

behind. He warned, however, that the requirements for the space program should be carefully measured against other national needs, and that adjustments should be made when necessary.

"A manned space program," he said, "is much more expensive than one without the man. His presence scales up everything, the industrial base, the facilities, the nature of the apparatus, the number of tests to be performed. We should therefore slow down the program and go back to easier, smaller steps without the man if we find that we cannot afford to have a manned program and at the same time do the other things important to our security and national growth. Today it appears we can do all these things, but we should keep a calm watch, and if we find in the future that we have grossly underestimated the requirements, we should not hesitate to review the matter."

In defense of the manned program, Ramo said that "the addition of a human passenger and observer to a total space program is a necessary ingredient. . . . How can we justify a large national space research program whose true objective is scientific discovery across all the spectrum of science if we are going to leave out the life sciences. . . . A space program without a man has much less useful prestige appeal, and it is especially useless to us for prestige purposes if the Russians have already succeeded in making manned space flight the center attraction of the Science Olympics."

Support for the space effort was also expressed by Harry H. Hess, chairman of the space science board of the National Academy of Science. Hess argued that the manned aspects of the space program helped assure public interest and support. ("Remove the goal which appeals to the public and the appropriations go with it.") But he also argued that man has a place in space, not simply to arouse public interest, but to function as a scientific observer: "man can look around and at a glance pick the significant item or anomaly from among the tens of thousands of items which might be examined. In missions far beyond the moon, the need for manned operations increases so that manned lunar landing becomes the training and development ground for later solar system exploration."

Turning to the military implications of space, Hess said that these now

appear to be insignificant. "Nevertheless," he said, "we cannot, without grave risk, afford to let others develop parallel capability against the unforeseen needs of the future. Obviously we cannot wait until a crisis arises because we probably cannot meet this type of emergency by a crash program."

Testimony was also given by Lloyd V. Berkner, Lee DuBridge, C. S. Pittendrigh, Martin Schwarzschild, Frederick Seitz, and Harold Urey. Printed transcripts of the hearing will be available, probably next month. They may be obtained without charge by writing to the Aeronautics and Space Sciences Committee, U. S. Senate, Washington 25, D. C.—D.S.G.

Tobacco and Health: Governmental Action Seems Unlikely until PHS Concludes Long, Two-Phase Study

A number of Senators last week sang the evils of tobacco and recommended federal action to discourage cigarette smoking. But, at the governmental level, the tobacco issue is likely to remain frozen until completion of what the Public Health Service expects to be the definitive study on smoking and health (*Science*, 2 November 1962).

The study, which got under way last fall, was initiated by the Administration when it found itself caught between a variety of organizations and individuals demanding restrictions on tobacco and tobacco-state congressmen demanding hands off. In such a spot, the tactical handbook calls for a study, preferably a long one, and the Administration accordingly convened a study, with ground rules designed to forestall any charges of partiality. Excluded from the study were "scientists who have already taken a strong public position pro or con" (on the tobacco-health issue). In addition, those who were to be placed on the study committee had to be acceptable to representatives of interested federal agencies, voluntary health organizations, and the tobacco industry. Thus, the committee is beyond reproach, but its very existence has had the effect of dampening the tobacco issue in favor of the status quo, since those who hold that tobacco is not detrimental to health can reasonably demand that government action be withheld pending completion of the study.

Just when that will be is not clear, although the committee is reported to

be hard at work, with the intention of producing a report that will be scientifically invulnerable. The first phase of the study is devoted to "a comprehensive review of all available data on smoking and other factors in the environment that may affect health." It was originally scheduled for completion this summer, but now the PHS will only say that the report will be completed "before the end of the year."

When it is completed, the PHS will turn to the second phase, which will deal with "recommendations for action." Deadlines, dates, and personnel for that part of the study are not even being discussed.

The Senate attack on tobacco was led by Frank E. Moss (D.—Utah), who proposed that the Food and Drug Administration be given jurisdiction over tobacco products, along with its present jurisdiction over foods, drugs, and cosmetics. The effect of this change would be to give FDA the authority to require warning notices on cigarette packages, something that government lawyers say is not possible now, since tobacco falls into a jurisdictional no-man's-land between FDA and the Federal Trade Commission. If FDA had the jurisdiction, it is argued, it could require cigarette manufacturers to label their products with such sales-promoting notices as "excessive use may cause death."

It has been contended that the FTC, with its power to regulate advertising claims, could require such notices at present. But the FTC wants the PHS to furnish it with an unequivocal pronouncement on tobacco's health hazards before it enters the legal battle that is sure to follow any attempt to discourage cigarette consumption. In any case, nothing much is going to happen until the PHS study is completed.

—D.S.G.

Congress: "Session of Reckoning" on Civil Rights Affects Prospects of New Vocational Education Bill

In Congress, and particularly in the House of Representatives, the legislative process can be likened to the operation of a venerable machine constructed of a maze of levers and gears, big wheels, cogs and counterweights—and a few cranks—which cannot be fully controlled or even diagrammed. Votes on the floor and more especially in committee are influenced not only by party and regional loyalties and the

pressures of interest groups but also by the play of more subliminal factors, such as personal friendship, committee solidarity, gratitude for favors rendered or tendered, or simple clubbiness. Because every congressman knows that today's adversary on one issue may be tomorrow's ally on another, there is a real reluctance to estrange a colleague, and the inclinations of Congress are normally to compromise and accommodate.

From time to time, however, the even tenor of congressional ways is upset by external circumstance, and such a time seems to have arrived with what is now being called the civil rights crisis. The events of Ole Miss, Birmingham, and Englewood, New Jersey, and the intensifying campaign of sit-ins, boycotts, and other less passive demonstrations against anti-Negro discrimination have convinced many people in Washington that the issue is now drawn between civil rights and civil strife. Certainly Congress is concerned with the civil rights problem today in a way that it was not a year ago, or even 5 months ago when this session of Congress began.

This congressional awareness has been heightened by the emphasis the Administration has recently given to action on civil rights problems, both by encouraging voluntary efforts and by proposing new civil rights legislation. The Kennedy Administration, which is well grounded in the rules of the congressional game and has tried assiduously to play that game, has not previously pressed for new civil rights laws, presumably on the assumption that a fight on civil rights would jeopardize the entire Administration program by alienating the Southern Democrats. Now, with the Administration committed to action on civil rights in Congress, Senator Morse (D.-Ore.) may have struck just the phrase for it last week when he called this the "session of reckoning" on civil rights.

This time of reckoning may well have a decisive effect on education legislation. It is generally assumed that the support of the Southern Democrats is essential to passage of major new educational legislation, and the Southerners have made it clear that their support depends on the absence of desegregation provisos.

The conventional antidiscrimination device in Congress has been the civil-rights amendment or rider prohibiting the use of federal funds to construct or support facilities or institutions in which

segregation is practiced. The history of the civil rights amendment in recent years, however, provides an illuminating example of how practical politics can breed paradox. Through the '50's, the attachment of civil rights riders proved fatal to education and welfare legislation. Although the espousers of civil rights amendments were by no means all cynical, in many cases opponents of education legislation, for example, voted for a rights amendment and then voted to defeat the bill on final passage. As a result, it became commonplace for pro-civil-rights liberals of both parties, including Negro legislators, to vote against civil rights amendments in order that a bill might survive.

Winds of Change

Representative Adam Clayton Powell (D.-N.Y.), who before this moratorium proposed the civil rights rider so often it became known as the "Powell amendment," himself abjured its use when he became chairman of the House Education and Labor Committee in 1961.

On Capitol Hill, however, times have changed. Earlier this year, Powell, apparently gauging the velocity of the winds of change, announced that he reserved the right to propose the rights amendment—not that he would but that he might.

It is ironic that the first education bill to catch the brunt of the civil rights impact on Congress is a new vocational education bill now emerging from its formative phase in the House of Representatives. For, on the one hand, vocational education legislation has been popular and strongly supported in the rural areas of the South, and on the other, the bill in its current form embodies changes which could help Negroes with some of the serious problems they now face in the employment market.

Vocational education in substantially its present form has been part of the American system of public education since World War I. From the outset, vocational educators have felt they were contending against a strong public bias—the view that work with the hands is less to be esteemed than work with the head. Vocational education is often described as the "stepchild" of American education. Nevertheless, it has made a secure place for itself and has developed unique features of organization, financing, and control.

Most notably, it has been the recipient of federal aid for nearly half a century. Furthermore, federal funds

have been directed largely into teacher salaries—a forbidden area, ordinarily, when federal aid to education is discussed.

The ground-breaking Smith-Hughes Act of 1917 provided a total of \$7.2 million annually for vocational training. Of this, \$3 million went for agricultural training, \$3 million for trade and industrial and home-economics training, and \$1 million for teacher training. To obtain the federal funds, states had to match them dollar for dollar. In fact, the states and local school districts have done much more than that.

For 20 years Congress did little for vocational education but provide annual appropriations under the Smith-Hughes Act. Then in 1946, in an expansive, postwar mood, Congress passed the George-Barden Act, which added \$29 million to the annual appropriation. The original categories were maintained and a new one was added—distributive education, a work-study program designed for students intending to enter the sales and marketing field after high school.

In 1956 two more categories were added—practical nursing, with an appropriation of \$5 million a year, and education in the fishery trades and industry, with \$375,000. It was not until 1958, with the passage of the National Defense Education Act, however, that a serious effort on a national scale was made to supply the growing demand for persons trained in scientific and technical skills below the college level. The N.D.E.A. provided \$15 million a year for programs to produce "highly trained technicians."

Although most people probably regard vocational education as a pursuit for high school youth, such courses are, and have been from the start, patronized by adults. Of the nearly 4 million students enrolled in vocational education courses in 1961, about half attended on a normal school schedule and the other half were out-of-school youths and adults attending extension courses at night.

Vocational education took a sharp turn with the passage of the Area Redevelopment Act in 1961, which provided \$4.5 million a year for vocational education, and with passage of the Manpower Retraining Act the next year, which authorized expenditure of some \$435 million in federal funds over a period of 3 years to train people for jobs that are actually available. The Commerce Department, in the case

of ARA, and the Labor Department, with manpower retraining, have direct responsibility for administering the new laws. But vocational educators are viewed as the reigning experts on retraining programs, and a large part of the job of setting up and running the training programs has been assigned to the Division of Vocational Education in the Office of Education, which is part of the Department of Health, Education, and Welfare.

For vocational education, both the NDEA and the manpower retraining programs presented new challenges and exerted new pressures by multiplying the types of jobs which fall into the province of vocational education. Criticism of vocational education has centered on the charge that it has been imprisoned in its "categories" and has not responded adequately to the realities of the job market.

The evidence most frequently advanced to show that vocational education is out of joint with the times is the data on agricultural education. About a quarter of the high school students taking vocational education are training for farm occupations. The decline in opportunities for farm employment is well documented, and it is estimated that only about a third of recent graduates in vocational education have entered farming even as a part-time occupation.

It is not, however, agricultural education which has the largest enrollment among high school students in vocational education, but home economics. More than half the high school students in federally reimbursed vocational programs are enrolled in home economics courses which are designed to prepare girls for housekeeping and motherhood. These programs have won strong local and state support but are hardly "vocational" in the sense of being job-oriented.

In all, in 1961, about \$254 million went into vocational programs to which the federal government contributed, with the federal government supplying \$48 million and state and local governments, some \$206 million. The figures (in millions of dollars) for the three dominant categories are as follows:

Total	Federal	State-local
	<i>Agriculture</i>	
69.6	13.7	55.9
	<i>Home economics</i>	
72.6	8.9	63.7
	<i>Trade, industry</i>	
75.4	11.4	64.0

While trade and industry programs receive the largest total support, they are also the most expensive to operate and the most vulnerable to obsolescence in both equipment and teaching.

It is estimated that another \$500 million in state and local funds was spent in 1961 on vocational education not connected to federal programs. Most of this went into school construction and into office occupations programs, which have never received federal support, apparently because of the effective opposition of private business education schools.

In recent years, as the complex of problems involving automation, school dropouts, and unemployment among poorly educated youth have come into clearer focus, vocational educators have been allotted a share of the blame that has been laid at the door of public education.

It should be noted that, among public educators, vocational educators make up a distinct subgroup with a hierarchy and separate aims of its own. The typical career of the ambitious vocational educator takes him along a special route, from vocational classroom teacher to a job as a local administrator, then either into vocational education administration at the state level or into teacher education, ordinarily in the publicly supported institutions of higher education which train vocational education teachers. Employment in federal service is a further possibility for members of the fraternity.

A Force in Washington

Because vocational educators may receive salary supplements through federal funds or from industry or by teaching evening courses, they are often better paid than teachers on the regular salary schedule, and, particularly in rural areas, vocational teachers may be persons of greater substance and higher status than their colleagues.

The rock and covenant of vocational education are the federal programs, and expansion has depended on the willingness of state legislators and local boards of education to provide additional funds. Vocational educators, therefore, have generally reached a more advanced state in political organization and sophistication than their colleagues in public education.

Vocational education at the national level has also developed what is recognized both in the Congress and in the Executive branch as a well-disciplined

and potent education lobbying force in the American Vocational Association. The A.V.A. has some 33,000 members and has exerted a force on legislation greater than its numbers would suggest, probably because of senior southern members' respect for the vocational educator's political prowess back home. Significantly, the A.V.A., while a frequent ally of the National Education Association, is an independent organization.

Because vocational education leaders themselves have for the most part been trained either in agricultural education or in industry and trades education, they tend, it is said, to see vocational education from the viewpoint of their own specialties, to be satisfied with things as they are in vocational education, and to have limited interest in changing them and limited capacity to do so.

New Horizons

While vocational educators in some areas have developed strong and mutually profitable links with industry, vocational education in general apparently has neither sought nor received significant help from scientific or engineering societies. Research on vocational education, which has been limited almost entirely to graduate theses of vocational educators, has been neither adventurous nor of high quality; and this the vocational educators themselves have recently conceded with concern. In the field of curriculum revision nothing yet has been done in vocational education comparable to the curriculum reform studies for academic subjects financed by the National Science Foundation.

When the NDEA provided funds for the training of highly skilled technicians, vocational educators moved to assume responsibility for administering these programs at the state level, in part because it seemed the logical thing and also because a threat was appearing on the borders of their empire. Some technicians' jobs require the equivalent of 2 years of training at the college level, and programs are appearing in junior and community colleges to train these semiprofessionals.

These programs, for engineering technicians and some types of laboratory aides, for example, are expensive to operate and require faculty whose natural habitat is higher education rather than vocational education. Partly because the distinctions among tech-

nicians remain so hazy, the question of jurisdiction in training is not likely to be easily resolved.

In the past decade, the most conspicuous effort toward reform from within vocational education has been the effort, especially in urban schools, to upgrade training in trade and industry, specifically by providing stronger preparation in theoretical subjects—basic mathematics and science—and somewhat less emphasis on practical training likely to become obsolete. Admission requirements to vocational schools have been raised, and, as a consequence, students with below-average intelligence or students who are poorly motivated are excluded and are consigned to the bottom-track courses or inadequate “industrial arts” programs in the general high schools which are the dumping grounds for future unemployables.

Vocational educators are being taken to task for shirking a responsibility, but if they are to be damned they also deserve at least a little faint praise, since it has been only the vocational educators, until very lately, who have tried to do anything at all for the misfits in the education system.

A reappraisal of vocational education had been long overdue, and soon after his inauguration President Kennedy asked the Secretary of Health, Education, and Welfare to convene a panel of consultants to cover the ground. About half of the 25 members of the panel, which was headed by Chicago Superintendent of Schools Benjamin Willis, were connected in some way with the vocational education establishment. The result of a year-long study was the report *Education for a Changing World of Work* (for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., \$1.25). The staff-written report includes a general survey and statistics of the history and present program of vocational education and some generalized criticism and fairly detailed recommendations.

This report, though published only last month, was put to immediate use by a House education subcommittee headed by Representative Carl D. Perkins (D.-Ky.), in meetings on vocational education legislation which turned into the first searching examination of vocational education since the late 1940's.

The bill reported out of the House Education and Labor Committee last week not only authorizes spanking in-

creases in the program—of \$45 million a year for 4 years to a total of \$180 million a year in 1967 and after, in addition to the \$57 million now available under existing law—but also proposes the most significant changes in the structure of the program since 1917.

The proposed legislation (H.R. 4955) would preserve the old categories in present programs but make it possible to transfer funds from one category of training to another in which there is a demonstrable need for trained labor.

It would be possible to spend new federal funds for training in any occupation consistent with a present and projected demand for manpower. Under the new open rule, for example, it would be possible to train office workers if there were job opportunities for them.

The definition of vocational agriculture would be broadened to permit training of students for food processing, marketing, and farm-machinery maintenance jobs, for example, which are now excluded by the “on farm” employment requirements of the law. The new bill also requires that 25 percent of new funds going to home economics be for training which is job-oriented.

The effect of the proposed legislation is to place a sharper emphasis on “gainful employment” and to serve notice that Congress will be watching with interest to see how successful the vocational educators are in training people to get jobs.

Bipartisan support for the new approach was strong in the committee, with the key amendments coming from the younger members of the subcommittee, notably representatives John Brademas (D.-Ind.) and Charles Goodell (R.-N.Y.). Significantly, Goodell was influential in shaping the Manpower Retraining Act, and Brademas has been a champion of technician education.

Despite the bipartisan harmony, the committee split down the middle last week on a 15-14 vote defeat of a civil rights rider. Supporting the amendment were all 12 Republicans on the committee and two liberal Democrats. Ironically, chairman Powell was one of two Democrats who were absent, and it is surmised that if he and the other absentee, Representative Hugh Carey (D.-N.Y.) had been present and voting, the amendment would have been added.

Republicans on the committee have announced that, on principle, they will

seek to add the amendment to the bill when it reaches the floor and also, even more significantly, will attempt to attach civil rights amendments to other education bills this year.

A showdown on the floor, however, is not imminent, since the bill now reposes in the Rules Committee along with three other education bills awaiting relay to the floor. To complicate matters, one of the bills, the one providing funds for the construction of college academic facilities, has no antidiscrimination clause, while the other two, an aid bill for federally impacted areas and one for community library services, do have such provisos. Rules Committee chairman Howard W. Smith (D.-Va.) is no particular friend of education legislation and is a foe of civil rights amendments and has amply demonstrated powers of delay.

In Congress at large, the issues are simple for segregationists and for those who oppose federal aid to education.

For legislators who favor both antidiscrimination amendments and education legislation, the choices this year are more difficult. As this was written, an attempt was being made by a group of such legislators to separate the questions of civil rights and the substance of education legislation through introduction of a bill, drafted by freshman Representative Thomas P. Gill (D.-Hawaii), which would apply a general antidiscrimination amendment to all education legislation now on the books. The effect of this would be to make it possible to fight for one principle at a time, an arrangement which congressional pragmatists feel improves the odds. — JOHN WALSH

Announcements

Hughes Dynamics, a subsidiary of the Hughes Tool Company, has established an **educational services** division, the first branch of which has been set up in Monterey, Calif. Among the services offered by the division are class scheduling, maintenance of enrollment and attendance records, test scoring, and research.

The American Oncologic Hospital in Philadelphia, Pa., last month joined the Fox Chase **Center for Cancer** and Medical Sciences. The center was created in 1961 by agreement between the