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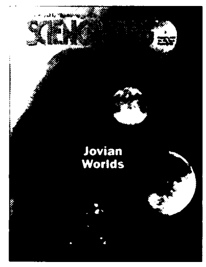
This Week

Research Notes

Articles



Cover: Four alien worlds—the large moons of Jupiter known as (top to bottom) Io, Europa, Ganymede, and Callisto—are revealing their distinctive personalities. Data recorded by the Galileo spacecraft are providing new evidence that the tug-of-war between these moons and Jupiter has profoundly affected the moons' evolution. This composite image includes a snapshot of Callisto taken by Voyager in 1979 and photos of the other moons from Galileo's current mission. (Image: NASA/JPL)

Departments

SCIENCE NEWS is published by Science Service, a nonprofit corporation founded in 1921. The mission of Science Service is to advance the understanding and appreciation of science through publications and educational programs.

Letters

Anatomically correct cover?

The 3,000-year-old Olmec clay vessel on the cover of the June 14 SCIENCE NEWS may, as you state, "mistakenly depict the heart with two chambers." But I am struck by its anatomically correct depiction of the typical branching off the aorta of a right brachiocephalic trunk, left common carotid artery, and left subclavian artery.

The Olmec may have been better gross anatomists than you suspect.

J. Roger Eagan
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For a more complete description of the Olmec vessel, see "The Olmec Heart Effigy: Earliest Image of the Human Heart" in the Spring 1997 PERSPECTIVES IN BIOLOGY AND MEDICINE. *The author, Gordon Bendersky of Allegheny University–Hahnemann School of Medicine in Elkins Park, Pa., calls the effigy "the earliest recognizable representation of a [human] heart."* —The Editors

Info secure for trusting parties

In failing to distinguish between two- and three-party cryptographic settings, "Quantum cheating" gives a confusing picture of the implications of the recent discovery that quantum bit commitment is intrinsically insecure (SN: 6/14/97, p. 373).

In the traditional three-party setting—described, for example, in Peterson's lucid article on the quantum cryptographic experiments under Lake Geneva ("Bits of Uncertainty," SN: 2/10/96, p. 90)—the goal is to protect two cooperating users, at opposite ends of the channel, against tampering or eavesdropping by an adversary. In this setting, quantum cryptography is believed to be secure against all attacks allowed by the laws of physics.

In contrast, two-party scenarios aim to enable two mutually distrustful parties to reach a common understanding or decision, despite possible cheating by one party. This is sometimes called post–Cold War cryptography—there is no explicit enemy, but one must cooperate with people one does not entirely trust. Bit commitment, the basic component that Mayers and Lo and Chau have shown to be insecure, is an essential ingredient in all known two-party cryptographic protocols but is not used in the three-party setting.

Thus their discovery, at least in theory, undermines the security of all schemes aiming to facilitate cooperation between two mutually distrustful parties, but it has no known impact on traditional quantum cryptographic schemes aimed at defending against eavesdropping and tampering by a third party.

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