the current, 0.3348 m. in the second; volume, 29.05 cub.m. in the second. The mean velocity of the entire body of water was obtained by multiplying the mean of the velocities obtained at each sounding (that is on each perpendicular of Fig. 36) by the depth of the sounding, and then adding these products together and dividing them by the total number of soundings taken. The result so obtained was as nearly as possible the actual velocity for the given section of the river. On the other hand I committed an error in my calculation of the mean depth. The total of the depths sounded in the above example is 26.01 m.; but to divide this by the number of soundings taken (in the example 9) was an error, it should have been by the number of soundings plus 1, i. e. by 10. Hence the mean depth works out at 2.601 m.; and the volume becomes 26.124 cub.m., almost precisely the result that is obtained by Dr. Ekholm by the employment of mathematically exacter methods; for by his method I the total is 26.04 cub.m. and by his method II 26.24 cub.m., the mean between these two being 26.140 cub.m. Having thus neglected to add the corrective unit to the number of soundings, the volumes that I worked out provisionally during the course of the journey are all a little too high; these are the figures which appear in the popular description of my travels (*Central Asia and Tibet*). But, wishing to obtain the most accurate results possible from the material which I obtained with so much trouble and at the cost of so much time, I appealed to Dr. Nils Ekholm, and he has very kindly consented to recalculate my *data* according to a more strictly scientific method. All the results of volume and velocity quoted in the subjoined pages have had the advantage of his careful revision. With the view of giving the reader some idea of the materials which I collected, I have inserted in the text throughout tables of all the vertical sections measured; the top row of figures signifying in every case the depth and those which come immediately underneath them signifying the number of revolutions of the propeller in 30 seconds. The constant of the instrument is 0.279, and the number of revolutions has to be multiplied by this figure in order to obtain the number of meters in 30 seconds, and that product again must be divided by 30 to get the velocity for one second.

The illustrations themselves will show that some of the series of measurements are more trustworthy than others; the reliability increasing of course with the number of soundings taken and with the number of levels at each sounding at which the velocity was measured. In general, I may observe that the measurements are more certain as I became more accustomed to the work, and more skilled in dealing with this class of hydrographic measurement. But it is time to let Dr. Ekholm speak for himself.

I.

Let the breadth of the river be b meter, and let this be divided into n parts $h_1, h_2, h_3, \ldots\ldots h_n$. Suppose that a sounding is taken and the velocity measured at each of the $n-1$ points of division. As the velocity measurements were taken at equal vertical distances on the line of each sounding, the mean velocity of the current at every vertical line may quite simply, without any sensible error, be found by taking the arithmetical mean of all the velocity measurements in that vertical line