

Polarized protons: Weak force in nuclei

Deep in the detailed structure of the atomic nucleus are the individual nucleons, neutrons and protons, and the forces that bind them to each other. For decades physicists have believed that the main part of that force is due to the so-called strong nuclear interaction, which they first saw operating in nuclei. But they believed that the weak interaction, the force responsible for various forms of radioactive decay, accounts for a small part of the total.

An experiment to find this weak interaction contribution, a very delicate one in view of the smallness of the effect and the overpowering presence of the strong interaction, has been done at the Swiss Institute for Nuclear Research near Zurich by a

group from various institutions in the United States, West Germany and Switzerland led by R. Balzer of the Federal Polytechnic Institute in Zurich. It looked for a left-right asymmetry in collisions of polarized protons.

Polarized protons have their spins arranged all in one direction, either left-handed or right-handed. The weak interaction notices the difference between the right- and left-handed spins; the strong interaction does not. An asymmetry in the way that protons bounce off each other would thus exhibit the work of the weak interaction as part of the force between them. W. Haeberli of the University of Wisconsin at Madison told the meeting that such asymmetry seems to be found. As another commentator said, it is in the right direction and about the expected amount. But the errors are such that some observers were awaiting refinement of the data before making judgments. □

To everything there is a season

In what season does a young man's fancy turn to thoughts of love? If you answered spring you're wrong, according to University of Texas researcher Michael Smolensky. These waning days of summer and early fall are the peak season for sexual activity, he told the recent Tenth World Congress on Fertility and Sterility in Madrid.

The reason love blossoms at about the same time as the hayfever season is, he believes, that organisms are affected by the environment in a dynamic way. The old principle of homeostasis — that the body strives to keep itself physiologically constant — just doesn't fit in with some of the biological fluctuations that are known to occur, he says.

Smolensky, an environmental physiologist, has collected statistical and biological evidence to support his theory. While no one piece of evidence proves his point, taken together they make a strong argument.

Birth records provide one indication. Figures for births in the United States between 1963 and 1966 show that most babies are conceived in July, August and September, Smolensky says. This could be by choice, he notes, but a similar pattern appears in monkeys.

Incidences of rape cluster in the late summer. Studies by Smolensky and Parisian researcher Alain Reinberg show that rapes in Paris and Memphis are most frequent in July, and in Houston and Oakland in August. And it is not a product of revealing summer clothes — Smolensky found a study by a Dr. Leffingwell, "Seasonal Incidence of Offenses Against Chastity, 1880-1884," that noted the same vernal predominance.

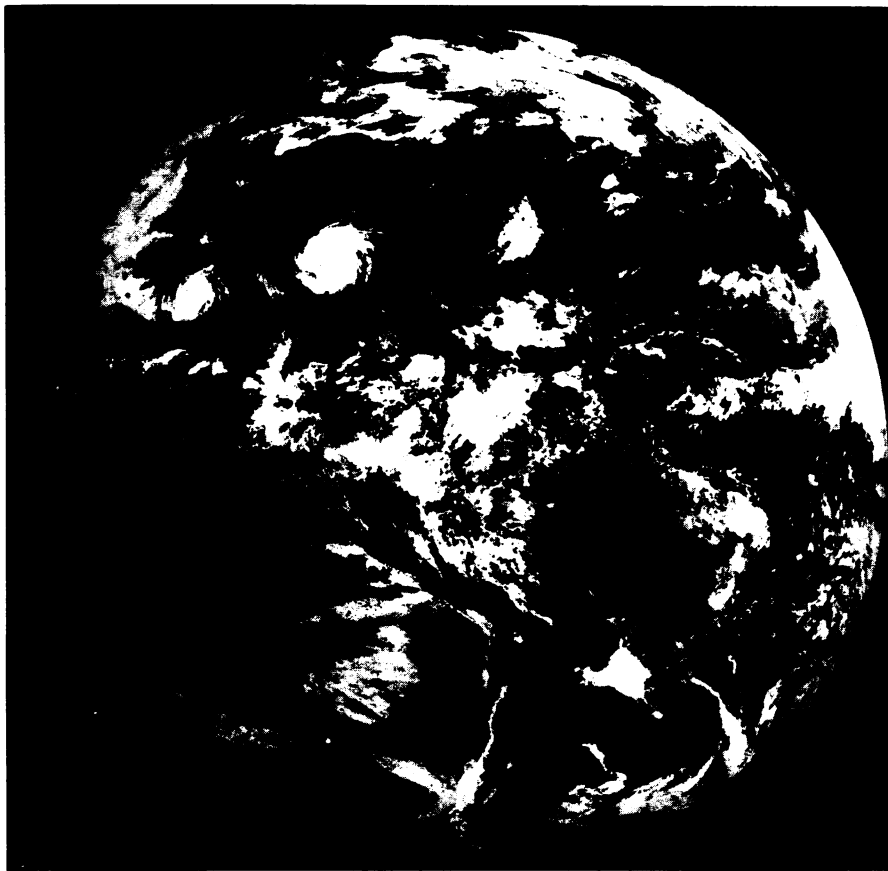
Venereal disease also shows a late summer onset. "Gonorrhea peaks in August, and syphilis, which can take six weeks to two months to show up, has its peak in November and December," the researcher says.

There are economic data as well — an English study showed that sales of contraceptives peak in late July and early August.

Physiological data also support his theory — Reinberg found that testosterone peaks in September; Smolensky found that sperm counts, which decrease with increased sexual activity, are 20 percent lower than normal in September.

Sexual activity is not the only reproductive function related to time, Smolensky notes. Girls most often have their first menstruation in the late fall or early winter. Women go into labor between 1 a.m. and 3 a.m. 40 percent more often than would be calculated by chance (and, no doubt, a lot more often than preferred by obstetricians). □

Hurricanes, hurricanes everywhere



Resembling two gigantic, white pinwheels, Hurricane Allen and Hurricane Isis swirl near the East and West coasts, respectively, of Mexico in this Aug. 8 satellite photo. When this picture was taken by a NASA GOES satellite in stationary orbit approximately 22,000 miles above the earth, Hurricane Allen was bearing down on Texas after its destructive rampage across the Caribbean and Isis had just achieved hurricane status (wind speeds of more than 75 miles per hour). Simultaneous hurricanes in the Pacific and Atlantic oceans are not unusual, according to National Oceanic and Atmospheric Administration spokesmen, but Atlantic hurricanes receive more attention because they are generally stronger and their usual courses threaten populated areas. Allen, for example, built to a monstrous 185 mph during its week-long, 3,000-mile journey, while Isis developed off the coast of Acapulco, Mexico, reached maximum wind speeds of 86 mph and died off the coast of Baja California without ever touching land.

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