacetime products, as improved industrial methods for making them, we intend to keep our managers informed of these trends—placing them in a better position to maintain a healthy plant.