circumscribing circle on AC. But when the angle AC is nearly 180° the centre of this circle would be too far away.

Draw the circumscribing circles in the usual way and join B with $M1$ and $M2$. By joining the intersections F and G the observer's position S is found (Fig. 3).

3. Where the distance AR is much greater than the radius of the protractor.

Divide AR into halves, AA' and $A'R$, and place the centre of the protractor at A'. To find $M1$, take twice the distance of RF (Fig. 4).

4. When the position of the observer is at S (Fig. 5*a*). The angle between A and B is only 1 or 2 degrees. Drawing the circumscribing circle in the usual way is not possible, nevertheless the intersection of the two circumscribing circles would be nearly perpendicular.

Draw the circumscribing circle on BC. Plot the angle α (the angle between A and B en by the observer) as in Fig. 5. Join the intersection F with A, thus S is the position of the observer. (The manual on Hydrography written by the Hydrographer of the Netherlands, Captain LUYMES, gives a solution that differs slightly from the above).

A GRAPHICAL METHOD OF ADJUSTING PLANE TABLE TRAVERSES.

(Extracted from *The Canadian Surveyor*, Ottawa, July 1933).

(The United States Geological Survey recommend the following method of similar triangles for adjusting cumulative errors in a plane table traverse).

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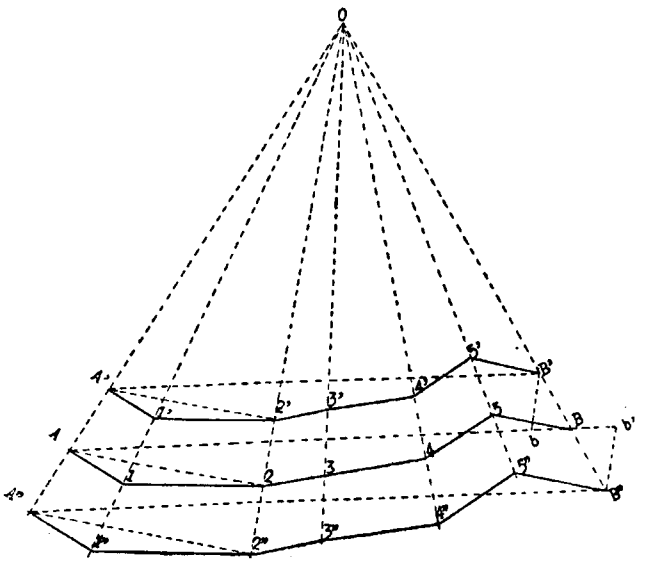
Through the end points of the traverse (see Fig.) draw a straight line AB. Measuring from one end, lay off on this line the distance which should be the end to end distance of the traverse. Call the end which does not coincide with the end of the traverse b or b' according to whether the distance laid off is respectively shorter or longer than the traverse. Take any convenient point O at one side of the traverse and at a sufficient distance away to avoid sharp angles of intersection with the line AB, and draw lines OA and OB. If the traverse is too long, draw a line from b parallel with the line OA and intersecting the line OB at point B'. Through point B' draw the line $B'A'$ parallel to the line AB.



Line *A'B'* gives the desired length of the traverse *Ab*, as parallel lines intercepting parallel lines are equal. From the point *O* draw lines through road corners and the several angles of the traverse represented by points 1, 2, 3, etc. The end points of the adjusted traverse are represented by points *A'* and *B'*. To locate other points on the adjusted traverse, begin at either end *A'* or *B'*, and through them draw *A'*1' parallel to *A*1, *B'*5' parallel to *B*5, 5'4' parallel to 5-4, etc. Point 2, any point on the traverse, may be located directly on the adjusted traverse by paralleling the direction of *A*2 through point *A'* to the line *O*2, the intersection 2' being the desired point. Because of the successively similar triangles constructed, the same proportional reduction of distance is carried through for each segment as was applied to the end length of the traverse.

If the traverse is too short by any distance *Bb'* draw a line through point *b'* parallel to the line *OA* to intersect line *OB* extended at point *B''* and proceed as before. *A''* and *B''* represent the ends and 1'', 2'', etc., the intermediate points of the adjusted traverse.

In the actual use of the similar triangles method, it is not necessary to draw the whole lines from the point *O*. A segment of each line, through points of the traverse slightly longer than will be necessary for the enlargement or reduction, will suffice. By fastening tracing paper over the traverse, the construction lines and the adjustment can be made directly on the tracing paper and so be ready without further effort for transfer to the final field sheet. With only a moderately large error to be adjusted, it will be found that a careful adjustment of the intermediate road corners or principal points on the traverse line will suffice. The segments of traverse between such points can then be adjusted into place without appreciable error by shifting a tracing of the original traverse line.

The similar triangles method of enlargement or reduction is applicable to plats of other than traverse lines.

A METHOD OF OBTAINING CURRENT OBSERVATIONS FROM A SHIP IN DEEP WATER WITHOUT ANCHORING

by

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Shortly after the termination of the Great War, whilst in command of H.M.S. *Merlin*, I received instructions to carry out a series of surface and sub-surface current observations in deep water off a coast where the current ran with considerable velocity, with resulting heavy swirls and rips. The ship was at first anchored with the deep water anchoring gear but having to veer a considerable amount of cable it was found that she yawed about too much to enable accurate observations to be obtained. The following method was therefore eventually adopted with success.

A buoy was moored at as short a stay as possible and the bow of the ship kept as close to it as possible, regulating the revolutions of the engine as necessary and keeping as steady a course as possible under the circumstances. The EKMAN current meter was used and when the first messenger was released natural beam transit marks ashore were observed from some position on the upper deck. On releasing the second messenger, the distance it was found necessary to move forward or aft from the first position to bring the transit marks in line again was measured, and this distance was respectively added to or subtracted from the total distance recorded by the current meter during the observation.