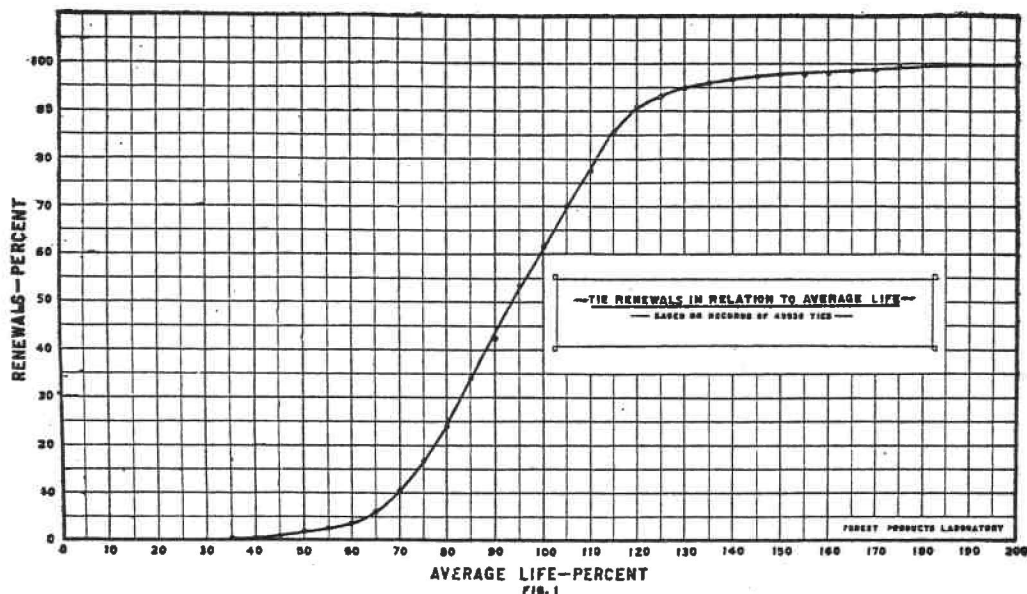


TIE RENEWALS IN RELATION TO AVERAGE LIFE

That there is a general law governing the rate of renewals in all groups of railroad ties, no matter what kind of wood is used in the ties, where they are placed, or whether they are untreated or treated with preservatives, is the indication of records kept by the Forest Products Laboratory, Madison, Wisconsin. These records show a wide variation in the lives of various groups of ties, but a remarkable similarity between the percentages of ties that needed replacement at proportionate intervals in the lives of any two groups.

The comparisons are based on 43 groups, including 42,000 ties of many species, some untreated and some treated. For any of these groups, the percentage of renewals in relation to the percentage of average life is fairly represented by the curve shown.



This curve answers several valuable purposes. It can be used in estimating the average life of a group of ties long before all the ties in the group have been removed,—also to show the number of replacements that will be necessary during a given year.

As an example, assume that out of a group of 1000 ties, 200, or 20 per cent, have been removed at the end of four years. From the curve it will be seen that 20 per cent of a group is usually removed at about 77 per cent of the average life. The average life of this group, then, will be 5.2 years. Further computation shows that the number of replacements to be expected during the fifth year is about 350, the sixth year 300, the seventh 100, and that at the end of nine years practically all the ties in the group will have been removed.

Thus with the aid of the curve railroad officials can substantiate arguments for or against the use of a certain kind of tie or preservative treatment in a certain locality, even while most of the ties are still in service.

Further information as to the various species, localities, and preservative treatments of the ties used in the derivation of the curve may be obtained from the Forest Products Laboratory.