

The contractors were provided with a large quantity of quarry spalls which had to be crushed by hand. The stone was shipped in drop bottom cars and dumped into bins built on the ground under the trestle. The sand was shipped in ordinary coal cars and dumped into bins. The mixing boards were placed on the surface of the ground and wheelbarrow runways were built up as the work progressed.

The cost of 1,900 cubic yards of concrete in the culvert was as follows, per cubic yard:

1.01 bbls. of Portland cement .....	\$2.26
0.56 cu. yds. of sand @ 60c. ....	.32
Loading and breaking stone .....	.25
Lumber, centres, cement house and hardware .....	.64
Hauling materials .....	.04
Mixing and placing concrete .....	1.17
Carpenter work .....	.19
Foreman (100 days @ \$2.50) .....	.13
Superintendent (100 days @ \$5.50) .....	.29

\$5.29

Only 19 yards per day of concrete were placed, with a gang of 21 negroes @ \$1.10 per day. The item for superintendence is high.

Cost of concrete pipes, previously described in this article. The cost of molding the four-foot concrete pipes is estimated as follows:—

Two per cent. of \$40 for forms.....	\$ .80
Assuming that a single set of forms can be used only fifty times before being replaced.	
1.1 cu. yds. stone and screenings @ \$1.85.....	2.04
0.8 bbl. of cement @ \$2.10 .....	1.68
10 hours' labor @ 28c. ....	2.80

\$7.32

This gives a cost of \$1.83 per linear foot of pipe, of \$7 per cubic yard of concrete.

The cost of transporting and installing concrete pipes, on account of greater weight and a greater number of pieces, would probably be very nearly double that for cast iron pipe. However, it is evident that the cost of a concrete pipe culvert in place would be but a small fraction of the cost of cast iron pipe culvert of the same diameter, if the haul is only a moderate distance.

### SAVING OUR FORESTS.

"Constant progress in forest conservation" is the keynote of the fourteenth annual report of the Canadian Forestry Association, which has just been issued from the office of the secretary, Mr. James Lawler, Canadian Building, Ottawa. The report, which contains all the addresses made by the prominent forestry experts, legislators and officials at the convention held in Victoria, B.C., is replete with the latest views of the most advanced minds in this line of national public activity. The great strides forward of the Federal and Provincial Governments, two of whom passed far-reaching legislation within the year, unusual progress of the science of forest protection among lumbermen, and the numerous changes in the Canadian Forestry Association itself, all indicate most clearly that the country is rapidly taking up the issue and making for more adequate protection of the great forest heritage. Copies of the Canadian Forestry Association report are to be had free, from Mr. Lawler, on application.

### AUTOMATIC SPRINKLERS AND HOTEL FIRES.

The question of fires in hotels in the United States is receiving a great deal of attention just now, and many publications are taking up this hazard not only with respect to loss of the building, but to the lives endangered nightly. The average fire occurrence in hotels during 1912 was one to every thirty-three hours, and during 1913 so far the hotel fire rate has been one every thirty hours. It is stated that eighty-five per cent. of the fires occur between six o'clock p.m. and six a.m.; almost fifty per cent. between midnight and three a.m.; twenty-five per cent. between three a.m. and six a.m., and fifteen per cent. between 9 p.m. and midnight. Hotel fires, it says, were more frequent in 1912 than any of the preceding five years, and so far the increase for 1913 has kept up. The statement is also made that for a period of five years the property loss is estimated at more than \$25,000,000, with heavy loss of life.

### CANADIAN FORESTRY ASSOCIATION.

The fifteenth annual convention of the Association will be held in Winnipeg, July 7th, 8th and 9th, 1913.

This meeting should be of vital interest to all Canadians who are interested in the conservation of Canada's natural forest resources. Canada's forest area is about 800,000,000 acres, containing some six hundred billion board feet of merchantable timber, worth in the neighborhood of ten billion dollars. But Canadians are cutting this timber at a rate of about 100 board feet per acre, or eight billion board feet per year; the fire loss is estimated to be 950 board feet per acre per annum, which means that these fires are destroying young growth, forest litter and soil fertility on hundreds of thousands of acres. That there is a crisis coming is apparent to all—when the forests which for a century men have thought inexhaustible are going to be greatly depleted.

This emergency must be prepared for by stopping the waste in logging, milling and utilization, the destruction of timber by insects and fungus, and protecting the forests from fire. At present Canada spends much less than one cent. per acre per annum on the forest lands under management, and only a fraction of this absolute forest area is growing trees as it might be, the rest being comparatively unproductive. How can Canadians stop the losses, arrest the waste? There is but one answer. Public opinion, public interest, and public conscience are the only forces that will ever make for progress. At the convention a number of practical papers will be read and discussed of problems relating to the great central part of Canada. These will include that of protection and perpetuation of the forests of Western Ontario, and of northern Manitoba, Saskatchewan and Alberta; the best methods of handling prairie forest reserves, and the possibilities of the same in supplying timber, fence posts, poles and cordwood for the settlers; the need of getting under timber the sand lands, which will never produce any other profitable crop but trees, and the rate of growth in the central parts of Canada as a basis for deciding the possibility of economical forestry under these conditions. These will be accompanied by the discussion of the value of forests as windbreaks, sources of stream supply, and as cover for insectivorous birds. Farm forestry, shelter belts to protect buildings and orchards, and the use of hedges will be discussed, as will also the dangers from insects and how these may be dealt with.