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COVER: How the green plants do their chemistry is now being followed on the molecular level, a few trillionths of a second at a time. Crucial to the operation are specially joined pairs of chlorophyll molecules. See p. 188.

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LETTERS

Saturn's disputed moons: A reply

In response to the letter of Aksnes *et al.* (SN: 2/19/77, p. 115) regarding the article on faint satellites of Saturn, we submit the following:

Although it has been our position that associating particular orbital radii with numerically designated satellites (as you did in your article, SN: 1/29/77, p. 69) is premature, we feel that there is an adequate body of evidence that Saturn has at least 11 satellites. On two sets of photographs, taken on separate days at different observatories, there are two images on the plates which cannot be associated with known asteroids, stars or satellites (excluding "Saturn X"). None of these images lie near prominent ring features where "knots" have been observed. We made an extensive study of these condensations of light, some results of which were reported at the Division of Planetary Sciences meeting by Fountain.

It is true that many orbits may satisfy 21 *random* observations; however, we have made use of the fact that the observations are *not* random. On 4 dates there are 10 observations clearly showing the satellite moving toward or away from the planet in the course of a few hours. We have required that all such series of observations satisfy candidate orbits. Further, we have rejected orbits predicting that a satellite would be seen at a time when in fact it was not.

As we suspected, after recently receiving details of Dr. Aksnes's possible orbits, we found that they were orbits which had been considered very early in our study. They were rejected because on good quality plates, no objects were seen near the positions predicted by those orbits. So far, our original interpretation is the only one that we have found consistent with all the data, but we are continuing to investigate even less likely orbits in an effort to arrive at a unique solution.

We agree that until the question of the uniqueness of the orbits is resolved, it is inappropriate to modify existing tables of the Saturn satellites or employ new nomenclature. We recognize the difficulties resulting from the short time base of the observations. We feel reference to *an* 11th satellite of Saturn appears justified by the data.

John Fountain
Stephen Larson
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University of Arizona
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Whistling in the wind

I feel that Mr. Merriam's estimate that wind power could supply 15 percent of our electricity by the 1980s (SN: 2/12/77, p. 106) may be an overly optimistic and biased opinion. Fifteen percent of our present electrical capacity is near 90,000 MWe, and existing designs of windmills have outputs of about 1.5 MWe maximum. Allowing for the fact that there are some places where 12 mph winds blow 60 percent of the time, you would need 100,000 windmills for that much power (12 mph being the threshold velocity for wind energy conversion). And you can't tell nature to make sure that the 60 percent occurs during peak demand periods.

Assuming that the vortex-type wind generators prove feasible, we may be able to achieve outputs in the tens or maybe even up to one hundred megawatts electrical, but that has yet to be proven. You can't escape the fact that the wind is a relatively dilute power source, and a large capacity wind plant must, therefore, be huge in comparison to existing plants of equal capacity. The wind may be free, but its power is not, and to improve on the wind's reliability will result in the unavoidable use of fuel combustion to maintain the vortex plant in operation during low wind periods. Combustion usually means pollution.

The bottom line is that with present materials and technology, there is no apparent way that we can have at least 90,000 MWe of wind-generated power any time in the 1980s.

H. Edward McNeill
Idaho Falls, Idaho

Two cultures

Thank you for John Douglas's splendid and timely report "The 2 Cultures—Twenty Years Later" (SN: 2/19/77, p. 122). It is an example of your own valiant efforts to knit the split that threatens civilization.

I wish you had called attention to the best bridgebuilder I have noticed in recent years—Robert M. Pirsig, author of *Zen and the Art of Motorcycle Maintenance.* The split between the two cultures (Pirsig calls them "classic" and "romantic") is precisely what this bestselling book is all about. By skillful dramatization and personalization, Pirsig has produced a deliciously sugarcoated dose of philosophy that cuts to the root of the question and illuminates it as a matter of values.

This book should be required reading in any curriculum that proposes to address the two-culture split.

Eugene W. McWhorter
Longview, Tex.