

For the above conditions the angular momentum of the earth and the moment of momentum of the spheroid may be added vectorially to give the magnitude if not the precise displacement between the old and new axes and also the approximate changes in the angular velocity. In Table III are summarized calculated results for collisions of various magnitudes.

TABLE III
CALCULATED RESULTS FOR COLLISIONS OF VARIOUS MAGNITUDES

Angular momentum, Moon		$2.3 \times 10^{36} \text{ gm cm}^2 \text{ sec}^{-1}$	
Angular momentum, Earth		$5.89 \times 10^{40} \text{ gm cm}^2 \text{ sec}^{-1}$	
SPHEROIDS	EARTH		
	2 MVR <i>gm cm² sec⁻¹</i>	Maximum axis change	Maximum rotational velocity change
0.032 km	5.5×10^{26}		
0.32	6.5×10^{29}		
3.2	5.5×10^{32}		
32.	5.5×10^{35}	0°0'2"	.001%
320.	5.5×10^{38}	0°32'	.9%
640.	4.4×10^{39}	4°15'	7.5%
MOON			
3.2	1.5×10^{31}	0°2'	.0006%
32.	1.5×10^{34}	0°22'	.65%
320.	1.5×10^{37}	81°20'	650.0%

What do these figures mean? With regard to changes in velocity they say that at the outset a relative velocity will exist between the lithosphere and the air-water ocean which can amount to a sustained difference at the equator of 2-120 km/hr. This differential will cause inundations of vast coastal areas, the withdrawal of tides from others, the reworking of all sorts of sediments and other unconsolidated deposits and the scattering of the ice caps.

A closer look at the effects of a tangential collision in the equatorial plane, increasing the angular velocity of the earth by 5 percent (80 km per hour at the equator), will help illustrate the sequence of changes to be expected. (1) The shock, sound and fury of wind, water and ground. (2) The rotation of the lithosphere at the new, faster rate. (3) Inertial maintenance of the original rate by the air-ocean masses so that they run westward overcoming the eastern shores of continents and islands. The basic rise to be expected due to this velocity change is not small—25 meters—but the rise can be very much greater in special configurations of coast lines which funnel the water-air masses and set up hydraulic

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