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## Letters

### Dirty words

Your report on acid rain ("Soils and Acid  
Lakes: Finding Common Ground," SN: 3/17/84, p.  
163) brings up a great problem to those of us  
who practice or use chemistry. At some point,  
the people who call themselves "soil chemists"  
broke off from the mainstream of chemistry and  
began to develop their own version of it. As a  
chemistry teacher, I've had some problems with  
a few students who take soils classes and come  
back to tell me that I didn't teach them the right  
stuff. No chemist that I know could possibly  
agree to the proposition that sulfate causes  
acidity. If the sulfate were tied to a hydrogen ion,  
then there would be acidity. Sulfate is consid-  
ered either a neutral or a very slightly basic an-  
ion. James Galloway is quoted as saying "the  
base cations calcium, potassium and mag-  
nesium." Every chemistry textbook in print  
today will either explicitly state or imply that  
there is no such thing as a basic cation. The  
three cations mentioned are in fact considered  
"neutral" by chemists.

Soil chemists have developed a huge set of

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Cover: Back 150 years ago, the average milk cow produced only 375 gallons a year. Even as late as 1950, cows produced on average no more than 677 gallons each year. But today the average output per cow is 1,432 gallons a year and still climbing—thanks to diverse and often unusual research efforts. (Photo: Wendy McCarren)
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internally consistent chemical concepts that no one who is not a soil chemist could understand. It's admirable that they are consistent. The problem is, if the soil chemists ever figure out the causes of lake acidification, it would take a translator to tell the rest of us about it. I wonder why they don't join the rest of us, if for no other reason than for the mutual understanding this would foster.

Siegfried N. Ludwig, Ph.D.  
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Centralia, Wash.

### Thick disks?

I would like to make a correction to your feature story on accretion disks ("Swallow Trans-sonically and Stay Fat," SN: 4/7/84, p. 220).

So far, observed quasars all exhibit parallel polarization; the first observations of this were made by Stockman *et al.* (Jan. 15, 1979, *ASTROPHYSICAL JOURNAL* 227, 55). Miller and Antonucci, besides extending the list of quasars, have also found that Seyfert 1 galaxies and certain radio galaxies show polarization parallel to the extended radio structures surrounding

these objects' centers.

Miller and Antonucci found perpendicular orientations between polarization and radio structure only in Seyfert 2 galaxies and N galaxies, never in quasars.

The implication is that a thin disk is at work in the group of quasars, Seyfert 1s, and radio galaxies; and a flat disk in the Seyfert 2s and N galaxies.

John R. Gustafson  
Staff Writer  
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### River city

The article on the Great Salt Lake by Cheryl Simon ("Bracing for the Flood," SN: 3/17/84, p. 172) was absolutely great, but the Jordan River flows west of and not through the heart of Salt Lake City. The "State Street River" (a sandbagged stream down one of Salt Lake's main thoroughfares) was from City Creek, not the Jordan River.

Frank B. Salisbury  
Utah State University  
Logan, Utah

MAY 5, 1984

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