around, there is a good deal of advantage in the federal science establishment being a complicated, haphazard structure, rather than a rationalized organization governed by standardized policies.

The genesis of the Bureau's report further reveals the widespread impact of Congressman Fountain's attacks on NIH. As noted before, they led to the Academy study. They also inspired the Office of Science and Technology to undertake the comprehensive study of NIH that resulted in the Woolridge Report (*Science*, 26 March 1965). Fountain can also take some credit for inspiring the Academy to a continued interest in federal science policies, as well as for tipping off his congressional colleagues to the fact that there is political pay dirt to be found in examining the government's multi-billion-dollar annual investment in research and associated matters.

It was following Fountain's report on NIH that Representative William L. Dawson (D–Ill.), chairman of the Government Operations Committee, of which Fountain's subcommittee is a part, suggested that the Office of Science and Technology produce some guidelines for federal support of research. OST concluded that the Bureau of the Budget would be a more suitable setting for such a study, and it was assigned there, but carried out in close consultation with OST. The actual study, involving detailed examinations of the activities of seven major government agencies, 13 universities, and five private foundations, was performed by J. Lee Westrate, a political scientist who went from OST to become senior management analyst for science, technology, and education, at the Bureau; Benjamin Selfon, in the Bureau's office of financial management; Laurin Henry, a political scientist who formerly was with the Brookings Institution and now is at the University of Virginia; and David Z. Robinson, a physicist on the OST staff. The close collaboration between OST and the Bureau of the Budget points up one of the political realities of OST's existence. OST is influential not because it intrinsically has power but because it has acquired the confidence of the Bureau of the Budget, and when the Bureau speaks federal agencies listen.—D. S. GREENBERG

Education: Facilities Grants Forbidden to Baptist Colleges

It is written that Samson, inspired by the Lord, slew a thousand Philistines with the jawbone of an ass. Samson's prodigious feat is like unto the task which now confronts the leaders of the South's major Baptist colleges. They must do battle with a formidable demonology which is gripping many of their coreligionists. They must help their fellow Baptists cast out a besetting fear of the federal government and the money it can bestow.

State Baptist conventions throughout most of the South, and some non-Southern state affiliates of the Southern Baptist Convention (SBC), are opposing the acceptance by Baptist colleges of federal grants under the Higher Education Facilities Act of 1963. Acceptance of the grants would be looked upon as a breach of the doctrine of separation of church and state. The conventions of a few Southern states have not yet declared their opposition to the grants, but, according to the president of SBC, this is only because no college in those states has dared raise the issue.

The state conventions generally have not protested other forms of federal aid to churches and Baptist colleges. For example, tax exemptions on church income and special postal rates for church publications have been welcomed. Similarly, benefits such as student fellowships, research grants and contracts, and low-interest loans for dormitory construction usually have not been opposed for the colleges.

The fact that these other forms of federal support are often accepted is cited by some Baptist educators as evidence that the church opposition to facilities grants is emotional and irrational. (The acceptance of research grants is excused by some Baptist ministers on the grounds that the grants will be repaid by services rendered. Facilities grants, on the other hand, are regarded by these churchmen as an outright gift.)

Scores of colleges with ties to denominations other than Southern Baptist are applying for and receiving facilities grants. Why do the Southern Baptists, apparently alone among the major denominations, deny their colleges this privilege? The answer seems to lie in a curious tangle of factors.

Many denominational colleges have self-perpetuating boards of trustees, and this is even true of the colleges founded by the Northern Baptist Convention (now the American Baptist Convention). In fact, there are now no major Baptist schools except those with ties to the Southern Baptists. For example, the University of Chicago, once Baptist, is no longer considered a denominational institution.

The temperament and make-up of the Southern Baptists help to explain why the facilities grants have become an issue. First of all, strict fundamentalists —men and women who look on anything beyond a literal interpretation of the Bible with profound distrust—are numerous in the denomination. The fact that they are usually Southerners as well as conservative Baptists is in itself significant. Some Southerners still harbor a distrust of outsiders, and many still worry about the Negro and the erosion of segregationist practices; mingling of these attitudes with the fundamentalist Baptist outlook can lead to massive resistance to any influences that wear, or can be given, an even vaguely alien label.

Certain peculiarities of the Southern Baptist leadership and governmental structure also seem to have created circumstances favoring the kind of outcry that has been raised against the facilities grants. For instance, every church can decide upon the qualifications of its

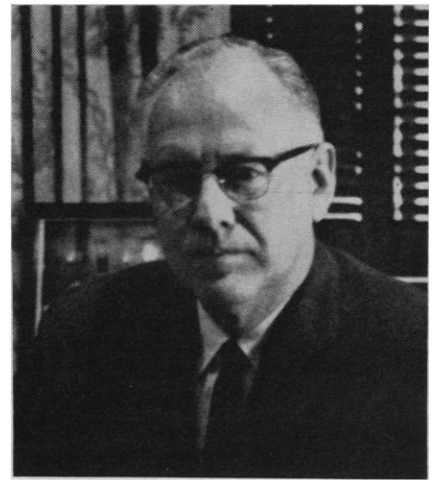
own minister. The inevitable result is that many churches, especially poorer ones whose members have had little formal education, are led by pastors of narrow, provincial views. Furthermore, many of the "messengers" in the voting membership of the Southern Baptist state conventions are not necessarily the most enlightened members of their churches. Often they are simply the people who have time on their hands.

Moreover, the formula for determining the number of messengers to which a church is entitled tends to favor the small and middle-size church over the larger church, which may have stronger leadership and a better-educated congregation. In addition, the size of the attendance at a convention has been known to jump from, say, 2500 messengers one year to 4000 the next, the larger turnouts generally reflecting the interest aroused by some controversial issue, such as the racial integration of a college or the question of federal aid.

The Southern Baptist Convention and a number of state conventions are reviewing the whole question of church-state relationships and federal aid to denominational schools. The SBC's top leadership seems disposed to consider sympathetically the arguments for accepting facilities grants. But since SBC itself owns no colleges, it will be the conclusions reached by the state conventions that are decisive. Pending completion of the studies and further action by the state conventions, the colleges are to regard the facilities grants as taboo.

For the colleges, the problem is more than simply one of failing to obtain funds for badly needed facilities. The root problem, in the judgment of some Baptist educators, is the unwillingness of the sponsoring church bodies to allow the college trustees to govern the institutions without interference.

Francis W. Bonner, vice president and dean of Furman University, near Greenville, South Carolina, delivered a speech last June before the Southern Baptist Association of Colleges in Nashville, Tennessee, which carried the provocative title "Can Southern Baptists Operate a First-Rate College?" Bonner said that the state conventions which "own and operate" the colleges often seem to have difficulty understanding that their power over these institutions should not go beyond electing trustees.



Gordon W. Blackwell

Fifty-four Baptist institutions of higher learning (including 15 junior colleges but no seminaries) are connected with state conventions within the Southern Baptist Convention, usually by being under their ownership and control. These institutions, mostly in the southern and border states, have nearly 87,000 students enrolled. Varying greatly in quality, the institutions include many which are not only small but inferior with respect both to their programs and to the calibre of their students.

Others, however, are important institutions, at least regionally. Baylor University, at Waco, Texas, has more than 7000 students and is by all odds the largest Baptist institution. Baylor's medical school at Houston has attracted national attention—for example, with its work in heart surgery and the experimental use of devices to assist a diseased heart pending its recovery.

Several Baptist institutions in the Southeast are among the better colleges in their region, though none has the strength and diversity of such regional leaders as Duke and the University of North Carolina. These colleges include Furman; the University of Richmond in Richmond, Virginia; Wake Forest College in Winston-Salem, North Carolina; Mercer University in Macon, Georgia; and Stetson University in Deland, Florida. Though all these institutions offer graduate work in one or more fields, they must be judged, for the most part, as liberal arts colleges.

In the struggle over the facilities grants issue, Stetson and Furman stand out—Stetson because it is the only Southern Baptist college (except for some Negro colleges, which are not affiliated with SBC) that has accepted a facilities grant ($502,000 for a science building); Furman because it applied for, and was awarded, a $612,000 grant for a science facility, then had it canceled in order to stay in the good graces of the state convention. (Southern Baptist College, an institution with a few hundred students at Walnut Ridge, Arkansas, last year also applied for, then refused, a facilities grant.)

In agreeing not to take the federal grant, Furman was assured by the convention that it would receive a special church gift equal to the amount of the federal money rejected. The gift has been made, and, for the moment, the convention and Furman are at peace. Stetson, on the other hand, was recently rebuked by the Florida Baptist State Convention's executive board. The board unanimously asked the college to reverse its decision to accept the grant, pending the appearance of a church-state study report by a convention committee next November. The convention's official journal has suggested that, in the future, the convention and individual Baptists may be less inclined to support the college financially.

The relationships between Stetson and Furman and their respective state conventions are not typical; but the very fact that their ties to the conventions are less tight than those between other Southern Baptist colleges and their conventions points up how little freedom of initiative these other colleges have in some important matters. The fact that state universities sometimes find themselves held on a short tether by their state legislatures does not make the restrictions imposed by the conventions on the Baptist colleges much easier to bear.

Stetson has a self-perpetuating board of trustees, although, through a nonbinding agreement between the trustees and the convention, the convention helps nominate trustees. Furman's trustees are elected by the state convention, as is usual for a Southern Baptist college. However, the trustees insist that, by the terms of the legislative act which chartered Furman, the convention's authority is limited to the naming of trustees. Few, if any, other Southern Baptist colleges are believed to have the degree of independence that Stetson and Furman have, and at times even Furman's independence seems illusory.

The troubles Furman has encountered in its relations with the convention make a revealing case history. A look at the college and its potential provides an insight into what is at stake for the more ambitious Baptist institutions in the facilities-grants issue.

Furman considers itself strong by regional standards and hopes ultimately to rank among the top 20 or 30 liberal arts colleges in the nation. In 1958 Furman moved onto an impressive new campus whose facilities now represent an investment of about $20 million. Plans call for the investment of another $10 million over the next 10 years; however, the financial strain on the college will be much less if federal construction grants can be obtained.

Well over half the Furman faculty hold earned doctorates, many conferred by the stronger Southern graduate schools and some by leading northern institutions. President Gordon W. Blackwell, a sociologist, was educated at Furman, U.N.C., and Harvard. Admission standards are said to be higher than those of the South Carolina state institutions, and the quality of the students—who now number about 1500—is improving.

Some faculty members feel that the most useful work done by Furman and other denominational colleges like it is the identifying and developing of potentially strong students who have been handicapped by weak cultural and educational backgrounds. For example, Larry Estridge, the president of Furman's student body, who next fall will enter Harvard Law School, is the son of a textile mill worker and attended a small-town high school. In his case, it is apparent that Furman has provided a useful bridge between a traditional southern community, with its provincialism and fundamentalist religion, and higher education. According to Estridge, his parents' lives have been centered on their mill community's Baptist church, and for this reason (as well as for financial reasons) Furman was the logical choice when it came to deciding where their son should attend college.

Furman can claim some distinguished alumni, including a Nobel laureate in physics—Charles H. Townes, provost of M.I.T. Although the college is a long way from becoming a major training ground for budding Nobel laureates, many of its science students are going on to advanced studies. Nearly two-thirds of Furman's 76 chemistry majors of the past 10 years have gone to graduate school. (The college has begun its own master's degree program in chemistry, and it plans to start similar programs in biology and physics.)

But, along with its strong points, Furman has some weak ones, which only stronger financial support can eliminate. For example, the teaching load of about 15 hours a week allows much less time for scholarly work and research than is available at leading liberal arts colleges. Moreover, faculty salaries, although they have increased by 80 to 90 percent over what they were 10 years ago, are still low, the basic pay of full professors averaging less than $10,000 a year. Clearly, the $612,000 the state convention has given Furman for the science building, in lieu of the federal grant, would have been more welcome, in the faculty's view, had it been in the form of a gift to boost salaries or reduce the teaching load.

"Challenge of Communism"

To the leaders at Furman and at other major Southern Baptist institutions it is clear that their colleges must take full advantage of federal aid programs if they are to compete with state institutions and with non-Baptist private institutions, which, typically, seem to take all the federal money they can get. A statement last year by the Furman trustees, who obviously worded their message with an eye to those South Carolina Baptists whose actual or spiritual home is up the branch heads, said, "if Baptists are to help meet the challenge of Communism," their colleges must not assume an economic handicap by refusing to cooperate with the government. The trustees observed that there are 870 church-related colleges in the United States—483 Protestant, 26 interdenominational, and 361 Roman Catholic. If, in the face of the rising cost of higher education, Baptist colleges alone refuse federal facilities grants, this can "lead only to a weakening of their purpose and work."

Some South Carolina Baptists probably were not unmoved by the reference to the Catholic colleges. The earliest opposition to Furman's accepting a grant is reported to have come from certain ministers in the Charleston area who felt that for a Baptist college to take such money would undermine their protests against Catholic church participation in the federal antipoverty program.

Accepting all available federal support seems especially important to Baptist educators now when it is apparent that church funds will meet a declining proportion of their college's financial requirements. At Furman, for example, this year's contribution of about $190,000 from the South Carolina Baptist Convention for operating expenses covers only about 5 percent of the budget. (Convention gifts for capital investment have totaled about $4.2 million since 1950.) While church contributions to Furman are expected to increase modestly each year, they will decline as a percentage of the college's total financial resources.

Furthermore, the reputation of Furman and the other Southern Baptist colleges isn't likely to be enhanced among the large corporate and foundation givers—to whom they are increasingly looking—if most are known to be so closely held by their church bodies that their trustees are not permitted to accept federal construction grants.

Furman has struggled gamely to assert its independence vis-à-vis the state convention. In the early 1960's the college was under fire from the convention for allowing students to have fraternities. One fiery minister, who evidently saw the college engaged with the Devil, is said to have accused the fraternities of "pagan practices," a complaint which disinterested observers familiar with the ritual and behavior of such collegiate groups might acknowledge to have substance.

In 1962 the convention demanded that Furman abolish fraternities by amending its charter. Fraternities were banned, but the trustees refused to amend the charter, thinking that to meet the very letter of the convention's demand would indicate they were dropping their claim to being the college's sole policy-making body. This entire controversy led to nothing very concrete, inasmuch as the students, though no longer allowed to affiliate with national fraternities, established clubs which they still often refer to by Greek letters.

Next came a clash of wills over racial integration. In the fall of 1963 the trustees adopted a policy of admitting students regardless of race. In 1964 the convention's executive board supported the trustees to the extent of agreeing that each Baptist college should determine its own admissions policy. The convention rejected the board's position on a close vote, however, then

decisively approved a motion disapproving of integration.

Shortly thereafter, the trustees reaffirmed their 1963 policy position, and last September the first two Negro students were admitted. The Furman administration and the trustees gained the faculty's confidence by this show of independence. According to a leader of the Furman chapter of the American Association of University Professors, faculty support for President Blackwell and the trustees continues strong to the present, even though the convention forced a compromise last November on the issue of facilities grants.

Blackwell says that he and the trustees—7 ministers and 17 Baptist laymen—were almost unanimously prepared to disregard any convention directive barring the acceptance of the grant. However, they found it impolitic to reject the proposal that emerged from discussions between their representatives, the convention leaders, and the leaders of those opposed to accepting the grant. The proposal was for the convention itself to provide the $612,000 toward the science building. "It seemed untenable to say that we preferred federal dollars to Baptist dollars," Blackwell told *Science* recently.

Furman has agreed not to apply for another facilities grant during the next 2 years. By 1968 a convention committee now making a study of church-state relations and the federal grant issue will have reported, and, possibly (though this is a long shot), the convention will have agreed that the grants are not the curse it once thought.

If the college has grounds to hope that the convention will change its mind, they may lie in the fact that the convention is in a fair way to discover that raising an extra $612,000, in addition to the collections needed for its regular commitments, is a troublesome endeavor. Such a sum was borrowed and given to the college; now a special drive is under way to raise the funds needed to repay the debt. The minister who was the most active in stirring up opposition to the facilities grant is leading the drive. At last report only $39,000 had been raised and some qualified observers doubt that more than half the target figure will be collected. It is possible, of course, that failure of the fund drive simply would discourage more special gifts, without leading those opposed to federal grants to abandon their position. Indeed, some conservative churchmen among the Southern Baptists have been suggesting that Baptist colleges should retrench, reducing their course offerings and increasing class sizes.

If there is to be an unshakable church commitment to progress at Furman and the other leading Baptist institutions, a large effort to inform Baptists of the needs of their colleges will have to be undertaken. That much is clear, for old prejudices among Baptists are slow dying, as evidenced by the fact that, even today, many Baptist institutions could bring down the wrath of their state conventions merely by lifting the ban against dancing on campus.—LUTHER J. CARTER

Ph.D.'s: Study Traces Their Path from Sheepskin to 25 Years Later

More Ph.D.'s in this country work in colleges and universities than in any other type of organization, according to a recent report by the National Academy of Sciences.* The report is the first in a series of scientific manpower studies NAS began in 1962 under contract with the National Institutes of Health. About 59 percent of the more than 10,000 Ph.D.'s represented in it are in academic positions. Of the rest, 15 percent are in business and industry and about 8 percent are with the federal government. The remaining 18 percent or so work for "all other categories" of employers; this includes the self-employed as well as those who work for foundations and other nonprofit institutions, and the approximately 3 percent who have jobs in foreign countries.

Data on Ph.D.'s who had earned the doctorate in any field in specified years between 1935 and 1960 were included in the report. The subjects of the study were asked, in questionnaires, what they had been doing in every 5th year since graduation; they were requested to tell where they had worked, and at what, and to give their salaries, their place in the academic hierarchy, and an indication of their family background.

Their answers show that, since 1935, each new generation of degree-recipients has devoted more time to research than the preceding generation did. Ph.D.'s have always tended to specialize in teaching, or research, or administration, although they have generally divided their efforts among all three. But, except for the 1950's, when the flood of ex-servicemen into the colleges brought a call for more new teachers, the trend has been toward emphasis on research.

For example, people who received the Ph.D. in 1935 devoted most of their time (46.8 percent) that year to teaching, less time (35.8 percent) to research (the figures are averages). By contrast, the 1960 degree-recipients spent most of their time (48.5 percent) in research and one-third in teaching.

As their careers develop, Ph.D.'s devote less time to teaching and research and more to administration. The 1935 Ph.D.'s spent only 8 percent of their time in administrative work their first postdoctoral year. By 1960 these individuals were devoting more time (an average of 32.2 percent) to administration than to either teaching (31.5 percent) or research (26.5 percent). The 1960 degree-recipients spent 10 percent of their time on administration in their first postdoctoral year; within 2 years, the study found, they were devoting 12.5 percent to administrative duties.

Herbert Rosenberg, chief of the resources analyses branch in NIH's Office of Program Planning, commented on NIH's interest in the report's discussion of women in the sciences. Traditionally, he pointed out, emphasis has been placed on convincing and helping women who already have their Ph.D.'s to return to work after periods of professional inactivity. Yet, it is also important that an effort be made to keep women graduate students, at all levels, from abandoning their degree programs when they marry and start raising children. Although a significant proportion of first-year graduate students are women, the attrition is high, and women comprised only about 10 percent of the Ph.D.-holders included in the study. Rosenberg said a major reason for the women's high dropout rate is the difficulty of making satisfactory arrangements for the care of their small children. He said that the universities could help solve this problem by adding child care centers to their existing nursery, elementary, and secondary school facilities. Such centers would serve a double purpose—besides allowing mothers to attend class, they would be an ideal source of training for students of child development.

Women Ph.D.'s, single or married, spend more time in teaching and less

* "Profiles of Ph.Ds in the Sciences: Summary Report on Follow-up of Doctorate Cohorts 1935–1960," by L. R. Harmon, Director of Research, Office of Scientific Personnel, NAS–NRC. Available from the Printing and Publishing Office, National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418. $2.50.