the proton flux which is assumed in the as yet unmeasured energy region below 40 Mev. The solar cells in Vanguard I are covered with a layer of glass and are still operating after 2 years of exposure to the inner belt. However, Vanguard I requires only a low-current drain, so that the full extent of damage may not be indicated in this case. In any event, this is not a very satisfactory method of eliminating the problem. Such a shield adds greatly to the weight of a solar power supply. Moreover, recent measurements by Denny (*5*) have shown that 10^{10} protons, of 350 to 750 Mev, per square centimeter, will also lower the efficiency of solar cells by 25 percent. Against such particles glass shields of reasonable thickness would be ineffective. Clearly, research and development are required to produce long-lived solar power supplies for use on satellites that must operate for long periods within the inner radiation belt. On the observational side, further measurements must be made in the 0.5- to 10-Mev region of the proton spectrum in the Van Allen belts to determine the exact shielding required.

References

1. S. C. Freden and R. S. White, *Phys. Rev. Letters* **3**, 9 (1959).
2. E. P. Ney, J. R. Winckler, P. S. Freier, *ibid.* **3**, 183 (1959).
3. J. W. Keller and N. M. Schaeffer, "Shielding of manned vehicles from space radiation," paper given at Aerospace Medical Association meeting, 9–11 May 1960.
4. K. Anderson, private communication.
5. J. M. Denny, "Radiation damage in satellite solar cell power systems," paper presented before the American Rocket Society Space Power Systems Conf., Santa Monica, Calif., 27–30 Sept. 1960 (*ARS Rept. No. 1295-60*).
6. C. L. Critchfield, E. P. Ney, S. Oleksa, *Phys., Rev.* **85**, 461 (1952).
7. F. B. McDonald, *ibid.* **116**, 462 (1959).
8. C. Fichtel, dissertation.
9. J. A. Van Allen, *J. Geophys. Research* **64**, 1683 (1959).
10. ——— and L. A. Frank, *Nature* **184**, 219 (1959).

Science in the News

John Kennedy's New Frontier: "The Margin Was Narrow but the Responsibility Is Clear"

The president-elect will take office with a mandate granted him by 50.2 percent of the major party voters and a Democratic majority of about 80 seats in the House of Representatives. Roosevelt in 1932 had 59 percent of the major party vote and a margin of 191 seats in the House. Kennedy has other disadvantages: he would not have won the election without the support of the conservative South; the country does not face as obvious a crisis as it did when FDR took office at the bottom of the depression; and before the nominating convention and to some extent today it is the more conservative Johnson rather than Kennedy who is the favored candidate of most Democrats in Congress. This, combined with the suspicion, or hope, depending on the politics of the observer, that Kennedy is really fairly conservative at heart has led to a good deal of speculation that the likelihood that the Kennedy administration will make a mark in history as a second New Deal can now be dismissed.

In the field of education, this means Kennedy would not succeed in putting through a massive program of federal support for public and higher education, for improving the economic position of teachers at all levels, and for removing the financial and social barriers that prevent or discourage students from poor families from going on to college and graduate school. In science, it suggests that there will be no abrupt increase in the current rate of growth of federal support for research.

Those who take the view that Kennedy's New Frontier can now be dismissed as campaign talk see his administration following a line close to that associated with Nixon: more active Presidential leadership; a faster increase in the size of the federal budget than under Eisenhower, but still increases that could be called moderate; and an effort to revitalize the government with newer and younger men. They expect a progressive administration, but not one that could be called radical by anyone to the left of Senator Goldwater.

Among those who disagree with this evaluation is Kennedy, who told reporters in his first press conference after the election: "I went to the country with very clear views as to what the United States ought to do in the sixties. . . . I am going to do my best. . . . The margin was narrow but the responsibility is clear." And in a speech last January, the tone of which has been repeated frequently since, Kennedy told the National Press Club that the Presidency requires strong leadership by a man who is willing to risk incurring "the momentary displeasure" of the public he is serving. Kennedy, in turn, is supported by Harry Truman who, in a syndicated article published this week, pointed out that both Lincoln and Wilson were elected by a minority of the popular vote, a fact which discouraged neither from the strongest sort of Presidential leadership.

Congress

Part, but only part, of the difficulty the new administration will face is that some of the ideas Kennedy and his advisers have talked of will be opposed as being too radical in themselves: Kennedy will probably have little trouble getting almost anything he wants from the Senate; the test will come in the House, where there is strong opposition in principle to a program like the plan for federal aid to teacher salaries, with its implied threat of the passing of a good deal of the basic responsibility for the country's educational system from the local to the federal government; to health insurance for the aged under social security, with its threat of eventual expansion to provide federal health insurance for everybody; to the Kennedy proposal on minimum wages with its intent to broaden federal regulation of wages and hours from the present control over businesses "involved" in interstate commerce to businesses "affecting" interstate commerce—that is, to almost every business of any consequence.

The Senate passed two of these proposals during the last session, and the third, health insurance tied to social security, probably would have passed if

the imminence of the election had not kept the liberal Republicans from backing Kennedy. But none of these proposals had any chance of getting through the House in the face not only of the House's greater conservatism but of the opposition of the Rules Committee and the near-certainty of an Eisenhower veto if they were to pass. The House will be more conservative in its membership after January. Twenty-two northern Democrats have been replaced by Republicans, nearly all conservatives, and this situation in the House is the source of much of the confidence of those who feel that much of Kennedy's New Frontier can now be written off in advance. Whether this is actually the case will depend on Kennedy's ability, completely untested as yet, to use the powers of the Presidency.

Kennedy's problem is enormous. Pushing through positive programs which the conservative coalition in the House might regard as too radical is only part, and probably the lesser part, of the task he faces. For it all costs money, and the money has to be raised. Many of the most expensive parts of the Kennedy program—space, defense, scientific research—are not "liberal" or "conservative" programs, although these three areas alone could well add an extra $4 billion to the first Kennedy budget.

One of the advantages, from the Kennedy view, of his farm and medical insurance programs is that both would be paid for in part by money raised outside the regular federal budget—the medical plan through the social security tax, the farm plan through higher food prices. Again, one of the advantages of the Democratic promise to lower interest rates is that it would save some money (Kennedy has talked of as much as a billion a year) on servicing the national debt, an expense which now runs to about $7 billion a year.

If Kennedy can get his way on these programs there is still a considerable range of additional measures that he needs to push through Congress in order to pave the way for getting enough money to carry both the additional expense for national security programs (space, defense, foreign aid) and for his domestic programs (urban renewal, distressed areas assistance, aid to education, and many more). He can get this money in three ways: outright tax increases, closing tax loopholes, and encouraging economic growth. Tax increases, of course, are unpopular. Closing loopholes is popular with the country at large, but very unpopular with the people whose loopholes are being closed, and who are assured of a friendly hearing before the conservative tax committees of the House and Senate. Stimulating economic growth is highly popular in principle, but in practice it requires a series of much less popular measures to enable the government to keep the economy at or very near full employment most of the time while having some control, direct or indirect, over prices and wages to prevent a runaway inflation from developing.

Thus Kennedy, if he is to carry out his promised program, is faced with the task of pushing through its positive aspects, some of which will be considered too radical by a substantial number of Congressmen; with the task of pushing through supporting legislation to make it possible to raise the money to pay for the programs, some of which again will be considered too radical by a substantial number of Congressmen; and on top of all this with the need to push through a considerable amount of other legislation—some reorganization of the defense department, revision of the conflict of interest laws, salary revision for the higher levels of the government, more adequate expenses for ambassadors, and several dozen other measures—all of which, while they cannot be criticized as too liberal or too expensive, nevertheless must face considerable opposition, if only in the form of Congressional inertia, and all of which will require the expenditure of a certain amount of Presidential energy to put across.

It was never believed that it would be an easy matter for Kennedy to push his program through. The slim margin of victory and the loss of liberal strength in the House have added to the difficulty, but have not made the difficulties insurmountable.

No one can tell yet how many votes can change in the House simply because Kennedy will be in the White House pleading the case for what must be done, while Eisenhower used the vast influence of the Presidency to warn the public of the danger of spending too much money. Nor can any one tell how many Congressional votes Kennedy can win through the use of the grosser tools of politics which Eisenhower always shied away from—the numerous jobs and favors which the President has the power to grant or deny.

No one is sure what role Johnson will play. Kennedy needs Johnson's active support more than ever. But Johnson's conservatism may well be overcome by his well-known ambition to make a name for himself as a major national figure. If Johnson becomes convinced that the way to make his mark in history is as a man who helped mightily to make it possible for Kennedy to put his program through in the face of great obstacles, rather than as an essentially negative figure, then Johnson may well turn out to be of far more assistance to Kennedy than has been expected. It was a similar appeal to the man's pride and sense of his role in history that helped convert Senator Vandenberg from a pre-war isolationist to the great Republican exponent of a bipartisan foreign policy in the decade of the 1940's.

But Kennedy's greatest source of strength is likely to be the existence of a powerful coalition of leaders, not only in politics and public affairs, but in the press, the universities, finance, and labor, who publicly or privately agree with Kennedy that the country faces an enormous challenge in the coming years, and that strong action is needed to meet the challenge. These are men who, among Republicans, were able to support Nixon only because they were convinced that his position was a great deal closer to Rockefeller's than to Eisenhower's. Most of these men, even the Republicans among them, would have been appalled at the thought of another Eisenhower administration. The Gaither, Coolidge, and Rockefeller reports were all prepared by good Republicans who found as harsh things to say about the Administration as anything Kennedy has said. In the area of national security, which includes the problem of economic growth, science, and much of the Kennedy program for education, as well as defense and foreign affairs, Kennedy expects to be able to enlist the support of such men. He made it clear that he intended to offer them posts in his administration long before the election returns made such action so clearly necessary.

How much Kennedy will accomplish is anybody's guess. But it is very possible that he will accomplish a great deal. The great bulk of his program lies in areas that are associated with national security, and another large share lies in areas such as urban affairs, where the problems have been getting worse for years and where it is really not very difficult to build a case for federal action to help solve them.—H.M.