in the 2 G desirable and valuable? And now, if any miner not a member of the 2 G has followed me thus far in this incoherent harangue, I hope that if he be thoroughly in earnest and in sympathy with the cause, we may have the pleasure of receiving his application for membership. Any regular miner, or any special whose course is mainly devoted to mining (to be decided by the society), is eligible for membership. The officers of the 2 G are: Frank Tenney, president; H. M. Mansfield, vice-president; C. H. Tompkins, secretary; G. H. Gustin, treasurer. L. E. N.

Fuel.

NOT one of the least important subjects to a mechanical engineer is that of fuel. On no subject is attention more needed. Coal is king among fuels. Wood is used to some extent, especially for domestic purposes; but other important uses of wood limit its employment as fuel. Peat is used quite extensively in some few places; not largely, however, as a producer of steam.

Nothing is more common than reckless waste of coal; and although there is no immediate danger of exhausting the supply, the time will inevitably come when empty coal fields will stare our descendants in the face. It is the duty of every engineer to promote, by word, example, and invention, the economical use of this invaluable article. The needless waste of coal should be checked, the full utilization of its stored-up power sought, and the use of other sources of energy promoted, thus freeing us from absolute dependence upon coal as fuel.

Not very long ago it was the custom at the mines to burn all waste coal, and hundreds of tons were consumed in a single day. One quarter of England's yearly output is consumed for domestic purposes. A modern stove is commendable as an efficient waster of coal. Here is room for budding genius to expand. Recent experiments in gas heating are a step in the right direction.

More than one quarter of Great Britain's coal product is used for manufacturing and locomotive purposes. Theoretically, we should obtain five horse-power per pound of coal; in practice, two fifths of a horse-power is considered good. This suggests the question whether there is not some better way to utilize coal as a source of power. Was it necessary that nature should store up ten pounds of coal in order that one might be utilized?

In metallurgical work there is an opportunity for enormous saving. Red-hot foundry chimneys are not uncommon things. Our own forges show on a small scale what a small per cent of the heating power of a fire may be utilized. Theoretically, one ton of coal should heat up to the welding point thirty-six tons of iron, while in an ordinary reheating furnace it heats only about one and two thirds tons. Other examples will occur to all.

One way in which the drain on the coal fields may be lessened is by the use of peat, which occurs very largely in many parts of the world. The valley of the Charles is a large peat meadow. Peat is commonly used in Ireland and Scotland. Cut into blocks of convenient size, it is dried in the air and is ready for burning. Much machinery has been invented for improving the quality of peat; the peat may be ground up to make it homogeneous, and dried either artificially or in the atmosphere. These processes, of course, increase the cost of the product.

There is no question of the value of peat as steam fuel. Its calorific power is seventy-eight per cent of that of coal. It makes a clean, bright fire, with little ash or smoke. Several years ago the Vermont Central fired the locomotives on the northern part of their road with peat. Whether they do so now I have not been able to ascertain. The cost of manufacturing peat is the only objection to its use. But why does peat need to be manufactured? For certain purposes, as for locomotive or marine use, where space must be economized, a compact, dense fuel is necessary; but for stationary land boilers, cannot the peat be used in its natural