

also a roller should be placed back of each gate stem to facilitate the handling of the gate. The gates should have a protection built over them, to protect the gearing from the storm. In a cold climate, where the gates are apt to be frozen in, salt is essential in freeing them from ice. All headgates and timbers should be of the best quality of oak, and should be well bolted, and not less than two gates to one raceway. The tail race should have no less than two or three feet of dead water when the wheels are not in motion. Where the tail race runs under the station, cement floors should be laid, to prevent moisture in the station; a floor of that material will soon pay for itself. Vertical turbines should be placed so that the steps are covered with water at all times. In adapting turbines to very high heads, or to conform to location, it becomes necessary to set the turbines above tail water, and conduct the water away from the turbines, through a draft tube.

THE SUPPLY OF CURRENT BY METER.

By T. P. WILMSHUST.

THE method of charging for current adopted by the Yorkshire House-to-House Company, as published in *The Electrician* of the 30th ult., raises a question of some importance. A large number of supply companies have adopted the plan of allowing sliding scales of discounts to consumers, and of those who have no such published tables the majority find it expedient to make to their larger customers a substantial reduction of price, based on the quantity of current used.

The system in vogue is to allow a rebate to a consumer after a certain number of units have passed through his meter, irrespective of the number of lights that consumer may have. This, though undoubtedly the simplest method, is by no means an equitable one. Take the following instance. A customer, A, has 100 lamps which he uses an average of one hour per day throughout the year; B has 10 lights, and uses them 10 hours per day throughout the year. The number of units consumed by each is the same, and hence each receives the same rebate. B, however, is a far better customer to the supply company, for he helps to equalize their load curve, and only requires the use of one-tenth of the generating plant that A does.

To obtain a more even distribution of this load curve throughout the 24 hours is the fervent wish of central station officials. It was predicted that the more extended use of motors would bring about this happy result; but, unfortunately, it is found in practice that the hours of motor load overlap the hours of lighting load. One company, I believe, actually proposes to influence the lower parts of the curve by flooding the market with such apparatus as electric griddles, electric curling-tongs, and the like.

The simplest way out of this uneconomical state of affairs is, in my opinion, the application of an equitable system of rebates, which shall operate not simply on the numbers of units consumed per annum, but on the number of units consumed *per lamp* per annum. This will place the consumer with a small installation (but who wishes to use his light freely) on an equal footing with the consumer with a larger installation. Bearing these points in mind, the following table has been worked out for use at the Exeter supply station:—

Cost to a consumer of a 30-watt lamp in use for 365 days for the hours named in first column, at a sliding scale charge of—
7½d. per unit up to 12 units, 6½d. about 12 and not exceeding 16, 5½d. above 16 and not exceeding 20, and 4½d. above 20.

Hours of burning each day.	Units used per annum per 30-watt lamp.	No. of units at				Annual cost under sliding scale.	Average price paid per unit.	Price if at 7½d.
		7½d.	6½d.	5½d.	4½d.			
1	10.95	10.95	...	...	...	£ s. d.	7½d.	£ s. d.
2	21.9	12	4	4	1.9	0 6 10½	6½d.	0 6 10½
3	32.85	12	4	4	12.85	0 12 3	6d.	0 13 9
4	43.8	12	4	4	23.8	1 0 6	5½d.	1 7 6
5	54.75	12	4	4	34.75	1 4 6	5d.	1 14 4
6	65.7	12	4	4	45.7	1 8 7	5.2	2 1 0
7	76.65	12	4	4	56.65	1 12 8	5.2	2 7 9½
8	87.6	12	4	4	67.6	1 16 10	5.05	2 14 9½

—The Electrician.

One of the most interesting features at the recent exhibition in Ottawa was the heating apparatus invented by Mr. Ahearn. The visitors were enabled to witness the baking of bread and the heating of buildings by means of the electric current. The tea and coffee supplied from the lunch rooms were also heated by the same means.

BOGUS BOILER INSPECTORS.

TORONTO, Sept. 21st, 1892.

Editor ELECTRICAL NEWS.

DEAR SIR, In a city not 100 miles from Toronto there is a flourishing manufacturing concern, at the head of which is a man who is very wise in his own estimation. A few weeks ago it was decided to shut down this establishment in order to put in new machinery. The manager decided that this would be a good chance to have the boilers inspected, and, with this end in view tried to make arrangements with a boiler inspector to make an inspection of his boilers. For some reason best known to themselves, the proprietor could not induce the inspector to make the examination, and he at once commenced to look around for someone else. He was not forced to look long; a man came along one day who claimed to have the necessary ability and experience to examine a boiler in the most scientific manner. He was at once engaged for the job, and was to give a written report as to the condition of the boilers.

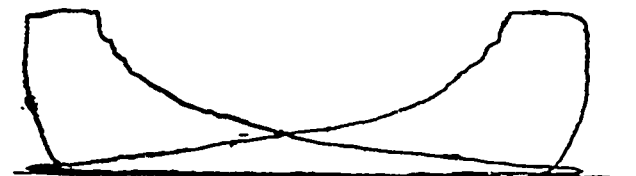
The engineer had everything in readiness for the "Inspector," who turned up on time, and after much talk about what he knew of steam boilers, commenced operations. He went in at the manhole of one boiler, and, in a few moments came out and announced that he had found a hole in the boiler, and that the brickwork along the side with the hole in it must be taken down to enable him to examine the hole externally. The brickwork was taken down, and the hole, which turned out to be a one inch plug, was examined, to the evident disgust of the "Inspector" and owner. The side of the boiler had been tapped to attach a pipe for some purpose. The "Inspector" had seen the hollow spot in the plug which had been screwed in, and pronounced it a hole in the sheet. Of course the brickwork had to be made good again and the owner had rightly enough to foot the bill. This man who was proclaiming himself a boiler inspector turns out to be a cross between a blacksmith and tinker or something of the kind.

I could relate another case where a tramp called on a concern and succeeded in persuading them that their engine was working very uneconomically, and that he was just the man to fix it. In fact he represented himself as an inspector from Messrs. Goldie & McCullough, and said he was going around the country adjusting the valves of their engines. He worked on this engine, which was a Corliss, all Sunday, and "fixed it" as he called it. On Monday he called early and took away twelve good dollars of the firm's money for his services.

The engine did not appear to be right, but the foreman thought she must be in good shape as Messrs. Goldie & McCullough's inspector had fixed her up. However, the superintendent made up his mind to have the engine indicated, and an engineer was sent for. The first card taken off that engine after the "fixing" is shown below, and must be pronounced a "daisy."



CARD TAKEN AFTER ENGINE WAS "FIXED."



CARD TAKEN FROM ENGINE AFTER ADJUSTING VALVES.

This should prove a warning to steam users to look out for tramp engineers. If an engine is out of order, let them employ a reliable man to put it in order, and not squander their money on the first loafer that comes along.

Above all, lookout for a genius purporting to be an inspector from Messrs. Goldie & McCulloch. If Messrs. Goldie & McCulloch had an inspector to examine their engines, he would carry an indicator and use it, and would not lounge around hotels for two or three days at a time, an example of the effects of too much "fire-water."

Yours truly,

DASH POT.