

ELECTRONICS

Amplify Electric Current

By having an electron gun shoot a beam at a small diamond chip it is possible to produce electric currents several hundred times as large as the original.

See Front Cover

► AN electric current shot at a diamond chip has been amplified, or strengthened, as much as 500 times by a new method developed in the Bell Telephone Laboratories, the American Physical Society was told in New York by Dr. K. G. McKay of that research center.

He described the discovery as a radically new method of controlling the flow and amplification of an electric current, one that may have far-reaching influence on the future of electronics. It is not expected to replace existing electronic techniques but rather to supplement them.

The method is based on the discovery that when beams of electrons are shot at an insulator, in this case a diamond chip, electric currents are produced in the insulator which may be several hundred times as large as the current in the original electron beam. The apparatus is shown being inspected by Dr. McKay on the cover of this week's SCIENCE NEWS LETTER.

The diamond chips used are what are called saw-cuts, obtained from a natural diamond in shaping it for a gem. They are roughly the size of a small snow-

flake. Before they are used for this electrical process, they are coated with very thin films of gold, applied by the evaporation method, to afford electrical connections.

Methods of amplifying currents in gas or vacuum tubes have been known for 35 years, Dr. McKay stated. But this has never been done previously in solids. The process is somewhat similar, he said, to the technique of translating the energy of light into electricity by the well-known photo-electric cell.

The experiments reported by him stemmed directly from previous Bell Laboratory research in which current was induced in diamonds by bombarding them with alpha particles. These are relatively heavy, positively charged bits of matter shot off by radioactive substances. The findings were verified in other laboratories, particularly at the National Bureau of Standards. The development promises a new and improved laboratory tool for detecting and counting alpha particles. The National Bureau of Standards has already announced that diamonds might be used to replace the Geiger counter, the standard instrument to detect radioactivity discharges.

Science News Letter, February 7, 1948

GENERAL SCIENCE

New Drive for Foundation

This bill, which may finally assure federal support for science, will soon be introduced to Congress. Plan measure to overcome President's former objections.

► A THIRD drive to give the U. S. a long-delayed National Science Foundation is quietly under way. The bill which may finally bring civilian control to federal support of science is expected to be introduced soon.

The new measure is being planned to overcome the objections raised by President Truman when he killed, via pocket veto last August, a National Science Foundation Bill passed by the first session of the 80th Congress. Sen. H. Alexander Smith, R., N. J., leader of the group supporting the vetoed bill, will in-

troduce the new version in the Senate, while Rep. Charles A. Wolverton, R., N. J., and chairman of the House Committee on Interstate and Foreign Commerce, may introduce the same bill simultaneously in the House.

One Science Foundation bill has already been referred to Rep. Wolverton's committee. This bill, which answers at least one of the President's veto objections, was introduced a few weeks ago by Rep. J. Percy Priest, D., Tenn., but it is not expected to get out of the committee.

The National Science Foundation is a bit of postwar business which has been accumulating an ironic history since the end of hostilities. Before the war ended, scientists and others recognized that federal support of science, which played a big role in victory, should be continued in peace. The wartime Office of Scientific Research and Development, it was generally agreed, would be succeeded by a National Science Foundation.

The first bill to establish the foundation passed the Senate in the 79th Congress, but did not get to the floor of the House. Last year's Science Foundation Act got to the White House before being killed. But everyone remains convinced that the foundation is necessary. No one has opposed it. The question has been and continues to be one of setting up an organization satisfactory to the President, Congress and scientists.

The Administration's budget for the coming fiscal year includes \$15,000,000 for the as-yet-unauthorized foundation.

"I hope that the Congress in this session will pass a bill for this purpose (National Science Foundation) in keeping with the principles of responsible and efficient administration," the Chief Executive declared in his budget message.

Support of scientists for the foundation is united in the Inter-Society Committee for a National Science Foundation, a unique organization representing scientific and educational organizations. Pres. Edmund E. Day of Cornell University is chairman of the group's executive committee. Vice-Chairman is Dr. Harlow Shapley, director of the Harvard College Observatory and past president of the American Association for the Advancement of Science, while Dr. Dael Wolffe of the American Psychological Association is secretary-treasurer and Washington representative.

The Inter-Society Committee is an impressive and unique lobby with the sole function of pressing for a National Science Foundation. They are hopeful that the fight for the foundation may be nearing an end.

If the new bill coming before Congress is brought to a vote, it is unlikely anyone will want to vote against science. And if this measure represents an improvement in the eyes of the Administration, it can become law.

Despite the Marshall Plan, inflation and taxes, the second session of the 80th Congress may be remembered in future years as the one which started the National Science Foundation.

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