

# ASTRONOMER AND ARCHITECT EXPLAIN TIMING OF SHAFT OF LIGHT AT MONUMENT

**M**R. GERARD MOERDYK, architect of the Voortrekker Monument, commenting on a recent reference in *Stoep Talk* to the "slight error" in the placing of the hole through which a beam of light is designed to strike the sarcophagus at noon on December 16, has explained to a representative of *The Star* the methods he adopted in deciding where the hole should be placed.

His calculations, said Mr. Moerdyk were, from the first, not according to the highest astronomical calculations, but by a rule-of-thumb method, which is, however, perfectly satisfactory.

He took a scale model and worked out how the sun would strike down on the day of the monument opening.

"The fact that there is a difference of a minute and three-quarters between actual noon on the spot and standard time does not matter a great deal, since the shaft will strike down on the sarcophagus as was intended."

The astronomical aspect of the problem was given by the Union Astronomer, who said: "Mr. Moerdyk, it is clear, deliberately arranged for the beam of sunlight to fall on the sarcophagus 105 seconds after noon on December 16.

"The point, of course, is that the monument forms a huge sundial. Now, the sundial indicates the sun's time, not standard time. Sundial noon is the instant when the sun is due north of the meridian and the difference between sundial noon and standard time noon varies throughout the year."

## ANY SPECIFIED TIME

It would be possible, he said, to arrange for the beam to fall on the sarcophagus at any specified time of day, but the choice has been of two alternatives: the first, at local apparent noon when the sun is due north; the second, South African standard time noon. The architect had chosen

the first, bringing the monument into line with ordinary sundials.

"According to reports, the sun-beam will fall on the sarcophagus at 105 seconds past noon, South African standard time, on December 16. If this is true, the aperture on the roof is slightly out of place; for at the moment, sundial noon occurs on December 16, this year, at two minutes, 50 seconds past noon, South African standard time. This time will vary from year to year, with an extreme range of about 21 seconds.

"This follows from the fact that the actual length of the year is approximately 365 $\frac{1}{4}$  days, while the calendar year is 365 days in ordinary years and 366 in leap year. In addition to this, standard time varies from true time from year to year by a varying amount.

"In 1944, when Mr. Moerdyk checked his calculations at the monument, the difference was 4min. 32sec. In 1949, the difference is 4min. 39sec."

## AUSTRALIAN SHRINE

In Australia the Shrine of Remembrance, in Melbourne, dedicated to those who fell in the First World War, has been designed in such a way that a shaft of light falls on a memorial tablet at 11 a.m. exactly on November 11 each year, commemorating the exact time the armistice was declared. This monument, says an Australian now living in Johannesburg, is something similar in design to the Voortrekker Monument.