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COVER: The butterfly map, patented in 1913 by B. J. S. Cahill, shows the world projected onto the eight equilateral, triangular faces of a regular octahedron. (Illustration by Anne Lunsford)

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LETTERS

Kowal on Chiron

I have greatly enjoyed your articles concerning my new object, "Chiron" (SN: 11/12/77, p. 311; 12/10/77, p. 388). I would like to point out, however, that the distances reported in the Dec. 10 issue should be *billions* of kilometers, not *millions [as several readers have correctly pointed out — Ed.]*. It should also be noted that this object is very much larger than any known comet nucleus, let alone a "defunct" comet.

It has been amusing to see that people are more concerned with what this object is *called* than with what it *is*. It's as though giving the object a name would tell you what it's made of! The fact is that Chiron is a unique object, and one cannot fit unique objects into pre-existing categories.

In his letter in the Dec. 10 issue, Mr. Ronald Oriti states that it is "fairly obvious" that the object is a minor planet or asteroid. He later says that maybe the object is a "cometoid." His letter can be boiled down to the statement: "The object is an asteroid — unless it isn't." I can't argue with *that!*

Mr. Oriti places the division between major and minor planets at 1,500 to 2,000 miles diameter. That's just fine, except that no such dividing-line has ever been formally adopted. And what about objects whose diameters are unknown? It is obvious that astronomers will have to formally define the terms "planet" and "asteroid," and perhaps invent new terms as well. The same word should not be used to refer to objects which are unrelated to each other, even if their sizes are similar. The term "asteroid" is already so broad as to be almost meaningless. We have "main belt asteroids," "Apollo asteroids," "Trojan asteroids," and now, perhaps, "Centaurian asteroids." We could resurrect the old-fashioned term "planetoid" for objects in the outer solar system, or we could invent an entirely new word. It's up to the astronomical community.

Charles. T. Kowal
Pasadena, Calif.

Humans: How savage?

In your article "The Great Late Pleistocene Extinction" (SN: 12/10/77, p. 396), you made a rather uncritical presentation of Paul S. Martin's theory that human big-game hunters were responsible for the mass extinction of numerous species of large mammals that occurred in North America approximately 11,000 years ago.

It should be noted that many other types of animals were also dying off at elevated rates during this period. Donald K. Grayson of the University of Washington has found that the same elevated extinction rate was occurring at this time even among birds ("Pleistocene Avifaunas and the Overkill Hypothesis," SCIENCE, 2/18/77, p. 691).

It seems unlikely that the extinction of such a wide range of animals can be explained simply as the result of predation by rapacious human hunters.

George Fergus
Schaumburg, Ill.

While not necessarily supporting Martin's argument in your article concerning Pleistocene extinction, one might consider more recent American habitation and its effects on the buffalo.

However, man seems now to have changed into a different savage. Perhaps an existential one. How's the cow or chicken population doing these days?

Eric M. Adams
Melbourne, Fla.

Io's cloud

Io's sodium cloud is certainly a remarkable and enigmatic curiosity (SN: 11/12/77, p. 332). However, it might be edifying to keep in mind that the sodium surrounding Io has already been correlated with the Jovian decametric noise (see Cohen, JOURNAL ROY. ASTRON. SOC. CANADA April 1975). Thus Norman Ness is not looking for a new relation (as you report), but possible extensions of an already known one; the sodium does indeed act as a conducting "switch" which turns on the radio noise.

Nathaniel L. Cohen
Ithaca, N.Y.

(Cohen's 1975 paper noted that "when Io lies at longitude 90° or 240° (where 0° longitude is beyond Jupiter on the Earth-Jupiter line) ... there is a maximum probability of receiving Io-related decametric noise bursts." A University of Florida group used this probability to predict the times of some subsequent Io-related bursts, and Cohen reported the results of eight nights of investigatory observations by three teams of researchers. On five of the nights, sodium emissions were seen only at times different from the predicted burst times, and no Io-related noise bursts were seen. On the other three nights, sodium was sought during the times when noise bursts were anticipated, and on two of those three nights, the bursts indeed appeared. The burst-free night was also the only one of the eight in which no sodium emissions were detected either.

The correlation, wrote Cohen, "suggests that sodium acts as a conductive mechanism for a potential difference across Io's diameter as it crosses Jovian magnetic field lines." — Ed.)

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