exploited. But if the goal is merely generating industrial process heat, deposits at 200°F may be sufficient, Smith told SCIENCE NEWS. "And it's my own feeling," he added "that that's where the big future for this sort of thing lies." He says, however, that since those who fund or influence the funding of geothermal research tend to be more interested in electrical-generating applications, that has been the focus of the hot dry-rock programs. In fact, just three weeks ago the first of two wells that may eventually power a 5- to 10-megawatt commercial power station was completed at Fenton Hill.

Environmentally, hot dry-rock is virtually benign, especially compared with the notorious sulfur- and brine-polluting "wet" geothermal fields out West. There remains some concern, however, that rock fracturing could induce small earthquakes. □

Antibody zeros in on interferon

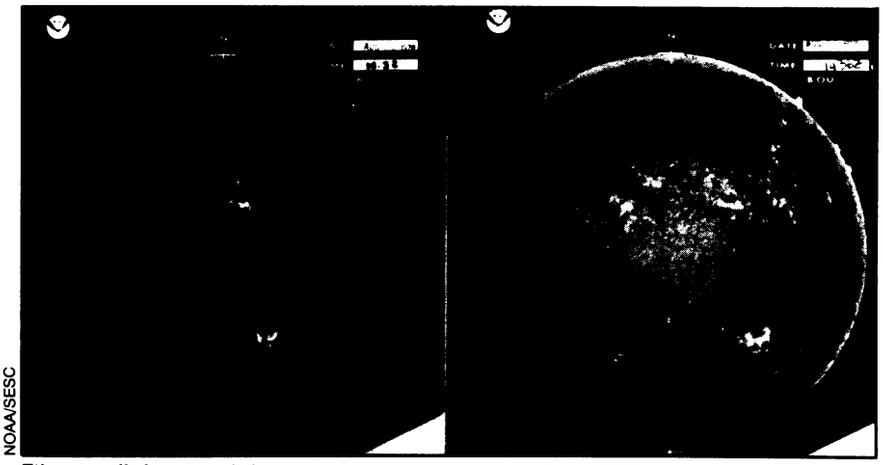
Sorting the therapeutic effects, and lack of effects, of the much-touted natural chemical interferon is a task greatly complicated by lack of the material in a pure form. The doses of interferon administered in current clinical trials (SN: 6/7/80, p. 358) are generally less than 1 percent pure. Now biologists in England report development of a tool that can clean up interferon preparations. Their technique concentrates interferon 5,000-fold in a single step.

The key to the purification is an antibody that binds specifically to interferon. When that antibody is linked to a solid support column, it grabs the interferon molecules from an impure preparation as they flow by.

David Secher of the Medical Research Council in Cambridge and Derek Burke of Warwick University spent three years tracking the antibody, Secher said in a telephone interview. The researchers used the technique developed by Cesar Milstein (SN: 12/23/78, p. 444) in which immune system cells and tumor cells are fused so that the resultant cells grow continuously in laboratory culture, each cell and all its descendants pumping out a specific (monoclonal) antibody. Secher and Burke chose a clone of cells making antibody that prevented interferon from protecting other cells against viral infections.

In two sets of experiments fusing immune system and tumor cells, the scientists found only one antibody specific to interferon. Secher has been using this selective antibody to concentrate interferon from human white blood cells, but he expects the same technique could be applied to purify interferon produced by recombinant DNA (SN: 6/14/80, p. 372). Secher's goal is to analyze the many molecules of the white blood cell surface. □

A prominent cause for magnetic storms



NOAA/SESC

Filament (left, upper left quadrant) may have caused Aug. 1978 magnetic storm.

A long-discarded theory for a source of geomagnetic storms—disturbances of the earth's atmosphere that are visible as auroras and that disrupt radio transmissions and electrical circuits — was revived recently at the meeting in Toronto, Canada, of the American Geophysical Union.

Geomagnetic storms, which are caused by pulses of charged particles from the sun, have long been associated with solar flares (explosive brightenings on the solar surface) and more recently with coronal holes (low density regions in the sun's corona), but these phenomena account for only a small percentage of the storms. A third solar event — prominences or filaments — may be "equally as important as flares" in triggering pulses of solar particles, suggests Jo Ann Joselyn of the National Oceanic and Atmospheric Administration in Boulder, Colo.

Prominences (called filaments when seen against the sun's face) are masses of gas that arch hundreds of thousands of kilometers above the sun's surface and appear to follow outpockets of magnetic lines in the corona. A certain class of filaments is not associated with sunspots and do not, as many do, re-appear repeatedly in the same spot. It is these features — called disappearing filaments — that were originally proposed in the 1930s as a source of geomagnetic disturbances and that Joselyn now suggests could be responsible for at least 25 percent of all geomagnetic storms. (The idea died when filaments failed as a candidate for M-regions — "magnetically active" and "mysterious" sources of recurrent storms.)

While studying a very large storm that originated from the sun on August 22, 1978, Joselyn noted, "There were no flares for a week, no coronal holes, so it had to be something else. And there was this disappearing filament." Moreover, she said, Skylab results showed a strong correlation between outward moving coronal disturbances — which could initiate particle pulses — and disappearing filaments. Studying solar activity from June 1, 1976, to June 30, 1979, Joselyn found that of 65 geomagnetic storms, 10 could be attributed to coronal holes alone, 3 to flares, 12 to disappearing filaments, 11 to filaments and flares, 5 to coronal holes and flares, 11 to coronal holes and filaments and 8 to all three events. Five storms are still unexplained. □

Mt. St. Helens: Dome, but no relief

As though yearning to rebuild its once beautiful face, the gaping crater of Mt. St. Helens began last week to ooze forth a plug of lava—the much-touted lava dome. But, made cautious by earlier misplaced enthusiasm and the volcano's third major blast in a month on June 12, scientists stressed that the presence of the dome does not lessen the hazard or the likelihood of many years of eruptions.

The dome was first spotted three days after a major eruption spread ash to the north, south and west — areas previously untouched. Before the 9:11 p.m. (PDT) eruption, University of Washington seismologists noted an increase in harmonic tremor (continuous rhythmic movements) and small earthquake activity during the afternoon, a decrease about 8:00 p.m. (PDT) and a sudden increase at the estimated time of eruption. Though not of the magnitude of the May 18 blast, the June 12 eruption produced an ash cloud that reached more than 50,000 feet and pumice and ash flows as hot as 600°C. The lava dome — the top of a "largely degassed column of lava" with a "bread crust" like appearance — emerged without seismic activity and measured about 650 feet wide and 130 feet high when last observed. □