

# **Explanatory Supplement to Figure 3 of the 1986 Proof of Nickalls Theorem.**

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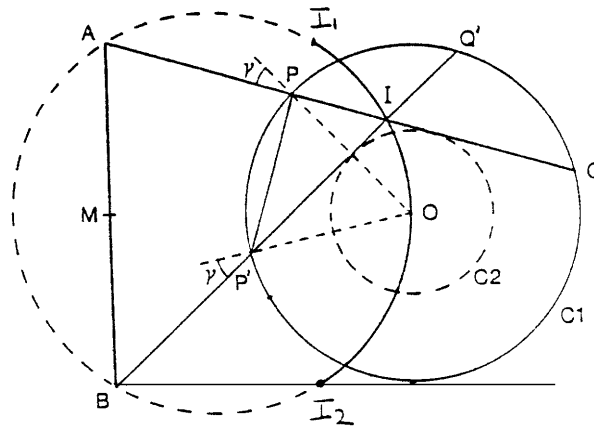
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### Points relating to the locus theorem (see p 29 & Fig 3)

The extent of the locus of  $I$  depends on the position of the line  $AB$  in relation to the circle  $C1$ . There are three case to consider.

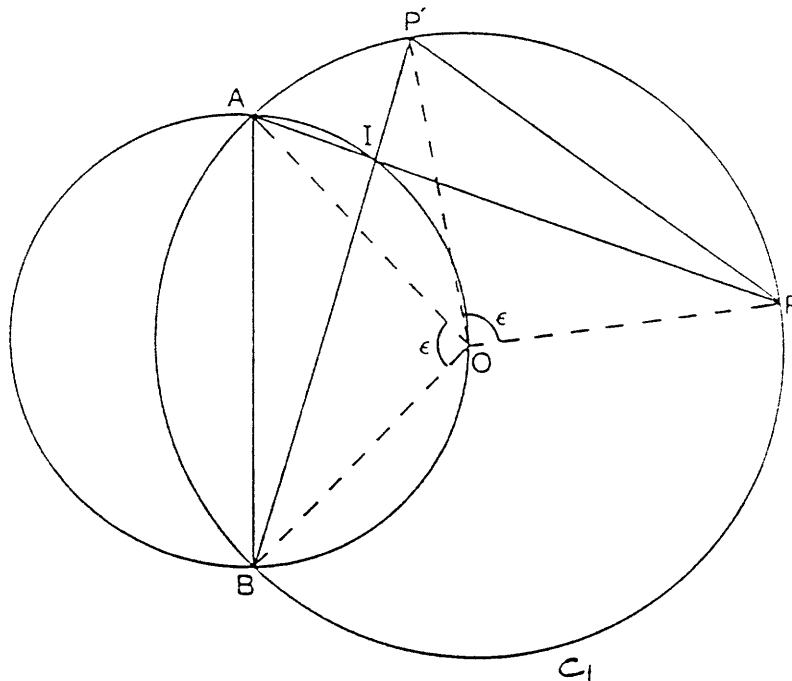
(a)  $AB$  outside/on the circle.

If the line  $AB$  is *outside* the circle, the locus  $I$  is the arc  $I_1OI_2$ , as discussed in the Maths Gaz article. If the line  $AB$  *touches* the circle  $C1$  (at  $M$ ), then the locus  $I$  is the arc  $AOB$ .



(b)  $AB$  is a chord of the circle  $C1$  (see figure below).

In this case one revolution of the chord  $PP'$  results in the intersection  $I$  making one complete revolution of the circle  $ABO$ .



(c) AB is inside the circle  $C_1$  (see figure below).

In this case, one revolution of the chord  $PP'$  results in the intersection  $I$  making *two* complete revolutions of the circle  $ABO$ .

