



THE PRINCIPLE OF GRAPHOMETER

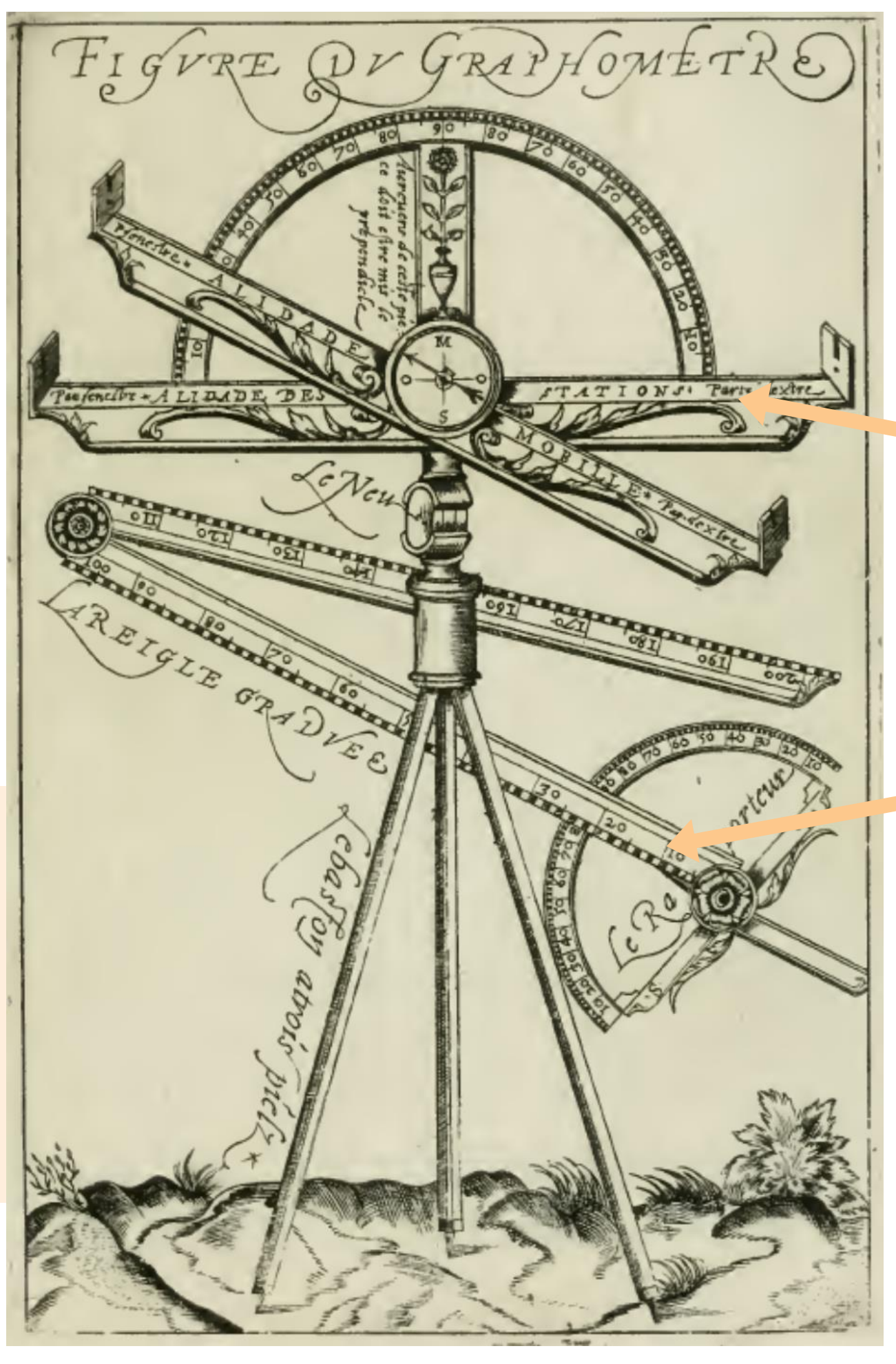
MEASURING

Illustrations taken from the *Declaration of the use of the graphometer newly invented and brought to light by PHILIPPE DANFRIE*

The graphometer later became a widely used instrument for surveying and navigation

Cet instrument est dict Graphometre à raison qu'auec iceluy l'on peut desoir e mesurer toutes choses visibles que l'on peut discernex, lequel comprend deux parties principales separees l'une de l'autre: la premiere desquelles est nommée Observateur, et l'autre est dicté l'apporte, le dit Observateur est

This instrument is called the graphometer for the reason that with it everything visible that can be discerned, can be measured. It comprises two main parts separated one from the other: the first is called the **Viewer** and the second, the **Protractor**.

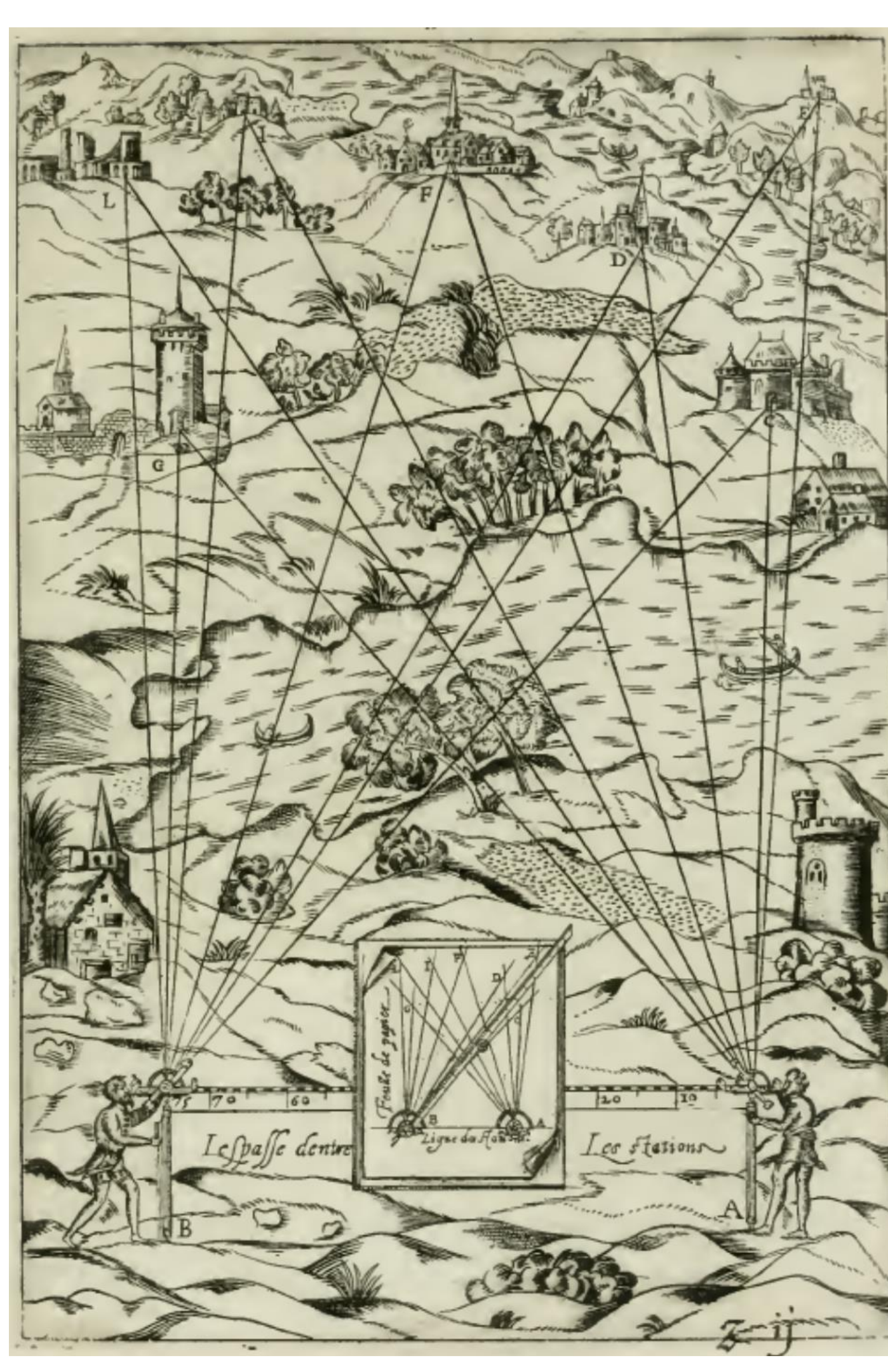


Viewer

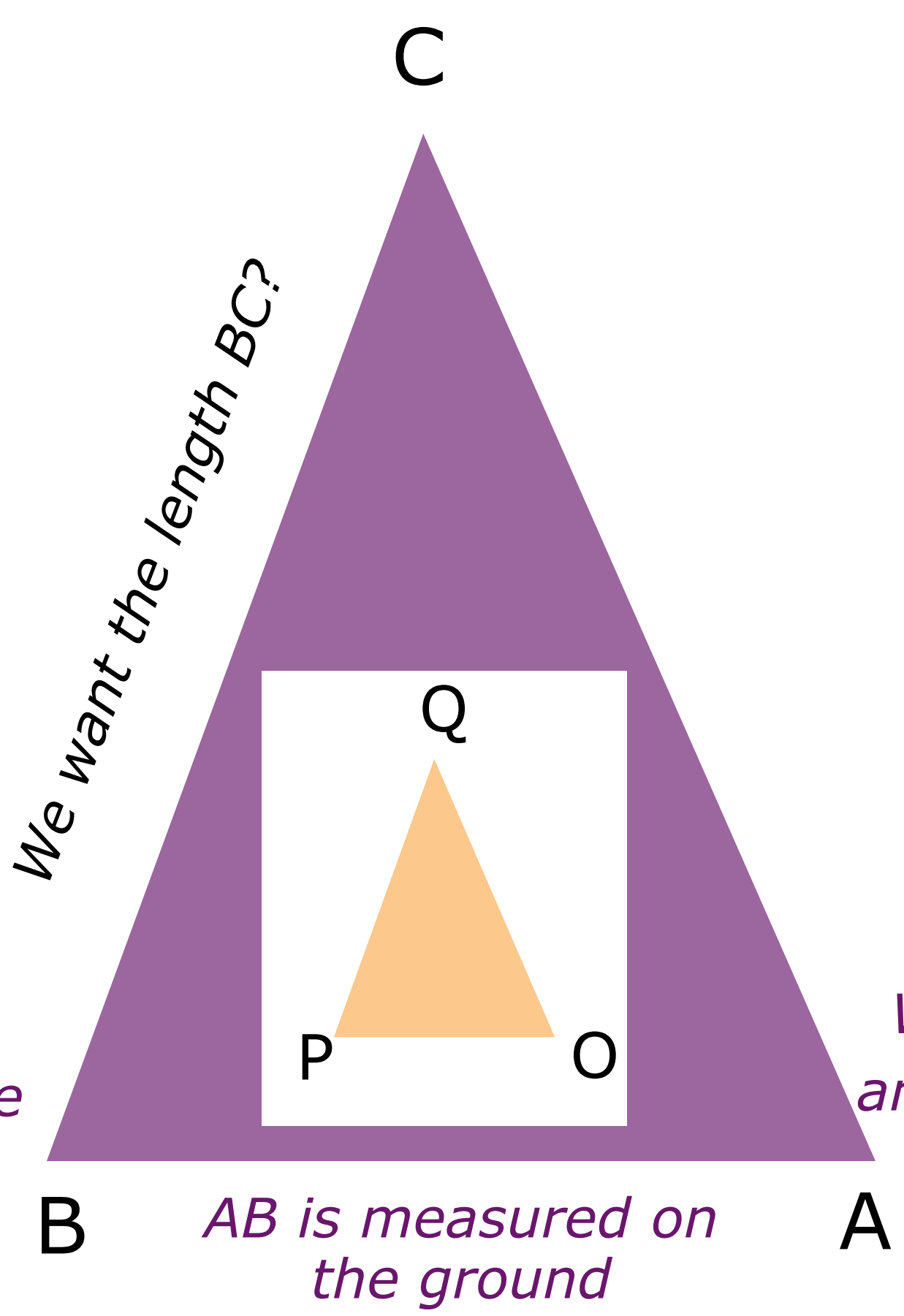
Protractor

DANFRIE Philippe (1532-1606)

Made his debut as a printer and then as bookseller in Paris. Was then by turns engraver, printer, maker of types, gunner ordinary to the King, engraver of mathematics and engraver of coats of arms. In 1582 he became Engraver-General of the French mint and an inventor of mathematical instruments, including the graphometer, for which he published the *Statement of Use* in 1597.



Using the graphometer in surveying for a city map



We measure the angle \widehat{ABC} with the graphometer

We measure the angle \widehat{BAC} with the graphometer

AB is measured on the ground

We want the length BC?

On the diagram, each person is denoted by a letter: A and B. The city is called C. The white rectangle represents a sheet of paper on which the triangle \widehat{OPQ} is drawn

The length AB is the length which is measured on the ground.

We want, for example, to measure the distance BC.

Place yourself at A with the **viewer** and measure the angle \widehat{BAC} in accordance with AB. Then place yourself at B and measure the angle \widehat{ABC} in accordance with AB.

On the sheet of paper, draw any length OP. Then, with the **protractor**, transfer the angles \widehat{BAC} et \widehat{ABC} .

The two half-lines originating at O and P are concurrent at Q.

The triangles ABC and OPQ being similar, BC is deduced by measuring OP and PQ on the sheet.



Graphometer of Blondeau Marseille Observatory



Using the graphometer to measure height

