

a dozen avionics manufacturers to crash-produce a design for a collision avoidance system.

The team recently came up with a results and for lack of competition it could conceivably get somewhere toward production. But it is, as predicted, complex—each plane must carry a precision atomic clock, expensive and bulky. And even if it advances without a hitch, the system will probably not see use until 1971, by which time the traffic problem will have gotten much worse. So the sparrows are still out in the cold.

In the next five years or so, however, the coming of several new superplanes could give the eagles problems right up there with the sparrows. The ATA's collision avoidance system, for example, would give a 60-second warning to planes approaching too near to one another. But the supersonic transport will travel 30 miles in that time. Thus, the FAA plans to give the SST its own routes, and has already decided that SST's on similar routes should always be going in the same direction at the same time (SN: 4/8).

But just imagine what will happen when the gigantic barnliners—the Boeing 747 and the Lockheed L-500—come along. The harrowing possibility is a headline says, 500 DIE IN MIDAIR COLLISION. ♦

ACCELERATORS PROLIFERATE

The Japanese Join In

The world's largest particle accelerator, the machine that goads protons to energies of 33 billion electron volts at Brookhaven National Laboratory, will soon be surpassed by a 70 Bev instrument at Serpukhov that the Russians hope will send its first experimental beam no later than Oct. 1.

Also in the works is the much-debated 200 Bev accelerator planned for Weston, Ill., and a 300 Bev machine to be built by a group of European countries organized along the lines of CERN, the European Council for Nuclear Research, which already operates the world's second most powerful accelerator, 28 Bev.

Now the Japanese Government has approved construction of a 40 Bev machine, also an alternating gradient synchrotron for protons, and is in the process of site selection. This energy level was selected, apparently, because it is higher than the 33 Bev Brookhaven machine, and because financial, as well as space restrictions made it impossible to build a machine besting the 70 Bev in energy.

Japan's current draft budget calls for

\$1.39 million for design studies, picking a location and building models of the proposed 40 Bev machine. The total cost is expected to run to \$80 million with an operating cost of some \$14 million a year.

The Japanese accelerator will be 404 meters (a quarter-mile) in diameter, with the particle beam confined by 128 magnets whose exact shape is now being designed.

About 10 locations are being investigated.

Meanwhile, as Britain deliberates its association with CERN on the 300 Bev (see page 137), the U.S. 200 Bev is nearing another crisis.

The refusal of the Illinois legislature this year to enact open housing legislation has endangered the location of the giant machine at Weston, the site selected by the Atomic Energy Commission.

Senator John O. Pastore (D-R.I.), chairman of the Joint Congressional Committee on Atomic Energy, was defeated both by the Committee and by the Senate in his effort to have the \$7.3 million design and engineering money for the 200 Bev deleted from the AEC authorization (SN: 7/15).

But because of the increasing importance of civil rights questions in the

nation and the continued tight budgets imposed by the war in Vietnam, the question will continue to come up. The handwriting may already be on the wall; science is losing some of its partisans.

Sen. Pastore called the 200 Bev "an educational gadget for the physicists" and The New York Times said, editorially, the accelerator is an "interesting but unnecessary scientific luxury" when the nation "is engaged in a bloody war in Vietnam; the streets of its cities are swept by riots borne of anger over racial and economic inequities; millions of Americans lack proper housing, adequate medical care and essential educational opportunity."

It was in the shadow of these shifts that the House of Representatives opened the debate last week, and approved appropriation of the funds to do the engineering and design on the 200 Bev allowed in the authorization bill. Without the funds, the authorization is meaningless. And even though the appropriation survived the objections of civil rights advocates—backed by proponents of sites in other states in the House—Sen. Pastore has every intention of reopening the question when the appropriation comes before the Senate this week. ♦



Villain and victims—a brown rat surveys baby chicks he has killed.

RATS

After 50 Million Years, a Respite for Rodents

Rats had been around this world for about 50 million years when what were to be men first swung down from the trees.

Since then, both rats and men have

flourished—the rats mostly at man's expense—until today there are roughly 3.3 billion of each. Of those, around 200 million people and 90 million rats live in the United States. Each Ameri-