## ANNUAL MEETING OF THE USERS ORGANIZATION

Charles Ankenbrandt

The Annual Meeting of the Fermilab Users Organization took place May 2 in the Fermilab auditorium. John Rutherfoord, chairman of the Users Executive Committee, opened the meeting by welcoming the users and reporting recent activities of the Executive Committee. He then introduced Norman Ramsey, President of Universities Research Association, who commented on the organization of URA and its relationship to Fermilab. He encouraged users to communicate with the Trustees and the Area Secretaries of URA.

J. D. Bjorken of Fermilab then spoke on the provocative topic, "A Review of the Physics of the 80's from the Perspective of the 90's." He began by reviewing the 70's, examining in particular how well a theorist could have foreseen the developments of that decade. He then reviewed the accelerators expected to start up in the 80's and how they might contribute to the "standard physics scenario," speculating that the nature of W, Z, $\nu_\tau$, bottom and top quarks, and Higgs particles will have been elucidated and issues such as jets, the $Q^2$ dependence of $\alpha_s$, the elementarity of quarks and leptons, the gauge structure of the electroweak interactions, and quantum chromodynamics will have been clarified by 1990. He then speculated on discoveries that might alter the standard scenario. He described many ways that Fermilab can contribute to the development of our understanding of particle physics in the next decade, concluding that the Tevatron will be the foundation of dynamic and vigorous colliding-beam and fixed-target programs in 1990.

The Woods Hole Committee, charged by the Department of Energy with recommending the course of United States high-energy physics efforts for the next several years, was meeting simultaneously at Fermilab. To provide input for their deliberations, a panel of users discussed the relationship of Fermilab's present program and future prospects to the national program. Panelists were Dino Goulianos, Bob Diebold, Wit Busza, Al Erwin, Stan Wojcicki, Frank Sciulli, John Rutherfoord, Henry Frisch, Bob McCarthy, Carl Akerlof, Jerry Rosen, Larry Jones, and George Brandenburg. Users in the audience also joined the discussion. Dominant themes of the discussion were as follows:

> Fermilab's present fixed-target program needs additional support. Because of leverage, increasing the funding by 10-15% would greatly improve the program.
>
> The present 400-GeV and future 1000-GeV fixed-target programs support the research efforts of a very large number of experimenters. The smaller size and quicker time scale of fixed-target experiments

vis-a-vis colliding-beam experiments are well matched to the requirements and resources of university high-energy physics groups.

The afternoon program was devoted to reviews of the present status and future plans of the Tevatron. Rich Orr led off the program by describing the status of the Energy Saver. They are making five magnets a week, having fixed the so-called vertical-plane problem wherein the dipoles were rotating in the cryostats on successive warm-ups and cool-downs. A 90-GeV beam of $1.7\times10^{13}$ protons per pulse has been transported through a string of superconducting magnets in A sector without inducing a quench. The central helium liquefier has made liquid during a successful test run.

Donald Young described the status of antiproton source development. Argonne National Laboratory, Lawrence Berkeley Laboratory, the Institute for Nuclear Physics at Novosibirsk, and the University of Wisconsin are collaborating with Fermilab on this project. The scenario for producing antiproton-proton collisions at 1000 GeV includes the following steps:

1) Accelerate protons to 80 GeV in the Main Ring,
2) Coalesce this beam longitudinally to approximately one Booster circumference by rf gymnastics,
3) Target the protons on a liquid-metal target,
4) Transport a 4.5-GeV antiproton beam having relatively small transverse emittance but large momentum spread to a new precooler ring,
5) Stochastically cool, bunch, decelerate, and debunch the beam several times in the Precooler,
6) Transfer at 200 MeV to a ring where electron cooling and accumulation of $10^{11}$ antiprotons takes place,
7) Reaccelerate the antiprotons via the Precooler and the Main Ring to the Tevatron. Young reported successful initial tests of stochastic cooling in the cooling ring.

Alvin Tollestrup discussed the Colliding Beam Detector plans. His talk touched on schedules, on a new scheme for producing low $\beta$ (small beam size) at the interaction region, on the design of the experimental hall, on the configuration of the detector, and on the accuracy of reconstructing events. Physicists from Argonne, Caltech, Chicago, Illinois, Purdue, Wisconsin, Pisa/Frascati, and Tsukuba/KEK are collaborating with Fermilab on this project.

John Peoples reported recent and forthcoming improvements to experimental areas. He described several improvements in each of the three areas to be completed by the end of 1981. Other developments include improvements to the control systems in the areas, enhancements to the CYBER system, and the merging of PREP and Data Acquisition Systems under Jeff Appel as Associate Head of the Computer Department. Providing in-house maintenance of PDP-11's is under serious consideration. Finally, Peoples described

the evolution of plans for experimental-area improvements for Tevatron II, the 1000-GeV fixed-target program.

Next on the agenda, Charles Brown talked about the early Tevatron program. A Tevatron II Design Report was completed just before the Users Meeting; users' input is solicited at a summer study to be held at Fermilab July 25-August 8. Brown reviewed plans for extraction from the accelerator and for the three experimental areas. Readers are encouraged to consult the Design Report for details.

As in the biblical story of the marriage feast at Cana, the planners of the meeting saved the best for last. Leon Lederman talked about Tevatron Physics and the Future. He stated the near-term priorities of the Laboratory as:

1) The Energy Saver,
2) The transition fixed-target program based on the Main Ring,
3) Tevatron II, i.e., the fixed-target program based on the 1-TeV Ring, and
4) Tevatron I, i.e., antiproton-proton colliding beams at 2 TeV.

The present goal of the Laboratory is to preserve a vigorous fixed-target program while continuing to build for the future. Through 1983 the Laboratory will rely on fixed-target physics, because the collider facility will not be ready until then. Further in the future, prospects for electron-proton collisions (with an electron ring provided by the Canadians) and for a site-filler ring of about 5 TeV were discussed.

The thrust of the entire Users meeting was that Fermilab is pressing toward the future, improving its facilities to continue serving as a premier center for national and international high-energy physics research.