

Petrie's doubts about
Smyth's measurement of
the plug block length.

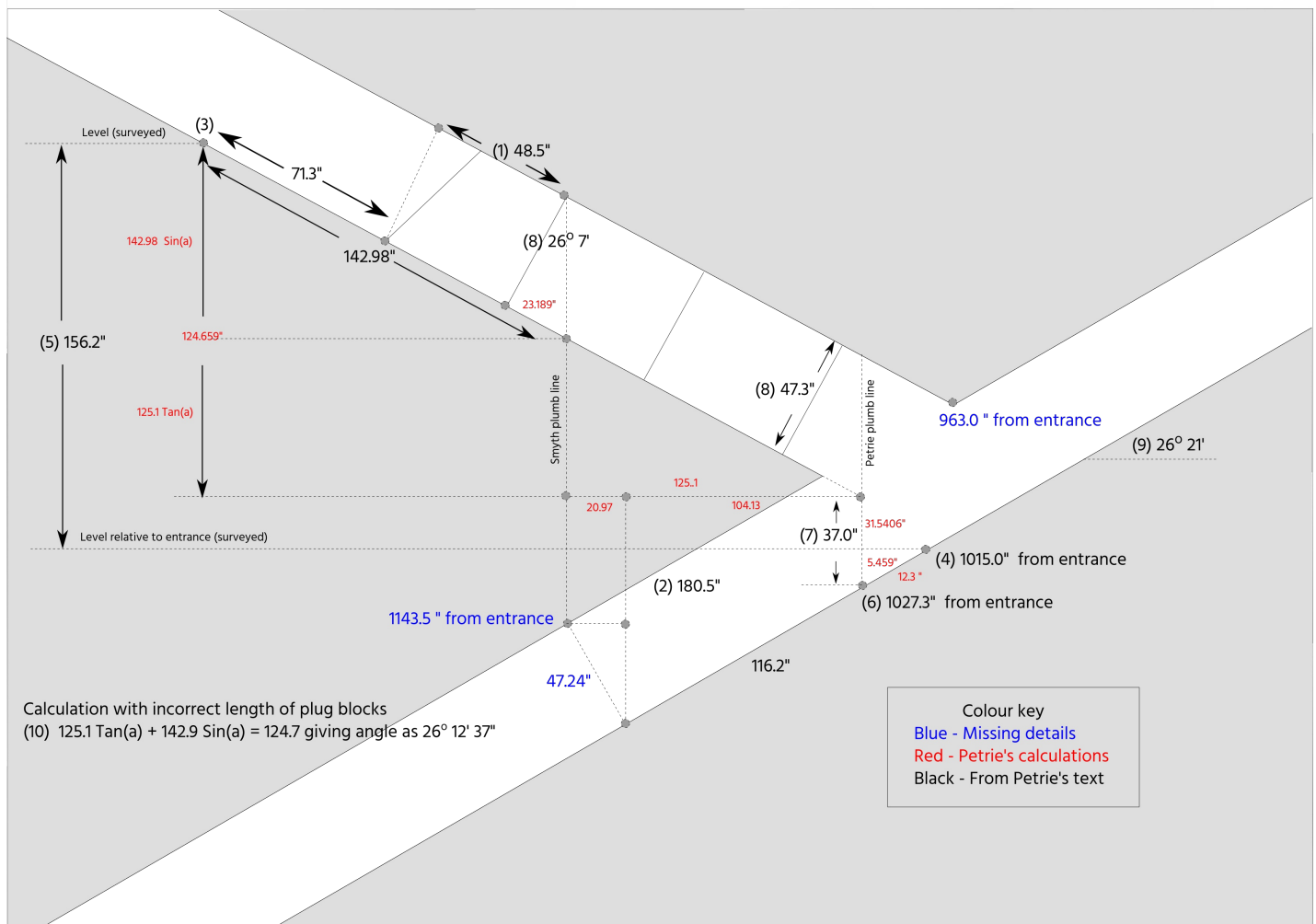
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Petrie's surveying measurements are contained in his book "The Pyramids and Temples of Giza" and throughout the work he diligently tabulates all of his data.

However on page 61, section 38 of his work, he consigns the measurements of the area of the plug blocks of the ascending passage to a curious note at the bottom of the page. The note is written using abbreviations, there is data missing from it which is essential to understanding it, and it is presented almost as a technical aside, whereas it is actually a very important part of the pyramid's surveying.

I suspect that Petrie was aware that there was a fault in this section of professor Smyth's work, and that is why he presented this data as he did, which is reproduced below.

*** The elements in question are (1) Prof. Smyth's plumb-line 48'5 on slope below his zero in Ascending passage ; and (2) 180'5 on slope of entrance passage, below beginning of Ascending roof. (3) My level in A.P., 71'3 on slope above C.P.S.'s zero in A.P. (4) My level in E.P. 1015'0 on slope below C.P.S.'s E.P. zero. (5) Difference of my A.P. and E.P. level marks 156'2 vertically. (6) My plumb-line on E.P. floor 1027'3 on slope below C.P.S.'s E.P. zero. (7) Height on my plumb to floor of A.P. 37'0. (8) height of plug-blocks 47'3, and angle of end 26° 7'. (9) Angle of E.P. at junction 26° 21'. From these measures we get 125'1 tan. $\theta + 142'9 \sin. \theta = 124'7$; $\therefore \theta = 26^\circ 12\frac{1}{2}'$.**



If you analyse this work you can see that Petrie uses the angle of the plug blocks' front face to determine the angle of the ascending passage, which is counter intuitive because it is illogical to use the angle you are trying to calculate as the input parameter.

In addition, point (3) on the illustration is a leveling point that Petrie measured inside the ascending passage, which he determined by setting up a theodolite chain from the entrance passage into Al Mamun's hole and then into the ascending passage. At no place in his work does he either a) specify the value of the level of this point or b) use it in any calculations.

Indeed, when he explains the location of the top of the ascending passage in the gallery, he refers back to his leveling point (4) in the entrance passage and ignores the leveling point (3) in the ascending passage.

This combination of facts leads to the conclusion that Petrie was unsure about Smyth's distance across the plug blocks, and that he therefore tucked this section of his work away in the obscure footnote.

His calculations shown above correspond to Smyth's work only, and do not correspond to the internal architecture of the building once the correction has been applied, or put another way, whilst the calculations are correctly performed, the input data is incorrect because Petrie has duplicated Smyth's error.