RELATIVITY EFFECTS

Radar echoes from Venus obtained at the Lincoln Laboratory, MIT, (**1**) and at the Jet Propulsion Laboratory, Cal. Tech., (**2**) have been interpreted by Clemence (**3**) to mean that the distance from the Earth to the Sun is about 75 000 km greater than is indicated by the dynamical method. He shows, by improving de Sitter's treatment on the relativity corrections of the orbital elements and by basing on Hansen's theory, that the relativistic effects previously neglected yields correction to the radius vector of a planet amounting at most to about a kilometre. While the correction to the longitude of Mercury is too small to be detected by any known optical technique, the correction to the radius vector in the principal periodic term may provide a new test of general relativity, by radar echo observations.

On the other hand Kustaanheimo (**4, 5**) deals with the possibility of demonstrating the relativistic curvature of space by the observations of satellites of large eccentricity. He proves that the period of revolution of a satellite is increased by an observable relativistic effect. If a Keplerian orbit and an orbit of the Schwarzschild metrics are defined by means of two orbital constants which have the same numerical values in both theories, then the sidereal periods of the two orbits are different. If the two orbital constants are detectable by observations, then the relativistic period is longer than the Newtonian period.

Briggs (**6**) discussed the steady-state distribution of meteoric particles under the operation of Poynting-Robertson effect.

Clemence (**7**) discussed controlled experiments in celestial mechanics for clearing the possible dependence of the Earth's gravitational field on its orbital velocity, the secular change of the gravitational constant, the orbital constants of the Earth, the mass of the Moon and the mechanical ellipticity of the Moon. He pointed out the work of Eckert on the motion of the Moon together with the motions of the near planets Mars and Venus, the measurement of the annual change of the radial velocity of hydrogen cloud, the measurement of the radial velocity of Venus on optical wave length, and finally the lunar probes, as the powerful means for the clarification. This is not a relativistic correction.

Schmidt-Kaler (**8**) discussed the free falls in Einstein's theory of gravitation.

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THREE-BODY PROBLEM

Klemperer (**1**) proved the existence of equilibrium configurations of n bodies for limited ranges of rhombic configurations and of arrays in the shape of hexagonal and octagonal regular rosettes, by extending the works of Dziobek and Bilimovič. Such arrangements comprise similar heavier bodies and an equal number of similar lighter bodies in regularly alternating fashion.

Miyahara (**2**) showed certain conditions, under which a contact transformation from a