streets, the width and depth of the town lots, the width of the streets and avenues, and the houses and improvements. Only the essential topographical features are indicated.

The title of the plan of a town site must state the name of the town site, the number of the section, or lot in which the town site is situated, the province, district, or territory, the name of the surveyor, the date of survey and the scale.

Plans of highways must show the bearings and lengths of the courses, the monuments, their description, and the bearings and lengths thereto, the main topographical features and the area of the highway, computed to the nearest hundredth of an acre, in every separate parcel crossed by it.

Monuments.—In private or custom surveying wooden posts are used. In Dominion land surveys no wooden posts are now used, excepting in deep swamps. The corner posts of a survey are usually bigger and deeper in the ground than posts used elsewhere.

A wooden post for a corner of farm or settlement lot is 36 inches in length, to be one-half in the ground. It is squared 12 inches from the top, and the faces are about 3 inches wide. The top is bevelled to shed rain. Such a post, when perpetuated by a mound in the northwest, is not placed in the centre of the mound, but in the same position that an iron post would occupy. Mounds and pits are seldom used in provincial work of a correction or jobbing nature. In new government work I believe they are used by some of the provinces.

In the Dominion lands surveys pits and mounds are used throughout, as corner monuments, and also witness monuments, and a square-topped post is only used for settlement lots, group lots, etc. Stone mounds are also employed, whenever stones can be readily procured, and make good monuments for any kind of survey work. These two classes represent the style of boundary monuments largely used by Dominion land surveyors, in work in the western provinces.

MANITOBA'S FOREST WEALTH.

Manitoba has not been looked on as a forest country, but it has always had a considerable area of forest, and, since the boundaries have recently been extended, a large territory has been added which is almost entirely forest land. The forest flora of this province is varied. At the south-eastern corner the red pine of Ontario intrudes, intermingled with spruce, jackpine, tamarack, birch and poplar. Along the valley of the Red and Assiniboine Rivers was a mixed forest of elm, ash, oak, basswood, and ash-leaved maple, where trees were found ranging to 24 inches in diameter. Rising like islands from the agricultural plains, tracts like the Turtle, Riding, Duck and Porcupine Mountains, bore forests of oak, ash and poplar in the Turtle Mountains, and of spruce, jackpine, oak, elm, ash, poplar and ash-leaved maple in the others. The character of the virgin forest may be seen from the following extract from a report of explorations made by Professor Hind on the 8th November, 1858: "I beg to subjoin the circumference, five feet from the ground, of a few trees within 50 yards of our camp on the Riding Mountain: Aspen, 4 ft. 6 ins.; 4 ft. 6 ins.; 4 ft. 1 in.; 5 ft.; white spruce, 7 ft. 3 ins.; 5 ft. 6 ins.; 6 ft. 6 ins.; 6 ft.; birch, 3 ft. 6 ins.; 3 ft.; poplar, 4 ft. 9 ins.; 4 ft. 6 ins. These trees represent, as far as observations permitted, the general character of the forest on the summit plateau of the Riding Mountain."

OXY-ACETYLENE TORCH.

Some tests have been undertaken recently to determine the mechanism of cutting the practical consumption of oxygen and the effect of variations in the different heating flames produced by the oxy-acetylene blowpipe when cutting metal. The metal on which the researches were carried out was a sheet of Martin boiler-plate of a thickness of 10 mm. and a sheet of Martin extra hard steel from 28 to 30 mm. thick. This latter was similar to that used for locomotive girders. It was found that, contrary to the general impression, the act of cutting did not consist of a simple combustion of the iron. In fact, with small or medium thicknesses only a small percentage of the metal removed by the influence of the jet of oxygen was actually burned. It was also found that a heating flame could be too powerful, and so retard the cutting and give an irregular surface. With equal cutting surfaces it was also found that less oxygen was consumed by those blowpipes with a central jet than by those which had separate burners.

It is interesting to note that particular attention is being given in Germany to cutting and welding metals by the oxy-acetylene flame, and, according to an authority, an advanced course in the subject is being given to the students in one largest technical industrial schools in the country. Writing in "Indian Engineering," he points out that the method of application to the various trades is taught, including boilermaking, the work of the blacksmiths, coppersmiths, machinists, shipbuilders, pipe-workers, electricians, aluminium-workers, etc. The method is also taught in twenty-one other technical schools, and at Nuremberg a special school is being built to be devoted exclusively to practical and theoretical teaching in this branch. Already oxy-acetylene cutting has begun to displace cutting by tools to a large extent. One direction in which a revolution is being effected is in piping. Instead of having short lengths with screwed joints, which necessitated a certain minimum thickness of me al to allow for the screw threads, the method now being commonly adopted is to use thin plates of steel or iron run through rolling machines to the required diameter and then butt-welded by the oxy-acetylene flame in an automatic machine. Jointless pipes of any length are thus obtained at less cost than formerly, the work proceeding on the spot where the pipes are being used, exactly according to requirements. There is a successful example of a repair to a large cast-iron cylinder which cracked and would have taken a month to re-cast. To prevent the chances of the cylinder developing cracks near the joint, owing to unequal contraction when cooling, it was covered with asbestos on the outside, while a wood fire was kindled inside, which maintained it at a dull red heat while the oxy-acetylene flame was being applied. After completion of the weld the cylinder was covered with insulation and allowed to cool very slowly. The insulation was removed after two days, when the joint was found to be perfect, without the trace of a shrinkage crack. The convenience of repairing by this method the machinery and boilers of ships at sea has only to be mentioned to be appreciated. It can also be realized how great is the saving in time in repairing and putting on the road again locomotives which otherwise might lie for weeks in the shops.

LARGEST DRYDOCK.

The drydock which is to be built at Quebec for the Dominion Government by a Montreal firm will, when completed, be the largest structure of its kind in the world. It is to be 1,150 ft. long and 137 ft. wide, or 100 ft. longer and 17 ft. wider than the Gladstone Dock, which was opened by King George at Liverpool.