

consternation, I must say with some pleasure, of the powers within the psychiatric establishment who have been vociferously insisting that vitamins have nothing whatever to do with the functioning of the brain," Rimland says. In addition, officials of the National Society for Autistic children (NSAC) say they are "impressed with his work."

Rimland and colleagues Enoch Callaway and Pierre Dreyfus are not sure exactly what vitamin B6 does to the brain. But in their study of 16 "autistic-type" youngsters, the investigators found that 11 improved significantly while taking massive (several hundred milligrams a day) doses of the vitamin in pill or capsule form. Moreover, the majority of the subjects appeared to deteriorate when "withdrawn" from B6. Each child was placed on B6 for half the study and on a placebo for the other half, but neither they nor those who rated their behavior knew at the time which of the two was in use — that information was not revealed until the ratings were concluded.

Rimland says he "cannot account" for the four youngsters who were not helped by the megavitamin therapy (in two of the cases the behavior appeared to worsen). "Frankly, I thought we'd be right in all of them [the 16 subjects] — I'm disappointed," says Rimland. The psychologist undertook the study, he says, largely on the basis of earlier clinical observations and noncontrolled studies, both in the United States and in England.

The researcher concedes that "it is difficult to say just what the exact mechanism is" that is responsible for the apparent improvement. But those who respond positively exhibit considerably lower levels of the almost trancelike detachment and other behavioral characteristics common among autistic children. B6 has been shown to elevate serotonin levels — apparently depleted in the autistic — and Rimland suggests that this could be a sign of "an underlying allergy in the central nervous system to some substance."

He cautions, however, that "a lot of kids have been helped [several hundred are now being clinically treated with vitamins] but no kid has been made totally well. . . . B6 may be just one of a series of things needed in treatment of the autistic." B6, even in such massive doses, does not appear to damage the system, Rimland says.

Ruth Sullivan, director of the NSAC's Information, Referral and Advocacy Office, says that Rimland "seems to be on to something that could be quite useful — how useful at this point, we don't know." "I know of no person working in the field that is more thorough in their search of the literature," she says of Rimland, whose theory of vitamin dependency could apply to "autism and other mental illness. . . ." "We're pretty sure that autism involves some neurological disability," says Sullivan. "Conceivably, vitamin dependency may be involved with that." □

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Solar superflare is noisiest on record

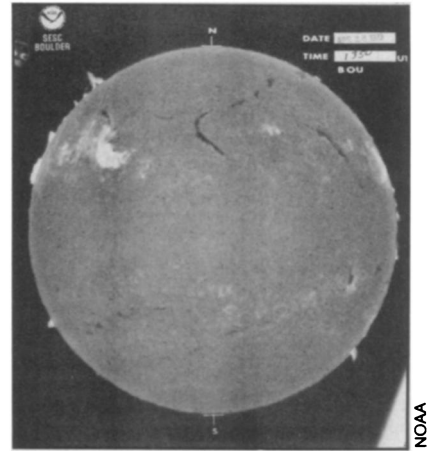
In the annals of the huge eruptions that periodically burst forth from the sun, the flare of flares took place in early August of 1972. Its X-rays, charged particles and other emissions bathed the earth in unprecedented numbers, playing havoc with communications and reaching levels that some researchers feel could have been lethal to astronauts in space. "The August '72 event," says Patrick S. McIntosh of the National Oceanic and Atmospheric Administration's Space Environment Services Center in Boulder, Colo., "is our benchmark."

Last month, however, one of the 1972 event's most important records was broken by a superflare that seems, in terms of its accompanying radio-frequency energy, to be the "noisiest" on record.

Of the sun's radio emissions, says McIntosh, the 10-centimeter wavelengths have been monitored for the longest time. During a period of minimum solar activity, the 10-cm background level is about 70 "flux units," rising to about 170 during an active period. The August 1972 event produced a level of about 22,000, an increase of more than 100-fold. The superflare of April 28, 1978, raised the number to 24,000.

A more representative indication of the flare's overall energy, however, is its X-ray output. The most common flares are small, with peak X-ray energies of about 0.001 erg per square centimeter per second reaching the earth. The August 1972 peak was about 15 ergs, with last month's event reaching about one-third that number. Because the emissions took longer to die out, however, McIntosh says, the total X-ray energy from the recent flare probably reached half the 1972 level.

It also triggered a "storm" that distorted earth's magnetic field for four days, causing communications difficulties by upsetting the ionosphere so that it could not be



April 28 flare (upper left) by H α light.

counted on to predictably bounce radio signals over the horizon. The U.S. Coast Guard, according to McIntosh, reported that it lost radio contact with ships from Maine to New Orleans. The distortion of the geomagnetic field lines also required the Space Environment Services Center to alert RCA Corp. and Comsat Corp., both of which operate communications satellites that depend on the field lines to maintain their proper orientation in orbit.

The superflare was part of an episode lasting more than two weeks, in which one or more "moderate-or-better" flares occurred almost every day. Ten such events were recorded on April 7 alone. If the more common, small flares are included, McIntosh says, the total during the two-week episode may have been as high as 200.

A number of the flares took the form of "loop prominences," stretching perhaps 50,000 kilometers into space and then curving back to the sun. Loops are the most energetic of prominences, McIntosh says, and the hottest, reaching temperatures as high as 2,000,000°K compared to a background temperature of about 6,000°K in the part of the solar surface surrounding the source region.

The sun's activity is expected to reach its maximum in late 1979 or early 1980. The number of sunspots, an indicator of solar activity, has already reached an average of about 100, says McIntosh, only 10 short of that during the last maximum in 1968-69. □

Sun Day's legacy: Organization for change

On May 3, millions of people from all walks of life found common grounds for celebrating the promise of solar energy. From sunup to sundown, across the nation and in many foreign countries, fairs, rallies, tours, panels and concerts feted the sun. Many functions were just plain fun, such as dancing to solar-powered rock bands or attending races between solar-powered cars. But there were serious messages too, such as the announcement by President Carter that another \$100 million would be added to the federal solar-energy budget.

"The question is no longer whether solar energy works," said President Carter during Sun Day ceremonies at the Solar

Energy Research Institute in Golden, Colo. (SN: 4/22/78, p.255). "We know it works. The only question is how to cut costs so that solar power can be used more widely."

His speech and endorsement of solar technologies marks a turn in the President's solar stance. Less than four months ago he sent a budget proposal to the Congress calling for a reduction in solar spending. Although the additional money he described May 3 will be "reprogrammed" — which means taken from funds originally proposed for use elsewhere within the energy-department budget — solar enthusiasts see it as an important attitudinal change.

And that was the whole purpose of