

a few years. Now that this millisecond accuracy is available, he would also like to test for effects of much larger earthquakes such as those that rattled Alaska and Chile in the 1960s.

Meanwhile, a group of researchers led by Thomas Herring at Harvard University has used VLBI data to measure a different kind of motion of the spin axis, one that changes relative to the rest of space and is driven by the sun's and moon's gravitational fields acting on the earth's equatorial bulge. Based on the VLBI data, Herring's group has concluded in a paper recently submitted to the *JOURNAL OF GEOPHYSICAL RESEARCH* that the coupling between the earth's core and mantle is much stronger than predicted by current geophysical models of the earth. These results imply that the liquid core is flatter by about half a kilometer in the pole direction than is presently thought. The amazing thing about all this, says Robertson, is that with VLBI the internal structure of the earth is being determined by observing the far edge of the universe.

— S. Weisburd

Bouquet of mustard for new genetics



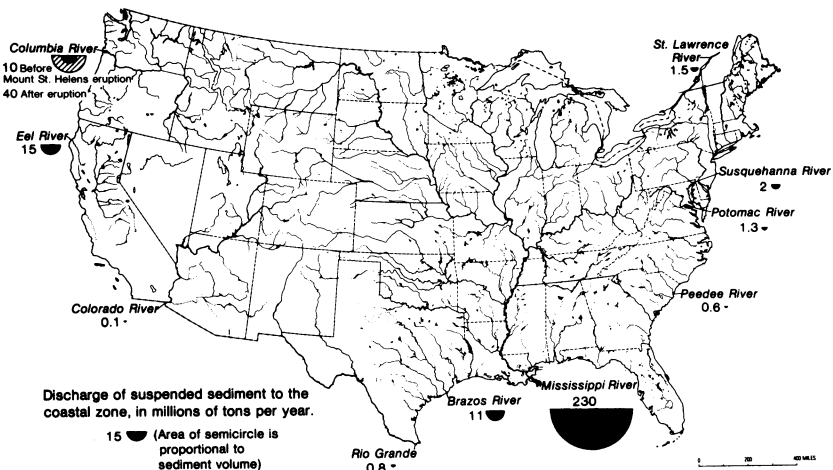
from Drawings of British Plants

Animal geneticists owe their success to mice and the fruit fly *Drosophila*; microbial geneticists are indebted to the bacterium *E. coli*. Now molecular biologists propose that a small weed will prove to be a similar boon to plant geneticists.

Plant genetics has lagged behind other fields in the recent rapid progress in understanding mechanisms of inheritance and in applying that knowledge to genetic engineering. The explanation often given for this lag is the amount and complexity of the genetic material, called the genome. Plants have large amounts of repetitive DNA — sequences of unknown function present in thousands of copies and scattered throughout the chromosomes. In addition, plants often have extra copies of their entire set of chromosomes.

A plant in the mustard family may allow geneticists to work with a much simpler genome. This harmless weed, *Arabidopsis thaliana*, which grows to about 5 inches tall, contains about 1 percent the amount of DNA in wheat, and less than 0.5 percent the amount of repetitive sequence. In addition, it is well suited for research: Its life cycle is only five weeks; one plant can produce thousands of seeds; and dozens of plants can be grown in a

Mud map: A sedimental journey



Over the last 35 years, the amount of mud released by the Mississippi River into the Gulf of Mexico has dropped by more than half, two U.S. Geological Survey hydrologists report in the agency's latest *National Water Summary*. But the river still discharges more sediment into the ocean than any other U.S. river, and its sediment load is ranked about sixth in the world.

Scientists attribute the decrease to the construction of several large, sediment-trapping dams on the Missouri River during the 1950s and 1960s. The drop in sediments upstream may be responsible for the erosion of shorelines downstream on the Mississippi Delta.

The recent water summary also documents sediment flow in other rivers. For example, the Cowlitz River in southwest Washington, which received 140 million tons of sediment after the 1980 Mt. St. Helens eruption, now transports 30 million tons per year.

2-inch-diameter pot. More than 75 genetic mutations have already been described and assembled into a map of the plant's five chromosomes.

Initial work on the molecular genetics of *Arabidopsis* is described in the Sept. 20 *SCIENCE*. Elliot M. Meyerowitz and Robert E. Pruitt of Caltech in Pasadena report that the individual genes of *Arabidopsis* are similar to those of other flowering plants. They predict that genes of interest can be easily located in the small genome of *Arabidopsis* and then used to pick out the corresponding genes in more complex plants of economic interest. Proteins encoded by large gene families in other species are encoded in *Arabidopsis* by a single gene or a few genes. For example, there are three genes in *Arabidopsis* for the light-harvesting chlorophyll protein. In contrast, in petunias this protein has 16 or more genes. Preliminary work in other laboratories suggests that it will be possible to do genetic engineering on *Arabidopsis*, using the gene carrier (the Ti plasmid) now employed for more complex plants.

At least a dozen laboratories are working on, or have plans to work on, the molecular genetics of *Arabidopsis*, Meyerowitz says. He and Pruitt conclude, "Our hope is that *Arabidopsis* will soon join the other organisms for which a combined genetic and molecular approach has led to both fundamental and practical scientific advances." — J.A. Miller

TMI tests trashed

Control room operators at Three Mile Island (Pa.) Unit 2 discarded the results of more than half the safety tests they conducted in the year before the reactor's 1979 accident, and in some instances falsified them, according to a report issued last week by the plant's owner, General Public Utilities Nuclear Corp. (GPU Nuclear).

But, the report contends, "evidence does not establish that management personnel above the level of the operations department participated in or consciously tolerated improper test practices."

In February 1984, GPU Nuclear pleaded guilty to criminal charges that it had falsified tests designed to detect water leakage from the reactor's cooling system. According to Edwin Stier, the Somerville, N.J., attorney who conducted the 15-month investigation for the corporation, this report represents the first attempt to document the extent to which those tests were falsified.

Comments Ellen Weiss, an attorney for the Cambridge, Mass.-based Union of Concerned Scientists, which has been involved in a legal battle to prevent the start-up of Unit 2's undamaged twin reactor (SN: 9/7/85, p. 150), "There's a great deal about that report that raises questions in my mind about the people still at GPU Nuclear." □