EDUCATION

Education Costs High

The National Science Foundation believes $50 billion must be spent on science education in the next ten years. Then doctor' degrees in science and engineering would double.

➤ THE NATIONAL Science Foundation has slapped a $50 billion price tag on this country's ideal rate of top-quality scientific growth during the next decade.

If the Foundation has its way, 1970 will find the United States spending nearly triple the amount it now spends annually for science training, engineering training and basic research at colleges and universities.

Progressive annual cost rises would bring the annual tab of $8.2 billion by fiscal 1970, compared with the $3 billion acquired from all sources and spent in fiscal 1961.

The number of graduates getting doctor's degrees in science and engineering would double by 1970. There were 6,600 in 1960.

The Government's share of the burden was not forecast. NSF officials explained that since no figures are yet available on how much the Government spends for science education alone, no ten-year projection was possible. The Government, however, footed two-thirds of the $900,000,000 bill for basic research in the fiscal year that ended June 30.

The long-range goal "is not going to happen unless we make a very determined effort to carry it out," said Dr. Richard Bolt, the Foundation's associate director for research. Unless the funds are forthcoming, "either the numbers (of trained United States scientists) will drop, or the quality will drop, or both. . . . We must find a way of staying and keeping ahead."

Not mentioned in the Foundation's newly published report, "Investing in Scientific Progress," is the scientific rivalry between the U.S. and the Soviet Union. But NSF spokesmen said their belief is that if the U.S. advances at the proper rate, it will automatically regain world eminence and be "ready to meet all contenders," including Russia and an "exploding" China.

Also stressed was the Foundation's thesis that their report is not an attempt to induce more persons to become scientists. The idea is to encourage existing trends and make sure that training facilities are available for the predicted reservoir of interested talent.

About 645,000 college students are now enrolled for science and engineering degrees. The probable 1970 total is 1,130,000.

The key sentence in the report, said Dr. Bolt, is this: "Every young person who shows the desire and the capacity to become a scientist should be ensured the opportunity to do so."

A major point made is that while U.S. population will increase by 20,000,000 in the next ten years, total world population is expected to grow by 420,000,000. Since the U.S. cannot compete in terms of sheer numbers of new scientists, the emphasis must be on quality training within population limitations.

Fulfilling our science potential can be done without draining top talent from other professions, the Foundation believes. There is enough talent to meet all expected demands. The percentage of young people graduated from college has been doubling every 18 years. This trend is expected to continue for some time.

To keep the science and engineering population growing in both quality and numbers, laboratories, equipments and teaching staffs must be greatly expanded.

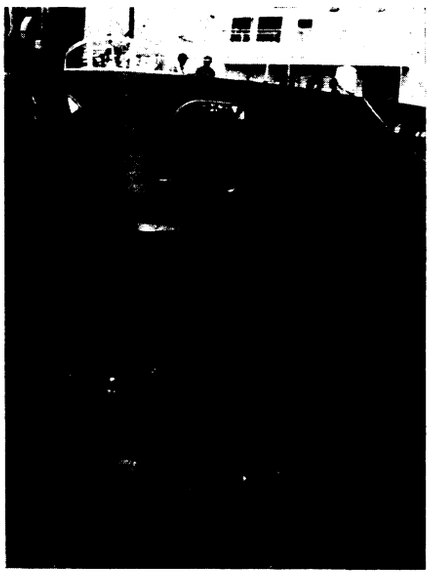
Professional staffs at colleges and universities should grow from the present 100,000 to 175,000 by 1970, with salaries increasing from $800,000,000 to $2.1 billion. Investments in staff facilities should go from $150,000,000 to $350,000,000.

Dr. Bolt said the report was a first try at an "overall quantitative interpretation" of the cost of needed science education, is "aimed at a very wide audience," and will serve as "a framework for continuing studies."

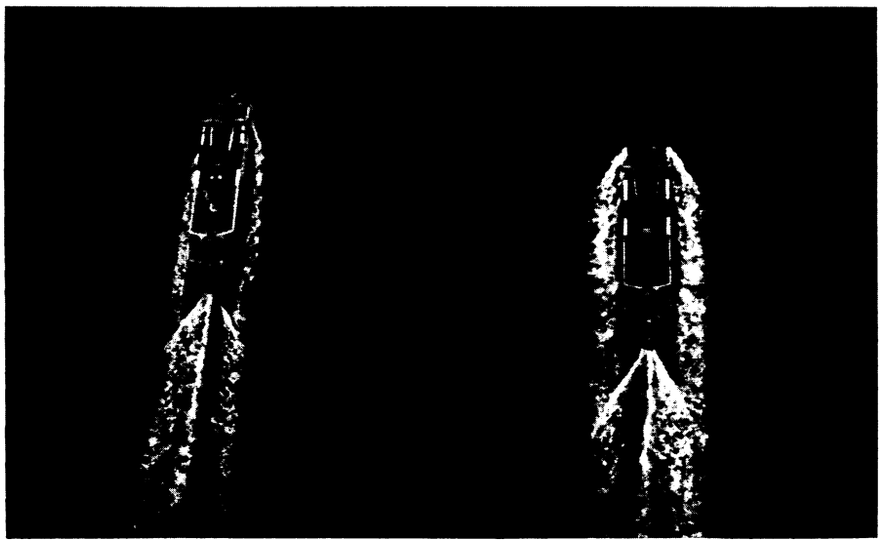
In a letter to Dr. Alan T. Waterman, NSF director, President Kennedy said the report "makes a valuable contribution in helping to relate the nation's requirements for the support of scientific research and education to our intellectual potential."

Copies of "Investing in Scientific Progress" can be obtained without charge from the National Science Foundation, 1951 Constitution Avenue, N. W., Washington 25, D. C.

• Science News Letter, 80:55 July 22, 1961



BULB-SHAPED BOW



JAPANESE BOW DESIGN CUTS WAVE

ENGINEERING

Ship Design From Japan Helps Lessen Bow Wave

➤ A BOW DESIGN that considerably reduces the wave created when a ship cuts through the water has been developed.

Prof. Takao Inui of Tokyo University has designed a bulb-shaped bow that lessens the bow waves, increasing the speed and efficiency of a ship. The bow wave interferes with the ship's movement by becoming entangled in the ship's wake.

During test runs in Osaka Bay, a big bow wave rolled from a conventionally designed ship, while a smaller wave was produced from a ship with the bulb-shaped bow. Both ships were traveling at the same speed during that time.

Dome-shaped bows have been tried on ships before, but tend to hamper a ship in rough weather. The Japanese "wave suppressor," nearly ten feet long, is much larger than most previously used.

• Science News Letter, 80:55 July 22, 1961