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T+t and st contacts, known; S and Venus ins; π the irly motion latitude of Now, since the effect of true positives. This is the rela-

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Now at the time T+t the distance between the centres of Venus and the Sun, is equal to the sum of their semi-diameters, =c, then we have

$$c^{2} = \left\{ G - S + a \left(P - \pi \right) + vt \right\}^{2} + \left\{ L + b \left(P - \pi \right) + gt \right\}^{2}$$

$$= (G - S)^{2} + L^{2} + 2 \left\{ a \left(G - S \right) + b L \right\} + \left\{ P - \pi \right\} + 2t$$

$$\left\{ v \left(G - S \right) + g L \right\};$$

neglecting the squares and products of the very small quantities t, a, b and $(P-\pi)$.

But when seen from the centre of the Earth at the time T, we have

 $c^2 = (G - S)^2 + L^2$, which substituted in the last equation, gives

$$t = -\frac{a (G - S) + b L}{v (G - S) + g L} \cdot (P - \pi)$$

$$= \delta \cdot (P - \pi), \text{ suppose}$$
(33).

Therefore the Greenwich time of the first contact at the place of observation = $T + \delta (P - \pi)$.

If δ' be the corresponding quantity to δ for the time T', then the time of the last contact at the place of observation

$$= T' + \delta' (P - \pi),$$

and if \triangle be the whole duration of the transit then

$$\Delta = T' - T + (\delta' - \delta) (l' - \pi)$$

Again, if \triangle' be the duration observed at any other place, and β and β' corresponding values of δ and δ' , we have

$$\Delta' = T' - T + (\beta' - \beta) (P - \pi);$$
Therefore
$$\Delta' - \Delta = \left\{ (\beta' - \beta) - (\delta' - \delta) \right\} (P - \pi)$$
Or,
$$P - \pi = \frac{\Delta' - \Delta}{(\beta' - \beta) - (\delta' - \delta)}$$
Now
$$\frac{P}{\pi} = \frac{\text{Earth's distance from the Sun}}{\text{Earth's distance from Venus}},$$
(34).

Therefore $\frac{P-\pi}{\pi} = \frac{\text{Venus's distance from the Sun}}{\text{Venus's distance from the Earth}}$

 $\pi = \frac{n}{n}, \text{ a known quantity}$ $\pi = \frac{1}{n} (P - \pi). \tag{35}. -(Hymers's Astron.)$