

RAIL BREAKAGES.

The weather generally gets the blame for the great railway accidents which are so characteristic of this continent. It is a happy explanation because it is a verdict which doesn't hurt anybody. Extremes of cold and heat are held responsible for the breaking and warping of rails and it has been rather hastily assumed that such "accidents" were unavoidable. The Union Pacific has, however, according to the Wall Street Journal discovered the secret of avoiding the "unavoidable." Our esteemed contemporary says:—"While a joint committee of the railroads and rail manufacturers is wrestling with the problem of eliminating the dangerous breakage of rails, Julius Kruttschnitt and his consulting engineer, John D. Isaacs, have solved the rail problem to so complete a degree that the Harriman lines are far in advance of any other roads in the country in the matter of reduction of rail breakage."

In crucial form the rail problem has been a winter problem. During the winter of 1911-12 there was an epidemic of broken rails on a score of roads, attributed without exception to the severity of the cold weather. The Harriman lines have discovered a remedy for the cold weather rail breakage so effective that the number of the new rails broken during the winter months of 1909, 1910 and 1911 was no greater than the number broken in July or August. Moreover, the cold weather breakage of the new style of rails is far below the breakage of the old style rails in summer months, when they are under least stress.

The secret of the elimination of the broken rail from the Union and Southern Pacific is fundamentally a matter of "section," that is, the shape of rail. The Harriman officials solved the problem by giving the rail a heavier base. During the cold weather the base of the rail has a tendency to become bowl shape. In forcing the rail back into shape there is great likelihood of starting a surface fracture. Rails, highly tempered as they are, act like glass. A good scratch on the surface is all that is necessary to cut glass. It is the same with rails. In laying rails the rail is never cut. A slight incision is made on the surface and the rail is broken. With a rail whose base is heavy enough to prevent change of shape in cold weather, obviating the necessity of forcing the rail back into shape, causing surface breaks, the percentage of breakage was reduced practically to nil.

"With 20,000 miles of road offering different styles of rail, all different sorts of climate and traffic conditions, it is obvious that the possible combinations of conditions surrounding rail breakage were infinite," said Mr. Kruttschnitt, "and it is probably for that reason that the task of solution has struck the average railroad official as hepeless. When a series of rail breaks occur, the division officials get panicky and attribute the event to some mysterious factor instead of sitting down to work out the cause."

"We simply went at the situation systematically. Mr. Isaacs suggested that we chart our rail breakages and see if it were possible to discover some law of breakage. We went over our record of breakages to discover whether any blame could be attached to the various kinds of rail, localities or traffic. The result was as simple as astounding."

"We found that the 90-pound rail of the shape in general use gave an average of 6 breakages to the

100 miles during the summer months when the mean temperature was about 75 degrees, and 23 breakages per 100 miles in winter with the temperature around 40 degrees. We found that the rail with heavier base gave only two breakages to the 100 miles in the winter months, the same average as during the summer months, so that so far as the Harriman lines are concerned the rail problem is solved. We are proud of our rail record. We feel that we have solved the problem for all the roads. Of course, we have been careful in giving our orders to the mills we had found most reliable and have insisted on a high grade rail, but it is the shape of rail that has solved the problem fundamentally."

The experience of the Union Pacific is important, because if there is any way of preventing at any cost the deplorable accidents that occur every year through broken rails, there will be a public demand for its adoption, which neither the railway companies nor the legislatures can afford to ignore.

COST OF LIVING.

The question of establishing legal minimum wages is attracting considerable attention both in the United Kingdom and on this continent. It is too often discussed as though it were the simplest matter in the world for a legislature to define what is or what is not "a living wage." Obviously it depends largely upon the cost of the necessities of life. This is altogether apart from the question whether the problem is capable of solution by law, in such a manner as not to do more harm than good. For instance, if the legal minimum wage is made too low it will not effect its purpose and if it is made too high, it will prevent a large class of people who are now wage-earners from earning anything at all. Less than a living wage in England would command luxury untold in China.

On this subject the New York Commercial Bulletin says:

"The subject of the cost of living has been much discussed in recent years both in this and other countries. The United States Bureau of Labor has made a number of budgetary studies, i.e., studies of the expenditures of typical workingmen's families, and a number of unofficial bodies and private individuals have done the same. The commission on the cost of living recently appointed in Massachusetts reported to the Legislature of that State in May, 1910. More recently, a committee of the United States Senate on Wages and Prices of Commodities has issued a report consisting of several volumes of hearings, statistical compilations and findings. Most important of all, the Labor Department of the British Board of Trade completed in 1911 a series of five reports on the wages, housing and living conditions in selected industrial towns and cities of the United Kingdom, Germany, France, Belgium and the United States. These reports were issued between 1908 and 1911."

The present survey of the comparative cost of living in various countries will comprise three divisions: First, a discussion of rents; second, a presentation of retail prices; third, a discussion of family budgets, with especial reference to the United States as compared with England and Wales. The text will be followed by an appendix, presenting in