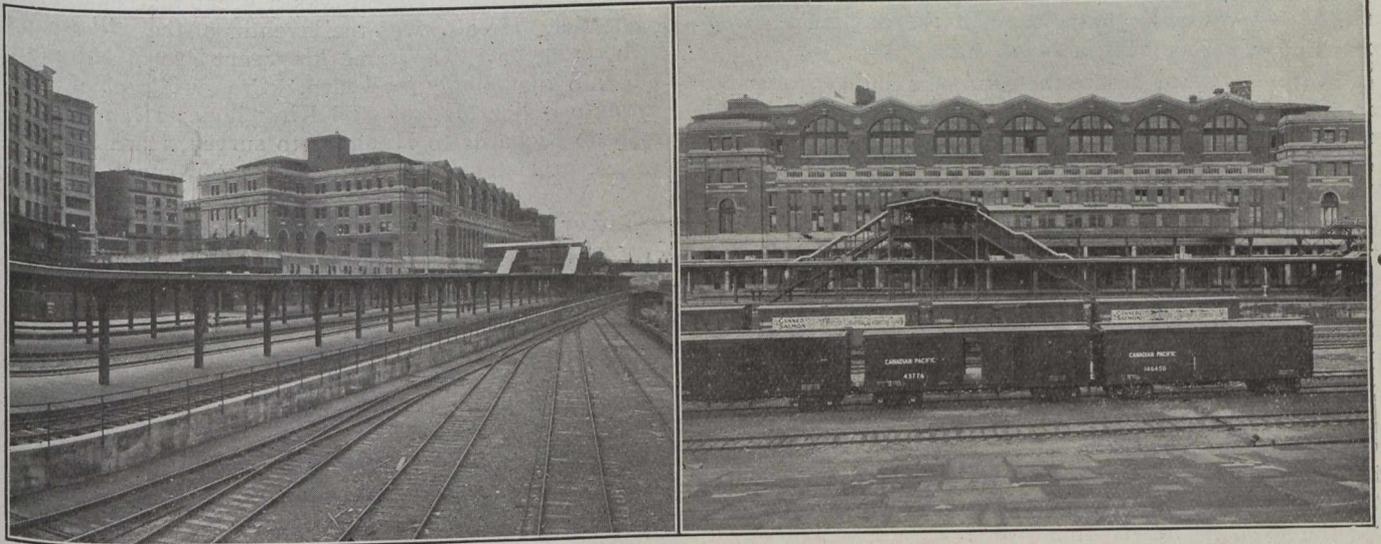


of air drills and the reinforcing cut by oxy-acetylene blow pipes. Traffic was kept open on the tracks above during the operations of removing the old structure and building the new subway.

The present arrangement provides eight passenger tracks reached by subway and stairways, the former leading directly to the level of the street. It was found necessary, in order to secure head-room for the handling of passengers underneath the tracks, to lower a portion of the main waiting room. The entire north end was

accordingly lowered about 4 ft. The baggage room has been moved from the extreme west of the building to the eastern end and under the elevated tracks. This department now faces Maple Street, a portion of which is used almost exclusively for the handling of baggage. A trucking subway running parallel to the tracks above and terminated by elevators, is a feature of the interesting arrangement of handling the baggage.

The improvements at Winnipeg included extensions to the Royal Alexandra Hotel.



The C.P.R. Station at Vancouver, Showing Separation of Freight and Passenger Tracks, Covered Bridge and Platforms.

## ENGINEERS AND WAR.

By R. O. Wynne-Roberts, Consulting Engineer, Toronto, Ont.

THE great European war is the absorbing topic; it concerns every citizen, for the stakes at issue are serious; and it has disturbed the commerce, finance, national and social affairs of the whole world in a manner which transcends anything previously experienced in history. The war being of special interest to engineers of various classes, it was thought that it would be appropriate in a journal which is devoted to engineering affairs, to trace the part played by engineers in wars. It is not proposed to treat this subject in its technical aspect, for those who desire such information can consult the many standard publications treating on military engineering. The subject will be dealt with in a general way.

The Right Hon. D. Lloyd George, the Minister of Munitions, in a speech delivered a few days ago at Bristol, asserted that the present war was a terrific contest between the engineers of the warring nations. The "Forum," in 1902, stated that the military question is in many respects an engineering question. Mr. Obertin Smith, in an article on "Who is an Engineer," wrote that the beginnings of engineers evidently were in the line of military engineering. Having sufficient brains, and being spurred forward by emperors and kings under the penalty of death or the loss of his ears, the engineer had to build forts, roads and bridges and to construct catapults and other appliances. Col. I. F. Maurice, in an able article in the British Encyclopedia, expressed his opinion that "the laboratories and workshops of

science in recent years have produced and forced on a change in the nature of fighting of a kind which, it is safe to say, never entered the mind of any one of the inventors whose skill made it necessary."

Although the great Duke of Wellington made full use of engineers in the Peninsula War of 1808, and earlier supported Major Lambton in his organization of the trigonometrical survey of India in 1800, yet, when the question arose later on as to the capabilities of engineers to command armies in actual war, he was not in favor of the idea, as he considered an engineer was a scientific officer, thus apparently disproving the oft-quoted statement of the "science of war." This idea has since been proved to be wrong, as will be shown farther on. The Duke, however, must have been in a petulant mood owing, perhaps, to the persistent advocacy of engineer generals when he declaimed that engineers were either "mad, married, or Methodists." The first two perverse conditions were forgivable, but in those days to be a Methodist, which meant being a non-conformist, was a veritable anathema to the aristocrats, and to call a man a Methodist was a polite way of committing him to perdition.

Engineers have been prominent in wars of all ages. The Assyrians employed engineers in making military machines, battering rams and catapults, as is recorded on the frescos and bas-reliefs which was the Assyrian method of writing history. The harbors of the Phoenicians and the palaces and sewerage system of Nimroud are