

# SCIENCE NEWS®

The Weekly Newsmagazine of Science

A Science Service Publication  
Volume 134, No. 7, August 13, 1988

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Subscription Department  
231 West Center Street, Marion, Ohio 43305

Subscription rate: 1 yr., \$34.50; 2 yrs., \$58.00.  
(Foreign postage \$6.00 additional per year.) Change of  
address: Four to six weeks' notice is required. Please  
state exactly how magazine is to be addressed.  
Include zip code. For new subscriptions only call  
(1) 800-247-2160. Printed in U.S.A. Second class  
postage paid at Washington, D.C., and additional  
mailing offices. Title registered as trademark U.S. and  
Canadian Patent Offices. Published every Saturday by  
SCIENCE SERVICE, Inc., 1719 N St., N.W.,  
Washington, D.C. 20036. (202-785-2255)  
ISSN 0036-8423

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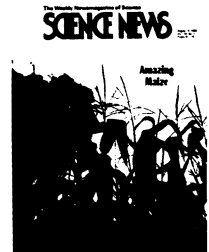
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Cover: In its many forms, maize — or corn — is a staple for a large and growing share of the world's population. However, conventional maize, lacking in two amino acids, cannot provide a balanced source of protein. Researchers in Mexico have incorporated a gene to improve the protein's quality in a range of different types. The result is a grain that looks and tastes like normal corn but has double the protein quality. (Photo: Grant Heilman Photography, Inc.)



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## Letters

### Traveling light

While I have been for many years an avid reader of your most informative and well-organized periodical and appreciate your careful efforts to demystify science for us, once in a while I am stumped.

Somewhere between Albert Einstein and Arlin Crotts, something, it seems, has been lost in translation. Einstein, I thought, had told us the speed of light was constant. Crotts seems to be telling us it is not ("A Burst of New Data From Supernova 1987A," SN: 6/18/88, p.388).

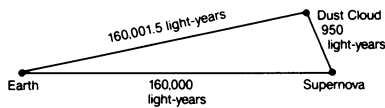
Every article I have read in your publication agrees that supernova 1987A exploded on Feb. 23, 1987. Now, I realize that astronomers mean 1987A exploded on that day about 160,000 years ago, adjusting as we must for the time it took the light to reach us, since we are located 160,000 light-years away.

But Crotts reports that 450 light-years from the place of the explosion and also at 950 light-years from that spot, there are visible

light arcs—a visible light echo—seen in dusty gas clouds. How could the light from a supernova explosion have traveled a distance of both 450 and 950 light-years in a year and a half? I thought light traveled a distance of 1½ light-years in 1½ years. And yet you report that visible light photons left 1987A in February 1987 and somehow managed to bounce off a dusty gas cloud a distance of as much as 950 light-years away by June 1988!

Can you explain?

Barrett A. Hurwitz  
New Bedford, Mass.



Light coming directly from the supernova took 160,000 years to reach Earth, while light traveling from the supernova to the dust cloud and then to Earth took 160,001.5 years to reach

Earth. These two paths together form a triangle. One side has a length of 160,000, while the other two sides total 160,001.5. Knowing the angle between the light's path from the supernova directly to Earth and the light's path from the dust cloud to Earth allows one to deduce the triangle's missing length: the distance from the supernova to the dust cloud. That distance—450 or 950 light-years—is just a small fraction of the total distance traveled.

—I. Peterson

### Bee ware

I wondered, when looking at the photograph of the microchipped bee ("Bee with a chip on its shoulder," SN: 7/9/88, p.23), if we might not be verging on a macroscopic example of the Uncertainty Principle—observation changing the behavior of that which is observed. Were I loaded down with a large object glued to my thorax, I am not sure that I would run and jump and fly with hoi polloi. And I would assuredly be in a foul mood when next I lighted on an engineer.

Ted Mead  
Port Neches, Tex.

AUGUST 13, 1988

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