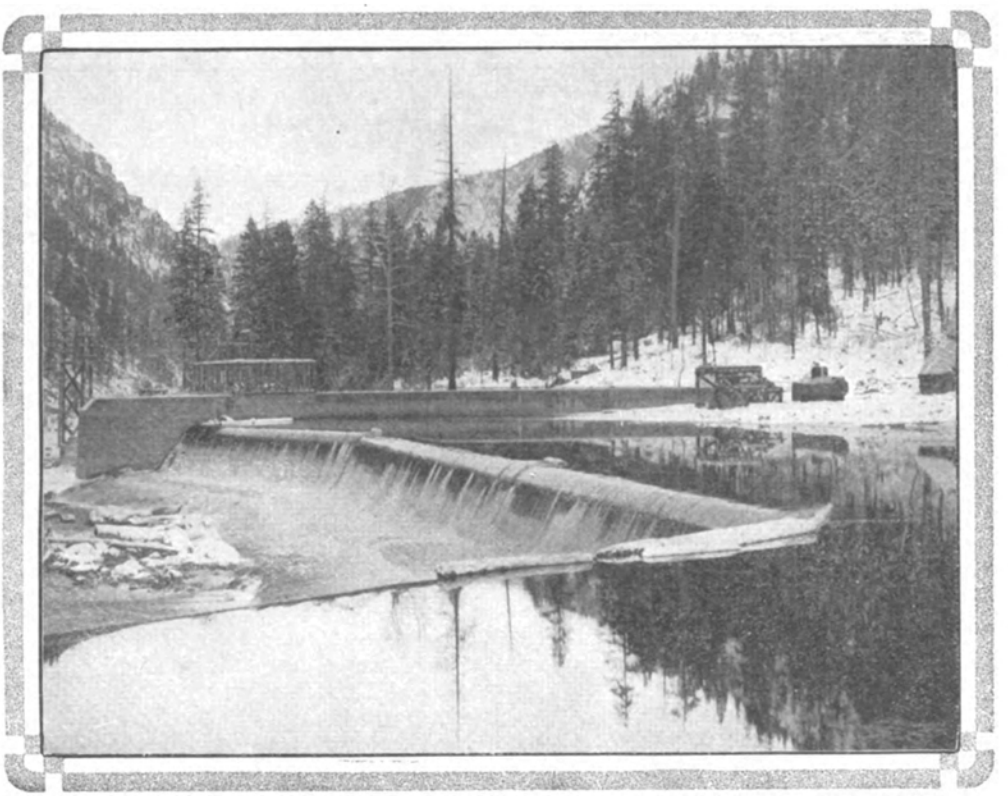


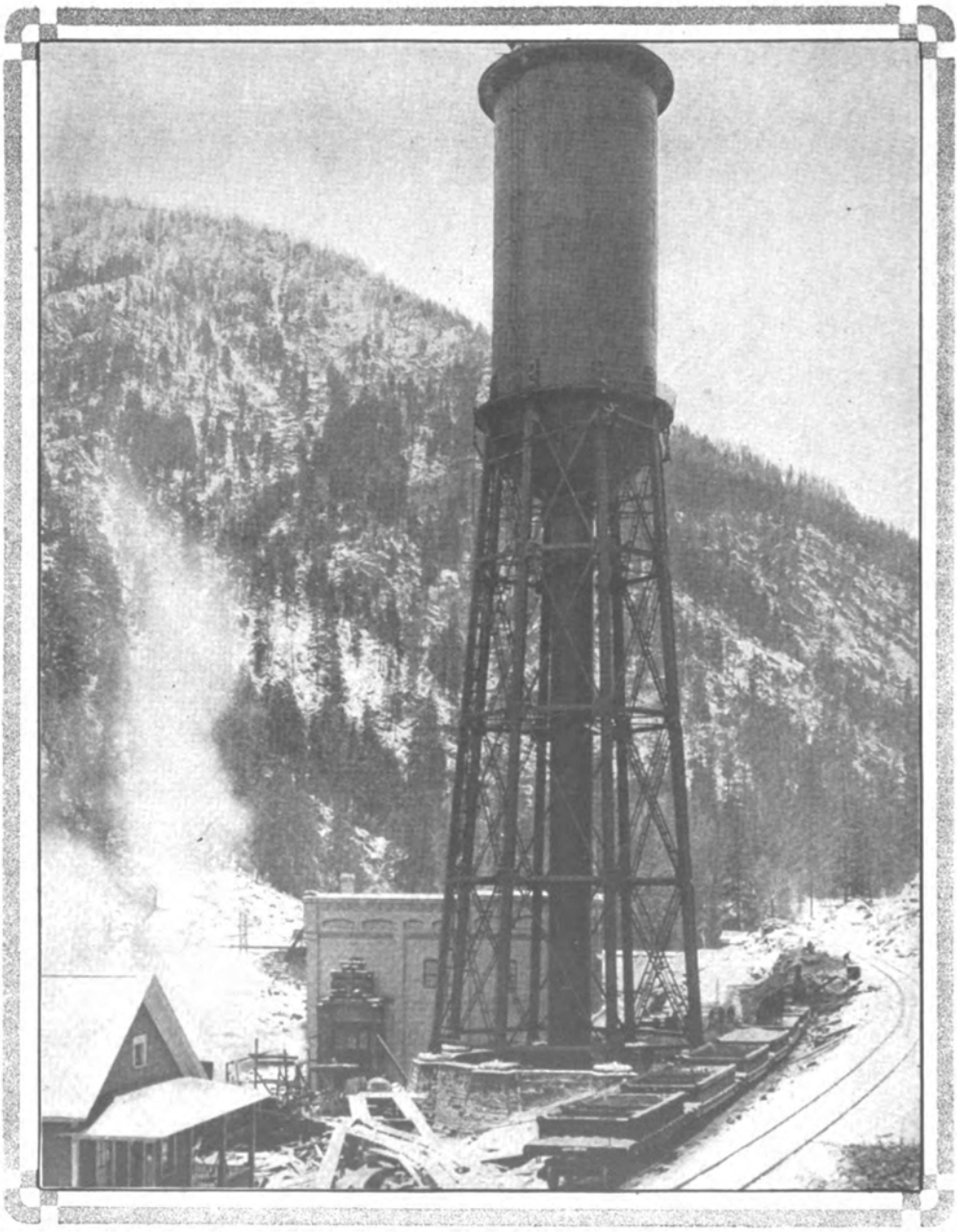
CREST OF THE DAM WHERE WATER IS IMPOUNDED.

ELECTRICITY DOUBLES TUNNEL'S CAPACITY

By W. T. PROSSER

THE interest of the Chicago, Milwaukee & St. Paul officials in developing water power along their 1,200 mile extension to Puget Sound undoubtedly stimulated James J. Hill to completion of long considered plans for the Great Northern's utilization of the power lying idle in Tumwater Canyon, near the town of Leavenworth, a short distance down the eastern slope of the Cascades from the Great Northern's famous tunnel. His engineers reported that there, perhaps, was the best opportunity along the line of the railway for the test of electricity, and Mr. Hill gave orders for the construction of a plant in the canyon capable of developing 10,000 horse power.

This capacity may be greatly increased in the future because of the abundance of the water's energy in the canyon, but the 10,000 horse-power is sufficient to accomplish an object long in the mind of Mr. Hill. It is the electrification of his Cascade tunnel, the opening of which with the construction of the Great Northern westward, was one of the most remarkable feats of western railway engineering. The traffic capacity of this tunnel represents the capacity of the Great Northern railway on through business. It has been possible to operate only one train through the tunnel at a



GREAT NORTHERN POWER HOUSE AND TANK WHICH CONTROLS PRESSURE.

time, even though more trains were bound in the same direction, because of the smoke of the engines. Half an hour or more has been needed, even with ventilating appliances, to clear the bore. The introduction of electricity means that the capacity of the tunnel will virtually be doubled. Economy of operation is another important consideration. Fewer men will be required in handling the traffic, and the fuel bill will be materially reduced, especially when the field of the

electric current's usefulness is extended to conveying trains up and down the mountain slopes.

From a point in upper Tumwater canyon the water is impounded and conveyed to the power house by a steel pipeline. So great is the pressure of the water at the power house that an immense iron tank has been erected high in the air to serve as an alleviator for the control of the pressure.

Mr. Hill expects to extend the use of the current as rapidly as is practicable, and it is likely that the Northern Pacific's Stampede tunnel in the Cascades will be provided with electricity. The Chicago, Milwaukee & Puget Sound, the name of the Milwaukee's western extension, has also particularly favorable advantages along its line for the development of water power for operation of its trains, and power stations will eventually be provided at such frequent intervals that Milwaukee trains will be conveyed for many hundred miles through western Montana, the panhandle of Idaho, and Washington by means of that solver of so many problems—electricity.

KILLING TICKS ENDS CATTLE FEVER

By ROBERT FRANKLIN

The fact that merely a little care and precaution, which can cause small trouble to the owners of cattle, will absolutely prevent cattle-fever and so save a sum of more than $40,000,000 a year in the United States, seems an amazing thing. The discovery is already turning some losing ventures into successes. It is one more of the seemingly simple things man has been long in discovering that are making him wonder at his own past stupidity.

A WRETCHED little blood-sucking tick, only about an eighth of an inch long, is costing this country $40,000,000 a year. What is to be done about it?

That nothing, or at all events very little, should be done (as is the case at present) is quite absurd, inasmuch as the insect which causes all this mischief might be entirely exterminated by the adoption of a few simple measures.

Why not save the $40,000,000 a year? The answer is that the Federal government is doing its best, and that all that is needed to bring about this happy result is the earnest coöperation of the States in the infested belt. The way out of the trouble is shown by a recent scientific discovery in regard to the tick in question.

The tick is a disagreeable bug. If it did nothing worse than suck the blood of cattle, that would be bad enough. But, incidentally to the sucking process, it introduces into the blood of the animal a virulent microbe, which feeds upon the red blood cells, destroying them, and thus producing the malady known as "tick fever," or "cattle fever."

The disease in question (sometimes called "Texas fever") is the great obstacle to cattle raising in the Southern States. It is also a constant and imminent menace to the same industry in the North—for which reason the government has been obliged to establish and maintain, for many years past, a barrier line, running clear across the country, from Virginia to California, which Southern cattle are not permitted to pass.

Now, this destructive cattle plague seems to be of quite ancient origin. It is supposed to have been introduced into America with cattle imported by the Spaniards during the early colonization of Mexico and the southern United States. But not until very recently was it suspected that the disease was spread by ticks—a discovery made by experts of our own Bureau of Animal Industry, who have even identified the germ which they carry.

Not only does the tick carry "cattle