

TECHNOLOGY

Solar-powered sting saves sheep

Coyotes enjoy mutton—in fact coyote feasts account for 35 percent of all lamb deaths and the untimely ends of many adult sheep too. Poisons once used to “control” predators have been outlawed on federal land since 1972. Because nearly half of all western sheep graze on federal land, coyotes now eat well. But that should change as a new generation of electrified fences take to the range.

Formerly, all wires in electrified fences were charged, using the earth as a ground. Animals leaping up and climbing them often escaped without a shock. Robert Piesse of Melbourne, Australia, solved the problem by alternating charged and ground wires from bottom to top, making it impossible for a predator to avoid simultaneous contact with charged and ground wires. The pulsed charge of 4,000 or 5,000 volts stings without injury.

Norman Gates, a U.S. Agricultural Research Service veterinarian, further modified the fence and added a wind generator to recharge the battery. The new fence, described in the November AGRICULTURAL RESEARCH, “costs considerably less to erect than conventional sheep fencing” and uses a renewable energy source. Next step: substituting a solar-powered battery energizer to generate the current.

Computers that ‘understand’ English

Naomi Sager of New York University is developing a computer fact-retrieval system that “reads” documents without having to code or alter the language in which they were originally written. The computer places words with similar syntax and information standing in their sentences into the same column in a stored table of data, she says. Requested facts are retrieved by reference to row-column entries and are summarized in tables. For example, after “reading” hospital medical records, her computer can summarize how many patients with disease “X” had a given symptom and when the symptom was reported. In fact, she said 50 such types of data from each document can be correlated. Most important, she said, is that the information need not be specially written for the computer to be able to “understand” what it means.

Tech briefs

- The clear diction and human-sounding voice of C-3PO, the gold *Star Wars* android, may not be so far off. A speech synthesizer developed at the Heinrich Hertz Institute in Berlin has coupled “a mere 250 sound elements” to produce “easily understandable speech” and a more natural, pleasant timbre to the “usually rather monotonous” computer voice, according to *Deutscher Forschungsdienst* (a German news service).

- A holographic movie projector which looks like a spaceship suspended from wires presents what academy-award winner Hart Perry Jr. believes is one of the first “projected holographic films.” The seven-minute movie was made from a series of “integral holograms” using equipment he and colleagues designed. It is part of the Holodeon exhibit — “the most complete collection of state-of-the-art holographic movies” — which opened Dec. 1 at the Museum of Holography in New York.

- An acoustic-hologram system able to picture objects five to 100 feet away through turbid water has been developed by the Naval Ocean Systems Center in San Diego. Within two seconds, sound pulses reflected off undersea objects are collected by a hydrophone array and converted to electrical signals that a computer reconstructs into a two-dimensional image.

- New directions for engineering education within developing nations is a major focus of IMPACT OF SCIENCE ON SOCIETY’s special issue (October-December) on engineering education.

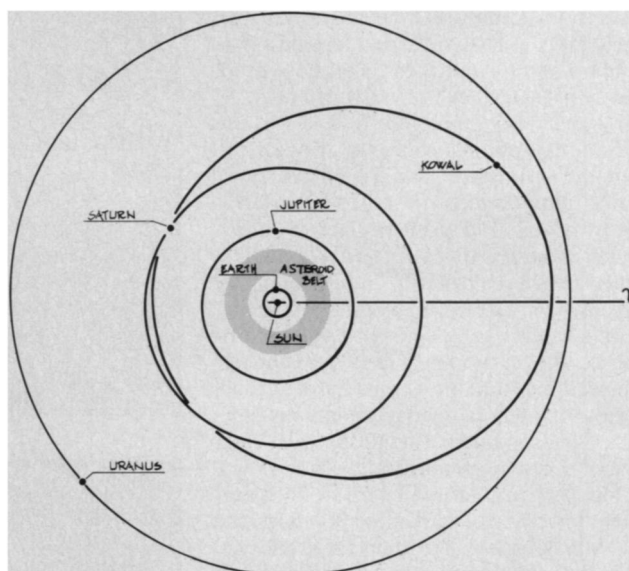
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SPACE SCIENCES

Object Kowal at Christmas

The determination of the orbit of Object Kowal, recently discovered between Saturn and Uranus (SN: 11/12/77, p. 311), has enabled this graphic representation of the object’s position in the solar system as of Christmas day 1977. The orbital parameters (SN: 12/10/77, p. 388) and other data were provided by Brian Marsden of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass.

The object’s orbit takes it as far as 18.9 astronomical units from the sun, and Uranus gets as close to the sun as about 18.3 AU. However, the most distant point of the object’s orbit is less than 32° away (in the plane of the ecliptic) from the nearest point in the orbit of Uranus so that, for the present, the two orbits do not cross. The most significant source of perturbations in the object’s orbit is Saturn, made the more so, according to Marsden, because the object and Saturn appear to be very close to a 3 to 5 resonance. In other words, every time the object makes 3 trips around the sun, Saturn has made 5, giving the planet a regular cycle of influence on the object.



POSITION AS OF DECEMBER 25, 1977

Space law: Not if but how

A growing number of lawyers and others have been urging that more attention be paid to the specialized legal problems that are likely to arise with increasing activity in space, such as in the possibly quasi-independent domains of future “space colonies” (SN: 11/6/76, p. 298). Even the Draft Treaty Relating to the Moon has yet to be fully ratified, and such documents are already being perceived as inadequate for some foreseeable circumstances. Yet, according to Hamilton DeSaussure of the University of Akron School of Law, “Identifying the need for some kind of international agreement on how law will operate in space is the easier part of the problem.”

“There are 52 legal systems in the United States and some 200 other legal systems around the world,” he says. “When more and more persons from these jurisdictions go into space, and crimes are committed and contracts broken, for example, one code of law will be a necessity. Developing this legal regime through international cooperation is the more difficult part of the problem” — a problem which, he suggests, could become still more complex with a growing role for private enterprise.

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