

THE WORLD'S PROGRESS IN SCIENCE AND INVENTION

POWER ON ALL FOUR WHEELS

**Motor Trucks whose Rear Wheels
Push while the Front Ones Climb**

ABOUT three years ago an American army officer, who was studying the question of moving supplies quickly and economically under adverse conditions, submitted his requirements to a large manufacturer of motor trucks. The latter put his most skilled engineers and transportation experts to work on the problem and the four-wheel-



Courtesy Four-Wheel Drive Auto Co.

Neither hills, ditches, logs, underbrush or muddy roads serve to stay the progress of these powerful vehicles

drive, four-wheel-steer, four-wheel-brake motor truck was the result.

A machine of this type can go anywhere a four-mule team can—through the deepest mud and over steep hills—carrying a two-ton load. One of the reasons for this is that the forward wheels climb while the rear wheels

push. Trucks of this description are now used in great numbers by the European armies. They are also as widely employed in the works of peace all over the world. They have been found extraordinarily efficient under particularly difficult conditions, because they drive, brake and steer on all four wheels. Locking differentials on both front and rear drive shafts put the full power of the motor into any wheel or wheels that can get traction where others cannot. The internal spur gear, driving on each wheel, gives a leverage which means tremendous power.

THE WORLD'S LARGEST ELECTRIC LOCOMOTIVES

TWELVE of 42 huge electric locomotives that are being put in service by the Chicago, Milwaukee & St. Paul Railway are for passenger service and 30 for freight. They are used on the heavy grades in the Rocky Mountains, in the State of Montana, through which this road runs on its way to the Pacific. They are the largest and most powerful engines that ever have been built. Their size and strength and the cheapness with which electric power can be generated from waterfalls in this region make them far more economical for railroad service than steam engines. These electric locomotives are able to haul much heavier trains at greater speeds than any that are now in use elsewhere.

The shipbuilding yards of Nervion, Spain, are being enlarged to permit of the construction of vessels of 1,500 to 5,000 tons for the Spanish merchant marine. The Peruvian Government is considering the construction of a cruiser by the Sociedad Espanola at Ferrol, to displace 2,850 tons, at a cost of \$1,260,000. It is not improbable that orders for other vessels will be placed there by Peru.

One of the huge electric locomotives for the mountain divisions of the Chicago, Milwaukee & St. Paul Railway during its recent exhibition trip near Chicago

Courtesy General Electric Co.

