John S. Foster, Jr.

tempts to explore the peaceful uses of atomic energy, Foster switched to weapons. Although the precise nature of his contributions is secret, he has been referred to as a leading designer of smaller nuclear weapons, and is reported to have been influential in pursuing development of the so-called "clean" or neutron bomb. In 1960, as one of the first recipients of the Ernest O. Lawrence memorial award, Foster was cited by President Eisenhower "for unique contributions demanding unusual imagination and technical skill" in the development of atomic weapons. And, at the same time that he was involved in weapons work on the scientific level, Foster was serving as an adviser to all three military services; in this capacity he is said to have been an outspoken advocate of military strategies utilizing some of Livermore's inventions. He has also been a consultant to the President's Science Advisory Committee.

A skeptic about the unpoliced moratorium on nuclear testing that ended with the Russian test series in September 1961, Foster did his best to keep the laboratory in a state of readiness and is generally credited with having held it together during that period. That experience appears to have been partly responsible for his opposition to the test-ban treaty, about which he testified, "we must provide a scientific climate that will not discourage [military] developments . . . From purely technical-military considerations, the proposed treaty appears to me disadvantageous."

So far, the Foster nomination has evoked relatively little response. The Washington *Post* seemed to question the propriety of appointing a test-ban opponent to the third highest civilian job in the Pentagon, stating in the headline of a front-page story, "Pentagon Science Boss Is 'Hawk'" and reporting that, on the basis of his attitude toward the test ban, "Foster is looked upon by many in the scientific community as a hawk. . . ." Members of the security-minded Senate Armed Service committee, however, who voted last week to endorse the appointment after confirmation hearings that lasted less than 15 minutes, went out of their way to commend Foster for his test-ban testimony and seemed immensely pleased by his selection.

How relevant Foster's past views will be to his new position is uncertain. The chief function of the DDR & E is to advise the Secretary of Defense in scientific and technical matters relating to research, development, testing, and evaluation of new weapons systems. In practice, under Foster's predecessor Harold Brown the office became a stronghold of supporters of McNamara's policies and figured heavily in operational decisions such as those to cancel development of the Skybolt missile and the Dyna-Soar air-space plane (*Science*, 23 July).

The office has recently undergone a reorganization which resulted in the elimination of some of its responsibilities in the space field, and before the selection of Foster there was speculation in the trade press that, with Brown as Air Force Secretary and General Bernard Schreiver of the Air Force Systems Command directing the new manned-orbiting-laboratory program, the influence of DDR & E in the Pentagon might be downgraded. With Foster in charge, this development seems less probable. He and Brown are longtime associates (Brown seems to have recommended Foster as his successor), and a Brown-Foster team is more likely to strengthen the office than to weaken it. The new team could also strengthen the position of the "defense intellectuals" (with whom Brown is identified) in dealing with the military services.

What Foster's attitude will be toward the political and foreign policy questions that may come his way is harder to predict. The disarmament front has been quiet for some time—the Johnson administration's evident determination to press the Vietnam war may be one reason why Foster's selection has been greeted with such warmth. But there have been reports recently of the possibility of a new Russian initiative in the disarmament field—perhaps in the form of a proposal to extend the test ban to underground explosions above the level of force at which verification requires direct inspection. If such a proposal is actually forthcoming, the man in Foster's new slot will have a lot to do with evaluating the advisability of accepting it. In Washington, the feeling seems to be that, while Foster has disagreed with McNamara on such issues in the past, the broader responsibilities of his new job will in time lead him to take a more compatible position.

—ELINOR LANGER

## Congress: Birth of NSF Recalled as New Foundation Is Established To Strengthen Arts, Humanities

New ventures in federal support of educational and cultural affairs seldom come without struggle and controversy. This rule was illustrated again recently when Congress finally created a National Foundation on the Arts and the Humanities (NFAH), sister agency to the National Science Foundation, which itself had a difficult birth 15 years ago. Proposals for federal assistance to the arts have been before Congress at least since the late 1950's, but not until last year was approval obtained for even an arts advisory council. This year, in the most liberal Congress since the early New Deal, the bill (see box) establishing the new foundation won approval handily, but provoked warnings of "federal control" and "culture czars" that recalled the debates that preceded the creation of NSF.

The measure grew partly from a strong recommendation by the academic community, however, and carried the enthusiastic endorsement of a number of scientists. In the spring of 1964 a Commission on the Humanities, sponsored by the American Council of Learned Societies, the Council of Graduate Schools in the United States, and the United Chapters of Phi Beta Kappa, completed a year's study and issued a report urging that a National Humanities Foundation be established.

"The laudable practice of the federal government of making large sums of money available for scientific research has brought great benefits, but it has also brought about an imbalance in one field of study and dearth in another," the commission said. Creating

the new foundation to initiate a program of grants and fellowships in the arts and humanities was seen as a necessary corrective. Leland J. Haworth, director of NSF, in a letter last March to Senator Claiborne Pell of Rhode Island, chief Senate sponsor of the NFAH legislation, supported the bill and noted that scientists as well as others would benefit from the strengthening of teaching and research in the humanities. The common habit of drawing a hard and fast line between the humanities and the sciences was unfortunate and unwarranted, he said.

In testifying for the measure, Glenn T. Seaborg, chairman of the Atomic Energy Commission, spoke of an "imbalance in our national personality." "The attention given to the place of science today—particularly its practical applications—leads some to believe it is a panacea," he said. "It is because of this preoccupation with 'means' that those areas of study concerned with 'ends' are beginning to suffer. I am referring here to the humanities—to that area of thought which helps tell us how to live as human beings, and should to a big extent, guide our course of action in the use of science."

That the humanities are in difficulty seems amply documented. They are holding their own in the number of undergraduates attracted, but among graduate students—especially at the doctoral level where career commitments are made—their drawing power is weak. U.S. Office of Education statistics for the 1962–63 academic year revealed that 80,414 bachelors' degrees were conferred in the arts, humanities, and arts education, compared with 75,827 in the social sciences and 65,855 in mathematics, physical sciences, and engineering. In master's degrees conferred, the proportions began to change: 13,338 in arts, humanities, and arts education; 9970 in the social sciences; and 17,090 in mathematics, physical sciences, and engineering. In doctorates earned, the picture had changed entirely: only 1665 in arts, humanities, and arts education and 2340 in social sciences, but 4248 in mathematics, physical sciences, and engineering.

Alvin C. Eurich, president of the Aspen Institute for Humanistic Studies, has presented to congressional committees other aspects of the problem facing the humanities. More than 70 percent of the federal money spent for research each year is in the physical sciences (including mathematics and

## Arts and Humanities: New National Foundation

The National Foundation on the Arts and the Humanities, inevitably to become known as NFAH, is a dual structure with no central director. The major components are a National Endowment for the Arts and a National Endowment for the Humanities. The funds at the disposal of the two Endowments, at least initially, will be modest. Each is authorized $5 million for the current fiscal year, and the same amount for each of the two succeeding years; depending on the size of private gifts and matching funds put up by the states, however, the total federal authorization for the foundation could rise to $20 million annually. In addition, the U.S. Office of Education is authorized $1 million a year for support of the arts and humanities; half of it is for teacher-training institutes. No request for an actual appropriation had gone to Congress last week, as President Johnson had not yet signed the NFAH bill.

### Grants To Encourage State Action

The arts Endowment will provide grants (usually matching) to states, to public and nonprofit private groups, and to individuals engaged in the creative and performing arts. States that have an arts agency may receive an annual matching grant of $50,000; other states may apply for a $25,000 nonmatching grant to undertake a survey leading to the creation of such an agency. "Arts," as defined in the act, is virtually all-embracing, covering, among other things, music, dance, drama, creative writing, painting, photography, architecture, tape and sound recording, and fashion design.

The humanities Endowment will award training grants and fellowships, nonmatching grants and loans for research, support the publishing of scholarly works, and foster wider understanding of the humanities. "Humanities" includes the study of modern and classical languages, linguistics, literature, history, jurisprudence, philosophy, archeology, those aspects of the social sciences which have humanistic content and employ humanistic methods, and the history, criticism, theory, and practice of the arts.

The chairman of each Endowment will receive a salary of $28,500, like the Director of the National Science Foundation. Appointed by the President with the advice and consent of the Senate, the chairmen will bear ultimate responsibility for the activities of the Endowments. But each will preside over a 27-member advisory body which must be consulted before action can be taken on grant applications and which will assist in shaping policies.

### Council To Advise Endowments

The National Council on the Arts established by Congress last year will advise the arts Endowment, which will be headed by the Council's chairman; the present chairman is Roger L. Stevens, the President's assistant on the arts. A new body, the National Council on the Humanities, will be appointed by the President to provide a "comprehensive representation" of scholars, other professional humanists, and the public.

A Federal Council on the Arts and the Humanities will advise the Endowments chairmen on major problems that arise, and will promote coordination of all federal activities affecting the arts and humanities. Its nine members will include the two Endowment chairmen as well as the heads of such agencies as the Office of Education, the Smithsonian Institution, and the NSF.

engineering), about 25 percent in the life sciences, some 2 percent in the psychological sciences, and perhaps 1 percent in the social sciences, Eurich said. "The humanities are, with a few localized exceptions, forgotten," he added. "To call the relationship an 'imbalance' would indeed be an understatement."

Approximately nine times as many postdoctoral fellowships are available in the sciences as in the humanities, according to Eurich. Moreover, in nearly all universities the younger faculty members in the science departments can divide their time about equally between teaching and research, whereas those in the humanities must devote almost all of theirs to teaching. Still more alarming, Eurich said, a full professor in the humanities usually has heavier teaching and supervisory responsibilities than an instructor in the natural sciences.

Some will ask if the need for persons with graduate degrees is as great in the arts and humanities as in the sciences. Whether the answer is yes may be arguable, but the harried and overworked professors whom Eurich has described are unlikely to contest it.

The situation in the visual and performing arts is deceptive in that the extraordinary amount of activity in these fields obscures the financial difficulties. That the United States now has some 1400 symphony orchestras, better than double the number existing in 1939, might be taken as a sign of robust health in the arts. But all but 54 of these orchestras are predominantly amateur, scarcely indicating a flourishing field for the professional musician.

Opera groups, dance companies, and theaters have been multiplying, but again comparatively few are professional. For example, even though theatrical enterprises now number about 40,000, 15 percent more than 10 years ago, the financial strains of the professional stage show in the decline in the number of commercial theaters from 590 in 1927 to 200 today. Museums have increased spectacularly and now number about 3500, or a third more than in 1950; but surveys show they are hard pressed for funds.

The new hunger for the arts manifested by the public, together with the unrest among academicians because of the neglect of the humanities, explains the new sympathy in Congress for aiding these endeavors. To most people, a state or community arts council is simply a group dedicated to promotion of the arts; to a member of Congress, it is something more—it is a group capable of activating a perhaps small but articulate segment of voters. By early this year, 26 state art councils had been formed, nearly all of them since 1960; many cities also had organized councils, and along with the state groups some were looking to Washington for help.

Still another factor undoubtedly has contributed to the willingness of Congress to establish the new arts and humanities foundation. The old arguments about the erosion of state and local responsibility by an expanding federal bureaucracy have been growing less and less persuasive. The National Defense Education Act of 1958, passed in the heat of the reaction to the first Sputnik, followed by the college facilities act of 1963 and this year's major school-aid legislation all have marked the gradual acceptance of the idea that the federal government shares much of the responsibility for education.

Thus, the NFAH bill found itself in favorable circumstances when it came up in the House of Representatives on 15 September. A Republican motion to recommit the measure to committee, in effect to kill it, was defeated 251 to 128. Such legislation is vulnerable to ridicule, but the satiric barbs thrown at the bill drew more laughter than votes. Representative H. R. Gross, a Republican from Waterloo, Iowa, who approaches most proposals that cost money with scorn and distrust, sought out a colleague, Representative Durwood G. Hall of Missouri, who happens to be a physician, and together they came up with an amendment, heavily larded with medical phraseology, bringing belly dancers under the foundation's benevolence.

Gross later indicated that humanists are not common in his state and said he wouldn't know one from "a bale of hay." Although the verdict of the House was that the arts and humanities are more than a laughing matter, it has not always been so. "Ten years ago, Gross would have laughed the bill off the floor," remarked a legislative aide who played a major role in guiding the NFAH bill through the Congress.

Discussion of the bill in the Senate, where nearly a majority of the members were sponsoring it, was perfunctory, but the House debate was vigorous, and important questions were raised. Some of the objections voiced seemed like echoes from the congressional debates over the NSF, which was proposed in 1946 but failed of enactment until 1950.

A major question during the NSF debate was whether federal support of research and graduate education would not lead to stifling federal controls; also debated was whether the structure proposed for the NSF would insure guidance from responsible leaders in science, education, and public affairs by shielding the foundation from the more direct political pressures.

President Truman vetoed an NSF bill in 1947 because the foundation's director was to be chosen by an executive committee of the National Science Board instead of by him; under the bill of 1950, which Truman accepted, the President named the director, but authority to make policy was left to the Board. An issue in the debate on the NFAH bill was whether the ultimate policy-making power within the new foundation should rest with the chairmen of the arts and humanities Endowments or with their respective councils.

Representative Ogden R. Reid, a New York Republican, proposed that the councils should be policy-making instead of advisory bodies. Reid said an important principle was at stake. "Stated very simply, it is whether or not we wish to have full autonomy for the arts," he said. The congressman added that the NSF precedent of vesting grant-making authority with the National Science Board should be followed.

Representative Frank Thompson, Jr., of New Jersey, the bill's floor manager, replied that the chairmen, as the "representative[s] of the President," should have the authority. He indicated that the White House had been consulted on the point and was strongly opposed to giving the councils more than an advisory function. Reid's amendment was easily defeated on a standing vote. Several House members suggested that its adoption would have made little practical difference. In their view, for the chairman of one of the Endowments to get at cross-purposes with his advisory council would be his undoing.

Some Republicans expressed their distrust of any form of federal support for the arts. They contended that, at best, a program of federal subsidies would create an arts bureaucracy which, in seeking to avoid controversy, would contribute to a "spirit of com-

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promise and conservatism" in art. "France has had a national academy of arts for years," said Representative William S. Broomfield of Michigan. "But beaux arts has had a consistent habit of turning its back on the man with talent and rewarding the man who follows the safe party-line and does not dare to deviate from the norm."

Attempts at control of the arts, possibly by headline-seeking politicians, also were viewed by these critics as a possibility to be dreaded. "We will not have to worry about pop art. It will be pap art or poppa art in honor of the man who has the official word and his hands on the federal purse strings," said Broomfield, who predicted the coming of a Soviet-style "culture czar." Such forebodings were dismissed by the NFAH bill's supporters. They said that with distinguished practitioners in the arts and humanities serving on the advisory councils, unwise federal intervention in their fields could be discouraged.

Although opposed to a subsidy for the arts, Representative Albert H. Quie, a Minnesota Republican, favored support for the humanities. In a report on the NFAH bill, he cautioned, however, that it would be inappropriate to follow the NSF example of making grants to individuals as well as to institutions. He observed that grants to individuals sometimes have resulted in differences between the recipients and their institutions which have gone unresolved because of the grantees' independent status. "Such situations, when they occur, are disruptive of the normal university relationships and they ought not to be encouraged by federal programs," Quie said.

In testifying for the NFAH bill, Kingman Brewster, president of Yale University, had warned that government and the humanities scholar should be insulated from each other. If there is to be direct support of individual research projects, it should be for the development of techniques or the purchase of equipment and not for specific research raising questions of taste, ideology, and esthetic judgment, Brewster said. But he was confident that by trial and error the Endowment chairmen and advisory councils would develop appropriate policies. The NFAH legislation itself by no means precludes direct support to scholars, however.

Some members of Congress fear that the new foundation will quickly outgrow its swaddling clothes and claim a budget large enough to support comparison with NSF's. But the chances of this appear minimal, since the arts and humanities neither require such elaborate and costly equipment as the sciences nor claim so direct a relationship to the national security. Moreover, the role envisaged for NFAH is primarily that of a catalyst to engender greater support for the arts and humanities from state, local, and philanthropic sources.

The foundation's initial authorization of $20 million a year is small compared to NSF's budget of nearly half a billion. Beginning life less than 15 years ago with $3½ million, NSF has seen its appropriations rise steadily, as Congress, partly in response to cold war competition, has sought to keep American science preeminent. For NFAH to gather comparable momentum is scarcely conceivable.

—LUTHER J. CARTER

## Announcements

The National Aeronautics and Space Administration and the Federal German Ministry for Scientific Research have signed a "Memorandum of Understanding" for cooperation in a space research program regarding the **earth's radiation belts**. Objectives are studies of the inner radiation belt, of electrons in the horn of the outer radiation zone, and of solar proton events. Plans call for placing a German scientific satellite in a polar orbit in 1968. The project will involve scientists from the Max Planck Institute for Physics and Astrophysics, the University of Kiel, and the Max Planck Institute for Aeronomy; U.S. participation will be under the NASA Office of International Affairs.

A **water resources research center** has been established at Pennsylvania State University to help coordinate research on water use, purification, conservation, pollution, and related problems. It will be part of the 2-year-old Institute for Research on Land and Water Resources, and will be directed by E. Bruce Jones, an assistant professor of meterology at the university. The center was set up with the help of a $140,000 grant from the Office of Water Resources Research, U.S. Department of the Interior.