the Interior subcommittee on Alaska lands, has put it, "There is no other place in the United States, and perhaps not in all of North America, where you can see vast landscapes as they came from the hand of the Creator, without any alteration by man."

The Alaska lands bill that has been introduced by Representative Don Young and Senator Ted Stevens (both are Alaska Republicans) represents a much more development-oriented approach. Under their measure, only 25 million acres would be added to the four systems, while 57 million acres of federal land would be placed along with state and some private lands under a "cooperative" program of multiple use management. The state would exercise a strong voice in this program through its representatives on a new federal-state land classification commission which would be established by this legislation. Needless to say, the mining and oil and gas industries are strongly behind the Stevens-Young bill; this bill may, however, be modified to increase the acreage for the four systems and to meet the objections of those in Congress who do not want the federal government to share jurisdiction over land management with the state.

Should Congress not act on the Alaska lands issue next year, the frustration of the state of Alaska and some of the Alaska natives' organizations in satisfying their land claims may be further prolonged. The Statehood Act of 1959 allows the state to select 103 million acres from the federal public domain, and the Alaska Native Claims Act of 1971 gives the natives the right to select 44 million acres.

But section 17(d)(2) of the Native Claims Act calls for a major expansion of the four systems before the end of 1978; consequently, final selection and patenting of most of the state's and some of the natives' land must await disposition of this so-called "d-2" lands issue. According to Robert Leresche, Alaska's commissioner of natural resources, the whole state land selection and patenting process is now caught in an "effective freeze."

Before its Alaska lands proposal finally jelled in mid-September, the Carter Administration engaged in a lively internal debate over some of the philosophical and practical aspects that were involved. On several questions, the last word was spoken by President Jimmy Carter himself.

Underlying the entire debate was the question of whether, as a matter of general philosophy and policy, even the most protected areas should be closed to exploration and development by the mining and oil and gas industries. In speaking to this question in interagency meetings called by the Office of Management and Budget (OMB), representatives of the Department of Commerce and the Federal Energy Administration (since absorbed by the new Department of Energy) generally reflected the industry point of view—which was, and is, that to forbid all commercial exploration and development in protected areas, short of such exceptions as Congress may see fit to grant in the future, amounts to locking them up.

Department of the Interior representatives, on the other hand, objected to this characterization. They contended that, except for U.S. Geological Survey (USGS) studies which need involve no scarring of the landscape, it was not necessary to allow exploration and development at this time. In their view, the

Cryptography Meeting Goes Smoothly

Albeit a little nervously, scientists went ahead as planned with two public sessions on cryptography despite the fact that an employee of the National Security Agency (NSA) warned that they could be in violation of the export and classification laws, which, he claimed, proscribe open discussion and publication of cryptographic research. The sessions were part of a 5-day meeting on information theory held last month at Cornell University.

The work of some of the principal speakers, including Ronald Rivest of the Massachusetts Institute of Technology (MIT) and Martin Hellman of Stanford University, derives from a study of complex mathematical problems, and has resulted in the design of a new class of codes, which could prove to be unbreakable—even with the application of billions of years of computer time.

The work has aroused commercial interest because of its implications for secure electronic banking and data communications. But it has also aroused the NSA, as became clear in September when an employee named Meyer wrote to the Institute for Electrical and Electronic Engineers (IEEE), the meeting's sponsor, threatening that the public discussion of the work and its publication could violate federal laws (*Science*, 30 September 1977).

After checking with lawyers, the scientists proceeded anyway, although they did limit their public discussion to the mathematical and technical aspects of cryptography and did not discuss, in their presentations, the possible national security applications of their work. In addition, because Stanford lawyers had advised Hellman they could defend him as a faculty member, but not his students, in the event of any subsequent prosecution, Hellman gave two papers on behalf of two of his students. The students came to the sessions, however, and were on hand to answer questions.

The scientists even laughed about the fact they have become controversial when an IBM researcher presented a paper explaining a computer program for decrypting text. The decrypted text, in successive slides, turned out to be the lead paragraph of an article that had appeared in *Science* about their dilemma.

More seriously, later in the meeting the Board of Governors of the IEEE Information Theory Group which sponsored the Ithaca gathering, appointed a subcommittee to study the issue and report back in December. The chairman of the group is David Slepian, of Bell Laboratories, Inc., who is on leave at the University of California at Berkeley. The members are Thomas Cover of Stanford and Rudolph Drenick of the National Science Foundation (NSF).

The successful conclusion of the two cryptography sessions left little doubt that the work has been widely circulated. It has been published in several journals with international circulation including *Science* (19 August 1977), and the IEEE sessions were attended by a Russian, three Hungarians, and scientists from the Republic of China (Taiwan), France, and Sweden. There were also several industry people, and people with name tags indicating that they worked for the military. One displayed a label that said only "Department of Defense—Maryland"—a phrase believed to be a code word for the NSA.—D.S.