References and Notes

1. D. C. McClelland, A. L. Baldwin, U. Bronfenbrenner, F. L. Strodtbeck, *Talent and Society* (Van Nostrand, Princeton, N.J., 1958), p. 13.
2. B. Hoffmann, *The Tyranny of Testing* (Crowell-Collier, New York, 1962), pp. 99–101.
3. W. E. Coffman, "The Scholastic Aptitude Test—a forward look, 1963," unpublished.
4. Unpublished test analysis conducted at ETS.
5. L. R. Harmon, *Science* **133**, 679 (1961).
6. ———, "Validation of Fellowship Selection Instruments against a Provisional Criterion of Scientific Accomplishment," *Res. Fellowship Selection Techniques, Office Sci. Personnel, Natl. Acad. Sci., Natl. Res. Council Tech. Rept. no. 15* (1959).
7. D. W. Taylor, "Variables related to creativity and productivity among men in two research laboratories," in *Scientific Creativity*, C. W. Taylor and F. Barron, Eds. (Wiley, New York, 1963), pp. 228–250.
8. A. Roe, *The Making of a Scientist* (Dodd, Mead, New York, 1952).
9. ———, "A Psychological Study of Eminent Psychologists and Anthropologists, and a Comparison with Biological and Physical Scientists," *Psychol. Monographs: Gen. Appl.* **67**, 1–55 (1953).
10. J. W. Kallop, "A Study of Scholastic Aptitude Test and Eminence," thesis, Princeton Univ., 1951.
11. It should be kept in mind that Harmon's results were based on the general population and Kallop's were on a selected college population. To obtain a more direct comparison of the two studies we can estimate the AGCT score which is comparable to Kallop's 75th percentile SAT score. On the basis of a table provided by C. C. Brigham [*A Study of Error* (College Entrance Examination Board, New York, 1932), p. 336] and a second table provided by the Staff, Personnel Research Section, Adjutant General's Office [*J. Ed. Psychol.* **38**, 385 (1947)], the SAT score of 629 is estimated to be comparable to an AGCT score of 150. Kallop observed that 25 percent of his cases fell above this score; Harmon observed 14 percent. In addition, by means of the same estimates, we can say that a person in the top 1 percent of the general population has approximately 25 times as much chance of being in *Who's Who* as has the population in general.
12. R. Pearson, "On the Use of Multiple-Choice Tests in College Admission" (College Entrance Examination Board, New York, 1963).
13. L. M. Terman and M. A. Merrill, *Measuring Intelligence* (Houghton Mifflin, Boston, Mass., 1937).
14. L. M. Terman and M. H. Oden, *The Gifted Child Grows Up* (Stanford Univ. Press, Stanford, Calif., 1947).
15. ———, "The Gifted Group at Mid-life," *Genetic Studies of Genius, V* (Stanford Univ. Press, Stanford, Calif., 1959).
16. J. L. Holland and A. W. Astin, *J. Educ. Psychol.* **53**, 132 (1962).
17. J. R. Warren and P. A. Heist, *Science* **132**, 330 (1960).
18. J. L. Holland, *J. Educ. Psychol.* **50**, 135 (1959).
19. D. Whitla, "PRL (Predicted Rank List) Revisions," unpublished Harvard College Study, 1962.
20. J. W. French, "The Validity of New Tests for the Performance of College Students with High-Level Aptitude," *Res. Bull. 63-7* (Educational Testing Service, Princeton, N.J., 1963).
21. G. V. Lannholm, "Abstracts of Selected Studies on Relationship between Scores on the Graduate Record Examinations and Graduate School Performance," *Graduate Record Examinations Spec. Rept. 60–3* (Educational Testing Service, Princeton, N.J., 1960).
22. J. Thorpe, unpublished report, Princeton University Graduate School, 1959.
23. G. V. Lannholm and W. B. Schrader, *Predicting Graduate School Success* (Educational Testing Service, Princeton, N.J., 1951).
24. D. G. King and R. O. Besco, "The Graduate Record Examination as a Selection Device for Purdue Research Foundation Graduate Research Fellows," unpublished report, Graduate School, Purdue University, 1960.
25. J. A. Creager, "A Study of Graduate Fellowship Applicants in Terms of Ph.D. Attainment," *Res. Fellowship Selection Techniques, Office Sci. Personnel, Natl. Acad. Sci., Natl. Res. Council Tech. Rept. No. 18* (1961).
26. See W. S. Miller, *Manual, Miller Analogies Test* (Psychological Corp., New York, 1952), p. 9.
27. E. L. Kelly and D. W. Fiske, *The Prediction of Performance in Clinical Psychology* (Univ. of Michigan Press, Ann Arbor, 1951).
28. E. L. Kelly and L. R. Goldberg, "Correlates of Later Performance and Specialization in Psychology," *Psychol. Monographs: Gen. Appl.* **73**, no. 12 (1959).
29. W. H. Angoff and E. M. Huddleston, "The Multi-level Experiment," *Statist. Rept. 58-21* (Educational Testing Service, Princeton, N.J., 1958).

30. We are indebted to John W. French and William B. Schrader for their valuable criticisms of a draft of the manuscript.

News and Comment

Antarctica: Congressional Urge for Tidy Research Administration Manifests Itself in New Proposal

One of the most persistent themes in government relations with science is the Congress's inclination to tidy up the administrative structure of research and the executive's desire to protect what Jerome B. Wiesner once referred to as the "anarchy" of research.

Thus, Congress has from time to time toyed with proposals for a Cabinet-level Department of Science, to encompass most or all of the federal government's research activities. Strenuous opposition from the executive's science advisers has helped prevent these proposals from acquiring the necessary votes. But now and then a less ambitious plan for administrative tidiness manages to develop significant support. Such was the case, for example, in 1962, when, on the initiative of the Senate Commerce Committee, Congress passed a bill giving the White House Office of Science and Technology (OST) responsibility for coordinating the oceanographic research of the 24 federal agencies operating in that field. Folklore says that government offices inexorably quest for greater power, but OST didn't want to take on oceanography or any other operational responsibilities. President Kennedy pocket-vetoed the bill—one of the nine vetoes of public bills during his presidency—and the coordination of oceanography remained the responsibility of an interagency committee. Congress obviously didn't agree, but the administration felt that the interagency committee offered the virtues of coordination and decentralization. No effort was made to override the veto.

The latest example of congressional interest in tidiness of research administration concerns another interagency effort, the Antarctic research program, in which the Defense Department, through the Navy, handles logistics, the National Science Foundation is responsible for research, and the State Department provides coordination and guidance under the 14-nation Antarctic Treaty. Some Navy officials have complained about what they consider to be poorly defined lines of authority in this three-agency arrangement, but there seems to be fairly general satisfaction, among researchers and Defense Department officials, with the way things have worked out. Nevertheless, an effort is now under way in the House to place the Antarctic program under what would be called the Richard E. Byrd Antarctic Commission. This would consist of a director, two deputy directors, and an 11-member consulting board of governors, all of which, as things go in the federal government, is a lot of brass for a program that is budgeted for about $27 million a year.

In an apparent effort to take some steam out of this proposal, the administration recently set up a three-member Antarctic Policy Group, consisting of

the Assistant Secretary of Defense for International Security Affairs, John T. McNaughton; the Director of the National Science Foundation, Leland J. Haworth; and the Assistant Secretary of State for International Organization Affairs, Harlan Cleveland. Since OST itself was, in part, established to reduce pressure for a Department of Science, the establishment of the policy group follows a tested course, and at this point there appears to be little likelihood that the proposed commission will receive congressional approval. The bills, introduced by Representatives Craig Hosmer (R–Calif.), John P. Saylor (R–Pa.) and Rogers C. B. Morton (R–Md.), were the subject of recent hearings before a subcommittee of the Committee on Interior and Insular Affairs, and the subcommittee is yet to report to the parent group.

The motivations for congressional interest in tidying up the administration of research are complex, and they vary from case to case. But in general, each case seems to have an underpinning of a congressional desire to know precisely who is in charge of spending the government's research funds, particularly in programs that are sprawled over several government agencies. In addition, since the power and prestige of a congressional committee is closely related to the importance of the activities under its jurisdiction, committees often maneuver to acquire authority over administratively amorphous and burgeoning programs.

On the scientists' side of the issue, the aversion to neat administrative organization probably is a vestige of the scientific community's traditional fear of governmental control. The dangers of such control, it has generally been felt by the leadership of the scientific community, are considerably lessened when government support of science flows through a highly balkanized administrative structure. Whenever the Department of Science proposal, in one form or another, has been raised, the response of scientific leaders has been that the benefits that might be realized from centralized administration of the nation's far-flung research and development programs wouldn't be worth the risks. As things now stand, the organizational chart of federal research agencies resembles the doodles of a very disturbed person, but the virtue of the system is that if the National Science Foundation says no, the Office of Naval Research, or one of half a dozen other agencies, might say yes.

Other manifestations of the scientists' aversion to tightening up the system are the frequent colloquies that take place between congressmen and scientists on the question, What is our national science policy? Congress would understandably like to have a policy spelled out so that it can ascertain whether the policy is being followed. On the other hand, the leadership of the scientific community is generally pleased with the way things have worked out, and sees no merit in saddling the relationship with a master plan. When pressed, at committee hearings, the emissaries of science will usually go no further than to express the view that all talented scientists and promising projects should be supported. The Daddario Committee (*Science*, 30 April) tried to get more specific answers by asking just how much the federal government should spend on science; the response from the scientific community was 15 separate essays, most of which ignored the question.

As for the Antarctic Treaty, it provides a remarkably successful story of international cooperation, especially between American and Soviet researchers. Harlan Cleveland, Assistant Secretary of State for International Affairs, in recent testimony before the House committee considering the Byrd Commission proposal, stated that the treaty "was an innovation without precedent on the world's land surface. . . . Its doctrine is simple: that all nations would have access to Antarctica, as long as that access was for peaceful scientific purposes."

Cleveland pointed out that the treaty, which went into effect in 1961, "was, among other things, history's first nuclear test ban agreement. It authorizes any signatory nation to inspect the activities of all other nations in Antarctica. . . . The nations operating in Antarctica have agreed, for example, to exchange detailed reports about their expeditions. The inspections called for by the treaty have actually been carried through; we have sent inspectors to the installations of a number of our Antarctic partners, including the Soviet Union. And we have opened our own peaceful stations to their scrutiny whenever they care to come."

Referring to the proposed Byrd Commission, Cleveland concluded with the observation, "When Congress finds a Government activity that works as well as the Antarctic program does, it is cause not for reorganization but for rejoicing."—D. S. GREENBERG

Research Facilities: Los Alamos Designated by JCAE as the Site for New $55-Million Accelerator

During the past few years, various regional interests have come forward to stake their claims whenever it became known that the federal government was contemplating the construction of a major research facility. Such was the case with the NASA Electronics Research Center, the Environmental Health Center, and the 200-Gev accelerator now under design at the Lawrence Radiation Laboratory.

The Electronics Center went to Boston after a lengthy row, the Environmental Health Center was cut into three parts to assuage the contenders, and, in an effort to dampen the strife, the National Academy of Sciences has been asked to provide recommendations on a site for the accelerator.

Now and then, however, the regional lookouts fail to detect who has the ball, and the decision on locating a major facility goes through without a squabble. A case in point occurred a few weeks ago when the Joint Committee on Atomic Energy (JCAE) authorized the first steps toward the construction of a $55-million, 800-Mev linear accelerator, also referred to as a meson factory, at the Los Alamos Scientific Laboratory, in New Mexico. The JCAE took the action despite an administration decision not to go ahead with the project at this time, and it is not certain whether Congress will appropriate the requested $3.2 million in design funds or whether the executive will spend the money. But the JCAE generally has its way in atomic energy matters, and the odds are that the machine will be constructed, and constructed at Los Alamos.

Both scientifically and politically, the JCAE decision seems to have ample support. Early last year, after the administration vetoed the high-intensity accelerator proposed by the Midwestern Universities Research Association (*Science*, 31 January 1964) a panel chaired by Hans Bethe, of Cornell, recommended construction of a meson factory and all but came out explicitly for placing it at Los Alamos. The matter was understandably of some interest to Senator Clinton P. Anderson (D–N.M.), who is a member of the Joint Committee on Atomic Energy and

* *AEC Authorizing Legislation, Fiscal Year 1966*, part 1. Available for $2.25 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.