

THE "WILD" PRISMATIC SQUARE

by Alan Cooper

There are many instruments which help the Forest Officer when carrying out survey work in the Department, one of the simplest and smallest of these being the "wild" prismatic square, which, despite its simplicity, lends itself to many phases of survey work. The prismatic square comes in the forms of single prism and double prism.

The instruments are as small as a hen's egg and fit easily into the pocket whilst for the service it renders, it is quite inexpensive being only about \$22.00 retail for the double prism and even less for the single.

Throughout the years many instruments have been designed to carry out some of the work that this instrument will do. Their shapes and sizes have made them rather unwieldy. These devices have, in turn, consisted of plumb lines, eyelets, sight vanes, slits, mirrors and finally prisms. Mirrors tarnish quickly and must be absolutely flat and precisely set in their mountings. By reason of these facts they do not lend themselves to field work - any small deviation from true immediately giving a source of error. The magnetic compass is subject to attraction and the misreading of degrees is a further error of which to beware. In the "wild" prismatic square the single prism deviates the observed ray through 90° to right or left according to which of the two faces through which the observation is made. The double prism has two super-posed prisms which deviate the observed rays through 90° one to the right and one to the left. The two right angles together then form an angle of 180° . The angle of deviation of the prisms is constant at all times for the instrument and as they are fixed in their mountings no setting is necessary, which fact makes them ready, at any time, for use.

Approximately 12 months ago the double prism was acquired by the Wanneroo Division and much use of it has been made in the subdivision of planting areas for pine. Not only does it enable the officer to quickly mark out right angles for the pegging of fire breaks and cross tracks but by using the rectangular co-ordinate system he can carry out the survey of an irregular area.

By using both the prisms to give the 180° angle the officer is enabled to place himself in a straight line between two given points.

With the use of the single prismatic square and a plumb line suspended from the threaded portion of the instrument it is possible to take levels to within an accuracy of approximately 2 cm in 50 m. The square is held horizontally, with one of its faces towards the ground and the observer sights into the other face. To the observer the image of the plumb line appears horizontal acting as a reticle. Observing through the direct view finder the user has only then to read the figure on the surveyors staff in line with the reticle. This operation would be of more benefit in building or earth levelling works and has not yet been used in the Wanneroo Division.

When not in use the instrument screws down into its cover saving it from the likelihood of any damage. Unlike cross heads, the magnetic compass and other home made devices the instrument will indicate perfect right angles even when not absolutely motionless or held exactly in line of sight, thus dispensing with the use of tripods. Thanks to its small size and the fact that it can be carried in the pocket it is ideal for spot checks with an accuracy in the vicinity of one minute.