them were hospitable, if not receptive.

President Nixon also opted for conciliation. In contrast to his ignoring of the massive student protest in November, he appeared at the Lincoln Memorial at dawn May 9 to talk with students preparing their demonstration. And the only military some of the Washington thousands saw was the crew of a three-truck convoy bringing water that afternoon to the sun-baked protesters.

While students at 450 campuses were boycotting classes—sometimes with the consent of administration officials—longer range plans were being made. Universities including Duke, Princeton and Notre Dame were planning to give students two weeks off before next November's election so that they could participate in election campaigns.

Students and faculty at the University of Rochester in New York and another group in New Haven organized drives to collect money for a nationwide antiwar media campaign. A ham radio network for striking students was organized in the New England-New York area. Brandeis University students and faculty were organizing boycotts of youth products to demonstrate the economic power of the young people and as a symbolic protest against an overmaterialistic society.

Further evidence of widespread support for the student aims came when the League of Women Voters, traditionally a nonpartisan group, passed an unprecedented resolution against the United States involvement in Cambodia.

There was some evidence during the week that the numbers of radical students had grown, too; they made up a large fraction of the 75,000 demonstrators in Washington May 9. But the more moderate students, both those newly activated and those who had worked before in the peace movement, were determined that the radicals would not seize the initiative. "We are placing an extreme emphasis on nonviolence," said Linda Dobbs of the New Mobilization to End the War in Vietnam, organizer of the Washington demonstration.

"You can expect to see the end of the burning of ROTC buildings in New England," says one Yale activist, "The tactics are shifting."

Another possible explanation is that neither aggression nor withdrawal results when there is hope of accomplishing change. If the majority of United States students can be said to have been withdrawn in the sense of not having participated in political activity since 1968, then this week's resurgence of mainstream involvement may indicate a new hope on the part of these students who were silent earlier—and it may also indicate the genesis of a new political force.

Thirteen Washington area sociologists, for example, polled about 500 students at the May 9 demonstration. Most of the students were attending a demonstration for the first time, and had been drawn by the Kent State tragedy. Of 68 students interviewed by Dr. David Gottleib of the Pennsylvania State University, he says, 43 considered themselves moderates, part of a previously silent group.

Also adding to the ranks of the moderate students were former radicals who were beginning to admit to themselves that radicalism offers few solutions to the pressing problems that face the United States. "The kids admit they don't have the answers," said Washington demonstrator Gregory Morgan, 29, a third-year law student at George Washington University and clearly not a radical. "Increasingly, they are becoming willing to work within the system."

"The politicization of the campus may prove to be the most significant phenomenon of the 1960's," says Sheldon S. Wolin of the Center for Advanced Study of Behavioral Sciences at the University of California at Berkeley.

Nevertheless, the question being raised by university administrators, government officials and students themselves is: What directions will the newly infused activism take?

"It depends in large part on how the police and government react," says Hans Toch, professor of criminal and legal justice at the State University at Albany, N.Y. If student activism wanes as it did following the Nov. 15 mobilization, the students will be met with the indifference and inattention they will deserve, he believes.

On the other hand, violent confrontation such as occurred at the Chicago convention will serve only to radicalize more students and antagonize police. The consequences of that could be another Kent State, which all but the most militant radicals want to avoid. □

ORGANIC CHEMISTRY

No doubt about suffering

Scientific research, President Richard Nixon declared during the 1968 election campaign, cannot be turned on and off like a faucet. The rhetoric was apt, but in view of present fiscal stringencies and a conscious emphasis on mission-related projects, investigators in certain areas of fundamental science find the tap is running dry.

Organic chemistry, which is not the special province of any single Government agency, appears to be in for a particularly hard time. Plant physiology and research in photosynthesis are also subject to severe funding cuts. Because these areas are funded by a variety of agencies classifying the research under numerous headings, precise dollars and cents measurements of the loss are difficult to obtain. But according to Dr. Philip Abelson, president-designate of the Carnegie Institution of Washington. "There is just no doubt about the reality of the suffering."

Rep. Emilio Daddario (D-Conn.) and National Academy of Sciences President Dr. Philip Handler have also singled out these areas as being in desperate straits. And the focus of the crisis seems to be the National Institutes of Health.

The NIH, charges Dr. Handler, is behaving as if last year's Congressional action, directing the Department of Defense to abandon all its nonmission-oriented work, applied to it as well. "Witness the decline in support for photosynthesis and organic chemistry by the NIH," he demands. "For my part, I would far prefer that NIH support first-rate research in organic chemistry than third-rate research in any seemingly more immediately health-related area."

The NIH until recently supported almost 60 percent of the nation's research in organic chemistry, with the Department of Defense and the National Science Foundation bearing most of the cost of the rest. About a year ago, the pattern began to change. Says Dr. Robert Berliner, deputy director for science at NIH, "It is true that we are cutting back our support. This represents no new policy but rather a new implementation of a long-standing policy. The NIH has always focused on more money, it was possible to fund health-related science. When we had first-rate organic chemists. Now, we have to take program relevance into greater account."

Dr. Berliner insists that the basis of the NIH policy is not a decision to support only those projects that are most likely to yield quick results. Rather, he says, the focus is on subjects that are most likely to bear some relation to human disease problems. The organic chemists, of course, dispute this view, stressing that basic studies of chemical structures and mechanisms are vital to such biological fields as enzyme behavior and the synthesis of proteins, vitamins and new drugs.

In an effort to document the crisis in organic chemistry, two Yale Univer-

sity scientists, Drs. Kenneth Wiberg and Jerome Berson, sent questionnaires to 500 investigators whose primary research is in this field and received replies from close to 200 of them. Two years ago, those researchers had a combined total of $2.6 million from NIH. Now, they have only $1.5 million, and do not expect approval of any new grant applications. Support from the Department of Defense declined $630,000 in two years and NSF support dropped by $377,000. In the same time period, NIH has dropped 78 fellowships in chemistry, while NSF dropped 35.

These representative figures do not cover the still further reductions anticipated by the end of fiscal year 1970. At NIH alone, a 64 percent cut is expected in fellowships and training grants. The cuts and anticipated cuts are also affecting individuals now applying to graduate schools in chemistry. Yale is a case in point. "Last year," says Dr. Berson, "we had 40 first-year graduate students. This year we have accepted only 15."

Across the board, support of chemistry in the United States by these three agencies appears to be down by about 50 percent, from totals of about $50 million to closer to $25 million. Says Dr. Wiberg, "If this continues, it seems clear that we shall no longer be able to maintain the present United States position in chemistry and that there will be a major decrease in graduate enrollments." Though the job market for chemists is small at present, both industry and the academic community predict an upswing in the demand by 1975. "If we lose students now," observes Dr. Berson, "there will be no one to fill those positions in five years."

The prognosis is grim. Because of the Defense research restrictions, DOD has virtually pulled out of academic support of chemistry. There is no indication that things will change at NIH.

There are chemists who see no reason why they should. One, responding to the Yale questionnaire said, "Frankly, I do not think the NIH should support organic work, but I do support a larger role and budget for the NSF."

Theoretically, perhaps, the suggestion is sound. But there is little chance that NSF will expand significantly. Its total budget is only about $500 million, distributed across a host of research areas and concentrating new money in environmental areas (SN: 3/7, p. 240). To try to offset the grant reductions in other agencies, it is asking for an additional $10 million this year, but even if the request is honored the total impact will be comparatively small.

"The only way we have," says Dr. Berson, "is to educate the persons in Congress who are receptive to our problems." But they are hard to find.

MAGELLANIC CLOUDS

Polarization and magnetism

In an ordinary light beam the electric and magnetic waves vibrate in random directions; in a polarized beam each kind vibrates in a single direction, and the two directions form an angle of 90 degrees. Polarization can be accomplished by passing the light through certain crystals or reflecting it from certain surfaces.

Astronomers now generally agree that the polarization observed in the light from stars in the Milky Way should be attributed to reflection from grains of interstellar dust. If that is done, the polarization gives away the direction of any magnetic field in the galaxy, since the dust grains are electrically charged and the field will orient them in specific directions.

If reasoning of this kind holds for the magnetic field in the Milky Way, it ought to hold as well for other galaxies. It has now been applied to Magellanic Clouds, a pair of galaxies nearest to the earth, visible clearly from the Southern Hemisphere, and a prime subject of study for astronomers.

The Milky Way galaxy has a general magnetic field with a strength of about a millionth of a gauss.

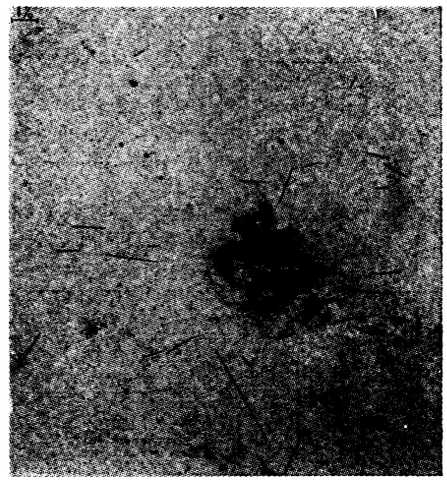
From evidence of polarization in light from Magellanic Clouds, Drs. D. S. Mathewson and V. L. Ford of the Mount Stromlo and Siding Spring Observatories and Australian National University conclude that the Magellanic Clouds have magnetic fields too, and that these fields appear to be connected with one another and possibly with that of the Milky Way. The data apparently give them no information on the strength of the field in the Magellanic Clouds.

Evidence of polarization in light from 30 stars in the Large Magellanic Cloud dates back to 1966, but Drs. Mathewson and Ford allege that up to now the data were insufficient to draw many conclusions about the structure of the magnetic field.

They set out therefore to measure the polarization of 180 stars in the Large Magellanic Cloud and 80 in the Small Magellanic Cloud. From the evidence they gathered they conclude that there is such a field.

"The two clouds are enveloped in a very regular magnetic field with lines of force parallel to the line joining the two galaxies," they find. Superimposed on this are some local regions where the field lines are twisted, probably by some local source of magnetism.

Drs. Mathewson and Ford, in a report in ASTROPHYSICAL JOURNAL LETTERS for April, go on to point out that if the line joining the Magellanic Clouds is extended toward the Milky Way, it runs along a prominent spur of the Milky Way, which was discovered in 1960. Many astronomers believe this to be a bridge of stars building out from the Milky Way toward the Magellanic Clouds. At that point the magnetic field of the Milky Way points in roughly the same direction, and Drs. Mathewson and Ford suggest that the field in the Magellanic Clouds may be an extension of that of the Milky Way.



Astrophysical Journal

Polarization in a Magellanic Cloud.

From the overall regularity of the magnetic field in the Magellanic Clouds, Drs. Mathewson and Ford conclude that it is primordial and has been present since the formation of the two galaxies. Most astronomers would say the same about the Milky Way field.

But Dr. Eugene Parker of the University of Chicago is now proposing that the Milky Way field is constantly generated by the motions of interstellar gas in a manner very similar to the way the earth's field is generated by motions of liquid in the core. Dr. Parker considers the work of Drs. Mathewson and Ford a very good observation, but their conclusions about primordiality of the field in the Magellanic Clouds does not shake his confidence in his own theory.

The field findings add another piece of apparent evidence to the growing belief that the Magellanic Clouds form a bound system that may somehow be connected to the Milky Way. Other data include a giant gas cloud that envelops both of the Magellanic Clouds, and the apparent motions of the Magellanic Clouds, which lead to the suggestion that they are satellite galaxies orbiting the Milky Way. One seems to be moving away from the Milky Way, the other toward it.