to another, an arithmetical operation which cannot be performed with such great rapidity, as to leave room for suspicion that the operator may have been tempted, in order to save time, to substitute for the actual supplementary rod readings asked of him, fictitious readings deduced by computation from the interval between the two first readings. It is moreover claimed: that the variety of the six elementary ratios corresponding to the numbers 4, 8, 10, 12, 18, 22, as given above, permits of properly adjusting the range of the instrument in accordance with the degree of precision to be attained and getting readily over difficulties which arise when a part of the rod is hidden from the observer by an intervening object.

From what I have just stated, it will be seen that the "Tachéomêtre Sanguet" affords to engineers and surveyors, advantages and resources for the accurate measurement of distances in the field, far ahead of any presented by other instruments proposed as substitutes for the chain or steel measuring band or tape. Indeed it leads to results so much superior to the best secured with all other such instruments equally as regards accuracy, despatch and control of field operations, that I feel convinced the new tacheometer or measuring instrument, needs only to be placed in the right light before practical professional men and contractors to come into general use before very long to the exclusion of nearly all their other ordinary surveying instruments, excepting of course a suitably divided rod.

In support of this opinion I may state that while it is found, in general, that the result of a very good chain measurement is affected by an error in excess amounting to between 3 and 6 hundredths of a foot per 100 feet, the calculated mean error which one may make in measuring a distance of 100 feet, with the new tacheometer by combining three rod intervals, is but $\frac{28}{100}$ of a foot, and the results of numerous experiments show, that the mean error which actually obtains is even less than at the rate of 0·28 foot per 100 feet, viz.:—little over 0·2 ft. per 100 feet.

Again, with a view of testing the practical working of the tacheometric method of surveying, a plot of ground 538·7 acres in area and containing 605 parcels of land having the form of elongated trapeziums was surveyed in France both in the ordinary way, viz.: by running lines between angles and measuring them with the chain, &c.. and also entirely with the aid of the new tacheometer and a properly divided and figured rod.

The survey of this plot of ground actually kept the party which operated in the ordinary way, 336 hours at work in the field, while the party that worked with the Sanguet tacheometer completed the whole field work in 121 hours. The party surveying with the tacheometer had to be more numerous than the other; but the cost of the tacheometer survey proved smaller than that made in the ordinary way, in the ratio of 411·4 to 789·6. So that it may be said that by the use of the new self-reducing tacheometer, the expense was in this case, reduced by one-half and the time spent on the work by two-thirds.

I may add that the "Tachéomêtre Sanguet" was critically examined in detail and experimented with by the Official Commission appointed to examine the instruments of precision exhibited at the Paris International Exposition of 1889, and more recently by the "Commission extra parlementaire du Cadastre" of France.