

For the past nine months the Gray-Sussman electric lamps have been used at one of the mines of the Liverpool Colliery, and when first installed were intended only for the coal-hewers, but, owing to their superior light and their many advantages as compared with the oil safety-lamp, it soon became evident that better results would be obtained by the general use of these lamps, therefore, with the exception of the mine officials, every underground employee in this mine now uses the electric safety-lamp. Within a week from the time these lamps were issued to the workmen it was discovered that a weakness existed in the accumulators: this was due to the breaking of the lead conductor between the connecting-bar of the positive plate and the terminal.

A new conductor and terminal were designed with a greater cross-sectional area than the original ones: these have been fitted to all the lamps, and have withstood the most severe test. After nine months' continuous service the whole of the original lamps and accumulators are still in good working-order.

The accumulator of this lamp is of the lead-cell type, 2 volts, the electrolyte being dilute sulphuric acid of 1·2 specific gravity. On an average ninety-five of these accumulators are charged on a special charging-stand fitted with spring-contact clips for conveying the current. The accumulators being placed on a shelf, the terminals come in contact with the spring clips, which automatically connect the cells in series for charging. The charging-current is obtained from a 220-volt circuit through suitable switch-gear and safety devices, the voltage for charging being regulated by adjustable resistance to obtain the required charging-current, the rate of which is $1\frac{1}{2}$ amperes for approximately seven hours after eight hours discharge.

These lamps have sometimes failed to light when the switch was turned on, and upon investigation it has been discovered that the failure was principally due to two causes—viz., broken lamp-bulbs and bad contacts. These bad contacts are caused by the action of the sulphuric acid on the brass terminals, causing them to sulphate, thus breaking the circuit. Although the electric lamps are heavier than the ordinary oil safety-lamp, the many advantages derived more than compensate the user for the extra weight carried about.

CHANGE AND BATH HOUSE.

In accordance with Mines Regulation 143, a change and bath house is now in the course of erection at the Liverpool Colliery.

The building is of wood, with an iron roof and concrete floor, the dimensions of which are as follow: Length, 35 ft.; width, 26 ft.; height to where the clothes will be suspended, 14 ft.; height of lower walls of the cabinets, 8 ft.

Cabinets: There are fourteen cabinets provided, seven on each side of the building, the dimensions of which are 5 ft. long and 4 ft. wide. The inner walls are lined with sheet iron to within 10 in. of the floor of the building, this space being necessary to enable the cabinets to be thoroughly cleansed daily. In each cabinet a shower, wash-basin, and seat will be provided; the water supplied will be heated to the required temperature by steam passing through a copper coil in the tank or receiver used for this purpose.

Change-house: In the change-house twelve seats will be provided, capable of seating from sixty to seventy men. Above the seats the workmen's clothes will be suspended from the ceiling, and at the same time be subjected to the drying effect of heated air supplied by heated pipes passing along the entire length of the building.

ACCIDENTS.

There were several minor accidents during the year, and one that may be classed as serious, on which a special report was written.

GENERAL.

Although the output from each colliery shows an increase when compared with last year's figures, it is regrettable to report that considerable time was lost, especially at the Liverpool Colliery, for the want of steamers, also through the bar being unworkable.

The average number of days worked per week throughout the year was only four and a quarter, whereas the possible working-days, excluding holidays, average five and a quarter, thus showing an average loss of one day's work per week. In addition to the loss of wages to the employees, the output from the Liverpool Colliery alone was reduced by approximately 25,000 tons, and the cost of production increased.

In conclusion, permit me to say that the officers in all branches have performed their duties in a most satisfactory manner, and the Inspecting Engineer has in the course of his duties rendered good service.

I have, &c.,

I. A. JAMES, Manager.