Discoveries

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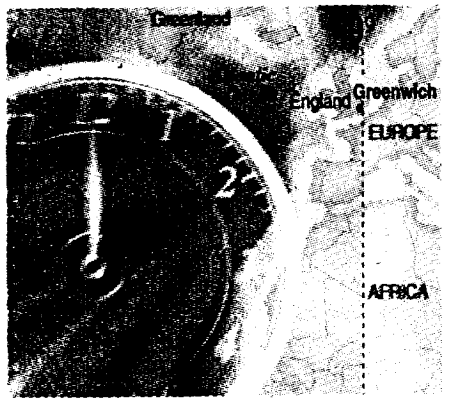
SCIENCE LORE



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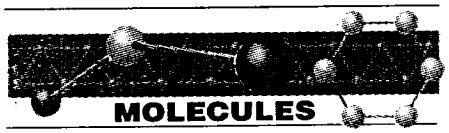
On this date in 1884, Greenwich was adapted as the universal time meridian of longitude from which standard times around the world are calculated.

SCIENCE UPDATE



Scientists have a blast learning how to break chemical bonds

■ **In an attempt** to understand the secrets of chemistry, scientists are squirting one stream of water into another.

Of course, university researchers get the best water pistols around. They've figured out how to slam water streams together at speeds of 450 mph — something that would cool even a Dallas autumn.

And new research shows that when the jets of water collide, the force of the smash can actually break chemical bonds.

Scientists from the University of Illinois at Urbana-Champaign have been pumping water at very high pressures, through tiny holes drilled in gemstones, to watch the chemistry of stream collisions. They found that when the water jets hit each other, the collision breaks the bond between oxygen and hydrogen atoms in H_2O. The atoms then join back together to form the hydrogen peroxide molecule, H_2O_2.

The reactions occur because tiny bubbles form and then collapse within the fast-moving liquid, destroying the bonds, the researchers say.

Scientists usually trigger chemical reactions by shining heat, light, ultrasound or other radiation on a substance. Using high-speed streams of liquid may be a new way to drive chemistry, says team leader Kenneth Suslick.

The technique might someday be used to clean up pollutants by breaking chemical bonds within contaminants, he says.

The researchers describe their work in the current issue of the *Journal of the American Chemical Society*.

— *Alexandra Witze*