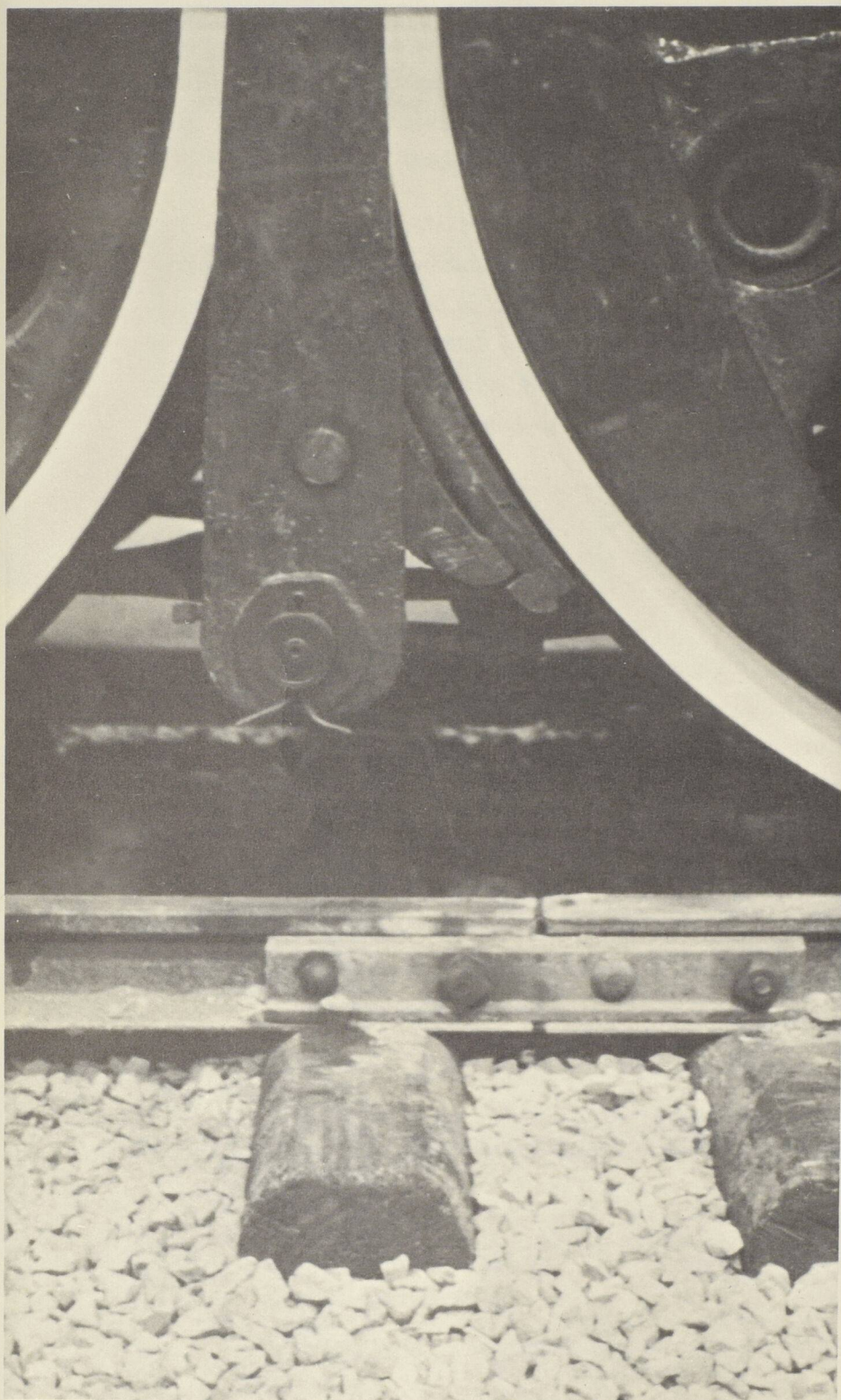


clickety clack removed from rail travel

Techniques developed by NRC permit railways to lay 1,400-foot welded rail sections on year-round basis. This will lower maintenance costs and give freight and passengers a smoother ride



One hundred and fifty years ago, when railroading was in its infancy, the first regular train tracks were set down in six-foot rail lengths. Six feet of rail was deemed to be the best length a man could comfortably carry unaided. As time passed, the length of rail being used grew – generally at the whim of its manufacturer. By 1890, for example, American rail plants were producing mainly 24-foot lengths, British plants preferred the 25-foot span, while other countries produced rail in lengths of from 20 to 30 feet.

In Canada, confusion ended in 1880, not through any form of international accord or business agreement, but for a reason as simple as that which produced the original six-foot rail. The rail length was standardized at 39 feet because this was the perfect size to go into the 40-foot railway flatcar. Now, after nine decades, the 39-foot rail is making way for continuously welded rail, generally one-quarter mile or more in length. The reason again is a simple one – lower maintenance costs and a smoother ride for freight and passengers.

THWARTED BY CLIMATE

In Europe and in some parts of the United States, where temperature variations are not so extreme as in Canada, railways have gone in extensively for the long welded rail. Over the last 20 years welded rail laying has been limited in Canada by severe climatic conditions which impose great stresses on the rails. Only in the last five years have Canadian railways embarked on climate-limited welded rail laying programs.

Now, engineers with NRC's Division of Mechanical Engineering have developed techniques that, for the first time, will allow year-round laying of 1,400-foot welded rail sections in place of 39-foot bolted rails.

In a mile of track laid with 39-foot sections there are 270 bolted expansion joints. These joints are needed to permit expansion and contraction of the rail sections due to extreme rail temperature variations ranging as much as 200 degrees.

It is the wheels of a speeding train rolling over these closely-spaced joints that produce the singsong clickety clack rhythm that has lulled many a weary traveller into sleep. This click-