

with their lives in this fight, made a lasting impression on him. He admired the rebellion of the individual on behalf of "life" more than anything else, and his admiration was far from passive. That is why it warmed his heart to see a number of American scholars stand up on behalf of their Constitution during the spell of political neurosis in America five or six years ago. During this period Lang used to tell his many American friends that, along with the Four Freedoms, there is one very precious freedom that America must not lose, and that is a young man's freedom to make a "goddam fool of himself." He had a special liking for young men and women who were not afraid or ashamed of groping in their search for understanding. No wonder that he won the undying admiration of his students. Lang did not have any illusions, either, about the nature of the suppression of thinking in Communist states. Every instance of enforcement of "ideological biology," he felt, was a threat to the future.

Lang was in many ways a poet; his language was sensitive, subtle, and deeply humorous. It could express rebellion, but it could also, and more often did, express sublime ideas, and it always had warmth. He was as fluent in English as

in Danish, and his love for British and American slang added warmth and color to his lectures delivered in Great Britain and the United States. He and his wife Gerda radiated unlimited generosity and hospitality. Lang had the "gift of feast." Their friends will long remember the songs and speeches at the colorful dinner parties in their beautiful home. He particularly loved humor in art. Among the songs he could be persuaded to perform were Danish folksongs, Bellmann's songs, drinking songs, and romantic songs. Above all else he loved the music of Mozart and Schubert, and as a violinist, he was an enthusiastic and spirited performer of chamber music; especially with his friend Thomas Rosenberg, whose fine musicianship he admired so much. Lang was a painter of special talent, being influenced by modern Danish painters and by Cezanne. His home contained many fine works of his own creation, and he was generous in giving away his fine paintings.

Spirit, generosity, and courage are qualities that will always be associated with the Lang family. Never were they worried about security for themselves. Lang possessed in full measure the spontaneity to help those who needed comfort and encouragement. He had no fear of opening his heart and sharing

other people's sorrows and tragedies, although this surely added burdens to his own life. This combination of wisdom and compassion was unique. How many of us can expect to know a person of his stature in our life-time?

We who knew him will always remember his poetical and at the same time boyish face, with the warm smile and the deep blue eyes. His photograph catches something of his expression—a great light from a depth of laborious and unlimited human experience and understanding. His death is an immense loss to a large international community of scholars and students.

HERMAN M. KALCKAR  
*McCollum-Pratt Institute and  
Department of Biology,  
Johns Hopkins University*

#### Note

1. Linderstrøm-Lang was a member of the Royal Danish Academy of Arts and Sciences; a foreign member of the National Academy of Sciences (U.S.), the American Philosophical Society, the Royal Society (London), the Academy of Sciences of the U.S.S.R., and the Karolinska Institute (Stockholm); and a council member of the Institut International de Chimie Solvay. He received honorary degrees from the Universities of Copenhagen, Oslo, Ghent, and Brussels; New York University; Cambridge University; and the Polytechnic School of Copenhagen.

## Science in the News

### **Student Loyalty Oaths: Chances Nil for Outright Repeal; Compromise Possible**

The attempt to repeal the affidavit requirement of the federal student loan program should reach a climax in the Senate very soon, perhaps next week. This is the affidavit which requires students, in order to be eligible for a loan, to swear they do not believe in, support, or belong to a subversive organization. The students are also required to take a loyalty oath ("to support and defend the Constitution"), but it is the affidavit

requirement that has led nearly 30 colleges to withdraw from the program and many more to issue formal protests.

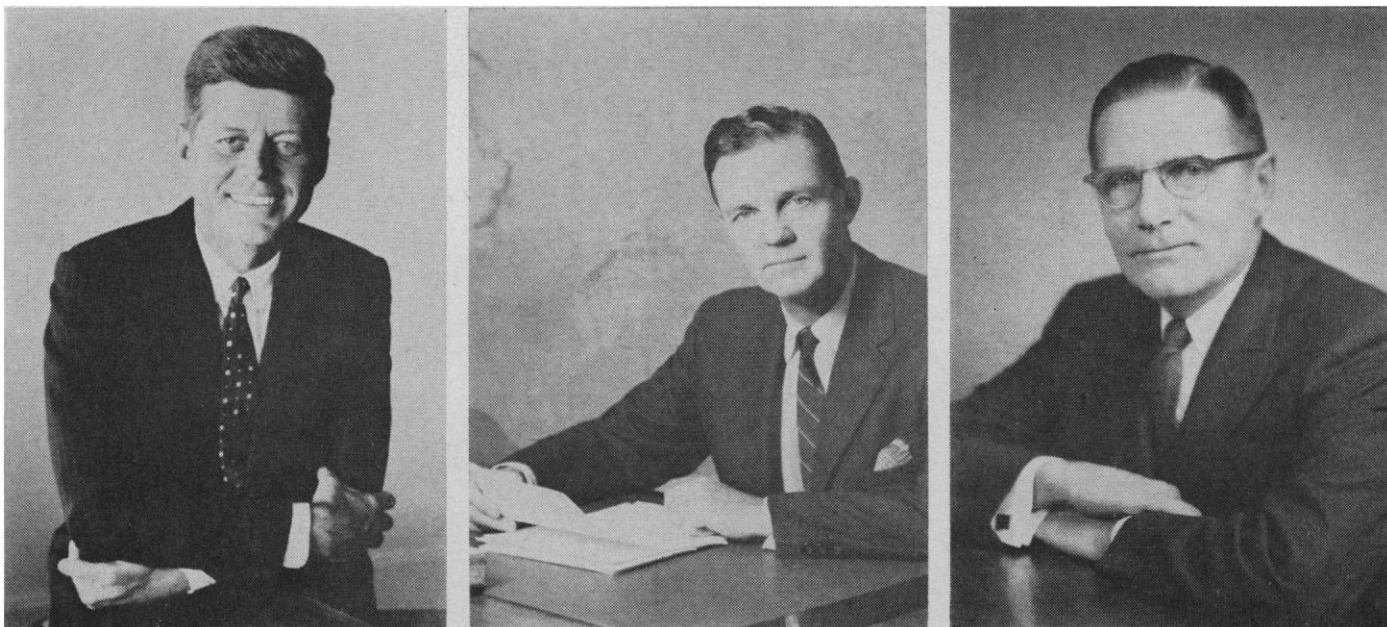
A year ago a bill to repeal both the oath and affidavit requirements was brought up in the Senate. During the debate its sponsors, Senators Kennedy and Clark, reluctantly accepted amendments reinstating the oath and attaching a penalty for taking it under false pretenses. Senator Mundt had offered a substitute measure which also did away with the affidavit but which made it a crime for members of subversive organizations to accept loans. Kennedy and

Clark refused to go along with this. They gambled on passing their bill without further compromise and lost by the fairly close vote of 49 to 43.

This year Kennedy and Clark will bring up a bill similar to the amended version of last year's, eliminating the affidavit but including a penalty for falsely taking the oath. They say they are optimistic about its chances of passage in the Senate, but a good many people find it hard to locate the source of this optimism. For the bill failed last year, and although supporters say that the colleges have recently been more active in applying pressure to Congress, it is always more difficult to pass this sort of law in an election year.

#### **Outlook in the Senate**

At this writing the feeling on Capitol Hill seems to be this: Kennedy and Clark will make a fight for their bill, but they will end by going along with an amendment by either Senator Mundt or Senator Prouty making it a crime for a member or supporter of an organization he knows to be subversive to ac-



Senators John F. Kennedy (D-Mass.) and Joseph S. Clark (D-Pa.), sponsors of legislation to repeal the affidavit requirement of the federal student loan program. (Right) Senator Winston S. Prouty (R-Vt.) who plans to offer a compromise proposal.

cept a loan. This is a compromise, of course, but a compromise which seems to be acceptable, if not satisfactory, to almost everyone—from the schools which have withdrawn from the program because of the affidavit (which seemed to them to imply, much more forcefully than the oath, that the loyalty and beliefs of American students need questioning) to the American Legion, which would like to see the affidavit requirement kept, but which, in a letter to Senator Mundt last year, appeared to be willing to accept Mundt's compromise without stirring up a fuss.

The senators who, with Kennedy and Clark, dislike such a compromise do so on the grounds that no good can come of attaching little re-enactments of the Smith Act, which is what they say the Prouty or Mundt amendments would amount to, to bills which have no substantial connection with the security of the country. And, in particular, they object to the state of mind which singles out needy students and implies that they are especially in need of watching.

As for the loyalty oath itself, no one denies the argument, advanced by its proponents, that it is an oath that any American should be proud to take. It is, in fact, the same oath that is used at the induction of new citizens and essentially the same as that taken at the swearing in of members of the armed forces, government officials, and Con-

gressmen, and at the inauguration of the President himself. Its opponents have nothing against the oath, which is simple and eloquent and was in essence written into the Constitution by the founding fathers. They merely point out that it is, on several grounds, simply inappropriate to the occasion of a young man borrowing some money.

Meanwhile there is virtually no one in the Senate who is wholly immune to the argument that there is something wrong with a law that requires a student to stand up and swear he is not a subversive before he is eligible for a loan. This is a substantial change from the situation as it was only a few years ago, and neither Mundt nor Prouty see any substantial opposition in the Senate to their versions of the affidavit repeal legislation.

#### The Real Fight

The real fight will come in the House, where Graham Barden (D-S.C.), chairman of the Education and Labor Committee, is opposed to any change in the law, explaining that he has been taking oaths since he was a boy scout, which was a long time ago, and it has never done him any harm. Howard Smith (D-Va.), chairman of the powerful rules committee, is also cool towards any change.

Carl Elliot (D-Ala.), Majority Leader McCormack, and apparently Speaker Rayburn have all taken the same position: that while they would favor elimi-

nating the affidavit, they regard it as an essentially unimportant matter and they have no intention of diverting any part of their time or bargaining power to it at a time when they are trying to push through more important legislation, such as federal aid to education.

The House is much more tightly controlled by its senior members than is the Senate. With the key figures there either actively opposed to the bill or, at best, passively in favor, the outlook in the House for the Kennedy-Clark bill is, therefore, dismal in the extreme. But Edith Green (D-Ore.), James Roosevelt (D-Calif.), and Peter Frelinguysen (R-N.J.), members of the Education Subcommittee, have all been pressing Chairman Elliot to at least attempt to get action on a repeal bill past Barden. They would all be delighted to accept the Mundt-Prouty compromise rather than no action at all. And Barden himself last year went along with a similar compromise on the labor bill. This eliminated the non-Communist affidavit requirement from the Taft-Hartley Act but substituted a clause making it a crime for a Communist to be a union official, or, as the liberals insisted on adding, a management official either.

So the situation appears to be this: If neither the Kennedy-Clark nor the Mundt-Prouty proposals pass the Senate the issue is dead for this year. But if either passes the Senate, the outlook for the Mundt-Prouty compromise in the House will be at least hopeful. The

outcome at best will be a compromise. But, if it comes about, it will be a meaningful compromise. It will supply the proponents of the oath with the token assurance they regard as important that the Defense Education Act will not serve as a source of financial support to such disloyal students as there may be. It will supply opponents of the oath with the more substantial gain that needy students will no longer have to swear they are not planning to overthrow the government before they can be eligible for a loan.

### **Test Ban Research: Program Calls for More Than Double Planned Spending**

The White House last Saturday released an outline of a greatly expanded program to improve the system for detecting underground nuclear explosions. The program showed a heavy increase in planned spending not only over this year's \$10 million pilot program, but over the program (roughly \$30 million) discussed at the test ban hearings on Capitol Hill last month.

The new program calls for spending \$66 million in fiscal 1961. An unspecified but large proportion of this money will go into preparing and carrying out a series of underground conventional and nuclear test explosions. There is, of course, no fallout or health menace from such explosions, and it is partly the very fact that all radiation from underground tests is confined within a small space deep underground that makes enforcing a test ban so difficult.

The Russians agreed to the use of nuclear as well as chemical test explosions last week. A series of scientific meetings was scheduled to start Wednesday (11 May) to begin working out the details of a cooperative research program with the Russians, including the touchy problem of developing a system to assure the rival powers that no one is using the research program to gather data useful in weapon development.

#### **Timing of the Announcement**

The timing of the White House announcement, combined with the haste of the press services in getting the story on the wire, led to headlines suggesting that the U.S. planned to resume tests outside the international research program and to speculation

that the announcement was intended as some sort of reprisal to the Russian's shooting down an American plane. None of this was helped by the phrasing of Presidential Press Secretary James Hagerty's remarks intended to clarify the official announcement. In an apparent effort to emphasize the peaceful character of the tests, Hagerty succeeded only in generating news stories linking the proposed explosions to the U.S. atoms-for-peace program. As a result the State Department had to issue a hasty announcement pointing out that the tests were only those the Russians had agreed to and had no connection with the Project Plowshare tests the Administration has had under consideration for some time.

A year ago the Berkner Panel had recommended that some nuclear explosions should be made as part of the detection research program. The White House announcement simply indicated that we were planning to go ahead on our own proposal, now approved by the Russians.

#### **Nuclear vs. Conventional Tests**

There are clear advantages in using atomic explosions in a research program designed to find ways to detect such explosions. You would need to build a chamber the size of a large office building 2000 or 3000 feet underground to hold 20,000 tons of TNT for a test explosion. A nuclear device of the same yield could be lowered down a hole 30 inches in diameter. But aside from such practical considerations, it is believed that the strength and patterns of shock waves from nuclear and chemical explosions are not identical. It may turn out to be fairly easy to use chemical explosions and to extrapolate the strength factor to get results equivalent to a nuclear explosion. There is much less likely to be a workable way to extrapolate the wave patterns, and it is the detailed analysis of the wave patterns that offers one of the most hopeful means of distinguishing nuclear explosions from earthquakes.

What the scientists want to learn is, first, how do the seismic reactions of nuclear and chemical explosions differ, if, as is suspected, they do differ? Secondly, how can nuclear blasts be distinguished not only from earthquakes but from large conventional explosions, such as those used in mining operations? Tests with both nuclear and conventional explosives will obviously be needed to answer these questions.

After long consideration the Russians last Wednesday finally agreed that nuclear tests would be necessary. But to the general public a nuclear test is a nuclear test. That the U.S. plans to explode some nuclear devices makes more of an impression than the distinction that these will be part of an internationally agreed to program and will be underground tests from which there is no fallout. So it is understandable, if nevertheless unfortunate, that the nuclear tests rather than the research program should have gotten a major share of the headlines.

#### **Advanced Research Projects Agency**

Regarding the size of the program, both Hans Bethe, the leading scientific backer of the test ban, and Edward Teller, its leading opponent, have strongly recommended a greatly increased effort in detection research, as have the members of the Congressional Atomic Energy Committee. It was fairly well known that the Administration was working out a program calling for substantially more spending than that outlined before the committee 3 weeks ago.

While the details have not been released, the program is expected to draw on the experience developed in the oil and gas industry, where analysis of the shock waves produced by test explosions is used to help locate oil bearing strata, and on government offices such as the Coast and Geodetic Survey and the Bureau of Standards. The Survey will be used in gathering data on the frequency of earthquakes in various parts of the globe, the Bureau in developing more precisely calibrated and generally improved seismographs. But administration of the program will be in the hands of the Advanced Research Projects Agency, a special research group within the Defense Department which reports directly to Herbert York, director of defense research and engineering, and to the Secretary of Defense. In the past ARPA has been used to get high-priority projects under way, after which they were transferred to one of the services for further development, although there is no intention of doing this with the seismic research program.

ARPA will handle the entire test detection program (Project Vela) which includes not only the seismic research for underground tests, but development, still in the pilot stage, of systems for detecting explosions millions