

*vital. How do you define the "best" laboratories, how do you determine this quality? To what extent would you preserve the less than best laboratories?*

Response.—The problem of evaluating the capability and performance of research organizations is a difficult one and perhaps one which can be answered only subjectively, since it is difficult to quantify or "score" such a complex and sophisticated organization as a research laboratory or development center. We believe that the NASA experience confirms what appears to be a widely held view among research administrators, that the basic determinant of strength or weakness is a very fundamental issue of the value and importance of the purposes of the organization, the validity of its objectives to recognize national or social needs and the capability to satisfy these purposes, objectives and needs. It would seem very hard for a research organization to succeed if its basic purposes and motivations seemed unimportant; on the other hand, the research organization which has an important and significant role to fulfill has a very good start in the critical process of building and holding a research competence.

We believe that the buildup of NASA in the years immediately following its formation has many illustrative examples as cases in point. Many of these were cited during the testimony before the Subcommittee on Science, Research and Development of the House Committee on Science and Astronautics. But it can be reiterated that the strong sense of national purpose and the challenge of the new opportunities for space research and development played an incalculable role in attracting a high quality of personnel within our new laboratories and in providing the motivation to reorient capable people into new technical areas. The continuing challenge of the program, plus the spirit of purpose and sense of accomplishment, has resulted in the retention of these talented and highly motivated people to an extraordinary degree. Our research and development centers, as institutions, have thus achieved a high order of effectiveness through the feeling of all of their people that important things were being accomplished and valid national purposes were being served.

As for the preservation of laboratories which are "less-than-best," just as a business executive, faced with declining sales, looks first for ways to improve efficiency and produce products which will be better received, so also the first reaction of the research administrator is usually to re-examine the research objectives and productivity of a laboratory which is faltering, or which is nearing the completion of its initial goals. In each case, the central fact is that the creation of a business or a laboratory is very difficult, time-consuming and expensive, and a manager must think long and hard before he makes any decision to terminate what has been created or to create an entirely new installation. In the case of a research and development organization, there are almost always many research areas, not receiving adequate attention, toward which a lab can be directed. Under the circumstances, the abolishment of a laboratory would probably be undertaken only when, in the judgment of management (and probably an external appraisal as well), the following conditions exist:

1. The initial purpose of the lab has been served, and there is no reasonable extension or continuation of it.

2. There is little likelihood that a reasonably pertinent new role for the laboratory can be found.

3. The abolishment of the laboratory would not leave any important gap in the national capability for performing necessary research or development work.

Finally, if the re-development of a declining lab were attempted and failed, it should probably not be continued. In many cases, consolidation of the most effective parts of a lab which is being abolished with some other research institution is an effective compromise which may save the best of the remaining personnel.

*Question No. 5.—You testified that NASA laboratories do not have to deteriorate and decline, that they have the flexibility to take on new roles and missions, to shift primary emphasis, to retrench. Please illustrate this concept with reference to NASA policies and procedures that affect a NASA laboratory director's discretionary authority to use funds for new research, to reassign personnel, to change the total personnel strength of his laboratory.*

Response.—The testimony given before the Subcommittee on Science, Research and Development of the House Committee on Science and Astronautics gave many examples where NASA organizations have demonstrated the flexibility to take on new roles and missions, shift primary emphasis, or retrench. The answer to question #1, above, discusses the discretion which can be exercised by laboratory directors in the selection and funding of research activity. Several other