**Jupiter’s Radio Noises**

One of the major deductions from the study of ancient civilizations was the recognition that the planetary and cometary bodies are charged objects and the solar system itself is regulated not solely by the law of gravitation; that electromagnetic interactions must exist and where following the inverse square law must be unrecognizable in their effects on the calculations of celestial mechanics - charge can, so to say, be hidden in or masked by the mass. Thus the problem of Pluto influencing Uranus and Neptune more than its mass can account for is a case of a substantial charge on a small planet. But where the less pronounced electromagnetic inverse cube relations take place, like in Mercury’s precession of its perihelion, divergences from the celestial computations are registered as anomalies. Mercury moves through a general magnetic field of the Sun that influences it more strongly than it influences the remoter planets besides the influence on it and on them of the magnetic solar spots and solar wind.

In catastrophic conditions, with two celestial bodies approaching one another closely, the electromagnetic interactions may become most pronounced - the cometary protoplanet Venus produced a display of discharges between its head and its trailing part when the orbital movement of the protoplanet was disrupted by the close approach to the Earth; in the latter, eddy currents were generated with the effects due to such phenomenon (see *Worlds in Collision*, “Epilogue” ). Interplanetary discharges took place when Mars and Earth came into close contact (*Worlds in Collision,* “Synodus” ). The projected volumes dealing with catastrophes preceding those that took place at the end of the Middle Kingdom in Egypt carry the titles “Saturn and the Flood” and “Jupiter of the Thunderbolt”.

The planet-god Jupiter (Zeus, Ormuzd, Shiva, Marduk) was pictured with a thunderbolt because of the spectacles witnessed by the inhabitants of the Earth —like a discharge that was directed toward Venus when it approached its parental body (*Worlds in Collision,* “Blazing Star”), or when the Earth itself might have been the target, as the content of the volume “Jupiter of the Thunderbolt” will reveal.

The understanding that the solar system is not neutral in its components but possibly neutral as a whole led me to the conclusion that the charge of the Sun may be equal to the combined charge of the planetary bodies and that quite possibly in Jupiter is assembled the major portion of it; thus, being ca. 1000 times smaller than the Sun it is charged to a very substantial potential.

Its potential could have been greater in the past; certainly planetary bodies exchanging discharges neutralized themselves to some degree; Mars, for instance, must have been much more charged in the past before the events of the first half of the first millennium before the present era. The charge of the planet, I thought, may even be decisive in the position the planet occupies in the planetary system. I even considered theoretically a system in which gravitation is completely supplanted by electromagnetic effects with the charged planets traveling in the magnetic field of the Sun, itself being a charged body that by its rotation creates the magnetic field permeating the solar system; I also contemplated the existence of magnetic shells that would be the determinative of the planetary distances (Bode’s Law).

Since 1941, I insisted that electromagnetic interrelations in the solar system cannot be ignored - this was the theme of my long debate, in writing and oral, with Einstein - from August 1952 to his death in April of 1955. At some point in our debate (in a letter written in June 1954) I offered to stake our debate on whether Jupiter sends out radio noises (of non-thermal nature, as I already claimed in my Forum Lecture of 14 October, 1954), to which he reacted skeptically, yet was greatly surprised when nine days before his death I brought to him the news (New York Times of April 6,1955) that such radio noises were accidentally detected.

It has been long known that Jupiter possesses an angular momentum that is superior to the angular momentum of the Sun, even of the Sun with the rest of the planets combined. This appeared to me not without a definite role of charges accumulated in Jupiter.

Jupiter was believed to be a cold planet - since the l9th century it was thought to be covered by a frozen mantle of ices over ten thousand miles thick. To me, however, from the knowledge of its activities in ancient times, it did not appear as an inert gravitational body; I thought also of Jupiter as a dark star (*Worlds in Collision,* p. 373); but the radio noises that I expected it to be sending out I considered as of non-thermal origin and so I also expressed myself in the mentioned Forum Lecture. But whereas I expressed myself in October 1952: “The planet is cold, yet its gases are in motion. It appears probable to me that it sends out radio noises as do the sun and the stars. I suggest that this be investigated,” in June 1954 in a letter to Einstein, I took a most definite stand: “Of course, I am a heretic, for I question the neutral state of celestial bodies. There are various tests that could be made. For instance, does Jupiter send out radio-noises or not? This can easily be found if you should wish.” This claim was also vindicated in the announcement made by Burke and Franklin on April 6 of 1955.

The relevance of the orbital periods of Jupiter and Saturn to the sunspot cycle appeared to me, if real, based on electromagnetic , interdependence. The highly charged Jupiter must create a powerful magnetosphere; it may even create magnetic shells, for distribution of its satellites, a thing not yet proven; but certainly the large satellites of Jupiter, and especially the innermost of the Jovian satellites, must be much affected by its magnetic field. Jupiter itself appeared to me to be of contrasting charges on various levels which would account for the potential difference observed in celestial battles by the ancients between the head and the trailing part of the Jovian progeny - protoplanet Venus (*Worlds in Collision,* “The Battle in the Sky”), the head having been expelled from Jupiter’s deeper parts, the trailing part of debris and gases from a more superficial layer.

Thus discharges on Jupiter could be dictated by potential difference. The closest of the Galilean satellites must be acting as a target independent of whether a spark discharge actually takes place or a stream of charged particles is directed toward it and to a lesser extent toward other satellites (the fifth, however is only 112,000 miles mean distance from the planet). A purely gravitational relationship between Jupiter and its satellites appeared to me unthinkable; and on this phenomenon, in my estimate, the purely gravitational system of the World must stumble, as also on the case of the behavior of the comets when approaching, then circling the Sun in their perihelia a subject much discussed by me with Einstein in my effort to convince him of the fallibility of a purely gravitational system of the solar system (and of the universe in general).

The discovery of the Jovian noises (1955), and of the terrestrial magnetosphere (1958), claimed by me also in the Forum Lecture of 1953, and of the interplanetary magnetic field centered on the Sun and rotating with it (1960), and of the solar wind or uninterrupted streams of plasma (1960), made the purely gravitational system of the World untenable. Yet among astronomers, as late as 1971, the full significance of the fact for the understanding of the structure of the universe only very slowly finds its way, as can be exemplified by a paper by Prof. Ivan King, “The Dynamics of Star Clusters”, where no mention is found of any electromagnetic participation in the mechanics of the galaxies.

The realization that Jupiter, which participated in a vigorous way in the theomachy (celestial battles), is not inert and cold led me to the conclusion that Jupiter must be also hot under its cloud cover, at some depth. This afterthought made me also claim that Jupiter is hot in a discussion with Prof. I. I. Shapiro of M.I.T., well-known authority in astrophysics, who denied such a possibility. This claim was confirmed recently by probes of the temperature underlying the surface clouds.

This leads me to the necessity to discuss some other aspects of the recent history of Jupiter, which all ancient peoples of the World elevated to the role of the supreme deity, the role it took over from Kronos-Saturn. But such a discussion I will undertake separately and at some length.