

SOME ORIGINAL CALCULATIONS

by Edward Thorp

Nathaniel A. Narbonne High School,
Lomita, California

I submit this record of some of my original findings well aware that the contribution presented here is minute in relationship to the great scientific discoveries of the past and present. Because I have always held science as my chief interest, I have made a deliberate effort to obtain a substantial groundwork in several of its branches and have attempted to adapt scientific methods and principles to my thinking. It is my hope that the following brief personal history and calculations will bear this out.

Approximately seven years ago, when I was about nine, I constructed a small chemical laboratory which enabled me to begin my first experiments. Soon afterwards, we moved from Chicago to California, and, on the way, I collected several hundred nondescript rock specimens. As a result of this, I became interested in mineralogy and took it up as a hobby. I entered junior high school and became interested in magnetism and electricity which led to a fascination for radio. For several months, I worked on receivers and transmitters, intending all the while to be a radio amateur. I received my license when I was thirteen. During that period, I constructed a telescope and became intensely interested in astronomy. This was followed by study of and experimentation in chemistry which last year resulted in my winning fourth place in the Southern California American Chemical Society contest. Old telescope lenses then provided the basis for experimenting in biology through microscopy. My progress in mathematics remained comparatively steady as I delved into the other sciences. I met problems, frequently, which required original mathematical methods for their solution, particularly in Physics.

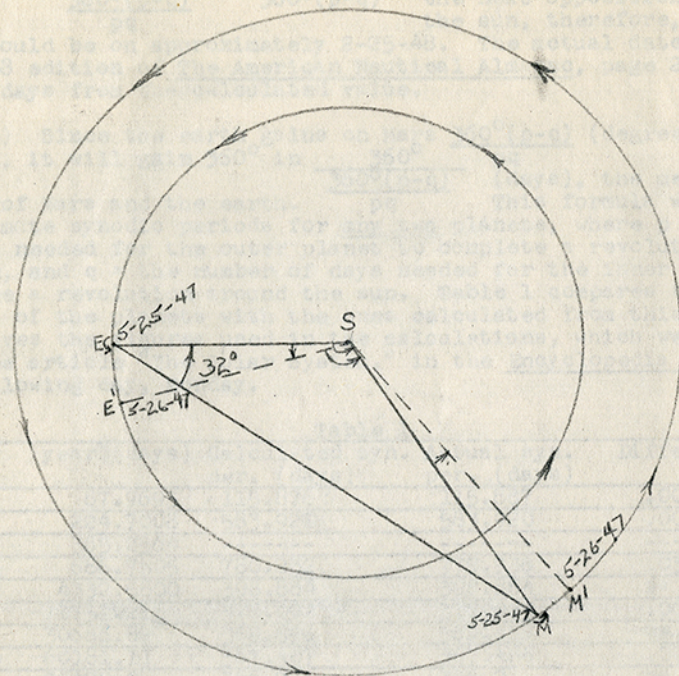


Figure 1.

Method-Data:

- (1) $\angle ESE' = \frac{360^\circ}{q}$
- (2) $\angle MSM' = \frac{360^\circ}{p}$
- (3) The amount (in degrees) that the earth gains on Mars in a day, with reference to the sun, = $\angle ESM - \angle E'SM' = (\angle E'SM + \angle ESE') - (\angle E'SM' + \angle MSM') = \angle ESE' - \angle MSM' = \frac{360^\circ}{q} - \frac{360^\circ}{p} = \frac{360^\circ(p-q)}{pq}$
- (4) The number of degrees earth needs to gain on Mars so that Mars and the sun will be in opposition, with respect to the earth, is equal to $\angle ESM$.
- (5) $\frac{\sin 32^\circ}{MS} = \frac{\sin \angle SME}{ES}$ (law of sines)
- (6) $\angle SME = 20^\circ 23'$
- (7) $\angle ESM = 180^\circ - \angle SME - \angle MES = 127^\circ 37'$
- (8) _____