

which the snow bank is forced by the forward movement of the self-propelled loader. The snow is elevated on the belt and dumped into waiting trucks.

The clearing of city streets, to be effective, must be accomplished before traffic has been able to compact the snow too hard for the plows to take hold, and before a drop in temperature turns slush into solid ice. It is for this reason that New York City may hire 100,000 men and spend as much as a million dollars in one day's snow removal of only a few inches.

The question has been asked whether there is justification for the tremendous outlay of money for snow control and snow removal programs. Studies have been made of the increased gasoline tax revenues which have been received in recent years when highways have been kept open during the winter. Comparison of expenditures and tax receipts reveal that snow removal operations actually produce a profit for the highway fund. But receipts from gasoline taxes are a minor item compared to the economic importance of assuring all-year-round transportation by motor vehicles.

Health Value

Moreover, the snow removal program promotes the health and safety of those living in otherwise inaccessible places. On this we cannot set a monetary value. Finally, the highways of the Nation represent an enormous capital investment, as do also the 26 million vehicles which move over them, and to have a very large percentage of both these investments idle during three or four months of the year would entail an economic loss which in comparison with the cost of keeping the transportation system functioning would be enormous.

With the increased use of closed cars, insulated bodies, and automobile heaters,

highway travel in winter has become as comfortable as in the summer months, and scientific attack upon snow problems has been forced to keep in stride with the motorist's demand that roads be not only passable, but that travel be made swift and, as far as possible, free from hazard.

New Trends

Whereas a few years ago almost the total expenditure and effort applied in the winter maintenance program was for the removal of snow as it lay on the highway, the trend has now definitely become one of preventive steps before the snow arrives, and safety measures after it has been cleared away. The study of drainage control has been found of special importance in keeping melted snows off the traveled way, and attention is being given to the roadbed beneath the pavement to prevent sub-grade water from seeping through the pavement joints and freezing on the surface.

Adequate facilities for weather prediction and reporting are looked upon as a prime essential, and study is made in the various localities of a single snow removal region to ascertain local conditions of the direction of prevailing winds, wind velocities, temperature ranges, and figures of winter precipitation. Attention is also given to methods of snow removal which will cause least damage to the pavement, and construction methods which will eliminate as far as possible the destruction of roads by frost heaving and faulting in the spring.

Dangerous conditions developing as a result of sleet storms and the freezing of drainage from melting snow banks are lessened by the erection of guard rails, but since the wooden type rail was found to act as a snow fence which deposited drifts on the roadway,

new guard rail installation is of the wire cable type.

The opinion so often voiced by old-timers that we no longer have the winters we used to experience would be contested by the highway engineer. For winter still piles up what appear to be insurmountable drifts, and sub-zero weather still makes removal a task for only the red-blooded men on the maintenance crews. Last winter, record snowfalls in all parts of the country sounded a warning to the highway profession that equipment must be up-to-date, and that the snowplows available must be of the type and size suitable in the locality where it is stationed or it will be of no more consequence than "two small boys throwing snowballs."

Science News Letter, January 16, 1937

SAFETY ENGINEERING

Foolproof Hood Saves Welder's Eyes

TO PROTECT the eyes of the welder from the blinding light of the electric welding arc—construction industry's most important "knitting needle"—a Lexington, Ky., inventor, H. F. Montague, has invented and just obtained a patent (No. 2,058,169) for a new type of foolproof welder's hood.

The instant the wearer of such a hood touches the piece of metal with the welding rod, a protective screen instantaneously covers the window of the hood to filter out the blinding rays that would otherwise reach the welder's eyes. The moment he lifts the rod—stops welding—the screen snaps away from the window so that without tilting or lifting the hood the welder can inspect the work.

Operation of the screen is made automatic by special electric mechanism in the hood, which is controlled by the current that operates the arc.

Science News Letter, January 16, 1937

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