that he would alter the present system of large-scale federal support for scientific research and related educational activities. Nevertheless, in conversations with many scientists who are contributing time and money to the Johnson cause, it is evident that there exists a great concern about what might happen to the federal-science relationship under Goldwater. When those who hold this concern are asked to point out anything that the Senator has said or done that might suggest hostility to the scientific community, or even lack of sensitivity to its interests, they are hard put to come up with anything significant. Often cited is a vote here or there against increased appropriations for a research-supporting agency, but the curious fact is that many of the scientific community's best congressional friends have for one reason or another cast economy votes on matters of money for science. Still, whatever the origins of its reaction to the Senator's candidacy, the scientific community equals and probably exceeds any other professional group in its feelings about the election. The cause of this intensity is not altogether clear, but it would seem to merit examination as an interesting and significant development in the life of the scientific community.

—D. S. GREENBERG

Elliott Committee: Latest Study Calls for Improvement in Data on Scientific Manpower Problems

The season is now at hand for a rush of reports and other publications from the two House committees that have spent the past year studying federal relations with science; these are Representative Carl Elliott's (D–Ala.) Select Committee on Government Research, and Representative Emilio Q. Daddario's subcommittee on Science, Research, and Development.

Last week, Elliott's committee released the second in a series of ten reports that it expects to publish before the committee's mandate expires in January. The latest report, *Manpower for Research and Development* (71 pp., available for 25 cents from the U.S. Government Printing Office, Washington, D.C. 20402), takes a look at the warmly contended question of the adequacy of the nation's supply of scientific and engineering manpower. The committee concludes that the subject is a difficult one, that not enough is being done to study it, but that, on the basis of the best available information, "it would appear that at this point in the mid-1960's the Nation is not suffering a severe general shortage of trained scientists and engineers." The committee added that it found "selective shortages (among them, college and university faculty)," and that "there is no field that can be said to be adequately staffed. But even this is not a static condition; 6 months may see a drastic shift."

Throughout its study the committee paid its respects to the difficulties of trying to match up far-off and uncertain scientific and technical goals with the lengthy educational process required for producing scientists and engineers. It warned that "there may be a tendency to generalize from some specific or selective shortages," and went on to caution that, "above all, we should be wary of leaping to a hasty conclusion that there is a crisis or that we are heading for a crisis."

Elliott's report tended to emphasize the uncertainties involved in manpower planning (it argued, for example, that "a change of as little as one-tenth of one percent in the estimated proportion of research and development spending to the gross national product would alter the number of personnel needed, say in 1970, by more than 20,000—almost three times the number of science and engineering doctorates granted in a single recent year"). Curiously, the report had nothing to say about an executive branch study that, as much as anything can, stands as the U.S. government's grand design for the federal role in developing scientific and engineering manpower. This is the so-called Gilliland Report, produced in 1962 under the chairmanship of Edwin R. Gilliland, of M.I.T., for the President's Science Advisory Committee. That report paid little heed to the uncertainties and came out emphatically for raising the annual production of engineering, mathematics, and physical science doctorates 150 percent by the end of this decade.

Elliott's group made no comment on this proposal—which, incidentally, has been incorporated in bits and pieces in the fellowship programs of various agencies; rather, the Elliott study limited its recommendations to proposing the establishment of a single agency to coordinate the manpower studies that are now conducted by the Department of Labor, the Office of Education, the National Science Foundation, the Bureau of the Census, and a number of other offices in the federal government.

The proposal was not spelled out in detail, but, in general, it conforms to the sentiments of many government people who have been attempting to deal with scientific and engineering manpower problems, and it is possible that the idea will enlist the support necessary for its implementation.—D.S.G.

C. P. Snow: Corridors of Power Is Novel about Nuclear Policy and Politics, Closed and Open

With national elections imminent in both the United States and Britain and the nuclear question emerging as the livest issue so far in the presidential campaign, the American publishers of C. P. Snow's new novel, *Corridors of Power*,* should profit from coincidence or good timing.

The "corridors" of the title can be taken literally to refer to the halls of the government offices of Whitehall and the houses of Parliament or figuratively to mean the labyrinthine ways of "high politics." The novel is set in the years before and after the Suez crisis and centers on a young Tory politician's rise and at least temporary fall because of his attempt to alter British nuclear policy.

Corridors of Power is the ninth book in a planned sequence of 11 novels dealing with the life and times—from 1914 to the present—of Lewis Eliot, whose experience and views happen to have much in common with those of the author, who from provincial beginnings became a Cambridge scientist, a civil service commissioner, a company director, a successful man of letters, and a knight.

By now the reviewers have Snow bracketed as a novelist, and the notices of his latest book indicate that he is viewed with respect, gained partly by his "Two Cultures" lecture, but without excitement. It is a commonplace to compare him, in technique and tone, with the Victorians. Certainly he is without the implied anarchism of Britain's angry young authors or the angst of many contemporary American writers. Like the Victorian novelists, Snow is a storyteller. He has their keen interest in the effects of the class system on British life, and his characters tend to be social types. He even has some of the minor mannerisms of the Victori-

**Corridors of Power*, by C. P. Snow, Scribners, $5.95.

ans. (Few writers today would use the adjective "tenebrous," of which Snow is fond.)

Corridors of Power is a political novel and a good one, in a category in which there have been few great ones. In recent years the decline in popularity of fiction and the rise of interest in nonfiction has resulted in the flourishing of a kind of semidocumentary novel based on the principle that a heavy dash of fact improves fiction. The recipe calls for varying quantities of technical and topical detail, and suspense and sex. Affairs of state obviously provide prime subject matter for this kind of fictionalized current events. The best-sellers *Advise and Consent* and *Seven Days in May*, to a great extent, and the James Bond thriller, to a lesser degree, depend for a good deal of their effect on the reader's feeling that resemblances to actual persons or events is really more than coincidental.

Corridors of Power is an "inside" novel, because Snow has been an insider. His political attitudes, which are well known, place him in the left-wing of the British Establishment, but in the Establishment nevertheless. Political business is still done in Britain in conversations at the club, at dinner parties in the West End, and on weekends at country houses, very much as it was in the days of Victoria, and Snow's accounts have the authentic ring of a participant. As all the reviewers have noted, Snow is interested in power—how it is gained, how it is used, and what its effect is on people—and Snow's story is not simply one of good chaps versus bad chaps, as many political novels are.

In Snow's story, the focal character is Roger Quaife, an energetic and ambitious Tory backbencher who becomes first a junior minister in an unnamed department which has responsibilities for the scientific side of defense planning, and then, through circumstance and astute manuevering, head of his department.

Snow has been faithful to the general outline of history and the fortunes of the Conservative government in the 1955–58 period of the novel but has carefully substituted unrecognizable fictional figures for actual Tory leaders. Discussions on defense policy are also carried on in an extremely vague fashion, but the reader will not go far astray if he recalls that a main issue of the 1959 general election in Britain was drawn on the Labor Party's bid to give up an "independent deterrent" and the Conservatives' pledge to preserve it.

For the American reader there will be interest as well as confusion in the attempt to compare the operation of the British and American systems.

In Britain, members of the majority party in Parliament serve as members of the cabinet and heads of administrative departments. British M.P.'s can acquire a kind of experience not open to American legislators so long as they remain in Congress. The British system provides no place for the political appointees—cabinet officers and their subordinates—who populate the highest reaches of our federal agencies.

The British civil service, like many a building it works in, is a monument to 19th-century Britain and its Victorian educational and social institutions. The civil service is still divided into two separate classes, the administrative and the executive. Members of the administrative class are recruited from among the top graduates of the universities, notably Oxford and Cambridge, and the executive class attracts the better secondary-school graduates.

Limited Room at the Top

The top jobs go only to members of the administrative class, a small, clubby elite drawn mainly from the comfortable middle class (the Foreign Office and politics attract more of the rich and those with higher social rank).

In the civil service, the top administrators are expected to serve any government in power and do any job. Interchangeability is the watchword, and the tradition of the all-rounder prevails. The ablest traditionally wind up with the best posts in the Treasury. Compared with American civil service careerists, the gentlemen of Whitehall have more prestige and probably more power. The British civil service seems not to have adapted as well as the American to needs for scientific and technical expertise in government administration, and this is one of the reasons that both Parliament and the civil service are under fire in Britain for failures to cope with 20th-century problems with 20th-century methods.

The civil service has been criticized for being both undemocratic and inefficient. In Britain's mixed economy with its nationalized industry, many civil servants have become functioning members of the managerial class in industry, or responsible for shaping decisions on investments for plant or research. And, as generalists, they may not be up to the job.

The cabinet system depends on ministerial responsibility, and departments have grown so large and their operations so complex that the minister who is politician and part-time administrator may have neither the time nor the training to understand what is going on in the department for which he is responsible. It is quite possible that the minister or parliamentary secretary and the top civil servant in a department may both be gentlemen amateurs.

In *Corridors of Power*, Snow is too concerned with showing how the status quo works to criticize it. His novels are known best for their explorations of the "closed politics" of Establishment institutions—the university, the government lab, the civil service, the board of directors. In the new book he concentrates on the interaction of the politicians, the civil servants, and the scientists. The military and the industrialists play indirect but influential roles.

Reaction to the Anglo-French attack and withdrawal at Suez in 1956 provides the political atmosphere of the story. As Snow represents it, the British took Suez so hard because it marked a failure not only of power and policy but of moral certainty.

The central thread of the story is Quaife's attempt to do no less than take Britain out of the nuclear arms race, against the prevailing policy of his party. Quaife feels that if Britain renounces nuclear weapons it can assert significant international influence to check the spread of nuclear arms. He believes that in 10 years nothing anyone can do will make much difference.

Quaife is ambitious. He wants to protect his own position and, in fact, to advance his own career. He knows that to be effective he must not outdistance party or public opinion. He is willing to take risks, but he also appears prepared to compromise and retreat. It is a virtue of the novel that it conveys a sense of the mixed motives, selfish and disinterested, which most often lie behind a politician's actions.

On His Own

Quaife's party leaders are willing to give him room to manuever, but it is clear that if he encounters real difficulty he will be on his own. There is plenty of potential opposition, but open resistance to any change in nuclear policy at the outset comes mainly from a Polish emigré scientist named Brod-

zinski, who hates and mistrusts the Russians obsessively and is an effective opponent because he doesn't abide by the accepted rules of closed politics.

Quaife's affair with a married woman is used in a veiled way to influence the climactic vote on an Opposition motion against Quaife after the white paper is published, but probably it has no decisive effect on the outcome.

If Snow's novel is to be taken as a commentary on the present situation in Britain, some updating is necessary. Memories of Suez have dimmed, and the signing of the partial nuclear test ban treaty just a year ago seems to have blunted the nuclear issue.

In 1959 the Labor Party stood for a policy of nuclear disarmament, and the Conservatives, for the independent deterrent. As Britain moves close to another election, the nuclear issue is cloudier. Cancellation of the Skybolt missile program by the Pentagon and substitution of an agreement under which the United States would help Britain build and arm Polaris submarines leave a question of how independent the British deterrent would really be. The Labor Party, for its part, has not said definitely it would cancel the Polaris agreement.

In the United States, discussion by the national candidates of who has authority to order use of nuclear weapons gave rise to a campaign debate which for a time sounded a little like a game of button, button, who's got the button.

As this was written, the expected debut of China as a nuclear power had ignited talk in both Britain and the United States on ways to limit the spread of nuclear weapons, but in neither country is the question of how (or if) the ultimate control of nuclear war can be acheived more than a subsurface issue.

While the situation has altered somewhat since the period of Snow's novel, his major points stand up: in general it is very difficult in the Western democracies to deal with nuclear policy in open politics, and, in particular, any move in the direction of arms control or disarmament must satisfy the political Right or at any rate the Center. Support of liberal opinion—in Snow's terms, "the disarmers, the pacifists, the idealists"—ironically may mean the political kiss of death.

As for the scientists in their long and in many cases reluctant embroilment in what the author calls the "mixture of technology, politics, ideology, moral conscience, military foresight," one suspects it may be Snow expressing his own feelings when he describes a Cambridge scientist speaking, with a mixture of disappointment, stoicism, and middle-aged weariness, on the eve of the vote.

"He did not believe that we stood more than an outside chance. He did not believe that any government could bring off more than a poor compromise. He believed that any government would have to repudiate a man who tried to do more. But he did not tell me so. He had been close enough to decisions to know the times when it was better not to be told. Instead he was ready to help: and yet, as he said, he wasn't eminent enough as a scientist to carry weight. Somehow, he remarked, the high scientific community had lost either its nerve or its will. There were plenty of people like himself, he went on, ready to be active. But the major scientists had retired into their profession—'There's no one of your standing,' he said to Francis, 'who's ready to take the risks you took twenty years ago.' It wasn't that a new generation of scientists hadn't as much conscience or more: or as much good will: or even as much courage. Somehow the climate had changed, they were not impelled. Had the world got too big for them? Had events become too big for men?"—JOHN WALSH

Medical Research: Congress Adds $10 Million to President's Budget for Special Studies on Leukemia

The slow-dawning discovery that money alone will not produce dramatic cures for disease has left Congress somewhat in the position of the old man who discovers that riches do not bring him happiness. Testifying before the Senate and House appropriations committees this year, officials of the National Institutes of Health were pressed to explain why some of their funds were left unspent when the world's diseases are still upon us. The indulgent uncles sought to know why some of their gifts had lain unopened and the blow was not lessened by explanations that funds may occasionally outrun the personnel available to use them. Despite its disappointment with what it termed NIH's "conservatism," Congress' impulse to continue its benefactions was strong. This year's NIH budget of $965,992,000 was $9 million more than President Johnson had requested and roughly $50 million more than the appropriation for fiscal year 1964. The most notable addition to the President's budget was a special appropriation of $10 million given to the National Cancer Institute (NCI) for research on leukemia.

The decision to undertake an especially intensive leukemia program originated with the Senate appropriations committee and passed the Congress after the concurrence of members of the House committee. The decision appears to have grown out of three things: (i) a general desire for visible progress against disease; (ii) a feeling, in the words of the House appropriations committee report, that "the Cancer Institute has tended to take a more conservative approach than other institutes. While it is gratified with the progress that has been made," the report stated, "the Committee is impatient and wishes that this institute would be more aggressive"; and (iii) the emphasis placed on progress in leukemia research during the hearings in both houses.

Leukemia, NCI director Kenneth Endicott told the House committee, "is the area where we are moving along most rapidly, and where the experts seem to feel there is the best chance of spectacular progress. . . . The picture on the etiological side," Endicott said, "is really tantalizing. We have now established beyond any doubt that a virus infection is the major cause of leukemia in animals. . . . These animal leukemias make beautiful laboratory models which you can then take and apply to man. Utilizing the new techniques that have been developed largely in the rodent," Endicott went on, "it is now possible, with the help of our new centrifuge [the result of a collaborative program between the NCI and the Atomic Energy Commission] to demonstrate the virus particles in virtually all patients with acute leukemia, and we have been unable to find similar materials in controls." Endicott also pointed out the possibility that a proven viral etiology for leukemia might in turn lead to the development of "some kind of immunization procedure." Endicott also stressed that the experimental treatment of leukemic children was beginning to produce encouraging results.

Adding to the general enthusiasm expressed at the appropriations hearings by government witnesses was what one private witness described to the Senate committee as "a virtual avalanche of very important new findings" that sud-

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