

experimentally conducted day-care program from 8:30 a.m. until about 4 p.m., five days a week. These children were matched on ethnicity, social class and sex with a control group reared totally at home.

About 100 children took part in the study. They were examined every other month for the first 10 months and then again at 20 and 29 months. The researchers were especially interested in those factors that are supposed to lead to competency in adulthood. "In our society," says Kagan, "verbal competence, problem-solving skill, burgeoning independence, sociability and control of anxiety at age 10 seem to predict the adult criteria. We selected criteria in the light of these considerations."

The researchers found little difference between the day-care and home-reared children with respect to cognitive functioning, language, attachment, separation protest and tempo of play. The only effect day-care rearing seemed to have involved behavior with unfamiliar peers. The day-care children were less vigilant and less inhibited in the presence of unfamiliar children than were those reared at home.

While results of this study seem to give day care a clean bill of health with respect to psychological development, it is necessary to point out that the children were

studied under special, experimental circumstances. "It is important to emphasize," says Kagan, "that the sample of children came from predominantly intact families, few experienced extreme forms of psychological deprivation at home, and the day-care experience was closely monitored by the principal investigators and implemented by mature, conscientious and nurturant caretakers."

Considering the fact that the day-care children spent almost as much time in the center as they did at home, how is it possible that there were so few differences between the two groups? Kagan suggests that psychological experiences at home have the priority. The emotional involvement of a mother, for instance, probably has a much stronger and more long-lasting effect on a child than does the more detached behavior of a caretaker. It appears that the effects of the home are not easily altered by the group care experience.

"The entire corpus of data," says Kagan, "supports the view that day care, when responsibly and conscientiously implemented, does not seem to have hidden psychological dangers. Since this conclusion flies in the face of much popular belief—including a prior prejudice of one of the principal investigators—it is both useful and natural to maintain a skeptical attitude toward this generalization." □

observational searches for extraterrestrial intelligence (p. 132), frontiers of the natural sciences, 50 years of anthropology (honoring Margaret Mead), the early history of life on earth, and 50 years of quantum mechanics. The subjects—dealing with the content of science—were seldom part of the program during the almost exclusively issues-oriented AAAS meetings of the early 1970's. Most persons SCIENCE NEWS talked to considered the change an improvement. □

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## The quiet sun: Omen of drought?

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The dry weather afflicting the high plains of the American West in recent months may be the beginning of a sustained drought, according to solar physicist Walter Orr Roberts. The recent dry spell over the western plains from South Dakota to New Mexico seems to mark the beginning of the ninth recurrence of a series of droughts that have hit the plains at 22-year intervals, Roberts told reporters at the AAAS meeting. He believes the drought cycles are associated with periods of minimum solar activity. The sun is this year reaching the low point of its 11-year cycle of sunspot and geomagnetic activity and won't begin a significant rise in activity for two to three years.

The sun goes through a complete rise-and-fall cycle of activity every 11 years. During each cycle its magnetic field flips. So there are 22 years between returns to the same magnetic polarity. This is the so-called double sunspot cycle.

There is no certainty that a drought is coming or that it will last a certain time, Roberts says, but during the eight previous recurrences of the low point of the 22-year cycle there has been a drought. The droughts have typically lasted three to six years. The last one was from 1953 to 1955. The one before that was responsible for the dust bowl years of the 1930's.

The subject is controversial because no one has shown any mechanical tie between solar cycles and drought cycles. Nevertheless, the correlation of drought cycles with the 22-year solar cycle is evident, Roberts says.

"I have a very serious fear that the drought of the 1970's has begun. All the signs point to it. If so, the price repercussions and hunger repercussions will be felt by people throughout the world." He says a drought over the high plains could be expected to cause 8 to 10 percent of the total grain production to be lost. He urges farmers and agricultural policy makers to prepare for the worst.

Roberts, formerly director of the National Center for Atmospheric Research and now director of the program in science, technology and humanism at the Aspen Institute for Humanistic Studies in Boulder, Colo., later added this final note: "I hope I'm wrong." □

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## AAAS: Science out of the shadows

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This year's AAAS meeting took place in a scientific climate that differs in important ways from past meetings in the early 1970's. For one thing, if AAAS officers are right in their assessment, public and governmental appreciation of science and technology is on an upswing, after reaching a low ebb a few years ago. New AAAS President William D. McElroy has sensed what he terms "a healthy turnaround" in people's attitudes toward the importance of science and technology. He sees the attitude reflected in the mood of students on campuses and in the President's new budget, which proposes major increases for basic research (SN: 1/24/75, p. 52). "Overall, we're seeing people beginning to recognize the importance of new information" in solving problems, McElroy says. "The people are beginning to realize you have to invest in knowledge."

AAAS Executive Officer William D. Carey—himself a former federal R&D budget official—calls the science budget "strong" and "strikingly good." "It has really been a remarkable year" marked by "an unexpected budget of this magnitude." Space scientists, however, have not been similarly cheered, fiscally. Many were heard lamenting a squeeze put on NASA's space science research.

The AAAS meeting itself is in part a reflection of attitudes toward science and in part a shaper of those attitudes. It is the only large scientific meeting devoted

to all the sciences. It is one of the few meetings each year which has as a major part of its purpose the communication of matters of science to the public. The AAAS goes to considerable lengths to facilitate news coverage (hourly news conferences, printed manuscripts of papers, plus Telex, telephones and typewriters). Scores of reporters from across the United States and throughout the world attend and write and broadcast stories.

Last year many scientists and reporters complained that the meetings had become too overwhelmingly laden with general discussions of already well-aired political and social problems at the expense of reports on new progress in scientific research. The AAAS consciously decided to try to strike a better balance in this year's meeting (SN: 2/8/75, p. 86). The goal, as Retiring President Margaret Mead said last week at its outset, was to "reestablish a balance between reports of where science itself is—where pure science is going—and discussions of the misapplications of science and technology."

That effort seems to have succeeded. There were, as in the past, many symposiums on such problems as nuclear power, the ecology of famine and communication on foreign policy. But there was also, for the first time, a new meeting category called "Frontiers of Science" that had fascinating and well-attended sessions on such topics as the Viking mission to Mars,