

RAILWAY WONDERS OF THE WORLD

The cylinders, with a diameter of 27 inches by 28 inches stroke, are of vanadium cast steel, and weigh 2,600 pounds less than cast steel cylinders bushed with cast iron of the same stroke, but only 22 inches in diameter, while as compared with cast iron cylinders of the same dimensions and type a saving of 4,000 pounds is obtained.

Several distinct innovations in regard to American locomotive practice have

Screw

Reverse Gear,

been introduced. The steam pipes connecting with the cylinders are placed outside,

and although a radical departure it has been received favourably. The screw reverse gear, which has become adopted almost universally on British and European engines, was provided for the first time. This appropriation of an Old World idea was not regarded favourably at first in many quarters, inasmuch as the American locomotive engineer is wedded to the reverse lever, despite the fact that its handling is becoming increasingly difficult in large engines, and that it represents loss of economy and efficiency. But the driver, the man who has to handle the machine, and who has been brought into touch with the innovation upon this engine, has expressed his preference for the screw reverse, once he has become used to it, very unequivocally. The advocates of the reverse lever have maintained hitherto that it is easier and quicker to handle the lever than the screw-gear. This theory has been shattered as a result of practical experience.

Many other refinements to secure the

builders' ends were incorporated, and have tended to show that, although the United States engineers have made great strides in the development of the locomotive, the skill of the Old World is by no means exhausted in this particular field, and that true advance only can be made by the mutual exchange of ideas.

That the builders of No. 50,000 carried out their experiment upon the right lines

is borne out by the fact that many of the improvements **Improvements Accepted.**

over long-accepted conventional practice in the design and construction of some of the principal details since have been adopted as standard features by themselves, practical experience having established their value. Moreover, these refinements have been applied widely to a large number of other locomotives since, with marked success from all points of view—from the general manager to the mechanical engineer and driver.

So far as American locomotive development is concerned this is the first instance on record where a private firm has built a locomotive upon its own initiative and at its own expense for the purpose of advancing locomotive design. The engine has been tested freely, and has given complete satisfaction to all who have handled and watched its performances. The engine is acknowledged to steam easier, and to impose less physical exertion upon the fireman in the maintenance of the steam pressure, than other Pacific engines of conventional design up to the appearance of No. 50,000.