

the map, by measuring the angles at each station, which every object makes with the station line $m n$. When all the objects to be surveyed cannot be seen from two stations, then three or four may be used, or as many as may be found necessary; taking care to measure the distance from one station to another; placing the instrument at every station, and observing the angles formed by all the visible objects with the respective station line; then the intersection of the lines forming these respective angles, will give the positions of all the remarkable objects thus observed.

In this manner may very extensive surveys be taken; and the positions of hills, rivers, coasts, &c., ascertained.

PROBLEM X.

To survey a large estate.

The following method of surveying a large estate was first given by Emerson, in his "Surveying," page 47. It has been followed by Hutton and Keith.

When the estate is very large, and contains a great number of fields, it cannot be accurately surveyed and planned by measuring each field separately, and then adding all the separate results together; nor by taking all the angles, and measuring the boundaries that enclose it. For in these cases the small errors will be so multiplied as to render it very much distorted.

1. Walk over the estate two or three times, in order to get a perfect idea of its figure. And to help your memory, make a rough draft of it on paper, inserting the names of the different fields within it, and noting down the principal objects.

2. Choose two or more elevated places in the estate for your stations, from which you can see all the principal parts of it; and let these stations be as far distant from each other