

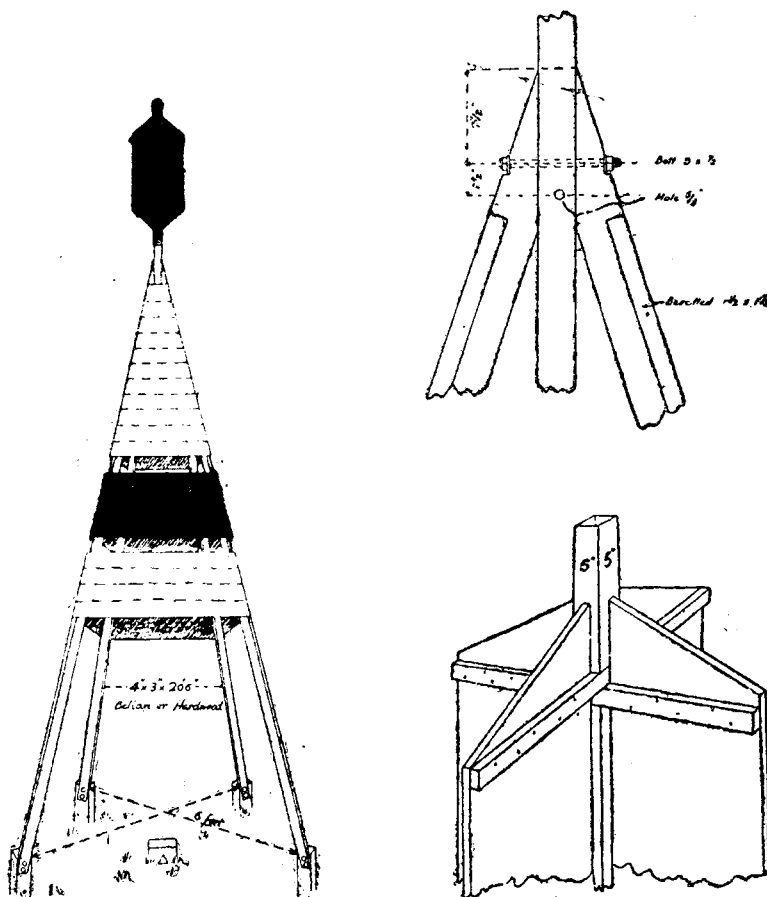
TRIANGULATION BEACONS.

by

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Reports, appearing from time to time on the results of completed triangulation, show a variety of methods of construction of beacons. These range from temporary brushwood and calico signals to something of a more permanent nature. No doubt the purpose of the work, the type of country, local conditions, methods of observing, and finance, all enter into a decision as regards the necessity for the type of beacon to be used.



Previous to the commencement of a comprehensive system this country possessed three or four isolated areas of minor triangulation, for which beacons, mostly temporary, had been made from jungle round timbers or anything which came to the surveyor's hand. Later a standard type of beacon, made from angle and sheet iron, was evolved. This was fairly

easy to transport and erect but was rather expensive to manufacture. In addition it was found to give insufficient headroom when observing, the signal was too small for long distances, and many were damaged by natives who broke and twisted off lengths of angle iron for making spears and parangs. Plans for two types of timber beacons were prepared and one of these is reproduced, with dimensions, on Plate V, Figs. 1, 2 and 3 *. The larger should, under good atmospheric conditions within the tropics, be visible up to a distance of 45 miles and the smaller up to 30 miles. The timber used is local hardwood (belian) for the legs and mast, with boards of camphor, and is cut and fitted before being taken into the field.

The cost of each beacon at headquarters, including paint and incidentals, is \$ 34 (£ 4) for the large type, and \$ 20 (£ 2,7 s.) for the small type (\$ 1 = 2 s. 4 d.).

Excellent results have been obtained from observations to beacons as described above. The last 1st-order work, consisting of early morning and evening rounds, was done in 1938. The results were as follows :

	0".0	0".5	1".0	1".5	2".0	<u>Total</u>
Limit of error :						
No. of triangles :	8	4	5	2		19
Probable error of an observed angle	±	0".115.				

Owing to the constant use to which the majority of triangulation stations are put for check bearings and closures during the course of settlement surveys, it is considered that permanent beacons represent a saving in expenditure and an improvement in the standard of work.



(*) The height of the primary triangulation tripod from the pegs (3 ft. 6 in. long) to its apex is 19 feet and the total beacon height is 24 feet. The ground diagonal is 12 feet, not 6 as appears in Fig. 1. The tripod is braced near the top to carry the vane. The secondary triangulation tripod (not illustrated here) is 13 feet high and the beacon is 16 feet to the top of the vane, which is circular; the splay of the ground diagonal is 8 ft. 6 in. — Ed., E.S.R.