

Alcohol and Brain Metabolism

IN a recent paper (*Amer. J. Psychiat.*, 97, 385; 1940), Drs. Walter W. Goldfarb, Karl M. Bowman and Joseph Wortis of the Psychiatric Division, Bellevue Hospital, New York, report the effects of ethyl alcohol on the metabolism of the brain in ten patients admitted to hospital presenting the clinical picture of acute alcoholic intoxication. The estimation of cerebral metabolism was based on the difference between the concentrations of various substances in the arterial and venous blood of the brain. The arterial blood was taken from either the brachial or femoral arteries, and the venous blood from the internal jugular vein. During the condition of acute intoxication the cerebral uptake of oxygen was diminished in six cases and within normal limits in four, while after recovery the uptake of oxygen was within normal limits in all cases.

Whale Marking

AFTER a considerable amount of experimenting the Discovery expedition evolved a satisfactory device for marking whales, in the form of a stainless steel tube 10 in. long that can be fired from a 12-bore gun. In the four seasons 1934-38 a total of 5,219 whales of six species was considered to be satisfactorily marked. G. W. Raynor (*Discovery Reports*, 19; 1940) describes the methods of marking, the data provided by the marks so far returned and discusses their significance. Of the three main species to be marked, the Blue, the Fin and the Humpback, there have been 187 returns out of 1,513 marked. This is not a large number, and it will obviously be increased in the course of time; but in view of the present conditions it was considered advisable to publish the results so far obtained. The Blue stock is being depleted faster than the Fin stock; but the Humpbacks are suffering most heavily. Blue whales round South Georgia are not a stationary group but move west towards the end of the whaling season. Similarly, Fin whales, although they may remain longer, move off to the south. The Humpbacks probably have an annual migration from the Antarctic to the north-west coast of Australia and to Madagascar. They also tend to remain more together and so do not exhibit the dispersal shown by the other two stocks. The dispersal is not quite so marked in the Fins, so that there appear to be "provinces" within which there is considerable movement but between which there is very little exchange of stocks.

The Heating of Buildings

AT a meeting of the Newcomen Society, held at the Institution of Civil Engineers on February 12, Mr. A. F. Dufton read a paper entitled "Early Application of Engineering to the Warming of Buildings" in which he reviewed the improvements of fire-places and stoves, and the introduction of heating by steam and hot water. The old open fire-place has long been recognized as a most wasteful and inefficient means of heating a room, and it was to economize fuel that Franklin in 1745 introduced the Pennsylvanian fire-place by which he reckoned

to save five-sixths of the fuel. Many years before Franklin, a French physician, Nicholas Gauger, had published a work, "La Mécanique du Feu", and had described the ventilating fire-place. In his work he referred to a form of such fire-place which had been installed in the library of the Louvre. Steam heating was used by Watt as early as 1784, but his tin-plate radiation was not satisfactory. Sir John Leslie's experiments in radiant heat had not then been made. Among the pioneers of heating Rumford was one of the most successful, and in his writings pointed out the necessity for double-windows to rooms. Strutt of Derby was another pioneer of this time. Heating by hot water was used in France in 1777 by M. Bonnemain for his chicken incubators, and to Perkins we owe the use of the high-pressure hot-water system. Another improver of stoves was Dr. Neil Arnott, who in 1854 was awarded the Rumford Medal of the Royal Society.

Lubrication Technique

EXPERIMENTS for determining both the qualities and methods of application of lubricants are sometimes vitiated by being carried out too quickly. An oil behaves quite differently, for example, when introduced in a properly run-in bearing and when used in one that has been recently assembled. A very similar case occurs with oil containing colloidal graphite. This oil when used in a short-duration test may give results which are misleading. It is claimed by the manufacturers of a product of this nature, Messrs. E. G. Acheson, Ltd., Thames House, Millbank, London, S.W.1, that the particles of graphite in colloidal suspension form a slippery surface on the working faces of the parts in contact, but that, due to the stable nature of the lubricant, an appreciable time may be required for the particles to become adsorbed on the surfaces. Research has shown that the rate of adsorption on a metallic base depends, to a great extent, on the viscosity and chemical nature of the carrier, this rate being low for oil of average viscosity and high for water, which has a relatively low viscosity.

Confirmation of this finding may be found in a paper by Messrs. Fogg and Hunwicks, entitled "The Static Friction of Lubricated Surfaces", published in the *Journal of the Institution of Petroleum Technologists* of January. To facilitate comparative tests, Messrs. Acheson have now developed a technique to which they have given the name 'pre-lubrication'. This consists simply of forming a graphite coating or film on the working surfaces prior to assembly, by spraying or brushing colloidal graphite on to them, the graphite being applied, in this case, in a volatile carrier such as carbon tetrachloride, white spirit or acetone. The rapid evaporation of the carrier leaves a lubricating graphited surface, thicker, naturally, than one deposited during normal lubrication, but functioning in much the same way. The formation of the initial film does not eliminate the necessity for using colloidal graphite in the lubricating oil during the normal running-in period, and afterwards if desired, since the graphited surface requires renewal from time to time.