

thickness the pontoons were heavy, and a complete lack of high tensile steel made it necessary to use timber (necessarily "green" as there was no seasoned stock), for the superstructure, and mild steel for the S.B.G.

The improvised equipment was therefore clumsy, and the timber parts warped in the sun, making assembly difficult; but it served its purpose.

120. The four native African Field Companies, one East African, two Gold Coast and one Nigerian, have done remarkably good work in spite of having been ill equipped and sixty per cent. under strength in British N.C.O.s.

The main engineer effort was supplied by South Africa which provided well trained and well equipped units for every purpose. I cannot mention all the units who have earned it, but their comrades in other units will not grudge particular attention being called to the Road Construction and Maintenance Companies and the Water Company. The vital work of these units has been carried out with great skill and perseverance under the most arduous conditions.

I must draw attention to the work of Brigadier A. Minnis, C.B.E., who, before the operation took place, by his initiative and foresight had made R.E. provision, to a large extent locally improvised, which enabled the advance to proceed without serious check.

#### 121. Survey.

Until the establishment of a Survey Directorate at the end of October, 1940, the only maps available for the operations were the out-of-date 1/1,000,000 series. Organised mapping of the probable area of operations on the 1/500,000 scale was then started, the data for the maps being collected from many sources, chiefly from Italian maps. As fresh data became available new editions were issued, while road strips of the more important roads were compiled from air photographs, and the details incorporated in the maps.

By the day operations began maps were ready as far as Mogadiscio. Artillery maps on the 1/25,000 scale had also been prepared from air photographs for the River Giuba position from its mouth to just north of Mabungo, together with large scale maps of Chisimaio and Mogadiscio.

As the advance proceeded, maps were prepared and issued well in time, information being mostly collected from captured Italian maps and from air photographs along the routes. Artillery maps of the Marda Pass and the Auasc position were also prepared. In view of the speed of the advance this must be considered a very successful achievement.

The satisfactory position in East Africa Force with regard to maps was mainly due to the careful preparation and detailed organisation made in the few months preceding the start of operations, under the direction of Colonel M. Hotine whose special knowledge and ability and untiring drive were outstanding.

#### 122. Signals.

From the time Advanced Force H.Q. left Nairobi on 10th February, 1941, communications had to be maintained almost entirely by W/T. This was due to the tremendous distances separating Advanced Force H.Q. from the Divisions, Divisions from their Brigades, and sometimes Brigades from their battalions.

At one period Advanced Force H.Q. was as much as 740, 570 and 250 miles away from the three Divisions.

The daily average of messages dealt with at Advanced Force H.Q. including D.R. messages and re-routing was over 1,000, while that of the Divisional H.Qs. was about 250.

123. Under the best conditions communications in these circumstances would not have been easy, but as it was, the Signals had to compete with three grave disabilities, lack of powerful wireless sets, a large percentage of partially-trained personnel, and the complete blackouts or heavy fading which constantly occurred owing to the atmospheric and terrestrial conditions in the Northern Frontier District of Kenya and Italian Somaliland.

124. 25 (A) Corps Signals and reinforcements for the skeleton 11th and 12th (A) Divisional Signals only arrived in this country from England as operations were beginning. The men in these units, owing to various circumstances, had received little training before embarkation, a fact fully realised by the War Office, who I understand, sent a certificate with them to this effect. Had the other two disabilities not been present, the partially-trained operators would more easily have been able to deal with the volume of traffic, but as it was, the lack of skilled operators capable of working sets under adverse circumstances proved a considerable hindrance to the free flow of orders and messages necessary to control operations over such large areas.

After approximately 2½ months spent on board ship all the officers and men experienced severe physical exhaustion during the marches and long spells of duty. Life suddenly maintained on bully beef, biscuit, and a small supply of water did not help to improve physical or mental fitness. This strain was further increased by the high percentage of sickness due to lack of acclimatisation which was unavoidable, since many of the men went direct from the boat to the field.

125. The limited resources in trained personnel had continually to be split owing to the necessity of sending forward advanced signal centres whenever Headquarters moved. Force H.Q. moved six times, the shortest distance being 200 miles in a straight line, and the greatest over 300 miles. This meant it was generally a week between the Advance Signal Centre leaving for a new H.Q. and the Rear Signal Centre arriving there. The 11th (A) Division moved its H.Q. 21 times, the average distance covered being 77 miles; the movements of the H.Q. of 12th (A) Division were similar, while those of the 1st S.A. Division were also abnormal.

126. 15-cwt. Ford trucks were issued in lieu of a proportion of motor-cycles as the latter were found unsuitable in the bush. These trucks proved invaluable for D.R. and D.R.L.S. work. The D.Rs. themselves worked heroically for very long hours, covering enormous distances over the bad roads and tracks.

127. The fact that reliance had to be placed almost entirely on W/T communication meant considerable strain on the cipher personnel, the shortage of which was further aggravated by having to detach men for the new sub areas made necessary by the advance. Extra men who were withdrawn from units to fill gaps