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**THE ORGANISATION OF THE TRANSPORTATION
SERVICES OF THE BRITISH ARMIES ON THE
WESTERN FRONT.**

By Lieut.-Colonel A. C. FEWTRELL, D.S.O., A.E.

The subject is one of such huge dimensions that it is only possible to briefly deal with it in a general survey.

I (the author) had the unique privilege of being attached by General Sir William Birdwood to the Transportation Directorate in 1917 as the Australian Representative, the idea being to study the organisation and to compile notes, so that the expert knowledge gained would be available for the Australian Defence Authorities. Owing to my collapse, and subsequent illness as the result of the over-strain by the previous fighting in 1916-17, this important work was never completed.

Before proceeding with the subject proper, it is proposed to outline a brief description of the size of the British Armies, which necessitated the re-organisation of these Services, in order that you may be able to grasp the magnitude of such an undertaking.

The British Army at the commencement of the war consisted only of six Divisions available to help France. These Divisions were divided into two Army Corps, one of which the late Commander-in-Chief of our Armies, Sir Douglas Haig, originally commanded as Corps Commander.

The normal strength of a British Division in round numbers is 19,000 all ranks, so that the original Expeditionary Force, comprising the two Army Corps and

lines of communication troops, numbered approximately 120,000 all ranks.

The composition of the British Expeditionary Force in the field on the Western Front when the great offensive was launched on July 1st, 1916, consisted of five Armies, together with two Cavalry Corps and Lines of Communication Troops.

It has frequently happened that an Army Commander has had five Army Corps embodied in his command, so that it will be easily understood that the original transportation arrangements for the first six Divisions would require reorganisation owing to the increasing numbers which poured over to France to swell up our strength to the five Armies, etc., already mentioned (above). A glance at the chart hereunder will quickly give you an idea of the size of an Army in the field, the normal strength of which comprises four Army Corps, the normal strength of each Corps being four Divisions.

The normal strength of one of the Armies approximates 330,000 all ranks, or almost three times the size of the original B.E.F. landed in France. Taking the five Armies, Cavalry and Lines of Communication Troops, the strength was swelled to approximately seventeen times that of the strength of the "Old Contemptibles."

To the professionally trained mind of the engineer, the difficulties which would of necessity arise in connection with the subject under treatment must be apparent.

Circumstances Which Brought About the Reorganisation.

Prior to the late war armies operating in civilised countries had used the existing railways and roads in those countries. Mobility was just as important in those days as it was during the recent struggle, but the theory held was that it would not be possible to increase mobility by the construction of additional railways, etc.,

during the operations. Consequently the existing facilities for transportation controlled the movements of armies in the past.

The pre-war agreement between France and Britain, in the event of a British Expeditionary Force being required, was that France would arrange the landing of the troops, and that arrangements would be made for the French railways to carry out all transportation necessary for the maintenance of that force in the field. When France was faced by an invasion of the enemy she was compelled to mobilise a large percentage of the railway personnel for service with the colors to augment her fighting strength, which had been seriously depleted in the great losses she had suffered in the early stages of the struggle. At first it was thought that the war would not last longer than six months, and the risks of maintaining the railways with the reduced personnel were confidently faced; but when the war had continued for a year the results of the shortage of personnel began to seriously embarrass operations. The operating staff was overworked, and the maintenance staff could not keep pace with the repairs of the rolling stock, etc. It was at this period that the new Army Corps of the Kitchener Armies were arriving on the Western Front, and they threw an additional strain on to the railways. It was soon apparent that the original agreement with the French to maintain our Army, now fast becoming plural in number, could no longer be carried out without material assistance by the British Military Authorities.

The British nation's energies were now being thoroughly organised to provide men and ammunition for the Western Front. Lord Kitchener's efforts were well rewarded in the former case, and Mr. Lloyd George had grasped the problem of providing munitions with a firm hand. The Western Front had settled down to "trench

warfare." The calibre of the guns and their numbers had gradually increased, approximating siege conditions, and since mobility had become of less importance the ammunition provided for the guns was greatly increased. The output of ammunition and stores had now reached such proportions that the transportation question was becoming vitally important, and it became so serious that at one period in 1916 it was doubtful whether the ammunition could ever be carried up to the guns.

Factories had been constructed all over Great Britain, and by the middle of 1916 it was apparent that the output of ammunition need only be limited by the amount of steel which could be made available, and it was calculated that it would be possible to provide 10,000 tons of ammunition a day.

The French docks and railways controlled the situation, and from the information provided by the British Authorities in France it was clear that unless some re-organisation was urgently carried out, the construction of further factories, and even the output of the already constructed factories in Great Britain, was useless, as it would not be possible to land it in France.

The British Cabinet acted promptly and sent a Commission overseas to enquire into the transportation question thoroughly, particularly to examine the methods of working the base ports, as there was some doubt as to whether they were being used to the best advantage. Here again the French mobilisation had reduced the civilian labor available for working the docks.

The British organisation available for handling troops, supplies, etc., at the docks was of a purely military nature. As an example, troopships were being unloaded by personnel drawn from the troops on board, the majority of whom had never seen cargo handled in ship's slings be-

fore. You will readily perceive how shipping was hampered under such conditions.

Personnel of Commission.

This Commission of investigation was headed by Sir Eric Geddes, who had already proved his capacity for organisation in the Department of the Ministry for Munitions. In civilian life Sir Eric was general manager of one of the large English railway companies. He had associated with him several military and civilian members of the Indian Railway Service.

The Commission arrived on the Western Front after the Somme battles had been in progress for some time.

Great preparation had been made for this "push." A heavy concentration of troops and guns was made on a narrow front. The ammunition required for the guns was greatly in excess of all calculations ever made before the war. It was probably not sufficiently realised what a heavy strain this concentration would throw on to the railways and roads leading to the area of concentration. As the offensive continued the strain reached breaking point. What could not be carried on the railways was thrust on to the roads. The winter was rapidly approaching, and the roads soon began to break up, and it was necessary to obtain large quantities of road material and to employ an army of men to save them from collapsing. The Commission had the opportunity of seeing these conditions, and their recommendations included the suggestion that light railways should be constructed quickly to relieve the roads. Very little provision had been made for this class of railway. In isolated cases Chief Engineers of Army Corps had experimented with it, but had never taken it up seriously.

During the tour of investigation the author was honored by a visit from the Commission, who were

anxious to see the methods adopted by the author in the construction of a light railway to the Ypres salient, and to discuss the methods of operation in order to eliminate road transport. The members were very interested in the work of the Australians, particularly so as it was the first light railway in operation on the British front. Later we had the opportunity of constructing a complete system for our Australian Army Corps, and practically demonstrated to the British Armies the usefulness and mobility of light railways, both in trench warfare and during an advance.

The Commission found a lack of co-ordination in the Transportation Services throughout the whole of the British zone. The conditions are enunciated hereunder:

1) All railway transport was dependent on what was made available by the French Authorities, and frequently the British Army demands clashed with French civilian requirements.

(2) The working of the docks was in the hands of Base Commandants, endeavouring to work in with other Army Directorates handling supplies, etc.

(3) The forward communications, such as light railways (mostly trench tramways) and roads, were in the hands of Chief Engineers of the Armies.

(4) The control of the traffic on the canals was in the hands of the Navy.

Their summary of the difficulties and omissions, viz. :—

- (a) Congestion of the docks,
- (b) Exhaustion of the broad gauge railway,
- (c) Absence of light railway material,
- (d) Breaking up of the roads,

decided the Commander-in-Chief to institute a reorganisation of the whole of these services, and that it should be put into the hands of capable men who were trained to handle traffic on a great scale in peace time. He decided

to appoint a Director-General of Transportation, who would be responsible for the co-ordination of all the means of transport which could be placed at the disposal of the Armies, and for the provision of all material and plant required to perfect these means of transportation.

Selection of Director-General of Transportation.

It was only natural that the Commander-in-Chief should select Sir Eric Geddes for the appointment, with the rank of Major-General, as he already possessed a very complete knowledge of the prevailing conditions, the result of his experience as leader of the Commission.

The C. in C. gave him a free hand to select his staff, and these appointments embraced some of the leading engineering and railway traffic experts in Britain, Canada and India. I was selected for appointment as Assistant Director of Light Railways, but the request was refused by General Birdwood for my transfer from the A.I.F. Previously the Army Railway Directorate was embodied in the Quarter-Master-General's Department.

The charts hereunder show the relative positions of importance the old Directorate held to that of the new Directorate of Transportation.

It will be noticed that the Directorate of Railways was subservient to one of the Deputy-Quarter-Master-Generals, a professional soldier, with little knowledge of railway requirements, and the Director had two senior officers as a barrier between himself and the C. in C.

The D.G.T. under the reorganisation was given direct access to the C. in C. in the face of strong opposition on the part of the Q.M.G., thus short-circuiting the cumbersome machinery of his Department.

Calculations Prior to an Operation Affecting Transportation.

When the C. in C. decided to carry out an operation the following calculations were made:—

(1) The number of troops required on the front of operations.

(2) The number of guns, amount of ammunition, and tonnage of food supplies and engineer stores.

The former calculation was made by the General Staff, and the latter by the Quarter-Master-General's Department. The total requirements of the C. in C. were then communicated to the D.G.T., who proceeded to make the necessary calculations to decide whether the existing communications could cope with the requirements, or whether additional railways, light railways, or roads were required. If the latter, then surveys were made, railways re-constructed or duplicated, and roads constructed or improved, as may be necessary. If the D.G.T. considered that the construction of additional communications would not suffice for the tonnage required, he would then inform the other branches of the C. in C.'s staff, and he would obtain from General Headquarters an order for priority for the various requirements of the Armies. Under these arrangements careful calculation and preparation were made to ensure that not only any particular operation could be undertaken with the necessary number of troops, but that the operation could be maintained for the period of time which the C. in C. considered necessary to bring it to a successful conclusion.

D.G.T. Organisation.

The following chart indicates the grouping of the various Departments, etc., in the new scheme, as existing on January 1st, 1918. The original organisation as laid down by Sir Eric Geddes differed slightly from that

shown in chart, the modification being made by General P. A. M. Nash, C.B., the then D.G.T., and successor to Sir Eric Geddes.

The organisation embodied seventeen distinct Departments, etc., each self-contained and independent of one another. The headquarters of each Department, etc., were grouped together in the rear area, near Sir Douglas Haig's General Headquarters, and the combined grouping was designated G.H.Q. (General Headquarters). The D.G.T. established an advanced G.H.Q. in the front zone of operations as an intelligence bureau for transportation, and also as a convenient base for the D.D.G.Ts. (1) and (2) to work from and supervise the front army areas, their main headquarters being at G.H.Q.

The British zone was divided for supervision into three areas, viz. :—

(1) Base Ports to Railhead Areas (Army Areas), supervised by the D.D.G.T. (T.).

(2) Northern Forward Area from the boundary of the Railhead Area to a line in the immediate rear of the Front Line, known as the D.G.T. Line, supervised by the D.D.G.T. (2).

(3) Southern Forward Area, etc., supervised by the D.D.G.T. (1).

The following chart illustrates the apportionment to the various Deputies. The Armies are shown in their relative positions in the latter part of 1917 from the Belgian coast to our junction with the French Armies.

D.D.G.T. (T) (Technical) was responsible for keeping close touch with the Quarter Master General's Department, and the allotment of tonnage. As the chart (above) indicates, he was responsible for the traffic working in the rear area, and in addition he acted as the Technical Adviser to the D.G.T., and supervised the requisitions for "plant" and material ordered by the Executive Directors.

D.D.G.T. 1 and 2.—The 1st, 2nd, and 3rd Army Areas were allotted to the D.D.G.T. (1) for supervision, and the 4th and 5th Army Areas to the D.D.G.T. (2), and these two deputies were responsible for seeing that the requirements of the Armies were met in the Forward Area, that all schemes of construction to meet contemplated operations, were prepared and subsequently, that the work was carried out in the given time.

The deputies (1) and (2) were represented at each Army Headquarters by a Staff Officer called the A.D.G.T. (Assistant Director-General for Transportation).

D.D.G.T. (O).—This deputy was responsible for the military side of the organisation. The greater majority of the technical officers were not professional soldiers, and the D.G.T. considered it necessary to have a staff of regular officers in order to give the necessary assistance in military matters, thus freeing the technical officers from all military details. He was also charged with the military details of the organisation of the new units required for transportation.

D.D.G.T. (C).—This deputy was appointed as the D.G.T.'s consultant in all matters affecting engineering construction, and in methods of employment of labour. This officer also commanded 10,000 Canadian Railway Construction troops, divided up into ten battalions, which were used on broad and light railway construction.

Technical Organisation in Army Areas.

The principal Transportation Officer in each Army Area was the A.D.G.T., he was the Transportation Staff Officer to the Army Commander. It was his duty to co-ordinate the work of the several branches of directorates, etc., allotted to the Army Area, for the Army Commander's information, and to act as the latter's channel of communication for the transmission of all orders to the