

# THE SANGUET TACHEOMETER (SELF-REDUCING)

AS ADAPTED TO

## PRECISION LEVELLING

IN CONNECTION WITH

### A NEW GEODESIC ROD.

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I believe I am quite safe in stating by way of introduction, that there is scarcely a single step of any importance to be taken in life, that does not involve the measurement of space in some form or other: linear, superficial, solid, angular.

Confining here our attention to linear spaces or distances, it is evident that when such a space is easily accessible all around, its magnitude may, in general, be readily ascertained by applying to it a properly constructed and verified standard of length, such as a chain, a tape, a rod, a foot rule, a scale, etc., provided always we are prepared to devote sufficient time and attention to the measuring and testing operations to ensure correct results.

This primitive method of measuring linear space has been followed from time immemorial and, it may be said, continues to be almost universally adhered to up to this very day with little or no variation, whether distances have to be determined in or out doors, notwithstanding many difficulties that are experienced. I believe it will readily be admitted by all those who have any knowledge of the subject, that the laborious measurements required between accessible points, in connection with the extensive field operations which are inseparable from the ordinary practice of a civil engineer and that of a land surveyor, are unquestionably those where the old method yet followed presents the greatest drawbacks.

The principal, if not the only reason of the backward condition of what might be termed the science of measuring distances between accessible points on a large scale, appears to be due to the fact that nearly all the measurements which have to be made in the field either for engineering or purely surveying purposes are horizontal measurements, and that previous to the time (not more than ten years ago) when Mr. Sanguet, President of the Society of Topographical Engineers of France, first brought out his perfected self-reducing tacheometer, there was no instrument available to civil engineers and land surveyors, that would enable them