—protons struck against a suitable target will make neutrinos, and FermiLab is the most energetic neutrino laboratory in the world. The neutrino line ends at the 15-foot bubble chamber. The purpose of a bubble chamber is to render visible the tracks of particles that may be produced or deviated in an interaction between particles. Neutrinos interact very weakly and therefore seldom with other matter. The large volume of the chamber means that more neutrino interactions can be seen and that they can be seen more completely.

The meson line ends in a building that might be taken for a small factory. Half a dozen or more experiments share its floor. The experiments are long—some of them stick out the back of the building. They are cramped together and interleaved. Often, says a staff member, only the experts (that is, those who put the stuff there) know which experiment a given piece belongs to.

The equipment for tracking these very-high-energy particles has to be large—interlaced arrays of hodoscopes taller than a human being, spark chambers the size of a truck, Cerenkov counters in a box the size of a small room, huge pieces of shielding.

Question: Where do old battleships go when it's time for them to fade away? Answer: FermiLab, where they bury them. A long time ago physicists discovered that the armor plate from warships was an excellent radiation shield. Other laboratories took bits and pieces. FermiLab takes whole ships.

The electronics that it takes to operate, record and compute these experiments truly boggle the mind. Shelf on shelf, it fills Portakamp trailers all over the place. Most of it has to be put together *ad hoc*.

The proton area does not have a single large building. It is a labyrinth of underground passageways and pits, and if one didn't have a guide that knew the place, one would desperately wish for Ariadne's ball of string. In one of its experiments is a relic: A magnet that was part of Enrico Fermi's cyclotron when he was working toward the first nuclear bomb is used as a beam analyzer. It seems very fitting—and it shows

Oh, give me a home where the proton beams roam
A Prairie Within the Proton Ring

The corn is not green at FermiLab in early October; it is brown. The ears stand heavy on the stalks. No one seems to know why the farmer who rents the land hasn't harvested his crop.

The scene at this laboratory that boasts the absolute latest in particle-physics equipment is often extremely bucolic. The combination of old-time Illinois flatland rurality and the newest 20th-century science can be incongruous at moments. If the laboratory should need a really long neutral-particle beam line, says Richard A. Carrigan, one of the staff, it would run right through the cornfield. Until then the farmer rents and plants. Other neighboring farmers rent other pieces of FermiLab land for cropping and grazing.

Scottish Highlanders peacefully graze.

Meanwhile the laboratory itself is getting into the livestock business in a serious way. It started with the famous herd of bison, which we have mentioned before. Lately the laboratory has been given a herd of Scottish Highland cattle. They come from Mr. and Mrs. James Bannister of St. Charles, Ill., for whom the herd was growing too large. They look a little strange to one used to Jerseys, Holsteins or Aberdeen-Angus. The Highlanders are long-horned shaggy beasts with physical resemblances to bison and musk oxen. They are a hardy breed, and it may prove possible to winter them on the range in regions too far north for the usual kinds of American beef cattle to stand the cold.

FermiLab also has a flock of deer inhabiting its woods, who sometimes take breakfast with the bison. There is a flock of quail and a couple of swans, who inhabit a pond appropriately titled Swan Lake. "People hear you're doing this, and they give you things," says a staff member.

All of this leads the mind to wonder what the landscape looked like even before the 19th-century introduction of European style husbandry—the primeval Illinois prairie. There is precious little of it left, and that thought leads to a unique use for the otherwise fallow land in the center of the main accelerator ring: FermiLab plans to establish it as a restored piece of prairie. Robert Betz, professor of biology at Northeastern Illinois University, and Ray Schulenberg, a naturalist at the Morton Arboretum, are advisers to the project.

The main ring is about four miles in circumference and encompasses about a square mile of land. It could thus comfortably encircle many a small town. At the moment a 10-acre section has been plowed and prepared for the first planting, which will take place next spring. Gradually the area of authentic prairie flora will be extended until the whole plot is covered, and the prairie is able to reseed itself. One of the things that makes the main-ring territory ideal for prairie reconstruction is that it is surrounded by water, the channel that brings cooling water to the accelerator's magnets, so that it can be safely burned off now and then. Periodic fires are an important element in prairie ecology. They are a severe natural selector that winnows out the true prairie mix of species.

On three autumn weekends 125 volunteers recruited from FermiLab and surrounding communities by the lab's Prairie Restoration Committee scoured the highways and byways for seeds for the project. The appropriate plants still exist, mostly in marginal areas where the plow never went, such as the edges of the railroad tracks or in carefully preserved patches such as a 10-acre tract in the Morton Arboretum. One hundred and fifty pounds of grass seed and miscellaneous amounts of flowering species are needed to start the project, and many more will be needed in succeeding years. It will take about a decade to fully set the prairie up.

Appropriate prairie fauna will also be introduced, starting with insects and working up possibly to the bison. There are, however, no plans for teepees or covered wagons. Disneyland it isn't, though visitors are expected and welcome. Many come now on Sunday to see the animals.

—Dietrick E. Thomsen