

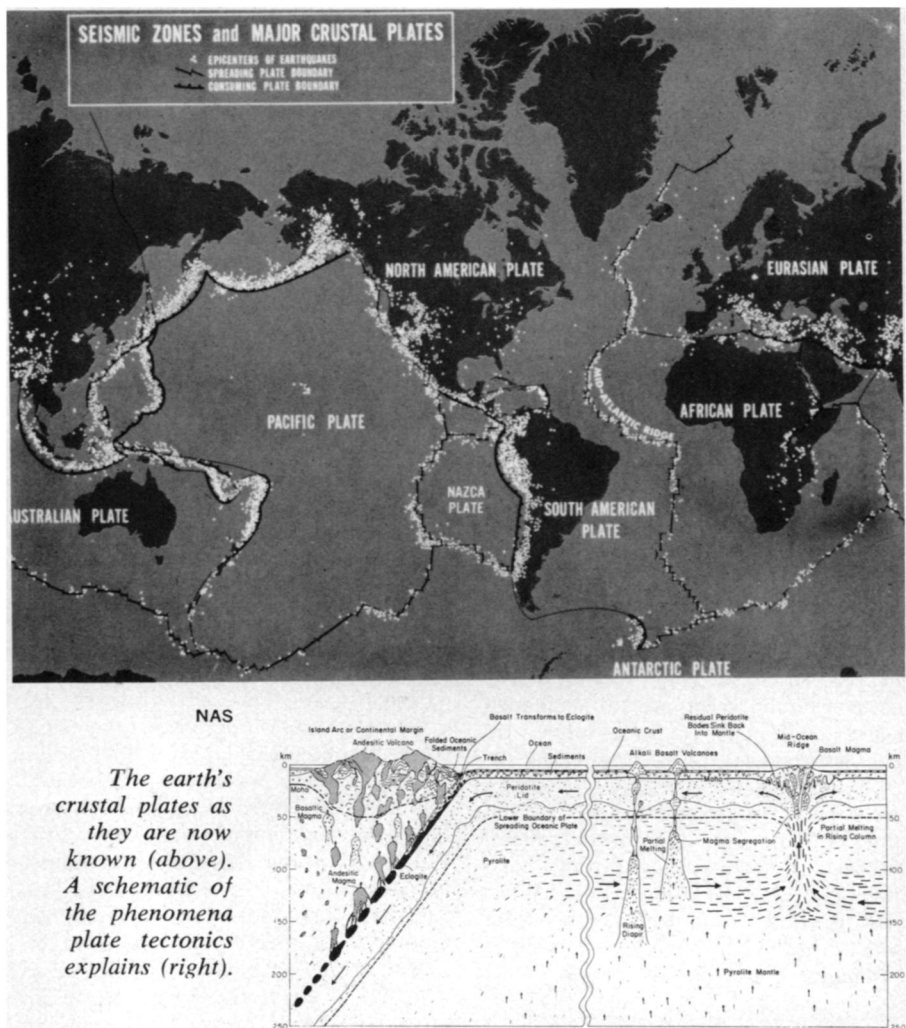
A multination project to study the restless earth

The earth is restless. It keeps re-arranging its crust. Most of the motion is slow and imperceptible, but sometimes the changes are sharp and destructive. Despite decades and centuries of human interest in the dynamics of the earth's crust, especially the more violent manifestations such as earthquakes and volcanic eruptions, until recently geophysicists did not have anything like a general theory of what was going on.

Now they do. It is called plate tectonics, and they like it so well that they are using it as the focus for an international geodynamics project in which 52 countries are taking part. The overall life span of the project runs from 1971 to 1979, but the first three years were spent in planning. Now the data gathering is about to begin, and the National Academy of Sciences has signaled the moment by issuing a report this week outlining what American geophysicists hope to accomplish as their part of the project. The report, *U.S. Program for the Geodynamics Project, Scope and Objectives*, is being formally presented to H. Guyford Stever, director of the National Science Foundation, who is the nearest thing left to a Presidential science adviser.

Plate tectonics is the theory that the earth's surface is made up of a number of plates that move horizontally in relation to each other. A generalization of the older hypothesis of continental drift, plate tectonics sees the mid-ocean ridges as places where material wells up from below the earth's mantle. From these lines the plates move outward. At other extremities, the material of one plate slides under another and its material gradually returns to the lower depths. There are also boundaries, exemplified by the boundary between the North American and Pacific plates, which runs along the California coast, where plates seem to be sliding horizontally past each other.

The theory can explain the apparent motion in the positions of continents, mountain building at plate boundaries, volcanism at boundaries and elsewhere, the presence of ocean trenches at plate boundaries and seismic activities at boundaries. But there are things the theory cannot explain, and the scientists involved in planning the geodynamics project stress that these instances are also of high importance in the study. They include such things as vertical motions in the middle of plates and mountain building and seismicity at points far from plate boundaries. Plate tectonics can explain the Pacific Coast Range; it has difficulty with the



Rockies. It can account for California earthquakes but not earthquakes in Missouri or the St. Lawrence valley.

The American part of the program consists largely of studies to be undertaken within the United States or in cooperation with Western Hemisphere neighbors, for example a study of stress accumulation and dissipation along the California plate margin or a detailed

study of the Nazca Plate, a small plate off the west coast of South America. Most of the detail work is already going on. The plans do not ask for large new expenditures though they do call for some increases. The main point of the project is to provide central coordination and a general frame of reference for the integration of a multitude of studies. □

Drug shows promise in counteracting Herpes virus

Herpes viruses are definitely known to cause cold sores. They have also been implicated in mononucleosis (SN: 12/2/72, p. 362), and in some human cancers (SN: 11/25/72, p. 345). Although some nonprescription drugs relieve the symptoms of cold sores, no drug has been proven to kill Herpes viruses.

Now such a drug is looming on the scene, Abbott Laboratory microbiologists reported last week at a meeting of the American Society for Microbiology in Washington.

The drug is phosphonoacetic acid. Its role was discovered during routine drug screening. It is simple in chemical makeup, consisting of phosphoric acid and acetic acid. It is somewhat of an

oddity in that it does not exist in nature.

Skin-infection tests in mice and eye-infection tests in rabbits are standard laboratory procedures for evaluating the effectiveness of drugs against Herpes viruses. When mice are infected with Herpes, not just their skin becomes diseased. Their central nervous systems nearly always become infected as well, and within a few days they become paralyzed and die. When rabbits are infected with Herpes, their eyes become diseased. Occasionally they too get the virus in their central nervous systems, become paralyzed and die. So when Abbott scientists tested the effects of phosphonoacetic acid on mice and rabbits, they looked for not just remission of skin or eye disease, but