

## U.S.-USSR cooperation

From an agreement signed by the United States and the Soviet Union in May 1972, has grown the world's largest bilateral environmental program. The most recent meeting of the joint committee that oversees the program was held in Moscow last November, and the just released record of the meeting includes a report on 40 current projects in 11 major areas now sponsored under the agreement. Some highlights:

- Joint teams of American and Soviet scientists have discovered important new data related to earthquake prediction. Working near the world's highest earthen hydroelectric dam in Tadzhikistan, one team measured clusters of minor earthquakes set off as the reservoir filled up. This data is being called "highly significant" for the selection of future dam sites—possibly preventing accidents like that at Teton Dam. Another team working in California found distinctive patterns of slippage along a fault, which may be forerunners of quakes.

- A joint balloon flight in Wyoming allowed scientists to use both Soviet and American instruments to measure stratospheric aerosol concentrations. The data may be useful in attempts to determine the effect of pollution on climate.

- Joint ocean cruises enabled teams of scientists to standardize methods of measuring petroleum pollution in seawater. Other cruises involved joint study of sea mammals, leading to preliminary discussions of new protective measures.

- Delegations of experts were exchanged between the two countries to study the planning and construction of pipelines in the permafrost areas of Alaska and Siberia, to find ways of minimizing environmental damage.

## PCBs in Antarctica

The production of a group of industrial chemicals known as polychlorinated biphenyls was recently banned because of potential dangers to human health (SN: 10/16/76, p. 244). Portions of the toxic material already produced, however, have been found in oceans, rivers and even mothers' milk. Yet no one has known exactly how the PCBs were spread.

One major piece of evidence against the theory that they are spread through the atmosphere was that no PCBs had been measured in Antarctica. That continent is rather isolated from ocean currents that could spread the substances; but if they were carried by the wind, it was thought, their presence should have been detected in penguin eggs and snow by techniques that have worked elsewhere.

Now a team of University of California biologists, writing in the Dec. 30 *NATURE*, have virtually destroyed that argument. The reason PCBs were not detected in Antarctica, they say, is that other chemicals present were interfering with the measurements. After removing these extraneous chemicals, the researchers found PCBs in about the same concentrations as elsewhere. The spreading of PCBs, they conclude, is the work of the atmosphere.

## Attitudes of power company execs

Are the executives of electric power companies really polluters at heart? No, say researchers at the University of Notre Dame, but they are trapped in a system in which certain basic assumptions never get questioned. Results of their study will be published this year as a book, *Values in the Electric Power Industry*, by Notre Dame Press.

The weakness of the system, concludes the team, is that desire for more electricity is equated with actual need, and that economies of scale are assumed, rather than proved. Thus curtailment of consumption is not treated as a real option.

## Biorhythms and baseball

Babe Ruth didn't consult his biorhythm chart before stepping into the batter's box, but at the rate biorhythm books, charts and calculators have been selling for the past several years, it seems that a good many people are putting their faith and money on the biorhythm line. The theory behind the biorhythm boom is that the ebb and flow of human physical, intellectual and emotional energy follows 28-, 33- and 38-day cycles. Accordingly, if one knows one's cycles, it is possible to plan certain activities to coincide with the highs and lows of a specific cycle. Babe Ruth, for instance, might have wanted to warm the bench rather than bat the ball on the days when his chart predicted poor physical performance. Einstein might have tried to avoid thinking at the nadir of his intellectual cycle.

Is there any sense in playing the biorhythm game, or is it just an updated form of astrology? The human body does run like clockwork. It follows certain circular patterns on daily, monthly and perhaps even yearly schedules. The monthly female menstrual cycle is probably the most obvious, but other, more subtle patterns or biorhythms have been detected. Because these cycles often involve hormonal changes, they may be related to physical and psychological performance. Industrial firms in Japan and Sweden, for instance, have reported that accident rates were cut sharply when employees were warned of impending "critical" or "accident-prone" days.

Even though the body is subject to rhythmic changes, "the theoretical problems with the biorhythm concept are large enough that few serious researchers have subjected it to scientific scrutiny," says A. James Fix of the University of Nebraska College of Medicine in the fall/winter issue of *THE ZETETIC*. This is the first issue of the quarterly now being published by The Committee for the Scientific Investigation of Claims of the Paranormal (SN: 5/29/76, p. 346). Fix mentions four theoretical problems: (1) the belief that each person has exactly the same cycles of 28, 33 and 38 days; (2) the necessary assumption that the cycles are totally inflexible and invariant, maintaining their patterns regardless of age, sex, illness or life events; (3) the difficulty in stating where the cycle begins (the assumed starting point is the day of birth, regardless of prematurity or other events surrounding the delivery); (4) the assumption that all systems begin with an "up" pattern from the day of birth.

"When theories and belief systems are used to sell products or services to the public, people have the right to know the scientific evidence for the ideas being promoted," says Fix, who has devised a "simple way to put the biorhythm claims to objective test." He has measured the actual productivity of people at varying points in their cycles. The people he chose, because their productivity was publicly available, were baseball players. During the 1975 major-league baseball season, the batting performances of 70 randomly selected players were watched. A "biocurve" was made for each based on birthdates recorded in *BASEBALL DIGEST*. Batting performance was checked on "up" days (when all three curves were within 1.5 days of their peak), "down" days (all three curves within 1.5 days of their nadir) and "triple zero" days (all three curves within 1.5 days of the neutral point, neither high nor low). These latter days have been called "critical" and an additional risk of accidents is thought to exist for them. The batting pattern did not follow the hypothesized superiority of "up" days over the others, and the players showed no significant tendency to bat more effectively on any certain type of day. "In this case," says Fix, "there was no evidence that the biocurve theory is helpful in providing personally useful predictions for individual athletic performance." What about the reported drop in accident rates? A placebo or expectancy effect could be involved, with people being more careful on critical days.