

and two native drivers being allotted to each wagon. The load for a wagon was 6,000 lbs. The oxen were, as a rule, fine animals, and very tractable. The curious thing about them was that they would pull together, however large the team might be. With heavy guns as many as 20 spans of oxen were employed, and when they were on the move the trek chain was always taut. This characteristic is probably due to heredity, for in India, where oxen are commonly used for draught purposes, but where more than two spans are never attached to a native bullock cart, but little advantage is gained by employing more than four spans at the outside to draw a gun or other heavy load. The Kaffirs are unrivalled in their management of oxen, and extraordinarily proficient in the use of the long whip, by means of which they guide and urge on their teams. During the greater part of the year the oxen only need a sufficient daily interval for grazing and rest to keep in good condition, provided that they are not driven too fast, and that the marches are of moderate length. In the depth of winter the animals require hay and Indian corn to supplement the withered grass of the veldt, and are all the better for being covered at night with horse blankets or with blankets lined with felt, called in India "jhoods." At my request the Government of India supplied a considerable number of jhoods, and these were found to be of great service in keeping the oxen warm during the bitterly cold nights of July and August on the high veldt. Being built in the country of hard and seasoned wood of indigenous growth, the ox wagons lasted well and seldom needed repair.

The mule transport consisted of what are called in South Africa buck wagons, carrying a load of 3,500 lbs., and drawn by 10 mules each, with two native drivers. The War Office supplied as many mules as were asked for, and though many of the animals were untrained, they readily adapted themselves to draught. Besides receiving a sufficient grain ration, mules require careful and regular watering and grazing, and difficulty was experienced in getting the native drivers to attend to their duties in this respect. It was so much easier to tether the mules together in groups of five than to knee-halter them singly, that continual vigilance had to be exercised to prevent the former practice from being adopted. When tethered together the strongest animal drags the rest about, so that they can neither drink nor graze, and consequently they rapidly fall off in condition. Being accustomed to drive oxen, the Kaffirs are apt to use the long whip too freely in driving mule teams, and so much was this the case that it was found necessary to prohibit the use of the long whip with mule transport, the drivers being provided instead with short hunting whips.

The mules employed in the campaign have been imported from North and South America, Spain, and Italy. A few also were supplied from India, and as many as could be obtained were purchased locally. Taken all round, no complaint could be made of the quality of the animals. The best were the Cape mules, these being thoroughly acclimatised, hardy, short-legged, and compactly built. Next to them came the mules from the Punjab. Big mules are a mistake for ordinary field transport, as they require as much care and as large a grain ration as horses.

As regards the buck wagons, those purchased locally were found to be much more serviceable than those manufactured in England, technically

styled "Bristol pattern wagons." As in the case of the ox wagons, the former were built of hard, well-seasoned wood grown in South Africa. Mule wagons not being in common use at home, there was no stock in hand, and they had to be put together hurriedly, the wood used in their construction warping and shrinking in the dry climate of the veldt. The wheels, especially of the English wagons, gave a great deal of trouble, requiring frequent re-tyring and other repairs. Six buck wagons were imported for trial from the United States, and these proved to be superior to any other pattern of either Cape or English manufacture. The wheels were of hickory, the bodies of black walnut, and the metal work of steel. They were built by Messrs. Stude, Baker, and Co., who have a great wagon manufactory at South Bend, Indiana. The superiority of these vehicles was doubtless due to the fact that mule wagons are largely used in America for the carriage of goods as well as for military transport. The manufacturers have, therefore, learnt by practical experience what is the best type of wagon, and what are the most suitable materials to employ in building it. It may be added that the wagons in question cost considerably less than the Bristol pattern wagons.

The mule harness supplied from England, though perhaps a little too elaborate, was of excellent quality and much more durable than what was obtainable on the spot.

An account of the transport in South Africa would be incomplete without a reference to the steam traction-engines and trucks which were sent out in charge of Lieutenant-Colonel Templér, 7th Battalion King's Royal Rifle Corps. These were first landed in Natal and afterwards transhipped to Cape Town, where some were employed for carrying stores from the docks, the remainder being utilised at Kimberley, Bloemfontein, Johannesburg, and Pretoria. At these centres, where coal and water were readily obtainable, the engines proved a valuable adjunct to animal draught; but owing to the absence of fuel they could not be used on the line of march, or to haul supplies to bodies of troops encamped more than 20 miles from a coal depot. From a military point of view the defect of steam traction lies not only in the impossibility of working it unless coal and water are available at each halting-place, but in the weight of the fuel and water which each engine has to drag along, thus expending much of its tractive force. This defect would be greatly lessened if an efficient oil motor could be substituted for the steam motor, as in that case no water would be wanted, while the coal would be replaced by a more portable and concentrated description of fuel.

In conclusion it may be observed that, although in some respects the organisation and maintenance of an efficient transport service in South Africa was not an easy matter, the abundance of good grazing in almost every district of the Orange River Colony and Transvaal during the greater part of the year was an advantage which hardly any other country would have afforded. The ox transport was practically self-supporting, and no forage except a moderate grain ration, sometimes procurable locally, had to be provided for the mules. In the thinly populated and uncivilised regions in which the British Army generally fights it is not unfrequently as difficult to feed the transport animals as the troops themselves. In South Africa this difficulty was reduced to a minimum. 25th March, 1901. ROBERTS, F.M.