ABSTRACTS


In Canada the industrial hygienist has found scope for his activities chiefly in provincial and Federal Government organizations. In the future it is certain that the larger industries will employ full-time hygienists as part of an industrial health programme. With this movement has come the general desire that full-time and part-time physicians in industry shall become conversant with the field of industrial hygiene. Short courses in industrial hygiene have been offered by McGill and Toronto Universities, and the response from the profession indicates that this type of tuition is considered to be of real value. Long courses have been given as adjuncts to courses in public health, but the diploma or degree granted gives no indication of the specialization.

In setting up a course in industrial hygiene in the Faculty of Medicine, University of Toronto, it was thought inadvisable to increase the time spent in industrial work at the expense of other subjects in the D.P.H. course. For this reason a Diploma in Industrial Hygiene (D.I.H.) was created. The diploma course occupies one academic year (eight months' didactic and laboratory work and three months' field work) and is open to any graduate of an approved medical school. Graduates holding an acceptable post-graduate qualification in public health may make application for exemption from the latter half (four months) of the didactic and laboratory work. Fieldwork credit is given for industrial experience gained prior to taking the course. It is hoped that in the future a course may be open to university graduates not holding a medical degree.

The subjects covered in the complete course are bacteriology and immunology, epidemiology and biometrics, physiological and industrial hygiene, nutrition, toxicology, public health chemistry, public health administration and education, sanitation and pertinent material in the fields of medicine and surgery. The Diploma in Industrial Hygiene thus offered by the University of Toronto is, so far as is known, the only specific recognition of postgraduate work in the field of industrial hygiene or industrial health which has ever been or is at present available to those requiring special instruction in this field.

Short courses are invaluable where time cannot be spared for more complete training. The long course described and being offered at the University of Toronto represents a serious attempt to aid the Canadian medical profession in its task of supplying trained men to industry and to Government bodies responsible for advising industry in matters pertaining to health. It is hoped that immediate beneficial results may ensue, although the press of activity in a nation at war will certainly limit the extent of such an educational programme. Full development in the field of industrial health and hygiene will probably not be attained until the period of social expansion which will inevitably follow the peace. Steps towards this goal are fortunately compatible both with a vigorous pursuit of the war-effort and with intelligent planning for a post-war world.

R. S. F. S.


The study of Industrial fatigue, defined broadly as a study of the variations in human health and efficiency associated with variations in industrial conditions, is unquestionably a special branch of social medicine. In the field of social biology there must be investigation of industrial factors such as training of workers, selection methods, and conditions such as hours worked. Results will vary with the persons or group of persons upon which the impact of the purely environmental condition falls. A study of type—sex, age, heredity, education, experience—therefore comes within this field.

Examples of recent research in social medicine include reports by the Industrial Research Board on measurements of height, weight, and muscular strength of unemployed, the relation of type of work to sickness absence, and accident proneness in factories. D. S.


This article describes an 'Industrial Health Education Week' from 15th to 20th February, 1943, in Columbia, financed by the Provincial Board of Health and having as its object 'making essential factual information about venereal disease and its control available to employed workers and their families, on as wide a scale as possible,' to arouse support for measures designed to combat the disease.' An intensive education programme, directed to members within the organizations concerned with launching the main campaign, was a preliminary. Personal support was publicized from the Premier, Mayors, Church dignitaries, Union officials, parent-teacher associations, Boards of Trade and military leaders. General publicity and support came through the press, radio, billboards, theatre trailers, street car cards, and window displays. The focal point of the campaign was the distribution of literature—and this appears to have been on a most ambitious scale.

Results of such a campaign are very difficult to assess. Further details of the technique employed are available on application to the Division of Venereal Disease Control, Provincial Board of Health, 2700, Laurel Street, Vancouver, B.C.

T. O. G.


In the twelve-month period from Sept., 1942, to Sept. 1943, 864 patients were treated at the hospital which furnishes medical care to the 90,000 employees at four shipyards. The annual frequency rate of pneumonia was 9.5 per 1000 workers, and the gross mortality rate of the patients treated was 8.2 per cent. The incidence of pneumonia did not appear to differ from that observed among the general population, and the rate appeared to be independent of the type of work done in the shipyards. Pneumococcal pneumonia accounted for over 70 per cent. of the cases, with types VII, I, and XXV making up a third of all typed pneumonias. The value of a low leucocyte count as a measure of the severity of pneumococcal pneumonia was indicated, for the 21 per cent. of the patients with a leucocyte count of 10,000 or less had a mortality of 27 per cent., whilst the remainder, with higher leucocyte counts, had one of only 6 per cent. H. M. V.
The author's opinions are based on experiences with diabetic cases lasting over a period of twenty years. He believes that diabetics can be employed in industry provided they are given medical supervision and are not subjected to unnecessary strain. He also believes that diabetics are a menace to themselves and others. Some moderate, and all severe diabetics, should avoid heavy types of labour, hazardous jobs, and elevated positions. As regards the question of diabetes being aggravated by trauma, the author points out that if a diabetic, who has his disease under control, is rendered completely inactive by an injury such as a fractured leg, a considerable part of his sugar-burning mechanism is put out of action. Unless the diet is modified there will be more sugar in the urine and blood, and the diabetics may get out of control. In cases of thyroid disease, an injury may increase the severity of the disease and the increase of metabolism by the hyperthyroid state. The author considers that infections bear no causal relationship to diabetes, but they are potent factors in making an existing diabetes worse. The sulphonamide drugs have no deleterious effect on diabetes, and are as potent in the control of infection as in non-diabetics. Inhalation anaesthesia may be followed by glycosuria, but there is no good evidence that it causes diabetes or makes an existing diabetes worse.

H. M. V.


The practice of wearing wet clothing by workmen in hot situations such as furnace rooms has been employed for a long time. In order to investigate the limiting environmental conditions under which this procedure is effective, eleven subjects, aged 18 to 25, were employed. They usually wore long-sleeved, long-legged underwear which, when wetted, took up 1250 g. of water. The subjects either rested, sitting down, or worked by stepping up and down 17-18 times a minute on a box 5½ inches high. Experimental periods lasted 35-90 minutes. At a temperature of 110°F., relative humidity up to 25 per cent., wind velocity 20 ft. per minute, the average rate of weight loss at rest with wet under- wear was 64 g. per hour as compared with 238 g. in the nude, yielding a saving of 174 g. attributable to the wet garment. When at work, the corresponding values were 279 g. with wet underwear and 588 g. in the nude, or an hourly saving of 309 g. The pulse rate of the resting subjects was 11 beats per minute less with wet underwear than with none, and 3 beats per minute less when at work. When the humidity of the air was 35 per cent. or more these advantageous effects were absent. Other somewhat similar tests are described, and it is suggested that further investigations should be made for application to specific situations.

H. M. V.


Toxic anaemia was made a notifiable disease in the early part of 1942 so that the Factory Department could obtain all the information possible on the effects on the haematopoietic system of the variety of chemical substances now being increasingly used in industry. In industrial medical practice it can be regarded as a dyshaematopoietic anaemia arising in an individual who has been exposed to some substance known to exert, or suspected of exerting, an injurious effect on blood formation and which is an occupational disease.

Examples of haematological examinations of workers exposed to known and suspected toxic agents are given. The blood-gas picture of benzol poisoning reported by previous workers was a leucopenia. Lately more attention has been focussed upon the significance of a relative lymphocytosis unaccompanied by leucopenia. Examples of the latter are found in a group of workers mixing and spreading a paint containing 40 per cent. benzol.

The toxic effects of carbon tetrachloride on the liver and kidneys are well known. Nevertheless a fatal case is recorded in which, following exposure to this solvent, blood counts during life gave a picture of anaemia, leucopenia, and relative lymphocytosis. At necropsy, the liver showed only an increased number of cells in the portal tract, some siderosis, and an excess of Kupffer cells, while the kidneys were normal.

Similarly a fatal case of aplastic anaemia and a severe case of hypoplastic anaemia are recorded in two workers exposed to trichlorethylene, which has never been regarded as having any special affinity for the blood-forming organs.

Other solvents discussed are xylol, solvent naphtha, and mixed solvents and thinners, which latter are used in cellulose paint spraying.

Blood changes have also been observed in industrial workers exposed to radioactive luminous compounds. Few significant variations in the red cell count and haemoglobin percentage have been found. In a certain case, a fall to 4300-4900 per cu. mm. has occurred. On removal from exposure, the blood count has usually returned to a more normal figure. The most constant finding has been a reversal of the normal leucocyte ratio. Another interesting phenomenon has been the appearance in stained films of a large white cell resembling a transitory lymphocyte with a horseshoe-shaped nucleus.

R. S. F. S.
It was also shown that there is no correlation between symptoms complained of and the onset of blood changes. This is important because clinical examination alone is probably useless for the specific detection of early cases.

D. S.


An attempt was made to estimate the amount of tri-ortho-cresyl phosphate that can be absorbed through unbroken skin, and how rapidly the absorption occurs. Tri-ortho-cresyl phosphate containing radio-active phosphorus was used and the absorption measured in two human subjects and one dog. The human subjects applied 0.22 g. and 0.11 g. of the tri-ortho-cresyl phosphate with radio-activity of 395,000 counts mm. -1 mg. -1 The first had thirteen micrograms of tri-ortho-cresyl phosphate per 100 c.c. of blood at the end of one hour, and he excreted seven micrograms in the urine in the first hour, and continued at 35 micrograms an hour for the next 24 hours. He excreted 797 micrograms or 0.36 per cent. of the amount applied. The second had four micrograms per 100 c.c. of blood at the end of one hour, and excreted 0.43 micrograms or 0.13 per cent. of the amount applied.

2.094 g. of tri-ortho-cresyl phosphate was applied to the abdomen of a bitch and the blood level quickly established itself at 8 micrograms/100 c.c. and maintained this for 24 hours. The urinary excretion began equally promptly, being 44 micrograms in the first hour rising after seven hours to a maximum of 1312 micrograms. The tri-ortho-cresyl phosphate was distributed in the various tissues of the dog 24 hours after its application to the abdominal surface. The retention values were in the following order: visceral organs, muscle, brain, bone.

The authors consider that the magnitude of absorption of tri-ortho-cresyl phosphate through human skin is such that a real hazard exists in industrial operations permitting a considerable or repeated exposure to this compound. A safe industrial hygiene control requires that measures be taken to prevent such skin contact, and that all workmen exposed to the compound be instructed as to the hazard, and the necessity for preventing skin contamination.

K. M. A. P.


A number of investigators have noted that some lead compounds are less toxic than others, but most of the observations have been made on lower animals. The present investigation relates to the toxicity of one compound, lead chromate. The paints used as spray materials contained less than 1 per cent. of the lead in the form of lead oxide. Risks of poisoning the subjects under observation were reduced by improvements in the exhaust systems of the spray booths and other engineering changes, and by personal protective devices. Lead in the air samples was determined by different methods, and comparisons of the results are recorded. At the same time samples of the blood and urine of the subjects were collected. Previous investigations with lead oxide showed that there was a positive correlation between the lead in air, the urinary lead and the basophilic aggregation of the red cells. The degree of exposure to lead could be reduced. In the present investigation the basophilic aggregation and lead in urine correlated, as before, but they did not correlate with the atmospheric lead concentrations. Observations were made on one group of 145 men and another of 40 men, the tests being made monthly for 16 months. The actual lead inhaled was 12 to 18 mg. per day, but subsequently—over a 12-month period—the lead exposure was less. The basophilic aggregation and urinary lead were not significantly greater than in normal persons unexposed to lead except for the small amounts usually ingested in food.

It seems probable that other insoluble lead compounds may resemble the non-absorptive properties of lead chromate.

H. M. V.


The Government Printing Office is the largest single industry of its kind in the United States of America, and it was deemed advisable to check the atmospheric concentration of lead in those rooms where lead is being processed or handled in quantity, in order to ascertain whether the existing control measures are adequate. More than 100 samples of air were collected on 14 days by means of a standard all-glass impinger and the electrostatic precipitator. The various rooms were provided with mechanical ventilation, there being about 35 air changes per hour in the remelt room, and 15 changes per hour in the monotype department and other rooms. It is considered that the maximum allowable lead concentration is 0.15 mg. per cubic metre, and observations showed that the average weighted exposure for all workers in the departments studied was below this maximum. However, operations in the monotype casting, stereotype and remelt departments presented potential exposures high enough to justify periodic physical examination of the workers in order to detect early symptoms of abnormal lead absorption. The highest individual lead values observed were, 0.59 mg. in the monotype room, 0.44 mg. in the stereotype room, 0.44 mg. in the routing operation and 0.30 in the shaving operation.

H. M. V.


To ensure efficient medical after-care for men invalided out of the armed forces the Commissariat of Public Health has allocated some of the leading hospitals and specialists specifically for this work. Units in plastic surgery, psychiatry, ophthalmology and other specialisms have been selected at central research institutes. While in hospital the men receive not only medical treatment but are also trained for an occupation. For example 3796 men have learned new trades in hospitals in the Novosibirsk region during the war. In one hospital alone 99 book-keepers and accountants, 31 cinema technicians, 18 drivers, 16 bee-keepers, 31 shoe-makers and 9 cooks were trained. At vocational residential training homes, where disabled men are fully maintained by the State, men have been trained as shoe-makers, tailors, watch-makers and photographers.

The rehabilitation of ex-servicemen, their placement in suitable work, and the maintenance and improvement of their employment is the duty of the Commissariat and those who administer the social insurance funds but also of public organizations and of the local Soviets. The great majority of men who have been invalided out of the Services are already back at work in factories, institutions, and collective farms, at their former work or in new occupations, according to their degree of disability.

In order to improve the co-ordination of plans for the industrial rehabilitation of disabled ex-servicemen, the Council of People’s Commissars has issued a new regulation with regard to the work of the industrial medical committees. The duties of the committees consist of specifying workers from hospitals and polyclinics, doctors from factories, and representatives of the Trade Unions. The duties of the committees are three-fold: to ensure that medical care and attention are readily available, if needed; to study the suitability of different occupations for these men; and to advise with regard to their placement in industry. In order to ensure that, having been placed, they receive any assistance that may be necessary.

D. S.