

FUEL ECONOMY.¹

EVERY nation which joined in the war suddenly found its productive man-power reduced while the productive capacity of the country had to be increased. Questions of economy, which used to be considered from a money point of view, now appeared in their true aspect as being quantity problems. It was not easy to discard the old methods, especially at a time when attention had to be riveted on the many new subjects which arose out of the war, and the University of Illinois is to be congratulated on having drawn up a set of most useful instructions as to how fuel economy, from the quantitative point of view, can be effected without even mentioning the saving in costs. The committee which drew up the instructions had the assistance of an advisory committee, which included railway engineers and representatives of locomotive engineers and firemen, and it would almost seem as if their influence had had the salutary effect of toning down scientific truths to a level where they could be understood by firemen.

The nearest approach to what might be called science

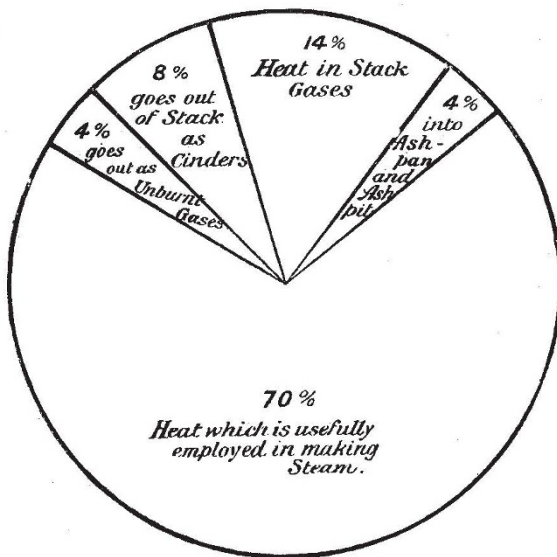


FIG. 1.

is a set of diagrams illustrative of heat or energy losses. The first, which, slightly modified, is shown in Fig. 1, deals only with the steam-raising losses in properly worked locomotives burning good American coal. The second diagram is a coloured locomotive overlaid with energy streams, which, in addition to the information contained in the first diagram, shows what becomes of the energy contained in the steam. Five per cent. is lost by radiation, 6 per cent. is used for auxiliary purposes, 52 per cent. escapes with the exhaust steam, and only 6 per cent. of energy is converted into useful work at the drawbar.

The Bulletin then proceeds to deal with these various losses and to explain how engineers and firemen can reduce them, the firing instructions being beautifully illustrated, but the committee does not stop there; it shows how coal is wasted before it reaches the locomotive both during transport and when stored, for, so it appears, American coal-dumps seem to take fire fairly frequently. Railway officials, from signalmen to repair works managers, are also told that they

cause a lot of waste, for it is estimated that 20 per cent. of fuel is burnt by a locomotive while raising steam and while waiting for a job, or on the road when the signals are against it.

In view of our present shortage of coal, it would be very desirable that this Bulletin should be widely circulated in this country, not only amongst railwaymen, who are, of course, chiefly interested, but also amongst the general public, who with its help would gain some insight into the complexity of railway management. This will be all the more desirable if the State purchase of railways is to be carried out.

The paper contains some interesting statistics about American coal, from which we learn that 22 per cent. (150,000,000 tons) is consumed in locomotives for hauling purposes alone, which is a little more than one ton per head of population. Unfortunately, only 6 per cent. of these 150,000,000 tons are doing useful work. Doubtless, from a money-making point of view, this enormous loss of 94 per cent. cannot be materially reduced, but from a national point of view encouragement should be given to quantitative saving in order to prolong the time during which our coal resources may remain at our disposal.

THE EFFICIENCY OF INVENTIONS.

A PAPER entitled "Efficient Invention," with special reference to patents affected by the war, was read before the Institution of Automobile Engineers by Mr. Douglas Leechman on February 5. The author recommends the Government to secure the confidence of the inventor by understanding, appreciating, and encouraging him. It is further suggested that (1) the present surplus of 100,000*l.* a year between the receipts and expenditure of the Patent Office should be surrendered to the inventor by way of reductions in the renewal fees payable on patents, and (2) the period of protection lost owing to the war should be added to the term of the patents affected. A proposal is also made that all patents which have expired since August 4, 1914, should be restored for a period equal to the duration of the war. Mr. Leechman states that the efficiency of inventions from the point of view of the patentee depends upon (1) the nature of the invention, (2) the capabilities of the inventor and his opportunities for working or placing the invention, (3) the way in which the invention is received, and (4) the law relating to inventions. He comments upon each of these matters, and expresses the opinion that the average inventor is lacking in the commercial instinct. A recommendation is made that some business experience should be included in the instruction given to inventors. Sound advice is also offered with regard to the steps which should be taken when inventions are being placed on the market and in connection with dealings with licensees. It may be doubted whether Mr. Leechman's proposal to restore indiscriminately all patents which expired during the war would either achieve the end desired or even prove tolerably satisfactory; its adoption would certainly prejudicially affect many persons who have legitimately embarked upon the manufacture of the articles the expired patents of which it is proposed to revive. A more equitable method of dealing with the patentees who have suffered exceptional hardship owing to the decision of the Government to concentrate the energies of the country on the production of munitions would be to ascertain the probable extent of the loss in each particular case, and to provide compensation accordingly out of a fund voted by Parliament for this purpose.

¹ "The Economic Use of Coal in Railway Locomotives." University of Illinois Bulletin, vol. xvii., No. 2, 1918.