PHYSICS

U. S. Plans Mile-Wide Atom-Smashing Machine

➤ THE UNITED STATES is planning to build a 200-billion-electron-volt atom smasher, requiring a giant steel ring of magnets a mile in diameter, Dr. Lloyd Smith, theoretical physicist of the University of California Lawrence Radiation Laboratory, Berkeley. Calif., reported.

Dr. Smith provided the first glimpse at the concept of a super-atom smasher now under study at Berkeley. Building the giant was recommended by a national panel of U. S. scientists last spring.

The scientist said the main accelerator would have some 600 to 700 magnets, forming a ring three feet square in cross section. About 20,000 tons of steel would go into the magnets. To absorb radiation produced, 30 feet of earth would cover the ring.

In the heart of the ring would be a three-by-six vacuum tube, a nuclear freeway over which protons, the nuclei of hydrogen atoms, would race to 200 billion electron volts (Bev).

The enormous energy of protons emerging from the machine would require that they have a flight path a mile long. Along this path magnet switching yards would be placed to sort and guide particles to detectors.

Before protons entered the huge accelerator, they would have to be started up in a smaller machine. Dr. Smith said one way would be to build a "baby" version of the big machine, with an energy of about five Bev. Another idea is to build the most powerful proton linear accelerator ever constructed, and put it inside the giant ring.

Some 150 megawatts of power would be needed for the accelerator and its experimental equipment.

"We hope the machine will help clarify present puzzles about the ultimate structure of matter," Dr. Smith said. "It should help establish simple laws to describe nuclear forces and provide knowledge necessary for better use of those forces."

Dr. Smith presented the preliminary picture of the machine in a paper prepared for delivery at the meeting of the 1963 International Conference on High Energy Accelerators at the Joint Institute for Nuclear Research in Dubna, about 60 miles from Moscow.

• Science News Letter, 84:143 Aug. 31, 1963

Do You Know?

Time and its reciprocal, frequency, can be measured with greater precision than any other physical quantity.

The meteoroid *paraglider* is a technique for obtaining direct information on small particles of matter in space.

Persons with allergic *reactions* to insect stings are advised to avoid wearing bright jewelry, leather and certain odors that attract stinging insects.

• Science News Letter, 84:143 Aug. 31, 1963