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HOW A RAILROAD IS MADE.

BY THE EDITOR.



ALL over the lines of the Grand Trunk Pacific, Canada Northern, and other projected railways, hundreds of men are at work prospecting, surveying, locating, constructing these great highways of the nation. Canada is entering upon a period of unprecedented activity in railway construction. The building of the pyramids of Egypt was comparatively insignificant, compared with the engineering and construction work of these great railways, and certainly the later are in service to mankind of infinitely greater value than those mountains of stone erected as the mausoleum of some vain-glorious Pharaoh now well-nigh forgotten.

Most of our readers are familiar enough with travelling by railway. Few of them, however, we venture to think, have any adequate conception of the amount of skill and labor required for the construction of these iron roads. As we are whirled along in our flying palace car, surrounded by every luxury, and able to read, sleep, or enjoy the ever-varying scenery, climbing mountains, diving through tunnels, leaping over valleys, we are apt to forget the weary toil of brain and muscle in the conception, construction, equipment, and management of that greatest triumph of the material civilization of the age—a suc-

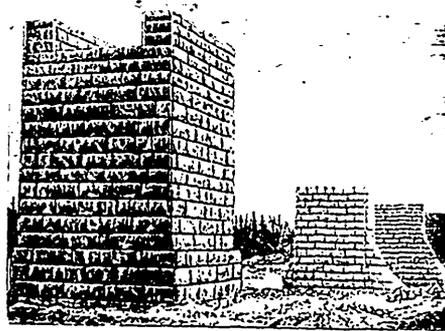


FIG. 1.—ABUTMENT AND PIERS OF BRIDGE.

cessful railway. The difficulties to be overcome are sometimes enormous. The nature of these difficulties and the triumph over them of human skill, experience, foresight, and patience form a record of intense interest. Upon the preliminary processes of surveying, making choice of routes, locating the road, clearing the land, grading, ditching, delving, digging, blasting, tunnelling, and embanking, we shall not delay; but proceed to a brief account of the superstructure and mason work substructures of the road.

In a country like Canada one of the greatest difficulties in railway construction arises from the severity of the climate. The action of winter frosts and spring thaws, especially on exposed embankments, is apt to throw the rails out of level and alignment. The only remedy for this, and for the undermining tendency of water currents and freshets, is thorough drainage. This necessitates deep ditching