

alcohol, and it may be termed a large Davy lamp, being somewhat similar to the Davy in construction.

The air is admitted to the lamp through a tube which is protected by wire gauze discs placed in the alcohol vessel in a vertical position.

Over the burner is placed a short chimney, by which the length of flame is fixed before testing for the fire-damp. The lamp is taken into pure air and the flame adjusted till it is level with the top of the chimney, it is then taken into the atmosphere to be tested, and if gas be present the flame rises higher than the top of the chimney, according to the percentage of gas present; even when $\frac{1}{4}$ per cent. of gas is present the flame rises over one inch above the chimney.

This lamp is probably the best gas tester yet invented, but for colliery work is not very suitable. Its disadvantages are:

1.—When the alcohol vessel becomes slightly heated, either by radiation of heat from the flame or by the high temperature of the mine, the alcohol takes the form of a vapour; this latter is highly explosive when mixed with air.

2.—It is a very sensitive lamp, and is easily extinguished if not used very carefully.

In the invention of Dr. Clowes hydrogen gas is used to provide a flame.

For the purpose of testing for fire-damp an ordinary safety lamp may be used, providing it has a hole through the oil vessel. Through this hole a steel tube is inserted, the latter being connected to a steel cylinder on the outside of the lamp, the steel tube coming on a level with the oil flame. Inside the steel cylinder compressed hydrogen is kept, and is regulated by a screw valve. Inside the lamp a scale is fixed by which the height of the flame is ascertained. When about to test for gas the hydrogen is turned on and becomes ignited by the oil flame; the latter is then turned out, and the height of the hydrogen flame regulated by regulating the flow of hydrogen by the valve. The height of the 'cap' produced is then read off on the scale, and the percentage of fire-damp then ascertained.

The oil wick can then be turned up and ignited by the hydrogen flame, the latter then being extinguished by cutting off the supply of hydrogen. The cylinder containing the latter can be taken off and carried in the pocket, and the lamp used for ordinary purposes.

LORD ROSEBERRY AND THRIFT.

Any subject that Lord Roseberry tackles he makes interesting. One might think that the subject of thrift was almost threadbare. A perusal of the following, part of a speech delivered lately at the annual meeting of the Edinburgh Savings Bank, affords proof that the last word has not been said:

"From the financial point of view, my definition of thrift shall be this—getting full value for your money and looking ahead. Of course the historical definition which has given so much comfort and encouragement to thousands is that of Mr. Micawber:—"Annual income £20; annual expenditure £19 19s. 6d.—result, happiness; annual income, £20; annual expenditure, £20 os. 6d.—result, misery." (Laughter.) I suppose that is practically true. It means in reality, that a man who is befuddled with the world, to however small a degree, occupies a very different position relatively to

the rest of the world from the man who is behindhand with it to however small an extent. Of course, from the financial point of view, we know very well that thrift is the foundation of all opulence, all prosperity, and even of those colossal fortunes we hear of in America but never realize in this country. There is, however, a particular distinction between thrift and avarice. Mr. Micawber expressly, as it seems to me, excludes avarice, because the accumulation of sixpence would certainly not satisfy any dream of avarice. Avarice is not generous, and, after all, it is thrifty people who are generous. All the great philanthropists and all the great financial benefactors of their species of whom we have record have been thrifty men. But I pass from the financial value of thrift to that which results in the formation of character. Many people when they read speeches about thrift say, 'How can the poor be thrifty seeing that they have nothing to be thrifty upon?' But the exact reverse of the case is the truth. Strangely enough, in your report there is a proof of this. From the experience of Edinburgh and Glasgow and Manchester it has been found that periods of stress, and not periods of prosperity, are the most favourable to thrift, as shown by the deposits in the savings banks. The eighteenth century was perhaps the time of Scotland's direst poverty and at any rate as compared with other countries in the world was the period of the greatest thrift. One hundred and twenty years ago there were probably no more than two or three hundred thousand pounds of current coin in the whole of Scotland, and when you compare that with fourteen millions of deposits in the two savings banks of Edinburgh and Glasgow you may arrive at some computation of what the difference of prosperity is between Scotland to-day, and Scotland of that day. In those days we read that the one great object of a Scottish peasant was thrift, not so much for the sake of a livelihood as for the sake of amassing enough money to obtain a decent funeral. These patient, self-denying people amassed enough for what, after all, is the most insignificant event in our lives. Only yesterday I lit upon an English caricature of the date 1780. It represents a Scotsman only half clad, with the shoes over one shoulder, and an essential part of his dress over the other, barefooted on his way to England. Underneath it is written this:—

Though Sawney's breeks are on his shoulders,

So plainly seen by all beholders;

Half-starved, half-naked, but one shoe,

Yet by and by he'll ride o'er you.

(Laughter.) Yes, our great-grandfathers did great things in those days on a mess of pottage. They helped to mould the Empire; they maintained their poor without legal compulsion. They sought nothing from external help, and they laid, in their nakedness and their barrenness, the foundations of the prosperity which reigns in Scotland at the present moment. (Hear, hear.) Some of the poorest in our country would shrink from the manner of life which was endured by some of the noblest in those days. We should not care to share their privations, but we should like to be convinced that we possess their independence, self-reliance, and self-respect. I regard that as the greatest blessing resulting out of thrift and independence of character. If I wanted to train up a child to be thrifty I should teach him to abhor waste. I do not mean waste of money. That cures itself, because very soon there is no money to waste. (Laughter.) But waste of material, waste of something that is useful though you cannot represent it in money value to the waster. . . . I do think it is wise that those who have the governance of our affairs should remember that great nations and great empires