FERMILAB INDUSTRIAL AFFILIATES ANNUAL MEETING

Dick Carrigan

The third annual meeting of the Fermilab Industrial Affiliates took place May 19 and 20. The annual meeting provides an opportunity for research directors and senior technical personnel from the Affiliates and other companies to visit Fermilab. This year's meeting focused on super-computers, the large control systems at the Laboratory, and the other technologies of the Energy Saver/Doubler.

The Fermilab Industrial Affiliates was established by Leon Lederman in 1980 in order to improve university-industry research communications and to foster technology transfer from Fermilab. By now the Affiliates number more than 30 institutions including many research-oriented companies in the Fortune 500 list as well as several companies formed by Fermilab staff members and users. Roughly half of them are in Illinois.

Direct activities of the Affiliates include visits of company representatives to Fermilab and Fermilab personnel to Affiliates. The annual meeting is one of the principal opportunities for such visits. Affiliates also receive selected Fermilab reports and other information about on-going work at the Laboratory.

Specific technology innovations are only one facet of the work of the Laboratory that is emphasized. The "scientific culture" related to particle physics is given heavy weight as well as the long range potential of activities such as the development of superconductivity technology. The participation of more than a hundred universities in all phases of the Laboratory is also important to Affiliate members.

Often, an Affiliate's interests in the Laboratory is hard to gauge. One major farm equipment manufacturer turned out to be one of the heaviest users of large computers in the United States.

This year's participation numbered 85 from outside Fermilab. There were 41 representatives from 16 Affiliate companies as well as 16 representatives from other companies. Representatives of the U.S. Department of Energy, the State of Illinois, and the Valley Industrial Association as well as the **Tribune, Sun Times,** and **Scientific American** also participated.

The highlight of the meeting was a Round Table on super-computer developments in the universities. The Round Table grew out of the establishment of an advanced computer program at Fermilab headed by Tom Nash. That program has studied the possible approaches to super-computers over the last year. An active seminar series brought in many university and industrial

Participants in the Round Table on Super-Computers (left to right) include Jack Schwartz, David Wallace, and Ken Wilson.
(Photograph by Fermilab Photo Unit)

speakers. At the same time, there has been growing national recognition that the U.S. must continue to play a role in the development of very powerful computers in the force of determined foreign competition.

The Round Table was spearheaded by Dr. Ken Wilson of Cornell, the 1982 Nobel Prize winner in physics. He emphasized that universities were good prospective buyers for the first model of a computer. They can do prototype software development and undergraduates do not mind the problems associated with getting the bugs out.

Other participants besides Wilson and Nash included Dr. Burton Smith of Denelcor, the moderator and token industrialist, Dr. Arvind of MIT, Dr. Norman Christ of Columbia, Dr. Jack Schwartz of NYU, and Dr. David Wallace of Edinburgh.

In summing up the Round Table, Burt Smith asked where super-computers would be by the year 2000. Most responses ranged in the region of 1000 to 10,000 times the present power but one distinguished participant stated that it was impossible to make

an overestimate and guessed at a factor of a hundred trillion. A brochure is now being prepared on the Round Table and should be available later in the summer.

Tours and exhibits were important facets of the meeting. A comprehensive tour of the accelerator control system was arranged by Dixon Bogert with the good offices of Bob Mau. Tour leaders included Jim Zagel, Dave Beechy, Lee Chapman, Kevin Cahill, Charles Briegel, Mike Shea, Bob Goodwin, and Tom Groves. In the afternoon the Affiliates visited the Magnet Facility and Experiment #605 in the Meson Area with Paul Mantsch, Gene Fisk, Steve Smith, and Henry Glass serving as hosts.

A special set of exhibits was set up on the second floor crossover to give the participants an opportunity to see and work "person-sized" technology developed at Fermilab. Some of these exhibits featured the Laboratory's expertise in the superconducting technology area such as laminar tooling, carbon resistor thermometry, and fast acting valves and oxygen monitors. Others were controls oriented: Fastbus components, the Linac control system, and a special high speed modular processor. A number of exhibits illustrated the diversity of the technology at Fermilab--silicon diodes, a current shunt, and a special precision drill developed by the Physics Section.

Other talks included a stirring banquet address by Robert Pry, Vice Chairman for Technology at Gould, calling for a concerted attack by industry and government on basic education. Dr. James Decker of DOE explained the government's role in technology transfer while Dr. Mel Schwartz of Digital Pathways described the realities of starting a new electronic company.

Fermilab Industrial Affiliates view "person-sized" technology exhibits.

(Photograph by Fermilab Photo Unit)

On Thursday afternoon Dixon Bogert, Claus Rode, and Al McInturff summarized examples of Energy Saver/Doubler technology. The silicon strip development of particle detectors was reviewed by Dr. Bill Reay of Ohio State. Al Brenner expounded on large scale computers and the Fastbus data transfer system.

Jonathan Schonfeld explained some of the applications of particle theory while Dr. Frank Hendrickson of Rush Medical College illustrated the interesting results obtained with the Fermilab Neutron Therapy Facility.

Perhaps most interesting of all, Dick Lundy explored the technology required for a 20 trillion electron volt accelerator twenty times the size of the Doubler, the so-called Desertron. The need for mass production and heavy industrial participation was emphasized.

Affiliate participants were uniformly pleased with the meeting. The wide spectrum of Affiliate interests emphasized the need to report on new Fermilab technology. Often others can see valuable ways to exploit a device developed for a very particular need.