BRITISH AND FOREIGN OFFICIAL PUBLICATIONS

THE PRESIDENT'S NATIONAL LABOR CONFERENCE

(U.S. Department of Labor, Division of Labor Standards (1946). Bulletin No. 77.)

This publication contains the minutes of a conference held in 1945, the Summary Report to the President, and proposed representation procedure and agenda for the conference. The latter consisted of examination of the major causes of industrial strife and the methods of reducing them, including the principle of collective bargaining in matters of wages, hours, and working conditions, the acceptance by the workers of the right of the management to direct the enterprise, and the use of existing machinery, such as National and State Labor Relations Act, and negotiation between employer and Union. President Truman's opening address, on the aims of the conference and the urgent need for minimizing industrial disputes, is also included. Committee reports adopted by the conference deal in detail with collective agreements and the strengthening of the Conciliation Service of the U.S. Department of Labor and the reorganization of its Division of Arbitration. There are statements by representatives of managements and workers on collective bargaining, management's right to manage, and representation and jurisdictional subjects. There are reports of the Public Hearings Committee, in the fourteen hearings of which the interests of independent unions, small businesses and consumers, etc., were examined. Finally comes the conference directory of delegates, advisers and committees, and other relevant information. *J. N. Agate.*

OCCUPATIONAL DISEASES CONTROL

(Baltimore City Health Department, Industrial Health Series, No. 1.)

This is a symposium of the schedule of occupational diseases, the rules and regulations for their control and prevention, and the penalties for failure to comply with these regulations, which apply under the Occupational Disease Law of the State of Maryland, U.S.A. Sections on the reporting of occupational diseases and the industrial hygiene services available in Baltimore are also included. Under the Schedule of Occupational Diseases employees in certain listed processes, or subjected to a risk of certain specific diseases, are deemed to be employed in extra-hazardous work, and compensation is then payable for any disability or death caused thereby. The listed diseases are: anthrax; lead, zinc, mercury, phosphorous and arsenic poisoning and their sequelae; wood alcohol poisoning; poisoning by benzol or nitro-, hydro-, hydroxy- or amido- derivatives of benzene; by carbon bisulphide or any sulphide, by nitrous fumes, by nickel carbonyl, or the sequelae of any of these; poisoning by dope, formaldehyde and its preparations, hydrocyanic acid, chlorine, ammonia, cadmium or manganese; chrome ulceration or dermatitis or the sequelae; epitheliomatous ulceration from any of the usual industrial agents; glands; compressed air illness or its sequelae; certain miners' diseases; cataract in glassworkers; poisoning from radium, radioactive substances or x rays; poisoning from methyl chloride or other halogenated hydrocarbons, carbon monoxide, or sulphuric, hydrochloric, or hydrofluoric acids; certain lesions due to petroleum products and their fumes; disability from blisters, abrasions, bursitis or synovitis; dermatitis venenata; silicosis; asbestosis. Recent additions to the list are: respiratory, gastro-intestinal or eye disorders due to contact with antigenic substances; occupational tularemia, brucellosis, psittacosis, leptospirosis, rabies, or Rocky Mountain

spotted fever, and selenium, tellurium, and fluorine poisoning. In each case the process or occupation in which the hazard can be expected to occur is laid down. *J. N. Agate.*

THE TOXICITY OF MOLYBDENUM

By L. T. Fairhall, R. C. Dunn, N. E. Sharpless, and E. A. Pritchard

(U.S. Public Health Service, Public Health Bulletin, No. 293. 1945.)

Molybdenum steels are used for munitions, high-pressure boiler plates, and tool-making, and are extremely tough; molybdenum can be used to make alloys with tungsten and chromium; in chemistry it is used as a catalyst, and in the making of pigment colours of great brilliance; it is used in vitreous enamelling, in high temperature furnaces, and in radio valves. The metal is hexavalent and occurs naturally as lead and iron molybdates, but mainly as the sulphide, molybdenite, which physically resembles graphite. There is no hazard to be expected in the mining of the ores, but in their smelting there is exposure to calcium molybdate dust, and in the rolling of hot billets exposure to molybdic oxide fumes.

Estimation of molybdenum is best done by a colorimetric method based on the red-orange colour given with thiocyanites in acid solution by reduced molybdenum, with an extraction medium to intensify the colour. Details of the method are given in this report. Molybdenum is widely distributed, although only in fractions of a milligramme per kilo, in both plant and animal tissues, including human liver and spleen and carcinoma tissue of the breast. Some plants contain enough to be injurious to herbivores. Previous animal experiments on the toxicology are reviewed; these had been confined to ingestion and intravenous injection.

In the experiments reported here, dosage was given by inhalation to simulate toxic hazards in industry, by ingestion to follow the course of absorption and excretion, and by intraperitoneal injection to determine if the substances are irritant or inert. Molybdenum trioxide, calcium molybdate, and ammonium molybdate proved fatal to rats and guinea pigs when given in doses of 1,200 to 6,000 mg. per kilo, if given orally into the back of the animal's throat by a syringe; with increasing dosage there was increasing storage in the liver and other tissues. Doses of one-tenth of the above produced fewer fatalities; 6,000 mg. of molybdenum as molybdenite did not cause death, and this was also the case in exposure to the dust of the molybdenite. Dust of this compound and of calcium molybdate and molybdenum trioxide were introduced into a chamber by means of an elutriator. The last two reagents in concentrations of 5 mg. per cubic foot were very irritating, caused loss of appetite, loss of hair, diarrhoea, inco-ordination, and death. Animals were exposed to molybdenum trioxide fumes produced by arcing electrodes of the metal, but no fatalities occurred, which was unexpected. Experiments on the solubility of molybdenum trioxide were then done to elucidate the problem; in the fume state it is most soluble.

Intraperitoneal injection of soluble molybdenum compounds, particularly molybdic oxide and ammonium molybdate, produced a high mortality in guinea-pigs when given in doses of 400 to 800 mg. per kilo. Respiratory paralysis and convulsions were seen. Radiographs suggested that molybdenite and calcium molybdate remained *in situ* but molybdenum trioxide was dissolved and redistributed. Storage of molybdenum compounds is transient and takes place mostly in the kidneys and bones, and to some extent in the spleen. Absorption

and excretion are both rapid after dosage by ingestion; the blood level rises after about 100 minutes. Examination of blood and urine will indicate the extent of the absorption of molybdenum.

Parallel experiments on the relative toxicity of chromates, tungstates and molybdates of sodium by intraperitoneal injection show that the molybdate is the least, and the tungstates the most, toxic. Histological studies throughout these experiments show minimal changes. The liver shows fatty infiltration and small focal necroses. The findings suggest that the compounds of molybdenum in general are of low toxicity. In industry the worker should be protected from inhaling large quantities of the more soluble compounds.

J. N. Agate.

A MEDICAL STUDY OF THE EFFECT OF TNT ON WORKERS IN A BOMB AND SHELL LOADING PLANT

R. F. Seivers, A. H. Lawton, F. Skoog, P. A. Neal and W. F. von Oettingen and

REPORT OF FATAL CASE OF APLASTIC ANAEMIA

R. L. Stump, A. R. Monaco and R. F. Sievers
Publ. Hlth. Bull., Wash., No. 291, 1945. (Pp. 98; refs. 70).

This is a painstaking study of 250 men and 103 women in contact with TNT, and of 55 men and 50 women controls, but little new is added to existing knowledge. For those who are unfamiliar with the methods employed in filling bombs and shells, the description and photographs of the process form the most valuable part of the report. No cases of severe TNT poisoning were seen, but 21 workers were considered to be suffering from early or mild TNT intoxication. No single test is diagnostic of TNT poisoning in its early stages. Workers exposed to TNT, but not showing signs of intoxication, showed a decrease in the haemoglobin, haematocrit reading, and red blood count, slightly increased in the icterus index, and urinary excretion of coproporphyrin. Snyder and von Oettingen's (*U.S. Publ. Hlth. Bull., No. 285, 1943*; and *J. Amer. med. Ass., 1943, 123, 202*) test for 2,6 di-nitro-4-aminotoluene (a metabolic product of TNT) in the urine, besides being quantitative, proved more sensitive than Webster's test as an index of absorption. The diet of all workers was good, but symptoms were more common in non-milk drinkers; the consumption of poly-vitamin capsules offered no protection. Men were more frequently affected than women, and the increased incidence of complaints in men was thought to be independent of the fact that the average duration of contact for men (8 months) was longer than that for women (3 months) or that men were employed on more dusty jobs. Loss of weight, if accompanied by other signs of TNT intoxication, was considered to be due to TNT. Compared with the control group, exposed workers complained more frequently of fatigue, malaise or drowsiness, anorexia and vomiting, abdominal pain, headache, dizziness, and polyuria. Cyanosis was observed among 68% of the exposed men and 36% of the exposed women, and pallor in 45% of the men and 41% of the women, but the pallor is unrelated to blood changes. Forty per cent. of the exposed groups complained of dermatitis at some time (usually in the first month). There were no significant cardiac changes.

A fatal case of aplastic anaemia following TNT hepatitis in a 43-year-old white male, after slight exposure to TNT, is reported. After he had complained of nausea, anorexia, constipation, sore throat, lumbar pains, burning of the eyes, and burning on micturition, it was discovered that he was jaundiced and that his liver was enlarged. The icterus index was 100 and Webster's test negative. The red cell count dropped from 4,010,000 to 2,730,000 per c.cm. of blood, and Hb from 15.0 to 7.5 gm. in 75 days. The white cell count fell to 2,400 per c.cm., and platelets disappeared. Folic acid was given too late to be effective. Histological section of the liver showed almost complete disappearance of the liver cells, but the bone marrow appeared of normal cellularity, with a few monoblasts and occasional erythroblasts. Granulocytes were rare and primitive.

T. A. Lloyd Davies.

AN EXPERIMENTAL STUDY OF RATIONING

By R. A. McCance and E. M. Widdowson (1946)
(Spec. Rep. Ser. Med. Res. Coun. Lond. No. 284.
pp. 61. 1s.)

This is an account of an experiment carried out by eight people in which they rationed themselves to a diet which they considered might become necessary for the whole population if unrestricted submarine warfare was successful. Government departments are apt to attempt to suppress scientific information, and this activity can, in wartime, always masquerade under security. Now that this excuse can no longer be upheld, the Medical Research Council has adhered to its principles that scientific work must be published. Readers may judge for themselves how valid was the security excuse for suppressing this simple experiment which might have been repeated by anybody at any time, and give thought to the unhappy results which may occur when ministers and their bureaux have complete control of everything. The diet envisaged included 4 ozs. fat, 5 ozs. sugar including jam, 35 ozs. milk, 4 ozs. cheese, 16 ozs. meat, 6 ozs. bacon. The bread was made from flour of 92 per cent. extraction, while the consumption of potatoes and vegetables was unrestricted. During strenuous exercise, which included cycling 90 miles a day, or walking 38 miles a day in the Lake District, they sometimes ate as much as 3 lb. of potatoes, the calorie value of the diet being between 3,000 and 4,000 a day. Throughout the experiment all food was weighed and analysed in detail, and during three separate weeks faeces and urine were collected and analysed also in the greatest detail.

The experimenters kept to the diet for three months and at the end were very fit and could carry out satisfactorily, and without undue fatigue, most severe exercise tests, requiring a very high expenditure of energy. The results certainly show that young adults could have maintained a high standard of health under dietetic conditions much more austere than those actually experienced in the war. The authors could see no justification for the enormous amounts of meat in the rations of the soldier, and considered that troops, in this country, at any rate, would have been just as well served with bread made from lightly milled flour, more potatoes if necessary, and less meat. From these experiments it is not possible to say how children and old people would have fared under these dietary conditions, but it is probable that those who could eat the food allotted would have maintained good health.

K. M. A. Perry.