tion, and the newspaper editorials in my state were in favor of my position," he told *Science*.

Nelson's opposition to the Kennedy-Lasker bill may have been aided by an old friend of his, Philip P. Cohen, professor of physiological chemistry at the University of Wisconsin. Cohen, who was a member of the National Advisory Cancer Council at the same time as Mrs. Lasker and Farber, seems to have been one of the first members of the scientific community to start lobbying against the Lasker proposals. In March 1971, he presented to Nelson's office a petition signed by more than 450 biomedical scientists in Wisconsin, including almost the entire faculty of the McArdle Laboratory for Cancer Research in Madison, protesting the establishment of a separate cancer agency. Nelson not only opposed the Kennedy bill in committee, producing an alternative bill that would have made the NIH as a whole independent, but also took his fight to the House in an appearance last month before the Rogers subcommittee.

Rogers, like Kennedy, has been chairman of his subcommittee only since January. Both are eager to establish their authority in health matters, a pursuit which has already led them into conflict on several issues, notably health manpower legislation. Rogers spoke out against the idea of an independent cancer agency as early as February. He opened his hearings on cancer by introducing on September 15 a bill designed to counter the Senate-passed bill in almost every particular. The chief thrust of the Rogers bill is to retain the National Cancer Institute within the NIH, but to transfer to the director of the NIH the czar-like powers designed by the Lasker group to be wielded by the director of an independent cancer authority. The Rogers bill raises the director of the NCI to the rank of associate director of the NIH (similar elevation is accorded to the directors of two other major institutes—the heart and lung, and the neurological diseases and stroke). Under the bill, the director of the NCI is allowed to prepare an independent budget, but the director of NIH can see and comment on it before it goes to the President. The director of NIH must also give his approval to any new peer-review system set up by the director of the NCI (in the Senate version of the bill, this approval is not required).

An important feature of the Rogers bill is a provision authorizing the directors of all NIH institutes to award grants of less than $20,000 without approval by their national advisory councils. This measure is designed to counter a principal criticism leveled by the Lasker forces against the NCI, and corroborated by a General Accounting Office study, that grant proposals are subject to average delays of up to 8 months.

Rogers and his aides claim that their bill embodies the three specific recommendations made by the Senate Panel of Consultants better than does the Senate bill. Thus the Rogers bill adopts the funding levels recommended by the Panel (a budget rising to $600 million by fiscal 1974—the Senate bill asks only for such funds as are necessary),

Soviet-American Conference

A group of Russian and American physical and social scientists gathered in Byurakan, in Soviet Armenia, last month to discuss a topic hitherto explored primarily by the writers of science fiction—the search for intelligent civilizations elsewhere in the universe.

The conference on Communication with Extraterrestrial Intelligence (CETI)*, the first of its kind, was jointly arranged by the National Academy of Sciences and the U.S.S.R.'s Academy of Sciences. The state of the art being rudimentary, only a vague set of recommendations emerged from the talks. In essence, the conference found that the arts of astronomy, biology, computer science, and radiophysics have progressed to the stage where they can be used to make "serious and detailed investigations" of electromagnetic activity in the starry deeps, and that such investigations are warranted because their fruits might influence the whole future of man. In a joint Russian-American statement, the conferees called for strengthening research in such areas as prebiological organic chemistry and searches for extrasolar planetary systems, as well as for new investigations to be directed toward uncovering modes of search for signals. A Russian-American working group, which will be expanded to become multinational, was formed to arrange more meetings and direct further study.

Two of the organizers of the conference, Carl Sagan and Frank Drake of Cornell University's Center for Radiophysics and Space Research, held a press conference in Washington last month to explain why the new explorations were justified.

They acknowledged that scientists have not, so far, run into any heavenly events that could plausibly be ascribed to other than natural sources. However, they pointed out, the planet Earth is still a technological parvenu. According to optimistic projections, the nearest intelligent civilization—assuming that one star in a million is hospitable to advanced forms of life—is likely to be at least several hundred light-years away. Since high-frequency radio, TV, and radar emissions, the only signs of Earth that are detectable from interstellar distances, began only about 50 years ago, our earliest signals are only 50 years out in space and can hardly yet be expected to have reached a receptive audience.

Sagan and Drake seemed to feel that there probably exist other civilizations whose technological sophistication would make earthlings look as though they had just crawled out of the primordial slime. They posed the seductive notion that there might already exist a sort of "interstellar communications club" which would be eager to grant us membership if we could only make known our presence.

Sagan had two basic arguments to support the idea that higher civilizations are around somewhere. First, he observed, man's view of his place in the universe has come a long way since the time Earth was thought to

* The acronym was designed to evoke Tau Ceti, the nearest sunlike star visible from the Northern Hemisphere, in the constellation Cetus. This is the first place scientists would look for other-worldly societies.

calls for the development of a cancer research program (the Senate bill does not mention a plan), and makes specific proposals for streamlining the administration of cancer research.

The Rogers bill was drawn up with advice from the Association of American Medical Colleges, and the president of the newly created Institute of Medicine of the National Academy of Sciences, John R. Hogness, was present at one drafting session with Rogers and AAMC president John A. D. Cooper. The fate of the Rogers bill depends on several factors, foremost of which is whether Rogers can retain a majority of his subcommittee in the face of blandishments from both the Administration, which is supporting the Senate-passed bill, and the skillful lobbyists associated with Mary Lasker. Several features in the Rogers bill seem designed as bargaining counters, but the failure of the Lasker lobbyists by last week to gain the compromise they had expected suggests that Rogers feels in a strong enough position with his subcommittee to drive a hard bargain.

In whatever form the bill leaves the subcommittee—and Rogers intends that his bill, not the Administration's, will be reported out—its next hurdle is in the full committee, the House Interstate Commerce Committee, chaired by Harley O. Staggers (D–W.Va.). Both sides are claiming Staggers' support, although Staggers has not indicated where his opinion lies (he sponsored the House version of the Administration's cancer bill but only as a courtesy). The Lasker forces claim that their pull with the Democratic members of the full committee, together with the Administration's pressure on the Republican members, will ensure a majority for the Senate-passed measure. Should the Rogers bill be reported out with the blessing of the full committee, it is almost certain to pass the House. Once in conference with the Senate, the House backers of a Rogers-type bill would be in a strong position, since in the event of deadlock authority over cancer research will stay where it is, under the control of the NIH.

The hearings held by Rogers' subcommittee, now in their fourth week, have produced some new faces, but few arguments that have not already surfaced at the Kennedy hearings. One reason, perhaps, is that the basic rationale for an independent cancer agency, that the NIH is incompetent to handle a major attack on cancer, has never been presented for serious argument. "There's a great myth about the omnipotence of the NIH, just as there used to be about the Pentagon, but in fact the place needs the same kind of going over as the Pentagon is getting from people like Proxmire," says one lobbyist associated with the Lasker cause. But the Lasker forces have not tried to prove this case except by assertion and, rightly or wrongly the bulk of the biomedical community seems to favor the contrary view, as expressed by Senator Nelson before the Rogers subcommittee, that the NIH is "a unique arrangement, probably the finest institution of its kind in the world, and certainly . . . the undisputed leader in the field of biomedical research."

—NICHOLAS WADE

Urges Search for Other Worlds

be the center of everything, and now that we know we are, in fact, in the "galactic boondocks," the obvious next step is to realize that life may not be unique to Earth. Second, he said, science has determined that amino acids, life's building blocks, can easily result from combinations of the simple chemicals and energy sources that already abound in space. And life can originate very fast, he added—Earth is 4.5 billion years old, and earliest fossils have been found to date back 3.4 billion years.

Of the two possible approaches—attempting communication with another civilization or eavesdropping on extraterrestrial radio activity—the latter was seen as preferable because of the huge time lags involved in transmission. Sagan and Drake think even the time problem might be overcome. We have not discovered anything that goes faster than the speed of light (except theoretical particles called tachyons, which can't be slowed down), but, they suggested, other civilizations might have discovered new laws of physics that could facilitate communication.

At the press conference, Sagan threw an interesting sidelight on the question of unidentified flying objects, a phenomenon that has baffled physical and social scientists since the end of World War II. "Flying saucers" could hardly be the vanguard of another world's interstellar problems, said Sagan, because they are uneconomical. Since all planets are round, and therefore finite, their resources are limited; creatures competing for the same resources must use them efficiently. Therefore, radio astronomy would universally be the most effective and cost-effective vehicle for cosmic explorations.

The U.S. government has spent virtually nothing on finding out about extraterrestrial intelligence, said the two scientists, except for a $20,000 grant from the National Science Foundation for travel expenses to the CETI conference and a $100,000 design study on a new, giant, multi-billion dollar receiver that is being funded by the National Aeronautics and Space Administration. This receiver would have a surface area of several square kilometers—which would make it ten times as big as the world's largest dish-shaped radio telescope in Arecibo, Puerto Rico.

Other countries advanced in radio astronomy, including the United Kingdom, Netherlands, and Australia, have shown little interest in the matter. The Soviets, though, have a modest program that involves a search for simultaneous extraterrestrial radiomagnetic events which are registered on a far-flung network of telescopes. They are also building a giant ring-shaped telescope one of whose duties will be to look for signs of intelligence from outer space.

Sagan admitted that the research projected by CETI was "in the context of large technology expenditures that don't have immediate value for the man in the street"—a proper effort would require the sort of financial outlays normally reserved for nuclear and space activities—but "there are few scientific endeavors which have the possibility of a greater payoff."—C.H.