cork. A valve rod, suspended from the feed box by an arm, has a float *s* by which the valve is brought down on its seat and thus regulates the depth of oil. An apparatus is provided for ringing a bell when oil falls upon the metal plate *t*, and the ringing of the bell indicates that the valve is working all right. The apparatus works as follows: The pipe *K* being connected with the gas or air pipe and the pipe *Y* with the burners, the operator opens the cocks 13 and 8 of the pipe *q*, allowing the oil to flow into the feed box. By opening cocks 9 and 4 of the pipe *i* the oil pours from the feed box to the chamber *a*. The cylinders of the enriching chamber should be charged with oil. When cock 3 is opened the air is allowed to escape through the outlet pipe *n*. Cock 2 on the inlet pipe *m* is next opened, and a minute later on the inlet pipe *l*, cock 5 on the pipe o is then gradually closed. When the water in the water jacket has become cold, cock 2 on pipe *m* is closed. The gas or air then circulates through the cylinders a^1 taking up carbon, the quantity of which varies according to the gravity of the oil and the temperature of the gas. From the enriching chamber, the gas or air charged with carbon passes through the opening 2 into the middle chamber, where it is thoroughly mixed in its passage through the cylinders b^1, and all super carbon is stripped out and absorbed by the packing in the cylinders, returning to the enriching chamber by percolation through the cloth on the bottom. When the gas has passed into the inner chamber through the flattened tubes, the cold blast serves to atomize the carbon and render the union with the air or gas complete. It should be remarked that the gas or air does not come in contact with the oil in the enriching chamber; but only with the packing in the cylinders. By these means, the illuminating power of the gas supplied to the burners can be varied, and gas supplied of a given power.

STATIONARY ENGINEERS, REAL AND IMAGINARY.

BY O. E. GRANBERG, MONTREAL.

At times we find men in positions for which they are not qualified, having worked themselves in by some peculiar combination of circumstances and a large amount of "cheek"; but their position is only a question of time. The men who fit themselves for a position will get there in time. Let me illustrate how this came about in a case. I was recently at a town making inspections and examining engineers. I found one chief engineer holding first-class papers from "such a place." He had to get a certificate from me, as the law now stands; and after examination he offered me $50 for a first-class. I gave that man a third-class, and I gave his second engineer a second-class—because the one man had got the position, but had not fitted himself for it, and the other man had fitted himself for the position, and now he got it.

You cannot keep a man back for any length of time if he is fit to take his place in the front. But it appears to be hard to make men understand this. How often do we hear men who have been engineers for many years grumble at what they call their bad luck, and accusing everybody of trying to keep them down, and finding fault because some one that used to be their fireman at one time was now holding a good position, with a good salary. While they were kept down they were unlucky, and the other fellow was lucky. There is no such thing as luck, in my opinion it is cause and effect. The one man has taken the trouble to qualify himself for a good position, and the other has been too shiftless to do so. The one man gets a good salary because he is worth it, and his employer can afford to pay it and have a profit left on that man's work. The other man has small wages, but his employer pays him more than he is worth, and would be glad to get rid of him at any time.

Another thing I have noticed is that some engineers are never quite ready to do a thing when it should be done. They put it off until some other time, and waste, and often expensive breakdowns, follow before they get to it, when a few minutes or hours at the right time would have saved their employer many dollars. They had broken their tools the last time they used them, and had been too slack to put them in order again, so that they could be used when needed, or they had left them kicking about until they were lost, strayed or stolen. Then they are very prompt at bell time in the evenings. As a rule, you will find them standing with their hand on the valve ready to shut her off at the first stroke; they had got their coat and hat on long before this, and before the engine stops the engineer is 100 rods down the street. He feels he has done his duty; he has put in his ten hours, and he is paid for no more. He comes in the morning, and at about five minutes to starting time he begins to oil his engine, and to do what he should have done the night before; at ten minutes past starting time some one comes to know what is the matter, and is told to get out, that the engine will be started when it is ready, and not before. I knew of one case where the engine was started before it was ready, because the manager came in and ordered the engineer to start up: he was packing his piston-rod, a thing he should have done the night before, and he at once started with the gland left on the rod, and the engine was smashed. Such men, when they find themselves out of work, think they are badly used. Then I find engineers that are afraid to dirty themselves with doing anything about the engine and boiler; they leave that part to the fireman and seconds, if they have one, and to the fireman alone if they have no seconds, and they themselves will stamp about, swearing at everything and everybody, but will take good care not to do anything themselves. Their position is above that; but the fact is often that they know so very little about the engineering that they are afraid to show their ignorance by attempting to do anything more than find fault with everything that anybody else does.

Then, again, you will find the man that goes to the other extreme. He wants to do it all himself. He thinks he is the only man that can do it right. Or, he thinks that if he lets some one else do a part, they, in time, will become as wise as himself and he could not stand that; so he goes on, making life a burden to himself and everybody belonging to him.

Now, the true engineer is generally to be found between the two extremes. Engineering has assumed such proportions as an agent of modern progress and civilization, that it has given birth to a profession whose scope and functions are not very clearly defined. The engineer's duty, in the performance of his daily work, involves the application of the laws of nature in various ways; to understand and explain which require a wide range of scientific knowledge. While there are to be found engineers whose intelligence and acquirements would shed lustre on any calling, there are others