References

1. P. Gyorgy *et al.*, "How to reach the preschool child," *Proceedings, 6th International Congress of Nutrition, 9–15 August 1963* (Livingstone, London, 1964).
2. M. Autret, *Nutrition of the Pre-School Child: A Consideration of New Approaches.* (U.N. Food and Agriculture Organization, 1964).
3. J. G. Harrar, "Bread and peace," *Chem. Eng. News* **41**, 126 (1963).
4. *The Role of Nutrition in International Programs* (Food and Nutrition Board, National Academy of Sciences–National Research Council, Washington, D.C., July 1961); *Recommendations on Administrative Policies for International Food and Nutrition Programs* (Food and Nutrition Board, National Academy of Sciences–National Research Council, Washington, 1963).
5. C. G. King, "Contributions of Nutrition Research to World Health Problems," *Proceedings, 6th International Congress of Nutrition* (Livingstone, London, 1964).
6. J. W. Gardner, "AID and the Universities," *Education and World Affairs*, 1964 (Carnegie Corporation, New York, 1964).
7. B. R. Sen, Proceedings of the World Food Congress, FAO, Washington, D.C., 4 June 1963, unpublished.
8. "The International Rice Research Institute," in *The Rockefeller Foundation, Annual Report, 1963*, pp. 161–65.
9. *Evaluation of Protein Nutrition*, Publication 711, National Academy of Sciences–National Research Council (Washington, D.C., 1963); *Evaluation of Protein Quality*, Publication 1100, National Academy of Sciences–National Research Council (Washington, D.C., 1963); C. G. King, "Protein malnutrition, a major international problem," *News Report, Nat. Acad. Sci. U.S.* **12**, 87 (1962).
10. "Building on Experience" (Agency for International Development, Washington, D.C., April 1963).

News and Comment

1965: Herewith, a Conversation with the Mythical Grant Swinger, Head of Breakthrough Institute

News and Comment is pleased to open the New Year with an interview with Grant Swinger, director of the Breakthrough Institute.

Q. Dr. Swinger, what is the Breakthrough Institute?

A. It is a research establishment dedicated exclusively to fulfilling the public demand for scientific breakthroughs. We are the shock troops of science.

Q. What breakthroughs have you achieved?

A. It is difficult to say at this point, but we have been able to report to the public and the granting agencies a broad variety of *imminent* breakthroughs. Our U.S.B. program is a good example.

Q. U.S.B.?

A. Utilizable Sonic Boom. The boom problem is delaying the development of a supersonic transport. Other researchers are seeking to eliminate or minimize sonic boom. We have decided that this is impossible. Therefore, we are seeking ways to extract some utility from the booms that these planes would create over our cities.

Q. What utility could there be in sonic boom?

A. We don't know. But perhaps the boom could be employed as a metropolitan area alarm clock system or for detecting weak structures. In any case, we have fully panelized the problem.

Q. Panelized?

A. Yes, we have placed the problem before a panel which has full responsibility for planning a breakthrough.

Q. How was the panel selected?

A. By our Standing Ad Hoc Committee on Panels. It makes all our panel selections, including the recently announced panel on Politico-Scientific Trends in High Energy Physics.

Q. What will be the function of that panel?

A. Quite simply, to plan the next generation of nuclear accelerators.

Q. Hasn't that job been performed recently by another study group?

A. Yes, but that study has been rebuffed in Congress and elsewhere, as might have been foreseen.

Q. How will your study differ?

A. The breakthrough in this regard is only foreseeable; it is not yet imminent. But, in general, we expect to take technical cognizance of the political realities of the problem.

Q. More specifically?

A. We are studying what we refer to as the T.C.L.A., Transcontinental Linear Accelerator. It would commence in Berkeley and terminate in Cambridge and thereby pass through at least 12 states, which means that 24 senators and about 100 congressmen could reasonably be expected to support it.

Q. Would it run in a straight line?

A. From a technical viewpoint this would be preferable, but we are considering the possibility of skirting several congressional districts which went against the administration in the last election. As we see it, there might be a few loops, particularly to take in areas where defense installations are scheduled to be closed.

Q. Is this practical?

A. Technically, perhaps not, but otherwise I would say it is immensely practical. But in case the T.C.L.A. proves too difficult, we are examining the possibility of a vertical linear accelerator at the only point in the country where four states intersect—Colorado, Arizona, Utah, and New Mexico. That could pick up eight senators and 11 congressmen at relatively modest cost. We've run that through the machine and come out with a very attractive bev/dollar/vote analysis.

Q. What are some of the other activities at the Breakthrough Institute?

A. We are deeply involved in a series of nutritional studies and, in fact, have been able to announce several imminent breakthroughs in this area. We are working on a process that would convert any waste product into edible foodstuffs, with virtually all of the original flavor removed. We have encountered some problems in consumer acceptance, but here again we are programming for an imminent breakthrough. We are convinced that people can relearn food preferences.

Q. What else are you doing?

A. We are developing a number of educational devices to expand scientific awareness. For example, we are working on a parlor game called Organ Transplant. We are also preparing a manual for the scientific community called, "As Long as You're Up, Get Me a Grant—A Guide to NIH Administrative Practice." And to assist high school students with the new physics curriculum, we are preparing a recording called, "Music to Study Quantum Mechanics By." It's sung by a

group called The Particles, and a dance team called The Two Neutrinos has worked out a step to it. I might add that I was most pleased the other day when a teacher told me that he had asked a student if he had read Newton's *Principia*, and the student replied, "No, but I've seen the movie." It was one of our educational films.

Q. Are there other activities?

A. Oh yes. We are working on breakthroughs in techniques for teaching rapid reading, and we are pleased to report that we have achieved speeds of 5000 words a minute.

Q. Really? With what degree of comprehension?

A. Well, that's a problem. Actually, we have been unable to achieve any comprehension at such speeds, but the imminence of a breakthrough in this area has attracted a gratifying amount of public attention.

Q. Dr. Swinger, as we go into the New Year what would you say lies ahead in the sciences?

A. We naturally have devoted serious attention to this question, and to obtain a fresh look we subcontracted a study to a group of Wall Street analysts. They report that the New Year can be expected to open on a moderate note, with selected advances in oceanography, molecular biology, and earth sciences. Though some softness will probably prevail in high-energy physics, sizable gains can be expected over the long term. Ground-based astronomy is showing new strength, but its potential is currently clouded by widespread interest in space. Chemistry is likely to come in for new gains, but on a highly selective basis. NIH futures will, in general, show only slight-to-moderate gains. NSF shows promise of rapidly advancing to new highs. NASA may have to retreat before heavy pressures, but the losses here are likely to be of a moderate nature. Fellowship and traineeship futures look particularly bright.

Q. Thank you, Dr. Swinger.

—D. S. GREENBERG

Education: Case for Federal Aid, Comprehensive Planning Discussed as Costs and Enrollment Rise

Trends in American education are usually closely linked to events which affect the society at large. The response to the launching of the first sputnik in 1957—emphasis on science, mathematics, and foreign languages in the schools and on all these and engineering in higher education—provides a clear example of the linkage.

In the years before sputnik, American public education had been struggling with the effects of the postwar baby boom. School authorities had been trying to build enough classrooms and to train, hire, and keep the teachers needed to do the job.

Since sputnik, the wheel has taken a new turn and another set of problems has come to the top. The results of school segregation, *de jure* in the South and *de facto* in the North, were finally being faced. And the recession of 1960–61 turned the spotlight on the technologically unemployed—the undereducated and unskilled, both young and old. For the schools, the new focus of concern became the "disadvantaged" child. It can fairly be said that that forlorn figure, the high-school dropout, played a starring role in the process which led to an extensive revision and expansion of vocational education programs in 1963 and the passage of the President's Poverty program.

Shifts in Attention

The shift in public attention from one set of problems to another does not mean that the earlier problems have been solved. The case is, rather, that the problems, like Hegel's dialectic, thesis-antithesis-synthesis, just keep rolling along. But another phase seems to be opening, and this might be called a search for an effective way to make national policy to deal with the problems, both quantitative and qualitative, which afflict American education.

In limited terms, this has meant a new consideration of federal aid, of how much and what kind there should be. This consideration is being forced by the pressures of enrollment in both the schools and the institutions of higher education, and by the growing difficulty the states and local school districts encounter in finding adequate revenues to support expansion and improvement. It is also being encouraged by the passage of an unprecedented number of important education bills in the last Congress.

In the two decades since the war, attempts to pass federal legislation to provide general aid to schools have resulted in several near misses. But objections on the grounds of states rights (segregation), the threat of federal control, and, particularly, the church-state issue have always blocked the door to general aid.

One example of this new serious look at federal aid is provided by the most recent report of the Educational Policies Commission, an advisory committee appointed by the National Education Association and the American Association of School Administrators, the grand army of organized education in the United States and the subgroup which traditionally has provided its marshals. The Educational Policies Commission, which includes both professional educators and distinguished laymen among its members, does not speak officially for either organization and has often advocated policies at variance with those of its sponsors. But its reports have often anticipated later developments and usually reflect topical concerns.

In general, education organizations have favored federal aid in the form of general support funds to be administered locally for locally determined purposes, rather than "categorical" aid limited to specific uses (for example, the teaching of science, math, and foreign languages under the National Defense Education Act).

This year the Educational Policies Commission, in its report "Educational Responsibilities of the Federal Government," says that passage of general aid legislation is unlikely and advises educators to "consider what alternatives are available."

According to the commission, "The most obvious alternative is to improve the dispensing of specific aids. This is not ideal educational policy, but democracy advances through willingness to adapt to present realities, without prejudice to the long-range pursuit of ideals. Moreover, the achievement of specific aids has proved politically feasible. In view of the failure of the Congress to establish general nationwide federal aid to education, and in view of the actual existence of a number of categorical aids, we recommend that educational leadership devote immediate and detailed attention to the improvement and spread of categorical aids, in order to obtain, to the extent possible, the values previously sought through general aid."

Another straw in the wind is a publication titled "Is Education the Business of the Federal Government," called a preliminary study for the Governors' Conference and presented last June at the Governors' meeting in Cleveland. The report carried no recommendations and required no action. It simply provided background on past proposals for federal aid programs, described