

quality of the material used in the rings. If the latter are of hard, close-grained cast iron considerably better service is obtained, but the wear becomes exceedingly rapid if the quality of the iron is soft, and this is noticeable to a greater extent than in engines using saturated steam.

It has been found that the best lubrication is obtained by the use of an ordinary type of sight feed lubricator in which the oil is carried into the cylinder and steam chest by a small jet of steam. A number of lubricators of the forced feed or pump type have been used, but have not on the whole given good satisfaction. The rate at which they feed the oil does not correspond to the requirements, as it is in proportion to the number of revolutions of the engine, in place of a uniform rate per minute, whereas the greatest amount of lubrication is required per minute when the engine is working slowly up heavy grades at a small number of revolutions. The sight feed lubricator is quickly and easily adjusted to give an increased amount of oil per minute, but under these conditions pump feed lubricators work exceedingly slowly and require constant adjustment to deliver proper amount of oil. On account also of the loss of pressure in the steam passing through the superheater, there is always a sufficient difference in the pressure between the boiler and the steam chest to ensure a regular amount of oil being fed to the cylinders with the sight feed lubricator, so that it has given more satisfactory results on superheater engines than on those using saturated steam, in which the steam chest pressure is frequently very closely equal to that of the boiler.

The packing for piston rods and valve stems shown in these illustrations is to a certain extent special in form. The type of packing previously used, in which a plastic ring of metal was pressed into a cone shaped collar fitting over the rod, proved at first unsatisfactory when using superheated steam on account of the melting point of the plastic metal used not being sufficiently high. Subsequent experiments have, however, shown that when the latter contains approximately 40% of lead, 50% of copper, and 1% tin, this form of packing gives satisfactory results. In general, no special difficulty has been experienced with forms of packing successful on saturated steam engines, ex-

cept the occasional necessity of using a metal having a higher melting point.

Lake Superior Corporation.

The report of the Lake Superior Corporation for the year ended June 30, states that the result of the year's operations of all the subsidiary companies shows a surplus, subject to depreciation and other charges, of \$1,194,735.22, which has been applied as follows: Losses on assets realized and bad and doubtful debts written off, \$159,031.49; written off in respect of discount on securities sold, \$160,000; reserved for renewals, doubtful debts, etc., \$90,232.54; to be paid to the trustee of the mortgage and deed of trust securing the note issue of the Lake Superior Iron and Steel Co., as a sinking fund for the payment of notes at maturity, in accordance with the provisions of the deed of trust, \$220,752.27; paid by the subsidiary companies to the Lake Superior Corporation as interest and dividends.

