

sponse, however, seem to relate to the sun's triggering in a complex, non-linear way. Soviet researcher A.I. Ohl thus determined a link between the sunspot numbers and two measures of geomagnetic activity known as the *Kp* and *Ap* indices. By relating recurrent geomagnetic activity on the "downside" of past solar-activity curves to the sunspot number at the subsequent maxima, he predicted that the next maximum should be 150 ± 30 . Howard Sargent of the National Oceanic and Atmospheric Administration produced a result similar to Ohl's using a modification of Ohl's method with a different geomagnetic parameter called the *aa* index.

But the sunspot number may be higher still. Also using the *aa* index, visiting NOAA scientist R.P. Kane of the Physical Research Laboratory in Ahmedabad, India, correlated high *geomagnetic minima* with subsequent high *sunspot-number-maxima*, and predicts (in the July 13 NATURE) a maximum of 192 ± 33 . Having incomplete data for 1977 when he wrote the paper, Kane adopted 1976 as the *aa* minimum, but 1977 turns out to have had a lower *aa* level. Updating Kane's calculation, however, says Joe Allen of the NOAA Environmental Data Service, still yields a number of about 168. Furthermore, Kane's work supports concerns that the sunspot maximum may occur as early as late 1979, making the Skylab rescue mission a real cliff-hanger, since that could be just when the shuttle astronauts are making their move. □

U.S.-Sino exchanges

Setting up mutually beneficial exchanges of science and technology was the subject of talks between key officials of the People's Republic of China and their counterparts in the civilian sectors of the United States government earlier this month in Peking. Promoting commerce between the nations was also discussed, according to Frank Press, the President's science advisor. He led the U.S. delegation that returned last week.

Although about 50 groups of U.S. scholars have visited China since 1972, these were the first direct talks between the governments on science and technology. Earlier missions tended toward "survey-tour" visits, with little continuity or follow up, Press said. These talks indicate that China is now ready to enter "substantive" exchanges of research, technology and people, he said.

The U.S. leaders toured research facilities and ministries, even a satellite-assembly plant. Talks, however, focused only on establishing contacts, procedures and "communications channels" for cooperation in the future, Press said.

The Chinese stated their goal as being to lift China "from backwardness" into the status of world economic and scientific leadership. □

Grasshoppers threaten U.S. crops

Americans should probably consider themselves lucky that locusts, those roving and irritable grasshoppers pillaging East Africa (see p. 61), have not been seen in this country since the late 1800s. But chances are that farmers in Kansas, Colorado, Oklahoma and Nebraska are too busy fighting the locusts' ordinary U.S. cousins to appreciate the comparison. Potentially devastating numbers of crop grasshoppers are munching away wheat, corn, barley and other cash crops.

The grasshoppers pose a serious threat to millions of acres of croplands and rangelands. Estimates of their potential economic impact are already running in the tens of millions of dollars. Agriculture officials in the four states have asked for government assistance and an immediate, temporary lifting of the Environmental Protection Agency's ban on several extremely potent pesticides, such as dieldrin and heptachlor.

EPA officials believe the problem can be

handled with available pesticides, however. And so does J. E. Henry of the Rangeland Insect Laboratory (formerly the Grasshopper Research Laboratory) in Bozeman, Mont. His organization is among those working on pest management, which essentially amounts to "preventive medicine."

One scheme undergoing tests involves seeding wheat bran with spores of *Nosema locustae*, a protozoan lethal to grasshoppers and crickets, but not to warm-blooded animals. The bran would be distributed over infested land. Protozoa entering the marauding populations would remain in the host community until their numbers decline to levels too small to support the pathogen.

Since 1958, grasshoppers have been kept to manageable numbers by a system of checks and balances involving parasites, predators and pesticides. But a long drought last year killed many predators and the heavy rains that followed incubated grasshopper eggs. There is nothing unexpected about the current outbreak, Henry told SCIENCE NEWS. Farmers were warned last year and should have taken preventive action, he said. □

Birth control through desegregation

Except for wars and other major catastrophes, the causes of rises and declines in population growth remain primarily subjects of conjecture. The current 'drop in worldwide population growth rate has been attributed to gains in socioeconomic conditions and effects of public education (SN: 2/25/78, p. 116). Less explainable are shorter-term ups and downs in fertility among certain groups of people.

In mid-1955, records show that fertility rates increased among white residents of the United States. During the same period, however, the birth rate among whites in nine of the 11 former Confederate states dropped—an occurrence at odds not only with most of the rest of the country but with trends in those southern states just before and after 1955.

The dramatic change, suggests a team of University of North Carolina sociologists, can be traced to the historic May 1954 Supreme Court decision declaring school segregation unconstitutional. Researchers Ronald R. Rindfuss, John Shelton Reed and Craig St. John contend that the decision triggered a delayed reaction among white Southerners fearful that their children might have to attend school with black children. The reaction took the form of temporary birth control.

"It is clear that the Court's unanimous decision struck at what many white Southerners saw as the basis for their region's way of life, and that it came as a shock to many Southerners," the researchers write in the July 14 SCIENCE. The timing of the birth decline coincides almost exactly

with what "one could possibly expect" following the Court's decision: It would take several months for the decision to "sink in"—making the first effects of conscious contraception visible in the early spring of 1955; then, when it became clear that despite the decision "nothing much was going to change any time soon [regarding desegregation]," the birth rates would resume their climb.

Statistics show that only North Carolina and Florida, among southern states, had an increase in white births during the 1955 period studied. The remainder of the southern states—plus three of the nation's other six states requiring segregation at the time—showed birth rates about 5 percent below the corresponding months of 1954 "for every social, economic and racial group." (Black Southerners also showed a decrease, but a slighter one, during this period.)

The researchers considered other possible causes for the drop, including Hurricane Hazel and a possible short-term economic depression. "But none of these seemed to wash," Rindfuss said in an interview. If, in fact, historical events can influence the birth rate, even for a short term, the implications might be significant, he says. First, "predicting [population rate] movement from year to year would be very difficult because you don't know ahead of time what's going to happen," Rindfuss says. And ultimately, such a phenomenon would have far-reaching consequences for schools and other "age-graded" institutions, he adds. □