

## PHYSICS

# Atom Smasher Obsolete

Competition in the race for bigger and better atom smashers has resulted in a controversy over the Atomic Energy Commission's projected 12.5 Bev proton synchrotron.

► THE ATOMIC Energy Commission's biggest atom smasher, a 12.5 billion electron volt proton synchrotron to be built at Argonne National Laboratory near Chicago, will be obsolete before it is finished in 1962.

This is the considered opinion of many of the country's top experts in high-energy nuclear physics. They think the AEC is making a mistake to build such a machine at this time.

The decision to do so was made at the very highest level within the AEC. Back of the go-ahead signal is a long history of disagreement between two scientific groups, the scientists at Argonne and those of MURA, or Midwestern Universities Research Association organized by 15 Midwestern universities to promote research on high-energy accelerators.

The MURA scientists are working on the third model of a radically new kind of atom smasher, capable of producing effective energies of hundreds of billions of electron volts, far in excess of any other machines now planned. They are using computers extensively to help them determine the feasibility of this idea, and their work is supported by both the AEC and the National Science Foundation.

The idea behind the super atom smasher is to hurl two atomic beams at each other, instead of the single beam crashing into a stationary target as in present machines. Suggested name for such a machine is "synchroclash," also known as the intersecting beam accelerator.

Scientists build atom smashers with higher and higher energies to create and study new nuclear particles, as well as to examine in greater detail the reactions of those already known. Man-made machines are now beginning to duplicate the lowest part of the cosmic rays' energy range.

Russia, with a 10,000,000 electron volt machine, now leads the world in producing

the highest energy particles. Some scientists charge that the main reason for deciding to build the 12.5 Bev machine at Argonne was to outdo the U.S.S.R. Since only \$1,500,000 of the estimated \$27,000,000 the new U.S. accelerator will cost has been made available for initial design work, they believe the AEC should admit its mistake and not build it. By the time the machine is finished, two other, considerably more powerful atom smashers will be in operation. One is the alternating gradient synchrotron, under construction at AEC's Brookhaven National Laboratory, Upton, Long Island, N. Y., and the other a similar machine being built in Geneva by the European Organization for Nuclear Research, or CERN.

Both these accelerators, which will be about one-half mile in circumference, will have energies in the 25 to 30 billion electron volt range.

The Russians have revealed plans for building an accelerator to reach 50 billion electron volts, or Bev, also on the same principle, but it is not known whether or not construction has started.

Also in dispute is the location of the proposed MURA accelerator, if and when it is approved. The MURA scientists want to construct it near the University of Wisconsin, but the AEC contends this would cause needless duplication of facilities already available at Argonne.

MURA members are the Universities of Chicago, Illinois, Indiana, Iowa State College, State University of Iowa, Kansas, Michigan State, Michigan, Minnesota, Northwestern, Notre Dame, Ohio State, Purdue, Washington University at St. Louis, and Wisconsin. Dr. H. R. Crane, physics professor at the University of Michigan, is president of MURA.

Science News Letter, December 28, 1957

make much more money in other fields of medicine. Those interviewed felt there is a financial burden placed on competent people who decide to enter or to stay in the research field.

The hardest men to find, apparently, are the creators. There are too few men in the world who have full backgrounds in several sciences and can come up with so-called cockeyed ideas, rather than orthodox ideas.

"Orthodox ideas lead to nothing," one researcher replied to the survey.

Science News Letter, December 28, 1957



*ATLAS GOES UP—The U. S. Air Force successfully launched its Atlas missile at Cape Canaveral, Fla., on Dec. 17. It reportedly attained an altitude of 80 miles and covered a distance of more than 600 miles.*

## TECHNOLOGY

## Twisted Antenna Means Increased Signal Power

See Front Cover

► A TWIST in antenna design has enabled engineers to increase the capacity of the parallel-rod antenna for amplifying radio and television signals.

The photograph on the cover of this week's SCIENCE NEWS LETTER shows a precise ten-foot long model of a full size antenna. By twisting the parallel rods about its supporting axis the antenna's length and power "gain" are increased.

Dr. D. K. Reynolds of Seattle University's electrical engineering department developed the technique in collaboration with the Stanford Research Institute, Calif.

Science News Letter, December 28, 1957

## MANPOWER

# Research Brains Scarce

► BRAINS have now become more scarce than money in the field of medical research, a nationwide survey of leading researchers, sponsored by Merck & Co., has shown.

The survey also revealed, not surprisingly, that the great need now is for basic research. Most of the scientists held the public partly responsible for the present situation because the public approves the spending of millions of dollars to "cure cancer" but becomes disinterested about money to study cell physiology, which may or may not lead to a cure for anything.

"There's no distinction in the public's

mind, between pumping a well handle and looking for a new well," one scientist said.

Other important factors brought out were that the abundance of new research funds was drawing topnotch people away from teaching. Medical schools occasionally turn down grants because it costs too much to accept them. Researchers have to be trained, and space, services and overhead have to be supplied.

The main need now is for men, not money, many of the scientists agreed. Low pay is the most critical factor affecting the shortage. Many of the researchers could