tions since no personnel cuts from its most "basic" research branch—the Scientific Research Staff (SRS)—have been announced. Spokesmen there emphasize that there is now no plan that would involve layoffs of scientists at SRS.

However, W. Dale Compton, the new executive director of SRS, who replaced the retiring vice president for SRS, Michael Ference, Jr., in August, told *Science* that the next year would see a "reorientation" of some of the work of SRS. Citing the pressures on Ford from recent national legislation regulating auto emissions and vehicle safety, he said "the research staff is devoting greater effort to those areas," and he suggested that some hiring in different areas might occur. (Ford discloses neither the number of scientists in SRS nor its budget.) Compton said he believed that more fundamental research would be needed to solve the auto emissions and safety problems. However, it has been suggested by other sources that the company may simply decide to do the requisite engineering work to meet legislative requirements on the basis of what fundamentals are already known—rather than continuing extensive programs of basic research.

It appears that many of the closings, layoffs, dismemberments of scientific teams, reorganizations, and resignations of top managers in these companies are the result of some fairly bloody infighting within the companies themselves. One symptom of this was that the scientists interviewed—even those who had lost their jobs—did not want to be named or quoted. A further sign was that most of the company officials involved—including a director of one of the laboratories who survived the cuts—requested that they not be quoted.

The reason for this corporate tonguetiedness, explained another anonymous individual, is that a basic research laboratory housed by a giant corporation incurs a set of natural enemies. The predators include company officers who cannot see the merit of handing over a slice of the profits pie every year to scientists. Such laboratories, which the scientific community applauds as farsighted enterprises, are often looked on jealously by other divisions within their own companies. A company scientist does work which appears to the average businessman to have nothing to do with products and profits; the scientist may be paid better than his counterparts elsewhere in the corporate structure; he travels more, and in general, enjoys a great deal of independence and prestige.

Two of the laboratories were said by one source to have been "on knife edge for years." One can infer, then, given the drying up of corporate profits, that some of the basic research laboratories —like the prehistoric dinosaur—may be extinguished.

More striking, in view of the internecine warfare within company ranks which precedes these decisions, is the loyalty which the corporation nonetheless commands from its scientists. Some obviously are very bitter. Yet one scientist, out of work for a month, talked long and lovingly of his former employer's enlightened practices. Another scientist, still working in another corporation, described 13 years of service, ideal working conditions, and what he termed "absolute freedom" to do whatever research he wished. Then, the scientist said, his own job was about to be eliminated. What did he think of his employers now? His answer was nothing but praise; he called them "liberal," "broad-minded," and even termed one "my patron saint."—DEBORAH SHAPLEY

Higher Education: Reinforcement from the Carnegie Commission

Last week the Carnegie Commission on Higher Education released its latest report, "Institutional Aid: Federal Support to Colleges and Universities," at a press briefing in Washington. Since a higher education bill bearing a key institutional aid section is bogged down in Congress, the choice of the time and place for the briefing did not seem purely coincidental.

In its new report, the commission moved to "reaffirm" its earlier recommendation that federal funds be given to "institutions for general support of educational programs." It is, in fact, the third Carnegie Commission report on financing, and the major addition this time is an analysis of distribution of funds under various formulas in order to support the theoretical basis provided in previous reports. The dollar increases prescribed in the commission recommendations would be $1 billion for institutional aid and $1 billion for student aid, to raise total federal funds for higher education to about $7 billion.

The Carnegie Commission, known also as the Kerr Commission for its chairman and director Clark Kerr, former president of the University of California, is completing its fourth year of operation as a pathfinder for American higher education in the last quarter of the 20th century. Its creator was the Carnegie Foundation for the Advancement of Teaching, and it has been funded at a level of about $1 million a year, primarily by the Carnegie Corporation. A 5-year life for the commission was planned, but the term will be extended to the summer of 1973 to provide adequate time to prepare a final report and complete an extensive publications program.

So far, the commission has dealt primarily with finances and with problems of achieving equality of opportunity in higher education. Kerr said at the briefing that, as the commission worked to isolate major issues for the 1970's, it came to see its three top priorities as social justice, health manpower, and innovation and reform. As it comes to grips with problems of innovation and reform, the commission may encounter more dissent than it has up to now either inside or outside its ranks.

The commission's activities fall generally into two categories: (i) reports that express commission policy (there have been 11 of them so far and there are likely to be about 20 in all) and

(ii) commission-sponsored research reports on a broad range of topics, most of them contributed by specialists in areas in which the commission is working.

In an interview, Kerr indicated that the commission's early emphasis on finances and its sense of timing on issues owes something to the origins of the project.

By the middle 1960's, foundation officers felt it was time for a sequel to the work of the blue-ribbon Commission on the Financing of Higher Education, which reported in 1952. That group had not anticipated the great expansion of higher education in the 1950's and 1960's and had recommended against a major federal role in financing higher education because of the danger of governmental influence. Carnegie had also been sponsoring James B. Conant's influential, decade-long study of the American high school, and there seemed to be a compelling logic to subjecting higher education to similar scrutiny.

Kerr Sought as Chairman

Kerr, then president of the University of California, was approached to act as chairman of the commission and he agreed, but he insisted that the study be broadened, since he says he felt it was unreasonable to talk about financing without considering the purposes of colleges and universities and questions of quality. In 1967 Kerr also became director of the project when, as he puts it, California's "Board of Regents made more of my time available."

Kerr remembers talking to Conant at the outset about "how to be effective." Conant's advice was to make the commission's recommendations "specific and well timed," says Kerr. That way the group would be "more controversial, but more effective." An example taken from the Conant experience was his urging, after he became convinced that the comprehensive high school was a desirable model, that a high school have a graduating class of at least 100. It was possible to argue over the exact number, but people remembered the 100 figure and it gave the discussion a takeoff point. Conant also did a lot of personal missionary work to get his recommendations accepted. Therefore it is not surprising that the commission is a follow on to the Conant study in tactics as well as spirit.

Because about two-thirds of the commission's 19 members* are well-known faculty members or educational administrators, there was a chance that the commission would be dismissed as overly "establishmentarian." Three of its members, after all—Kerr, Pusey, and Perkins—were, in different ways, the most prominent casualties of the campus troubles of the 1960's. But Kerr insists that the commission "doesn't represent higher education" and notes that, when the first report came out stating the commission's position on institutional aid and stressing aid to students (*Science*, 20 December 1968), "the rest of higher education was taking a different view." Kerr calls this an "unintended proof that we were an independent entity expressing our own view on what was good for the country."

However disinterested it is, the real test for the commission will be its influence. It would be difficult to say whether the commission created the tide or simply caught it, but in its fourth report, "Higher Education and the Nation's Health" (*Science*, 13 November 1970), the commission crystallized several recommendations that had been in the public domain and sped them on their way into public policy. In particular, one can point out the proposal for federal capitation payments to medical schools and other institutions training health professionals, which became a part of the recently enacted health manpower bill.

In a less overt way, the commission's report "Problems of Colleges Founded for Negroes" contributed to a change in attitude toward colleges with predominantly black enrollments. The prevailing assumption had been that these colleges would disappear as integration in higher education advanced. The report challenged this assumption, arguing that these colleges are a national asset that will serve an important purpose for some time to come and should be strengthened. Fund raisers for financially embattled black colleges have apparently used the report to good effect.

Of course the concept of institutional aid, which has been incorporated in the major higher education bills before Congress, is the single idea most clearly identified with the commission. And partisans of institutional aid, in Congress and in the Administration, have cited the commission, chapter and verse, in support of the proposal. Higher education legislation seems unlikely to be acted upon in the waning days of the current term of Congress. The paralyzing issue, which has prevented the bill from going to House-Senate conference, is a House amendment on busing children to overcome racial imbalance in the schools. Action will almost certainly be delayed until after Congress reconvenes in January. Observers expect that an institutional aid section will be enacted in the next term, but it appears that the amounts provided will be considerably lower than those the commission is calling for.

Second Most Important

Kerr says he thinks that institutional aid provisions will be the "second most important piece of education legislation ever enacted" in the United States. Top place he assigns to the Morrill Act creating the land-grant colleges. The commission, however, is concerned, he says, that expansion of the federal role give "no excuse for reducing state support." The commission is emphatic, he says, in urging that the law be written to make clear that the federal government is "not taking over the historic role of the states."

Although the commission will not ignore problems of financing and equal opportunity in coming months, issues of function and internal reform will be given more prominence in both the commission's reports and its sponsored research reports. Among the subjects scheduled for the remaining reports of the commission are academic reform, governance in higher education, new technology, graduates and jobs, and the functions of higher education.

Kerr notes that, although the title of its first report was "Quality and Equality," the commission has "done more on equality," and intends to redress the balance. At the outset, says Kerr, "We assumed that quality just took more money." Now, he says, the commission thinks there are threats to quality that money won't affect. Among them, says Kerr, are the new "sensate culture"; the

*Eric Ashby, Clare College, Cambridge; Ralph M. Besse, National Machinery Company; Joseph P. Cosand, University of Michigan; William Friday, University of North Carolina; Patricia R. Harris, Washington, D.C.; David D. Henry, University of Illinois; Theodore M. Hesburgh, University of Notre Dame; Stanley J. Heywood, Eastern Montana College; Carl Kaysen, Institute for Advanced Study; Kenneth Keniston, Yale University School of Medicine; Katherine E. McBride, president emeritus, Bryn Mawr College; James A. Perkins, International Council for Educational Development; Clifton W. Phalen, Marine Midland Banks, Inc.; Nathan M. Pusey, The Andrew W. Mellon Foundation; David Riesman, Harvard University; William Scranton, National Liberty Corporation; Norton Simon; Kenneth Tollett, Howard University.

attitude of a minority of faculty members, who say there are no such things as truths, only politics; and the situation in some institutions, where the student simply pays and, in effect, is told to "go do what you want to do."

Many of the questions the commission has in its sights are sensitive internal questions for higher education. The report on governance, for example, will, among other things, address the problems of tenure and unionization of faculty and staff. The commission may find itself treading on the toes of some who were its natural allies in its earlier endeavors.

Institutional aid and greater educational opportunity are ideas whose time the commission may have hastened in coming, but in the next year and a half the commission will be dealing with important issues on which it could find itself more controversial and less effective.—JOHN WALSH

Chile: Planning for Science Faces Obstacles Old and New

Santiago, Chile. Just over a year ago, Chile elected Dr. Salvador Allende Gossens, 63, active in politics for 40 years, successful in his fourth attempt to win the presidency, and the first Marxist elected to power in Latin America.

Allende's coalition reads like a roll call of names calculated to infuriate the Right—Socialists, Communists, Radicals, Christian Democrats, Social Democrats, and Independents—and his actions since taking office have been perfectly in keeping. He has nationalized banks, copper mines, textile works, breweries, and other businesses; expropriated more than 1300 farms and handed them over to the workers; expanded the social services; and established relations of great cordiality with Cuba, China, and the countries of Eastern Europe.

So far, science and technology have not played a major part in Allende's plans, or in his speeches. Chile has little enough science to start with, and even less technology—and it seems almost presumptuous to talk of planning when the plans concern so little. Nevertheless, the application of science and technology are crucial to the success of the Chilean experiment, and in organizing them Allende does not have to do very well to improve on the performance of most Latin American countries and on that of his own predecessors in La Moneda Palace. It can be argued that science policy-making is *more* rather than less important to countries with limited resources, and hence there is very little room for error.

Chile's budget for research and development adds up to about $30 million a year ($27.6 million in 1968, the latest year for which figures are available). This amount represents between 0.4 and 0.5 percent of the gross national product (GNP), a calculation which puts Chile clearly among the underdeveloped countries of the world. Expenditures on R & D are growing at a rate of about 15 percent a year in real terms, and much faster when measured in escudos, because of roaring inflation. At least three-quarters of Chile's science is in the universities, of which easily the most important is the University of Chile, based in Santiago. There are seven other universities, six of them private; but all get the bulk of their funds from the state.

Autonomy Defended

From these few facts the problem of making science policy effective in Chile can be simply stated. For the most part, Chilean research and development goes on in universities which jealously and passionately preserve their autonomy from the state. Although they depend on the government for funds, they recognize no obligation to it and made few efforts to use their courses or their research projects to further national goals. This is a roadblock that stands in the way of any sensible scientific planning in Chile; thus one cannot meaningfully talk of science policy without including a discussion of university reform as well.

Allende inherited from his predecessor Eduardo Frei the beginnings of a system for planning science and technology. The central body is the Comisión Nacional de Investigacion Científica y Tecnológica (CONICYT), an autonomous organization with the task of promoting, planning, and organizing science and technology in Chile. It has a president, a council of 48 scientists (soon to be increased), and a secretariat which has grown rapidly from 5 in 1969 (when CONICYT was formed) to 120 today.

The rapid growth of CONICYT suggests that it may be just another blossoming Latin American bureaucracy, producing volumes of paper for other bureaucrats to file. While there may, unfortunately, be some truth in this judgment, CONICYT does have real functions to perform. It administers foreign scholarships (at the rate of about 1000 a year), a very important element in the training of Chile's scientific manpower. It controls a tiny budget of about $300,000 a year, used to fund research projects in universities and government laboratories. It is in the process of organizing a central clearinghouse for scientific and technological information. But its most pressing task at the moment is to organize a massive Council of Chilean Scientists to help it hammer out a Chilean science policy. Allende wants everybody to participate in Chile's revolution, especially the workers—and the council is the formal mechanism to draw Chilean scientists into the planning of science policy.

The idea of the scientific council is said to be Allende's, written in his own handwriting on the copy of CONICYT's revised charter, which came to him for signature earlier this year. The added paragraph orders CONICYT to set up the council, and formally decrees that the universities shall be the majority participants and that each one shall be represented by a number of delegates proportional to the amount of research it undertakes.

The device—designed as it seems to