



SUMMER STUDENTS DISCUSS MANY THINGS

College science majors working at Fermilab this summer have strong opinions about what is required to motivate students' interest in science.

Nine of the 18 visiting students said in a round table discussion that much of the stigma of science as a foreboding occupation could be removed by teachers at the elementary school level. These teachers should sense the times when students need help in mathematics, for example, and extend themselves in a one-to-one way. Or, these teachers should use motivating techniques such as rewards for accomplishment, to keep students' interest alive while they learn the basics of math. The students in this group who have had this experience are quick to point out that it was an important motivating factor in allowing them to develop an interest in science-related subjects.

They recognize also that the teachers themselves were perhaps poorly prepared in their own education, pointing up the need for a revamp of the basic methods of teaching mathematics. The students fortunate enough to break the vicious circle have continued in subjects for which math is an important tool.

Some students still shied away from physics, however, as a subject too remote for the average student. Again, it was the personal contacts in college -- from fellow students, from professors -- which introduced them to physics. Now, they recognize that it is "abstract," "hard to grasp," but "rewarding and challenging." "It isn't as hard as they say," seems to be their reaction.

Participating in the discussion were Carolyn Alexander of Southern University; Aaron Daye of North Carolina A & T University; Gwendolyn Dixon of Southern University; Linda Flores of New Mexico Highlands University; Milton Harrison, Virginia State College; Rosemary Lara, New Mexico State University; Henry Mulvaney, University of Texas, El Paso; Cassandra D. Owens, Virginia State College; Judy Young, A & T State University.

They are members of the sixth group of students from colleges and universities in southern United States chosen by Fermilab to work here for the summer in a continuing program to encourage minority participation in physics. The students have jobs at the Laboratory and also attend special lectures and participate in other enrichment programs.

Exposure to the routines of a national laboratory have produced some immediate observations from the students: "I thought there would be something happening every minute; now I see that it takes weeks and months to analyze data from experiments"...Another feels that she has learned more about

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...SUMMER VISITORS...



...Rosemary Lara,
Technical Services...



...Samuel Hetherington,
Physics Department...



...Carolyn Alexander,
Meson Department...



...Tom Ratliff, Cassandra
Owens, Computer Group...

SUMMER STUDENTS (Continued)

computer techniques since coming to Fermilab than from a Fortran IV course she took last semester...Another, "I saw right away how much I don't know."

The students are enthused about the recent discoveries in high energy physics which appear to have revealed many new particles and new phenomena in the nucleus of the atom. Most of them find the situation "stimulating," although one student who says she is "set in her ways," says "It's depressing; I was used to the old proton-electron structure, and now that seems to be all gone." However, another student who has been interested in physics since the seventh grade, has this to say, "I'll always be trying to close the loop in physics, but hoping I never do, hoping it's an infinite loop. I would hate to hand my children a package of knowledge saying 'Here it is, that's all there is.' Physics is a learning experience."

Students on campuses now are "more intellectual" than were students ten years ago, the visitors feel. "We've grown up," one says. The majority feels that heavy demonstrating and rioting is "dying out." At the same time, they think that something was accomplished by the activist students of the 1960's. One observes, "That is why people listen to us now. The 1960's showed adults that kids were thinking for themselves; they knew how they wanted to live and exist among other people. It wasn't the children's way of living that was wrong, but the parents' way of teaching -- don't touch her, she's not like you -- kids didn't want this any more. There had to be some violent way to let them know so they'd understand we don't want to be like that."

And what will they leave to the next generation? "More power for young adults"... "I'd just like people to have more open minds." Two students speak fondly of their campus, where "everyone helps everyone else."... "People realize now that you can't achieve by demonstration. There has to be a right way of doing things. If you want to change the system, it has to be a gradual change. Students realize this." This student, with six older brothers and three sisters who have graduated from college before him, observes, "It's important to learn how to get along with people; no matter what your degree is you've got to know how to get along."

The students approve elected representatives in the Congress deciding how public funds for research should be allocated. They are aware that the interests of one scientific group, for example, might influence decisions on such allocations. But, elected officials are "responsible to the people" and would do the best job, they feel.

All of the students in the discussion group plan to complete at least master's level graduate study; five look forward to a doctorate. Two of the women will teach; one is headed for medicine as a career. One woman student feels she is "too quiet to compete with men. I'm going to have to pull myself out of it or most men won't listen to me."

In addition to the group mentioned above, also working at Fermilab this summer are: Freda Gibbs of Indiana University, now in the Meson Department; Samuel Hetherington, Alabama A & M University, Fermilab's Physics Department; Melvin Jones, Norfolk State University, Fermilab's Research Services Department; Marshall Joy, Northern Arizona University, Fermilab's Accelerator Division; Joe Prieto, New Mexico State University, Superconductor Group; Tom Ratliff, Jackson State University, Computer Department; Paul Ruffin, Alabama A & M University, Radiation Physics Group; Gerald Sigers, Jackson State University, Accelerator Support Group; and Catherine Taylor, Virginia State College, Physics Department.



... (Left Photo) Catherine Taylor, Physics Department... (Right Photo) Judy Young, Superconducting Group...



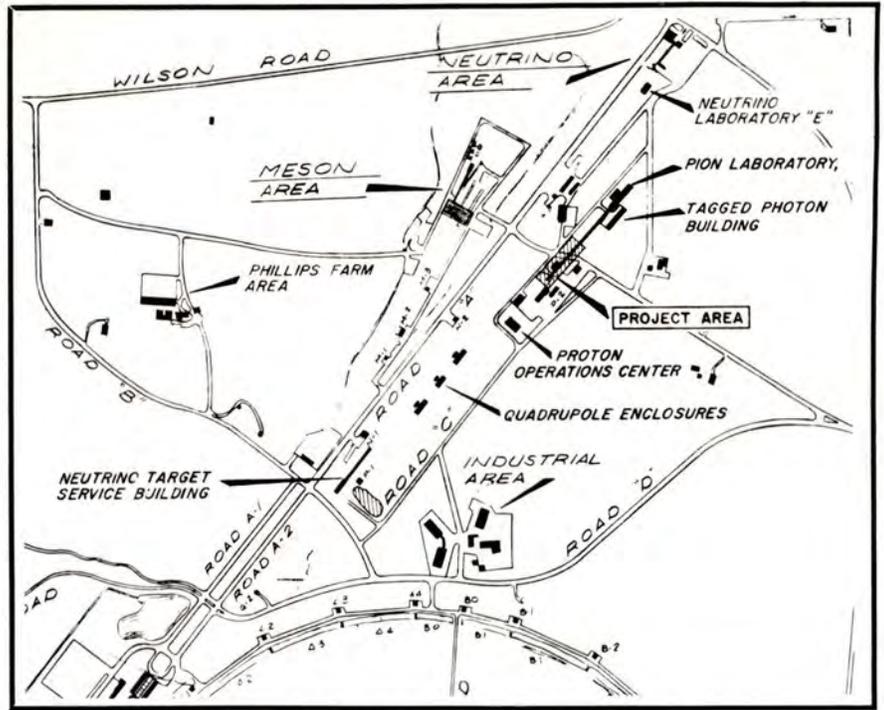
... (Left Photo) Roger Harris (L), Milton Harrison, Physics Department... (Right Photo) Paul Ruffin, Physics Department...

PROTON AREA EXPANDS

The Proton Experimental Area broke ground last week for a major addition to the experimental facilities there. Known as the "Pion Area," the new facility will be situated downstream of the existing Proton West experimental area. It will provide Fermilab with a major capability for experimentation with pion and anti-proton beams of intensities and of energies available at no other laboratory, and with an electron beam with excellent spot size, intensity, and purity at energies far above that available at electron machines.

According to Brad Cox, head of the Proton Area, Phase I of the construction will see completion in June of 1977 of the farthest end of the new laboratory to the middle; Phase II will include the targetting station, the portion adjacent to P-West. More than 50 superconducting magnets will be built for the line, similar to those being developed for the Energy Doubler.

The new area will receive particles of 500-1000 BeV and with intensities as high as 10^{14} protons per pulse at 500 BeV. In response to the growing experimental interest, it will be possible in the new area to study low cross sections which produce rare effects and particles such as the psi family.



...Major addition planned for Proton Area...



...Breaking ground for Pion Area: (L-R) R. Wilson, J. McCook, J. Peoples, E. Goldwasser, B. Cox, and D. Jovanovic...

CALL FOR AUDITORIUM COMMITTEE VOLUNTEERS

The Auditorium Committee at Fermilab is responsible for the live programs in the evening Auditorium Series. The committee selects, publicizes, and executes these events. These programs are receiving increasing interest and have more than filled the Auditorium for several of recent attractions.

Present members of the Auditorium Committee are: Janice Roberts, chairwoman; Jeff App associate chairman; and Frank Ascolese, Denise Augustine, Tom Collins, Saundra Cox, Joyce Curry, Larry Jackson, Jose Poces, Arthur Roberts, Robert Trendler, and Jane Wilson.

In order to make it possible for more of the interested Laboratory staff members to participate in this activity, Dr. Wilson has suggested that a list of volunteers be formed which can be drawn on in the future. People interested in participating in any of the work of the committee are asked to send a note to Richard Carrigan, CL-4E, expressing their interest.

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CORRECTED ITEM FROM JUNE 17 CRIER

Recently TIAA-CREF announced a new policy relative to withdrawal of funds from CREF individual supplemental retirement annuity contracts. Those employees currently enrolled in this voluntary program should have received a bulletin from TIAA-CREF at your home. Briefly, the new policy allows the individual to make a partial cash withdrawal of no less than \$1,000 every six months.

If you would like further information contact the Employee Benefits Office, Ext. 3395.

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...NALREC is sponsoring a trip to Ravinia, Wednesday, July 21. The program that night will feature Pete Seeger and Arlo Guthrie. Tickets at \$7.50 include bus transportation and light refreshments on the bus. Call Don Sorenson, Ext. 3087, or Barb Schluchter, Ext. 3199, for tickets.

...CO-ED TEAMS are being formed for volleyball league play. Games will be played at the Village Barn at 5 p.m. Interested people should contact Susan Calwell, Ext. 3126.

...THERE IS STILL time to sign up for the billiards tournament at the Users Center. Call Susan Calwell, Ext. 3126 to register.

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...GOLFERS: It is time again for the Fermi Golf League Mid-season Tournament. Where: Fox Valley Country Club, Route 25, 3 miles south of Batavia. When: Sunday, July 18, first tee-off at 10:30 a.m. Entry fee of \$8.00 includes green fees and prize money. Sign up will be held on Friday, July 2, starting at 11:30 a.m., in the Auditorium lobby. Or contact one of the following: Bud Stanley, Ext. 3862; Ellery Cook, Ext. 4420; Hugh Christ, Ext. 3483; or Bill Bielefeldt, Ext. 3534. EVERYONE WELCOME.

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CLASSIFIED ADS

VOLUNTEERS wanted to weed prairie plot on Eola Rd. June 26, 9 a.m.

WANTED - Ride until July 15 to/from downtown Naperville. Will share expenses. X3749/355-5812.

FOR SALE - 1974 Honda 450, 2,900 mi., luggage rack, \$1100 or offer. 232-7655 after 5:30 p.m.

FOR SALE - 1971 Honda CB 750, racing cam, pistons & valve, experienced riders only. \$1200. 896-1736 after 8 p.m.

FOR SALE - Slide projector, Sawyer w/brand new DAK500 bulb, \$20. or offer. J. Weiss, Ext. 3910 or 690-9879.

WANTED - Small camper for rent. H. Kluberg, Ext. 3666.

FOR SALE - Port. typewriter, \$25; dinette set, \$60; hide-a-bed, \$75; hedge trimmer, \$15; 1/3 hp electric motor, \$5. D. Mendenhall, Ext. 3724, 896-9308.

FOR SALE - Two L78-15 steel-belt voyageur tires w/wheels \$25 ea. Two new 15" white wheels for 8" tire \$70/pr. All fit econoline van 5 lug. Two child's desks w/chairs \$10. ea. Bob Trendler, Ext. 3084, 968-0516.