

But there were other very evident Socialist tracks. In Turatello's personal datebook police found the private phone numbers of Aldo Aniasi and Craxi's brother-in-law Pillitteri, a Milan city councilman whose name had already gained some notoriety when his personal secretary was arrested as a terrorist who specialized in weapons supplies. The association with these individuals could not be explained during Turatello's trial, which took place at the beginning of this year, although during the trial Pillitteri was officially interrogated.

Turatello began to lose some of his powerful protection. This summer, he was sent to the Nuoro prison, in an area outside his *capo dei capi* reach; previously, he had decided what prison he would take temporary residence in. "What happened?" asks *Il Giornale*. "Someone invokes the name of Licio Gelli and his P-2 lodge, and explains that the explosion of that scandal forced Turatello's protectors to be more circumspect in order not to become exposed themselves." The Propaganda 2 scandal to which *Il Giornale* refers provoked a real earthquake within the PSI leadership. Recent reports in the Italian press state that the P-2's banker, Roberto Calvi, president of Banco Ambrosiano, revealed while in jail that he had given 20 billion liras to leaders of the Socialist Party through Swiss banking channels; and the names of many PSI leaders appeared on the P-2 membership list. Reports were also published that Bettino Craxi used to meet with Licio Gelli.

According to investigators, the Turatello murder should also be seen in the context of a gigantic restructuring of drug traffic throughout the Mediterranean. Turatello wanted to direct that restructuring, but "this is too big a business to be managed by someone far from the real power that controls the heroin market." He knew too much; he could have begun to speak out against his protectors. The protectors decided to silence him.

Whether Bettino Craxi is a crucial participant in this "restructuring" is very difficult to clearly deny. In any case, Craxi is not simply an Italian asset; along with François Mitterrand, he is the most prominent instrument of the Socialist International's project for the region and for all of Western Europe.

This is the Craxi of whom, in *The Washingtonian* magazine, Ray Cline, director of the Georgetown Center for Strategic and International Studies (CSIS) and former deputy director of the CIA, wrote that "Bettino Craxi is a young, energetic leader likely to become the next prime minister."

Reagan, who has refused to meet with the Christian Democratic party secretary, Flaminio Piccoli, or even to receive Prime Minister Spadolini in the White House, is now reported to be welcoming Craxi this fall. Can it be in the interests of the United States to endorse one of Turatello's erstwhile protectors?

Science & Technology

Saturn findings are vindicating Kepler

by John Schoonover

Results from the latest Voyager mission to Saturn are a crucial experiment confirming the bankruptcy of Newtonian physics. Not only did physicists fail to predict the existence of Saturn's finely ordered ring system first seen on Voyager 1's approach to the planet, but further results this time are unaccountable under the assumptions of Maxwell and Newton, conventionally accepted by physicists today. The data returned from the Voyager 1 and 2 Saturn missions now cry out for scientific interpretation based on the superior approach of the 16th-century founder of modern astronomy Johannes Kepler.

Detailed study of the rings, using precise measurements of the brightness of starlight passing through them reveals that the structure persists down to a spacing of about five kilometers, or three miles. This means that there are probably about 10,000 rings in all. Conventional theory asserts that over billions of years, perturbations would have erased any tendency to ordered differentiation. Ordering on the scale that we find would be impossible.

Prior to the Voyager 1 trip, authoritative sources were ridiculing those few scientists who claimed the existence of more than the three rings observable from Earth-based telescopes. Just before the Voyager 1 arrived, some scientists were predicting there might be a few more, perhaps 10. No one ventured as radical a guess as 50.

When first several hundred, and then a thousand were counted, a wild attempt was made to salvage Newton by hypothesizing that each of the rings was shepherded by unseen moons which stabilized and kept them in orbit. But as Dr. Schoonover had already predicted in the May 1981 issue of *Fusion* magazine, and as Dr. Bradford Smith of the NASA imaging team has now confirmed, no such moons exist.

The changing rings

The experimental instruments aboard the Voyager 2 have allowed scientists at the Pasadena, California Jet Propulsion Laboratory to get a much more detailed look at the Saturnian system. Based on the results from last fall's encounter with the planet, a trajectory was established that would allow Voyager 2 to approach

moons seen only from a distance by Voyager 1, and to do more refined inspection of regions on the rings and the planet's surface that could be expected to reveal new information.

Not only were the hypothetical shepherding moons proved to be nonexistent, but it is now clear that the rings are not in a static configuration, but that they change shape and size, and come into and go out of existence. The evidence for this kind of behavior comes from a number of different observations. First, the F-ring, a thin, isolated ring that resides far outside the major region of the rings, was seen by Voyager 1 to be composed of several braided strands, with a clumpy appearance. Close inspection by Voyager 2 has shown that the braiding has disappeared in the intervening months.

At the same time, a new feature has emerged on the Encke Division, a dark, relatively empty band between two major regions of ring material. Imaging scientists describe this new feature as kinky and clumped in a manner reminiscent of the way the F-ring looked last fall.

A third, as yet to be confirmed piece of evidence for the dynamism in the rings is the preliminary indication that rings can combine. Over a period of about 20 hours, three rings in a particular region appear to have become two.

Thus Saturn's 10,000 rings are a dynamic self-ordering system rather than a configuration created at the time of the planet's evolution.

This is the first time that we have seen a pure gravitational field exhibit the same self-ordering effects familiar to us in energy-dense plasmas of the type created in fusion research, where electromagnetic forces are at work. But such observations are completely coherent with the non-Newtonian approach to physics that the famed German mathematical physicist Bernhard Riemann was pursuing in the 19th century. In his paper *On the Hypotheses Which Underlie Geometry*, and his later study predicting the existence of acoustical shock waves, (*On the Propagation of Plane Air Waves of Finite Magnitude*), Riemann anticipated just such behavior.

Where Newton treats the particle as primary, so that fields are produced by the summation of two-body interactions, and the interaction of three bodies is not precisely determinate, Riemannian physics starts from the evolution of fields or manifolds and treats particles as ambiguities which represent the intersection of manifolds. This was precisely the approach of Johannes Kepler in the 16th century, who accounted for the creation of the planets from the harmonic topology of the field around the Sun.

The challenge that now faces scientists is to throw off the mental fetters imposed by the Newtonian world

view. The Saturn rings demonstrate clearly that even gravitation shows just those self-organizing tendencies necessary to account for the existence of the solar system and the evolution of the biosphere.

On the basis of Kepler's original work predicting the distancing of the planets from the Sun from harmonic relations, the scientists Titius and Bode elaborated a close-fitting geometric progression to extend the distances beyond the six planets known at Kepler's time.

A similar geometric relationship exists between the moons of Jupiter and Saturn, if one neglects the recently discovered small moons. In two cases, that of Hyperion and Mimas, the fit is not exactly as predicted; however, the Voyager imaging team is now of the opinion that these moons were captured by Saturn rather than being created at the time of the planet's formation. If it proves to be the case that we can make a distinction between these moons—and the smaller satellites, which it is reasonable to treat also as captured material—and Saturn's other moons, this will be a brilliant confirmation of Kepler's original hypothesis.

Weather patterns

The weather system of Saturn has occasioned much comment by the Voyager scientific team, but they have not emphasized what is perhaps the most startling feature. Despite the greater activity which we now observe on Saturn's surface, the results we find are contrary to predictions based on what is known as the Reynolds number. According to conventional hydrodynamic theory, the more viscous a fluid, or the slower its velocity, the lower its Reynolds number, and the more it is subject to large-scale ordered effects. Yet observation of the weather patterns in the atmospheres of both Saturn and Jupiter, both composed mainly of hydrogen and helium, contradict this theory. Weather patterns on Jupiter, which is hotter and therefore less viscous and rotates more quickly than Saturn, still show larger-scale structuring.

This apparently anomalous effect makes sense once we look at hydrodynamic structures such as vortices—the spirals observable on Earth in such phenomena as tornadoes and whirlpools—not as the result of small-scale particle motions, but as the primary given, and correlate such structures with energy flow.

Weather studies done by Eric Lerner and Dr. Steven Bardwell, editor of *Fusion* magazine, with used a two-dimensional vortical model correlated with energy flows, do in fact predict the observed results found in Jupiter and Saturn.

The Voyager flights are wonderfully designed and executed experiments. As one would expect from a good experiment, the new results have raised as many, if not more, questions than they have answered.