

PHYSICS

Super Atom Smasher

Apparatus in planning stage will hurl atom hearts at each other at energies 200 times the highest now available. Name proposed is "synchroclash."

► A SUPER ATOM SMASHER to hurl hearts of hydrogen atoms at each other with energies nearly 200 times the highest now available is in the planning stage.

Bigger and more powerful machines to speed up the elementary particles of which atoms are made were a top topic at informal sessions among scientists attending a nuclear physics conference at the University of Rochester in Rochester, N. Y.

Suggested name for the proposed accelerator is the "synchroclash." It would actually be two machines whose atomic bullets smack head on into each other, instead of the single beam crashing into a stationary target of present machines. This could give protons energies of 1,000 billion electron volts or more.

Plans for such a super atom smasher are being studied by Midwestern Universities Research Association, composed of 20 universities.

Particle accelerators now under construction or planned have about reached the upper size limit, and scientists are being forced to use "tricks" to reach higher energies.

One trick is to use a very complicated

magnetic field, known as alternate gradient, for focusing speeding particles. The higher the energy, the closer a particle is to the speed of light, limiting velocity according to Einstein's theory of relativity.

The three Russians attending the Sixth Annual Conference on High Energy Nuclear Physics revealed Soviet plans for building an accelerator to reach 50 billion electron volts, or 50 BEV, using this principle.

CERN, a joint enterprise of 12 European nations, and Brookhaven National Laboratory on Long Island are now building atom smashers that will operate at 25 billion electron volts, also using the alternate gradient idea.

The newest trick is to smash one bunch of high velocity particles into another group of speeding atomic fragments, as in the synchroclash. And if two atom smashers, each accelerating protons to 15 billion electron volts were built and a bunch of hydrogen hearts from one were aimed at the other, the resulting collisions would equal 1,000 billion volts in energy. An accelerator operating now reaches the highest energy in the University of California bevatron with a top energy of six billion electron

volts. The first authentic example of anti-matter, the anti-proton, was discovered in this machine last fall.

Russian scientists expect to have a 10 billion volt machine operating within a year.

Scientists build atom smashers with higher and higher energies to create and study new particles, as well as to examine in more detail those already known to science.

Cosmic rays, atomic radiation continually smashing into the earth's outer atmosphere, result from the most powerful accelerator known — but whether from the sun, from other stars, from our Milky Way galaxy or from the universe itself is still to be determined.

Man-made machines are now beginning to duplicate the lowest part of cosmic rays' energy range.

Other particles of anti-matter will probably be discovered as the new U. S. and Russian accelerators now being built start operation.

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PUBLIC HEALTH

Clear Washington of Alcoholic Reputation

► THE NATION'S capital is cleared of any alcoholic reputation it has had by a study by Mark Keller and Vera Efron of the Yale University Center of Alcohol Studies.

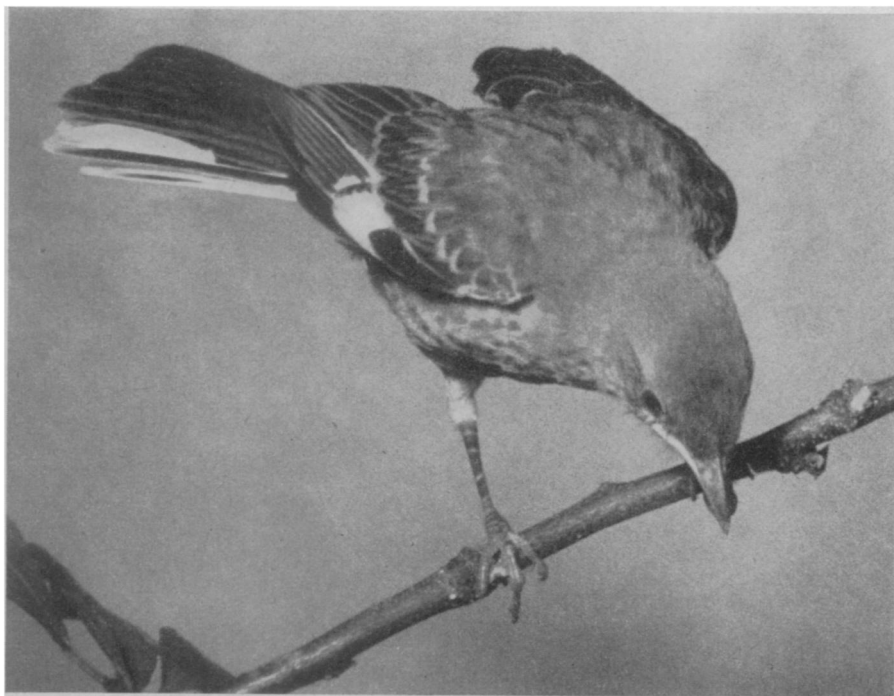
San Francisco had the highest alcoholism rate of all U. S. cities for the year studied, 1950. Its rate was 16,760 alcoholics per 100,000 population over age 20. By contrast, Washington and the District of Columbia which are coextensive had less than half that rate, 7,040 per 100,000 population over age 20. This is about the same as the rates for Chicago, Philadelphia and Pittsburgh and very little more than the approximately 6,000 per 100,000 rates for the much smaller cities of Pasadena, Calif., Utica, N. Y., and Little Rock, Ark.

Lowest alcoholism rate for the nation's 12 largest cities was Baltimore's of 5,120. New York had a rate of 6,200.

Whatever there is about city life that goes with alcoholism, it does not seem to be population density, the scientists point out in their report to the Quarterly Journal of Studies on Alcohol. For example, cities with between 100,000 and 200,000 population such as Wilmington, Del., or Sacramento, Calif., show much higher rates of alcoholism than a metropolis of millions, such as Chicago or New York.

Some states with many large cities, such as Massachusetts and Pennsylvania, have a number of large cities with alcoholism rates that are not much different from or even smaller than the rates of the less urban parts of the states. Big city rates in general, however, tend to have a higher rate than do the less urban parts of the states in which they are located.

Akron, Ohio, where Alcoholics Anonymous was founded, has a rate very little



MOVING NORTH—The mockingbird, whose song once charmed only the Southland, has been gradually spreading out toward the north. It is now reported as far north as Maine, Quebec and Newfoundland.