ship of patents resulting from federally financed R&D. This issue, bitterly debated in the last session, has not yet arisen in the 90th Congress.

University Physics Budgets Will Be Tightest This Fall

The winter of discontent for university physics will begin during the 1967–68 semesters. Federal-agency physics officers predict that the effect of slackening government support for basic physics research at universities will begin rising to its fullest impact starting in September.

These sources point out that direct federal support for university physics research has increased about 10% per year during the last few years instead of the 15% deemed as the necessary minimum by the Pake committee. Nevertheless a major dislocation in physics anticipated by the committee as a result of such modest support has not occurred. One reason given is that although direct federal support by way of research grants began to level off several years ago, other mechanisms of support have risen more rapidly and have sustained academic physics at nearly the level recommended by the Pake committee. These support channels include NSF traineeship and science development programs as well as NASA and National Defense Education Act traineeships; in the coming year they will also include NSF departmental development grants and the Defense Department project Themis. As a consequence, by means of such support, federal increases for university physics were approximately 14.1% in fiscal 1965, 14.9% in 1966 and 10% in 1967.

In the near future, however, such support must also be expected to level off so that university physics may have a real rather than an anticipated disaster on its hands.

Consequently, there is a sullen mood in Washington among physics program officers, stemming not only from their restricted budgets but more especially from what they consider the sometimes unrealistic attitudes prevailing among scientists and physicists in particular. It won't do any good, they say, to come down to Washington and wring one's hands before Congress to seek a 15% annual increase

in basic physics support rather than one of 10%. "What else in our economy," remarked one program officer, "grows at the rate of 15% or even 10% or 8%?" The real question that the physics community should address itself to, say these officials, is to determine the point at which the growth rate for our discipline should become stabilized, compatible with the growth rate of the overall economy. As another official put it, "We have to give more thought to how much we really need as reflected by the public interest." Then, having made this decision, the community must lay out effective mechanisms for turning the corner without disaster occurring. For surely, they add, the most dire consequences will ensue when support for thousands of graduate students suddenly ebbs and no plans for their scientific wellbeing have been formulated by the community itself.

Scientists Assail Hindsight, Agencies Mull Broader Study

While scientists continue to criticize a Defense Department study (Hindsight) into the cost effectiveness of technology used in weapons systems, federal program officers are considering a similar investigation into basic research. These officials discount any direct relevance the Hindsight study might have to the usefulness of basic research in general. But they propose using Hindsight methods to determine the effectiveness of federally supported research in producing new concepts for basic science itself.

Project Hindsight is a continuing study, headed by Chalmers Sherwin and Col. Raymond Isenson, of recent research and technology contributions to weapons systems. One of its most important and not at all surprising findings is that, in the systems studied, the contributions from research were greatest when the effort was oriented. Or in the words of Isenson, "When there is a useful communication link between the man who has the problem and the man doing research, there is a greater probability that the work will be utilized." Two very stringent limitations are imposed on the study; contributions before World War II are not included nor are the "countless results of research, that although indistinguishable in themselves, contribute to the pool of general knowledge of scientists and engineers from which ideas are drawn." In the near future, the project will undertake a study of this knowledge pool.

In view of these restrictions in selected areas of ordnance, neither the authors of the report nor official Washington know what to make of the hubbub that has arisen over it. "What's all the fuss about?" is the comment one hears. For some interpreters, equating basic with undirected research, have suggested that Hindsight may question some of the many claims of basic research to public utility while several scientists, responding to the attack as if motherhood itself had been impugned, have assailed the report and its interpreters as misleading and myopic.

Close observers of the situation suggest that the Hindsight report was merely exploited as a catalyst in the growing battle between critics and defenders of support for basic research. It is common knowledge that scarcely a week goes by in Washington when a Congressional office or an applied-technology group or a science philosopher does not pick at the foundations of basic research in its relation to the public welfare. And it is just as true, say these observers, that basic research is only heard from when it attempts to raise a counterargument and feels its very existence in jeopardy. "The argument for federal support solely because one is a graduate-student is finished in this country," said one Oak Ridge offical recently. And his colleagues in the Capitol hope that the organizations that speak for research will speak with a louder voice in identifying scientists and their laboratories with the common interest.

The Hindsight study, though scarcely noticed by Congress, has excited the interest of several agencies. Program officers for research, in particular, view the report as a pioneering attempt in one area that might profitably be duplicated for basic research. These officials are now discussing the possibility of performing a cost-effectiveness study of the funds spent for research in a particular subdiscipline.