

system, and the various stations. The talk was illustrated with the stereopticon. A general plan of the system was thrown upon the screen, showing the line leading from Niagara Falls, through Dundas, to Toronto, with the main interswitch at Dundas. Mr. Sothman explained that the loop system was used throughout and in all the 286 miles of the system. The line is connected up in series and current keeps up a natural flow. There is also a telephone system throughout. In testing the line the first time, an engineer was on watch in each station; gradually up to 76,000 volts were placed on whole system and company could not keep it continuous. It was tested to 120,000 volts, and then 150,000 volts. High voltage was had in the test for $2\frac{1}{4}$ minutes, and the stations were found very quiet for 110,000-volt stations. Mr. Sothman pointed out that this was a great asset in a new station, in fact, almost a necessity. Plans of the various stations were shown, and the exterior views of one or two also. The line towers were shown, and their important features, both as regards working efficiency and beauty of design, were pointed out.

After the reading of the paper a visit was made by the members with Mr. Sothman to the Toronto substation at Strachan Avenue, where a splendid display of high-class work is to be seen, and many questions were rapidly asked and as rapidly answered. Mr. Sothman pointed out the general aim of the appliances had been to make the station as quiet as possible, which he considered one of the most important requirements of a station at the start, at least. Furthermore, the operator must have not only a good hearing, but a trained hearing, as much depends on hearing whether all is working right as well as seeing. The crane and chain, etc., are walled in to insure safety, and every effort has been made to place switches, etc., handy for the operator, and well guarded from a safety standpoint. They are arranged throughout the same in all stations so that a man does not have to learn it afresh in coming from one station to another. The operator can go right into a station and operate as in any one of the others. From a platform or upper gangway a view of the whole station is possible. Water at the Toronto station is pumped direct from the lake, and city water is also connected. Two large tanks holding oil for the transformers are in the basement.

The station is most adequately and ornately finished off from an efficient working standpoint, as well as from that of general appearance.

TREE SURGERY.

Tree surgery, a new art so far as Canada is concerned, is being introduced here. In the earlier days trees were considered somewhat of a nuisance and effort was directed to destroy them. To-day, in large sections of Canada we are endeavoring to save the trees. The individual tree standing in the open receives the full force of the storm and to prevent its destruction bands were frequently placed about the tree as shown in Fig. 1. This was unsightly and it frequently happened that in the crotch of the tree decay commenced and it was not long until the life of the tree was in danger.

Shade trees are valued now as never before and a skilful method of tree surgery will preserve, for a generation to come, trees that would quickly die. By trimming, chaining, abracing, packing, spraying, disinfecting and fertilizing, almost any tree of medium age may be saved.

The tree grows in girth by the deposit of a thin layer of new wood between the wood and the bark. There are three layers in this coat—the middle one being composed of

thin forming tissues known as the "cambium." The inner side of this layer forms new wood, the outer new bark. It is this new layer and the layers of the four or five previous



Iron band unsightly and harmful.

years which are known as the sapwood, and form the active section of the trunk and branches. The cells of these inner rings are gradually covered by the yearly deposit of new growth, and from living sapwood become heartwood, which is dead, and serves merely as a strong framework for the living parts of the tree and as storehouses for excess material.



Band removed, braces in place and cavity cleaned out.

This is the reason why hollow trees may often be found in a flourishing condition when the heartwood may have entirely disappeared. However, a landscape tree in this condition, deprived of the shelter of its fellows, is in grave danger, for a high wind or a heavy snowfall may find it an easy victim.