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# The Volunteer Review,

AND

## MILITARY AND NAVAL GAZETTE.

"Unbribed, unbought, our swords we draw,  
To guard the Monarch, fence the Law."

OTTAWA, TUESDAY, AUGUST 25, 1874.

**TO CORRESPONDENTS.**—Letters addressed to either the Editor or Publisher, as well as communications intended for publication, must, invariably, be *pre-paid*. Correspondents will also bear in mind that one end of the envelope should be left open, and at the corner the words "Printer's copy" written and a two or five cent stamp (according to the weight of the communication) placed thereon will pay the postage.

**LIEUT. J. B. VINTER**, of Victoria, is our authorised Agent for Vancouver Island, British Columbia. As is also Captain H. V. EDMONDS for New Westminster and adjacent country.

We have to thank the Assistant Librarian of the Royal United Service Institution, T. D. SULLIVAN, Esq., for a copy of a most interesting and practical little pamphlet entitled "Measurement of Gun and Rifle Ranges from 100 to 3,750 yards; in a very Practical Essay, Rapid and accurate and in many cases by night with table and diagrams," by ROLLA ROTSE, Esq., late Major, 2nd Batt., R.V.

The scope of this valuable little brochure will be best understood from the author's introductory remarks, which are as follows: "Whether as regards accuracy and consequent efficiency of fire or economy of ammunition it would be difficult to overrate the importance of being able to measure distances in a manner practical and easy, rapid and accurate. As regards artillery fire the advantages of such a measurement will become still more important if

combined with the ability to effect the measurement before the guns are brought into position, and thus not only save valuable time but still more valuable lives from the absence of experience before firing commences and whilst the ranges are being ascertained. I propose to suggest a method by which all the advantages adverted to may be obtained in the most simple, rapid and inexpensive manner. 2—As regards the ascertainment of distances a most able article is given by Capt. NOLAN, R.A., in No. 57 (Vol. 14 p. 1) of the "Royal United Service Journal," and the plan he recommends has, to a certain extent, been adopted in the service; but his plan calls for complicated and expensive machinery which would not only encumber the guns and be liable to injury, but would require great nicety and coolness in the operations (made as they must be after the guns are brought into position and liable to the fire of the enemy) would be far from rapid in execution and would necessitate considerable previous study. 3—My plan requires no cumbrous or expensive machinery or any which would be liable to injury, would call for no greater nicety than could be given by the eye of a gunner, might be adopted without drawing the attraction of the enemy, would be very rapid in execution and would not necessitate a couple of hours previous study. The measurements would also be made before the guns are brought into position, and need not be confined to the distances of a single object, but within two minutes and probably less time the distance to a particular object—that to a nearer object in the same direction and the distance to two lateral objects—the one towards the observer's right and the other towards his left might be ascertained. Not only may those advantages be obtained without exposing a single gun, but in many cases the measurements may be made as readily by night as by day. 4—Having thus introduced the subject I will proceed to explain the details of the plan I propose for adoption after anticipating and meeting an objection which may be made as to its practical character. My plan is based on "Geometry" and not on "Trigonometry," and I am well aware that an objection is generally raised against measurement of distances by geometry, that the triangle on which the calculation is based is so small that the distance cannot be ascertained with sufficient accuracy. That objection applies with great force to the stadiometer used for the measurement of rifle ranges but does not apply to my plan, as under it the smaller triangle has a sufficient base to allow of accurate measurements even with very long ranges. At the range of 3,750 yards the base of the smaller triangle would be two feet and the covering line could be readily and accurately marked by the eye unassisted by a field glass. 5—The machinery required under the plan I am about to sug-

gest would be confined to four pieces of whiplcord string, each 50 yards long, with loops or small metal rings at the ends, five pieces of stout wire of the length of a foot or 18 inches each, a short measuring tape and a copy of the table afterwards given and for use under special circumstances as after mentioned, two pieces of similar string about four feet long, each having a small plummet at one end. For measurement between distant points, a sixth wire would be useful, with the exception of the wires the whole of the machinery might be kept in a water proof bag not too large to get into a fairly sized pocket, and the wires although useful might as afterwards shown be dispensed with. The entire expense might amount to, but would not probably exceed, seven shillings. For distances not exceeding 1,200 or 1,250 yards or even occasionally for greater distances strings of the length of 25 yards might be used, and by having a small ring or tying a knot at the middle of the 50 yard strings, ten of those strings might be used for the measurements where the smaller base is adopted. The measurements might be made with the sides of 50 yards by two pieces of string; but some loss of time would be occasioned by the strings having to be shifted. Small arms, cleaning rods, or even laths or sticks might be used in place of the wires, but the latter would be preferable, and they could be so readily taken with a gun or otherwise, and their use would so much tend to facilitate the rapidity and insure the accuracy of the operations that it would be desirable to have them. 6—The principle of measurement I would propose for adoption is that based on the *rhombus*, and in order to show the rapidity and simplicity of the operations I will, before explaining how the results are calculated give a practical example premising that the wires serve the double purpose of fixing the strings in position and as directing points, for coverings and that consequently they must be placed vertically or upright."

The illustration having reference to diagrams which we cannot copy, compels us to give the substance of the author's solution as follows: The principle is that of similar triangles with a common base and is to be found in euclid 6; 4—the whiplcord is to form on the ground a four sided figure, one side of which shall be in the line of the objective point; the lower side form the base; a line drawn from its extremity towards that point will intersect the opposite side of the figure at the point of intersection one of the wires should be placed—the triangles thus formed would have two sides of the figure—one a common base, the other a part of one of its sides and a proportionate part of a third side, included within itself—while the remainder of the third side and the fourth would form a similar triangle by the measurement of its base; a very simple calculation involving only multiplication and