

A compass on a transit is sometimes a convenience; the box should be water-tight and the covering glass should be made of homogenous plate or ground glass.

English instruments are as a rule more highly finished and are heavier than American; they are cheaper too. Some of the special features of American instruments would improve the English instruments if adopted on them.

In the writer's opinion the best transit is that whose line of collimation can be made the most nearly to trace out a vertical plane; this is the most important operation and at the same time the most difficult which has to be performed by the instrument. In the majority of ordinary instruments the readings of the graduated circle as to accuracy and precision are of a quality much superior to that of the manner in which the instrument is mounted upon the tripod and of the character of the tripod itself. It is an absurdity to have a circle reading to twenty seconds say, standing on the narrow base which usually accompanies the use of four levelling screws, and the ordinary unframed tripod. A circle reading to less than a single minute should stand on the broad base which can be obtained by the use of the three levelling screws and should have a framed tripod. The most difficult property to obtain in perfection in a transit is stiffness. A tripod needs frequently to be overhauled—always after a journey—to see that all the screws and bolt heads are tight; the shoes, especially on instruments that have been long in use, need to be looked after to see that they are firmly attached to the wood.

In conclusion I would say that in seeking a good instrument the safest way is to get one that has been made by a reputable maker.

DISCUSSION.

The Chairman—I am sure we have all been very much interested with the practical points brought out in this paper. I should like very much to have a discussion on this paper.

Mr. Abrey then explained what he considered the best kind of tripod and the one he generally used. He explained that symmetry was a very important element in this instrument.

Mr. Chipman—I have discarded the round tripod; the truss tripod is much better. If you tighten it once every six months it is quite sufficient.

Mr. Abrey—These framed tripods I have carried over the rocks, and they have been none the worse. It can be made smaller and so be more easily carried. Small object glasses are the best. In the North-West I used 10, 15 and 20 diameters and had no trouble with refraction. When you have higher parts you cannot use them well in the light.
