MILITARY TRANSPORT REQUIRED FOR RAPID MOVEMENTS, ESPECIALLY IN INDIA.¹

By Major A. R. HEYLAND, 1st Bombay Light Cavalry.

It appears that what is needed for the above is a species of transport which, to be thoroughly efficient, should be—

Easily raised on an emergency, and capable of being quickly set in working order; also of expansion as to numbers of vehicles and animals on requirements increasing.

When raised, easily kept going without a large staff of Transport Officers.

Capable of rapid progression, equal to if not superior to that of the troops which it accompanies.

The animals belonging to it should be of the hardiest obtainable, requiring small bulk of easily procurable fodder to sustain them in hard-working condition.

The vehicles of the simplest and lightest description consistent with strength, each one being easily pulled or pushed with its load rapidly by men in case of the animal in the shafts breaking down.

Harness of a style equally suited to pack as well as to draught, so that, in case of a break-down of a vehicle, the beast drawing it may be used as a pack animal; or that, in case of insufficient animals or vehicles for the baggage and ambulance, some of the animals may be used for pack and the vehicles as hand barrows, pulled or pushed by coolies or soldiers; or, again, in case of detachments which have to march with their baggage by mountain paths, where even light carts and field artillery cannot travel, the required number of pack animals may be used for this purpose, and the vehicles wheeled round by hand by better roads, or taken to pieces and carried over difficult places.

The vehicles should be capable of being easily and quickly taken to pieces and put together again for facility in stowage and transport, in a small compass, by ship or rail, or for carriage on coolies' heads.

A proportion of the best baggage animals with a force should be capable of drawing their carts at a gallop, carrying each four infantry men, with their arms and ammunition, to desirable points at critical moments, or of carrying reserved ammunition rapidly where and when required.

Vehicles and harness should be easily made and easily repaired when broken, by unskilled native workmen.

So as to diminish, as far as possible, the weight to be carried,² the vehicles should be so constructed that they or parts of them may, if

¹ Read at the Evening Meeting, April 19, 1880, Colonel E. H. Clive, Grenadier Guards, in the Chair.

² This must be particularly remembered with reference to number of vehicles and the length of the line of carts and animals to be guarded on the march.

necessary, be put to other uses besides that of carts or hand barrows; for instance, the platform of the cart may be made so as to be easily and quickly separated from the body of the cart for use as a hand-litter in distributing ammunition or for carrying wounded men, and the cart itself, carrying a small roll of canvas, from 30 to 40 lbs. weight, may be quickly converted into a comfortable tent.

Lastly, the raising and keeping up of the whole should be as economical as can be, consistently with as many of the above conditions as possible.

The description of transport which is best suited to meet these requirements in India seems to be—

Small and very light carts, made principally of bamboo and coir rope (until a better material is sug- gested). ¹	Drawn by— mules donkeys ponies Geldings and mares should only be employed, for obvious reasons.	} Not less than 12-2 and not more than 13-2 in height.

Such carts have been tried by me at different times for some years past, on the line of march and on shooting trips, and a pattern has been constructed by me with improvements by Mr. Rowe which possesses most of the advantages mentioned as desirable, and an inspection of this cart, real practical trials of its use, and expressions of opinions from those who consider the matter worthy of notice, may lead to good result.

¹ Gas piping has been proposed, and I believe used, by Mr. Rowe, Superintendent, Municipal Workshops, Bombay, as a substitute for bamboo in making up some of my pattern carts taken lately by Officers of the 7th Fusiliers on service.

A pattern cart may be seen at the Municipal Workshops, Bombay.

It is made of bamboo and coir rope.

It weighs 185 lbs. complete.

To make, it costs in the Municipal Workshops, Bombay (fitted with the best wheels and axle), about 45 Rs. complete: with country wheels, in the Deesa Bazaar, about 30 Rs.

When drawn by an ordinary 12-hand or 12-2 pony, it carries easily at three to four miles an hour on ordinary roads from 400 to 700 lbs. weight of baggage.

It carries canvas (three folds thick, weight about 40 lbs.), with which a cart can be made into a fair, small tent; two or four carts opposite each other with their canvas form a large one, or with the carts in two rows facing each other, any length desired.

The whole cart can be taken to pieces and tied in a small bundle, either to be carried by coolies or for stowage in a railway carriage or on board ship.

It can easily be put together again; the component parts of several carts are interchangeable without inconvenience.

The platform can be taken off at once to form a hand litter.

The harness consists of the ordinary Commissariat mule pack saddle (of course made smaller and lighter for small ponies and donkeys), with belly-band, breast-band, breeching and crupper.

Head-stall and leading tape, *no bit*, the animal in the shafts being quite under control with a metal nose-band, to which the tape is fastened.

There being no traces, to the ends of the shafts is fastened a broad leather band lined with numdah as a breast-band, supplementary to and over the pack saddle breast-band and kept in its place by a leather strap going over the neck of the animal.

On emergencies, the pony or donkey can be used as a pack animal without extra harness.

The pack is of itself a great protection to the animal from cold, sun, and rain, and can be used during day and night instead of a jhool.

The iron nose-band, in place of a bit, will more easily admit of one man looking after several carts, each pony being fastened by his leading tape to the cart in front of him.

With a bit, the jerks which would certainly frequently occur on the march would probably hurt the pony and make him resist and fall back, but with the nose-band this would not be likely to occur; the animal would be happier and work better without a bit (horses and mules in the shafts of carts in many countries never have bits in their mouths).

Remarks.

The carts being part of the tent, great celerity may be looked for in striking camp. The animals belonging to the carts should be picketed close to their respective carts, and there appears no reason why a force encamped with them during the darkest night should not be ready to march with all its baggage within ten minutes of receiving the order to strike tents and pack baggage.

The carts with ponies being capable of rapid movement, it would be feasible for a force provided with them to move in an enemy's country actually unaccompanied by its baggage, doing away with the necessity of providing for baggage guards and separate escorts, and the carts with their loads might at times offer valuable shelter from an enemy's rifle bullets.¹

It is unnecessary to remark that such very light carts are not suited for carrying heavy chests, but all impedimenta required by troops for actual business in the presence of an enemy can be easily carried by them, such as light tents, kit bags, ammunition, rations, intrenching tools, water bags, &c., &c.

The cart has no springs, but owing to the elastic material of which it is composed, it can be used conveniently for carriage of the sick; for wounded men the platform would be of course used as a litter carried by coolies.

It is a well recognised fact that a large percentage of pack animals on service are generally useless when their services are most urgently required, from galls and sore backs; with the harness and light cart suggested, sore back and galls should be almost impossible.

The only advantage for purposes of military transport which pack animals have over wheeled vehicles and draught animals, is that on rare occasions pack animals may go where wheels cannot, but the style of cart which is recommended to be used can be wheeled with its load in nearly all places that a laden camel can go, and in many places where a laden camel cannot; moreover, by the combination-harness for both pack and draught purposes, and the portability of the cart, the only objection to wheeled transport is at any rate partly removed;

¹ I could give many instances in which this use could have been made of light carts for approaching in the open, positions otherwise unassailable, without great loss to the attacking party—a loss completely disproportionate to the object to be gained—by loading these hand barrows with tents or bags, excellent easily and quickly movable mantelets can be extemporised.

on the other hand the advantages of wheeled over pack animal transport are too numerous and well known to require comment.

Small mules, ponies, and donkeys are the hardiest slaves we have in India, and require much smaller bulk of food than camels, bullocks, or horses, both as regards the animals themselves individually, and as considered with reference to power obtained for the required purpose. Costing next to nothing to their owners to breed, they can be obtained in sufficient quantities at small cost whenever required throughout India, without Government assistance until the moment when it is required to entertain them.

Spare bamboos to repair broken carts could be carried easily, one long and one short by each cart, and should be braced to a corresponding length of bamboo in the cart itself with leather thongs so as to be out of the way until required.

All who have tried it know the constant worry to men and animals entailed by the use of pack animals, loads difficult to balance, to fasten on, and when on, constantly slipping to one side or off altogether; with light carts bundles and bags can be distributed evenly, quickly, and without trouble over the cart, and the whole safely secured by one long rope drawn through iron rings attached to the sides of the platform and over the load as often as necessary, whether diagonally, crossways, or lengthways. The platform of the cart being of rope, can be slackened or braced up as tight as necessary, according to the sort of load which is to be carried.

In pitching the tent, should rain be expected, care should be taken by hauling out the canvas to the pegs to permit it only to come in contact with the cart at the highest point, viz., the top of the shafts where leather caps are sewn on to the canvas, as in all tops of pole tents.

The reverse ends of the cart may either be fastened to pegs in the ground, or buried in the ground themselves, so as to increase or decrease the slope of the tent as required.

It is perhaps superfluous to add that without power of rapid movement, accompanied by their tents, food, and ammunition, the best troops in the world, armed with the best weapons and commanded by the best Officers, are for offence no better, nay even not so good, as the most irregular and primitively armed troops possessing greater mobility. Is this fact recognised generally, and if so, is it ever forgotten?

NAMES OF MEMBERS who joined the Institution between the 1st July and
30th September.

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Field, A. M., Lieut. R.N.	Baynes, Gilbert S., Lieut. 60th Rifles.
Moore, J. G. Carrick, late Lieut. Royal Horse Guards.	Trent, H. W. J., Colonel, late 68th Regiment, Inspector-General of Musketry.
Wood, Edward A., Lieut.-Colonel 10th Hussars.	Pringle, J. Eliot, Commander R.N.
Bibby, Alfred, Captain 7th Dragoon Guards.	Jeffreys, P. D., Captain 88th Regiment.
Brown, Edgar Cubitt, Lieut. 89th Regiment.	Davidson, Stuart, Lieut. Royal Engineers.
Brand, T. S., Commander R.N.	Slade, Edmond J. W., Lieut. R.N.
	Allen, Charles, Lieut. 4th West York Artillery Volunteers.

ANNUAL SUBSCRIBERS.

McLeod, Walter T., D.A. Commissary-General Transport Department.	Beauchamp, H. G. P., Lt. 20th Hussars.
Roughton, Robert, Chief Engineer R.N.	Hallewell, H. L., Captain 1st Royal Scots Regiment.
Fox, W. R., Major R.A.	Adair, T. B. S., Midshipman R.N.
Barclay, F. C. D'E., Major-General.	Rising, Charles C., Captain R.N.
Durnford, A. G., Major R.E.	Smail, W. A., Captain 36th Regiment.
Fergusson, H. J., Lieut. 3rd The Buffs.	Burton, Edwin, Captain Royal London Militia.
Spicer, J. W. G., Major late 9th Lancers.	Macleane, Thomas, Captain h.p. late 101st Regiment.
Schank, H. A., Captain 71st Highlanders.	
Curtis, F. G. S., Lieut.-Colonel, 6th Inniskilling Dragoons.	