

Chart Beam Properties

by Michael Shea

The National Accelerator Laboratory's first on-line, computer-controlled measurements of accelerated beam properties were achieved on April 24, 1969, only one week after the pre-accelerator was put into operation.

In the last issue of the Village Crier the first stage (or pre-accelerator) of the NAL accelerator was described, together with a description of its initial operation. Since that time some of the characteristics of the beam of protons from the pre-accelerator have been measured using equipment and techniques developed at the Laboratory.

Space Charge Force

An ideal beam of protons would be a small diameter stream of particles traveling in a direction which is exactly parallel to the axis of the beam. The stream of protons, however, contains only positively charged particles and since positive charges repel one another, the protons experience a force from their neighbors which cause them to diverge from the axis of the stream. This force within the beam itself is called the space charge force. Other factors, such as the conditions of the arc in the ion source, also af-

fect the direction of the particles so this ideal beam cannot be achieved in actual practice.

The angles which the protons make with the axis at various positions across the diameter of the beam determine a characteristic which is called the beam quality (or emittance). The quality can be measured by moving a slit across the diameter of the beam and detecting the transmitted beam on very narrow (8/1000 inch) strips which determine the angles in which the protons are traveling when they pass through the slit.

Variables Displayed

In order to make the measurement accurately and quickly the position of the slit and the amount of beam detected by each strip is read directly into a digital computer. The computer actually controls the position of the slit, stores and analyzes the data, and prepares a display, on a television screen of the emittance measured and the other pertinent variables. Photographs of these television displays are shown in the accompanying pictures.

It is expected that this technique can be used at several places along the NAL 200 MeV

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100 Physicists Join Aspen Summer Study

About one hundred of the leading high-energy physicists in the country will take part in the second NAL Summer Study. The Summer Study will be held from June 9 to August 2 at the Aspen Center for Physics in Aspen, Colorado. About ten of these physicists are staff members of NAL. The rest represent universities and other laboratories throughout the United States.

Describing the Summer Study, A. Lincoln Read, Associate Head of the Experimental Facilities Section, said, "The purposes of the Study are two-fold: (1) To bring the best brains to bear in developing new ideas for research facilities, research equipment, and experiments at NAL; (2) To involve prospective NAL users from all over the country in planning NAL experimental areas."

NAL Use Widespread

National Accelerator Laboratory is being built for use by the entire physics community, and it is planned that approximately three-quarters of the research time on the accelerator will be used by visitors from outside the Laboratory staff.

Read explained the part played by the Aspen work in our design, saying, "The ideas generated at the Summer Study will be investigated and developed further by NAL's staff after the study and will make a large contribution to development of excellent research facilities of NAL."

A similar Summer Study was held last year in Aspen. About eighty high-energy physicists attended from universities and laboratories throughout the United States and two European research centers. Just as in this year's Summer Study, an effort was made to select people with as many as possible of the experimental disciplines that will be used in the future operation of the 200 BeV accelerator.

Details Studied

Subgroups at the 1968 program studied the use of a very large bubble chamber at NAL, the design and use of secondary beams, and the great variety of detectors that might be used at NAL, together with the relationship of these topics to the planning and layout of experimental areas.

Each participant wrote a report on the work he did during his stay. These reports have been collected and edited by Arthur Roberts of the Experimental Facilities section and are being issued as a three-volume set. The first two volumes are now out and the third will be ready soon.

Study "Great Help"

Commenting on the Summer Studies, Edwin Goldwasser, Deputy Director of NAL, said, "Last year's Summer Study was a great help in the design of the experimental areas. From it and the subsequent hard work of NAL people, we have developed much better and more definitive plans.

This year's Summer Study will be of great value in more detailed design of the experimental areas."

NAL Appeal: Save Our Trees, Cut Vandalism

Dr. Wilson's Appeal . . .

Contrary to what many of us thought when we first came to these corn fields, there is a real potential for beauty here. We need to conserve and use every tree, every bush, every patch of grass, and every body of water that we have.

I feel strongly about this and, believe me, anyone who thoughtlessly damages any of the natural attributes of our site is going to have a hard time with me.

If we do preserve what we have, and add to it, and create with imagination, then the site can become a joy to behold—a source of pride for all of us. I would like to hear more suggestions about how we can beautify our land.

Robert Rathban Wilson

Efforts to reduce vandalism and to preserve the natural beauty and natural resources of the National Accelerator Laboratory site have been reviewed by NAL officials.

Their actions have included an appeal to employees, contractors, visitors and others to be routinely conscious of the continuing need for a pro-conservationist awareness of the desire to make the Laboratory area one of the most attractive research and development centers in the world.

In addition, employees also have been asked to be alert to the Laboratory's desire to minimize vandalism on the 6,800-acre site in DuPage and Kane counties. Several incidents involving natural resources and buildings on the acreage have been reported in recent weeks.

Policy Statement

It was noted that several months ago a policy statement on natural resource utilization at NAL was issued. The statement said, in part:

"The National Accelerator Laboratory is pursuing a firm conservationist path in all of its relationships with nature and natural resources. Considerable study effort has been spent in developing a national resources utilization plan that will satisfy the operation requirements at the Laboratory and will adhere to depletion and pollution standards considerably more stringent than current laws stipulate."

The statement went on to say: "Nature may be bountiful, but it is not unlimited. The costs of conservation must be accepted as a new increase in the normal costs of doing business."

The text of NAL Director Robert R. Wilson's view of the urgent need for preservation and creation of natural beauty on the laboratory site is published above.

Permanent Patrol

Donald K. Poillon, NAL's Business Manager, reported that several steps have been taken to minimize vandalism on the site, which was turned over by the State of Illinois to the U.S. Atomic Energy Commission last April 10. A continuing, permanent patrol

by NAL-supervised guards is being made of vacated farms as well as of the NAL construction site and the NAL Village. Barricades have been erected to limit entry to the NAL Village during off-hours. Most of the roads entering the NAL site eventually will be closed in non-work periods. In addition, Poillon said, the DuPage and Kane County sheriffs' police forces patrol the NAL site.

Poillon especially noted two recent incidents:

1. An out-of-state contractor was discovered by Glen Lee, of the Linac group's engineering staff, in the act of transporting walnut trees that had been cut down in the forested area just northeast of where the Linac enclosure is under construction. About 19 sections, each 10 feet long, of walnut, which is now quite valuable wood, were involved. James Sullivan, of the Contract Administration staff, assisted in identifying the men involved in the vandalism. Because the trees on the site, like the buildings and equipment, are United States Government property, the Laboratory informed the Federal Bureau of Investigation about the incident and an investigation is underway. This incident occurred on March 23, 1969.

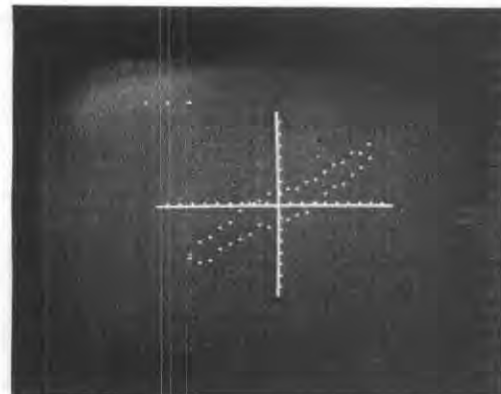
2. A house-moving contractor's workmen cut off three limbs from a stately box elder tree so that they could more freely move a house down Feldott Road, on the NAL site. The tree is still standing, but its major limbs have been sawn off and its natural beauty has been totally destroyed, says Ivan Alten, chief planner for DUSAF's architectural staff. This incident occurred during mid-May, 1969.

"It especially is unfortunate that this box elder became the victim of unqualified tree surgeons," said Alten. He explained that the tree had been included in the DUSAF master plan for the NAL site because it was such a natural landmark. For example, plans had been developed to locate an employee cafeteria across Feldott Road from the tree just

Continued Page 4

BEAM EMITTANCE DISPLAY NO. 1		
* SLIT: INITIAL POSITION	2.5	CH
PRESENT POSITION	2.46	CH
STEP SIZE	0.25	CH
* BEAM CURRENT: PRESENT	42.06	MA
ACCEPTABLE	40.0	MA
TOLERANCE	10	%
* BEAM PULSES: TOTAL NO.	29	
NO. ACCEPTED	21	
* THRESHOLD: NO. 1	10	
NO. 2	20	
NO. 3	40	
LEVEL NO. 1: PHASE AREA	17.88	MRCHA
BEAM	99	%
LEVEL NO. 2: PHASE AREA	14.63	MRCHA
BEAM	92	%
LEVEL NO. 3: PHASE AREA	10.63	MRCHA
BEAM	75	%
* PLOT=1, PRINT=2	1	
* RUN=1, RECAL=2, STOP=3	2	
* HISTOGRAM NO.	12	

Computer-generated display showing numerical results of NAL beam measurements



Graph of the NAL pre-accelerator beam quality



Linac's Glenn Lee surveys walnut trees cut down without need or authorization.



Robert Hines looks over "the back 40"

Meet 'Farmer Bob' Hines

by Helen Severance

Much has been written about the heritage of the Laboratory site. The local libraries, historical museums and societies contain material dating back to the early 1800's—the Potawatomi Indians who first settled near the "Big Woods," the early white settlers, information on the nearby towns and farmlands inhabited by former and present residents.

What legacy will NAL leave for those who come to the area in another hundred years? Will the 200 BeV Accelerator, or a 500 BeV Accelerator, for which there is room for expansion, be as obsolete as the Indian arrowheads are today? Could these 6,800 acres be within the city limits of Chicago—possibly the only vestige of rural living in this area? The possibilities of projection into the future are limitless for anyone interested in "playing the game."

Two Goals for NAL

Although the NAL goal is to create a new center of technical and scientific excellence, an equally important goal is to preserve and perpetuate as much as possible of the area's natural resources.

One of the men responsible for carrying out the Laboratory's plans for preserving the natural resources of the Laboratory site is Robert L. Hines, NAL's Farm Manager, a former resident of Iowa, having received a Bachelor of Science Degree in Animal Science and an associate degree in Pre-Veterinary Medicine. With a background of twenty years in agricultural sales, a competitor in the judging of livestock and meat, winner of many blue ribbons at State and County Fairs all over the country for prize hereford, angus and shorthorn cattle, including several Grand Champions, Bob brings a true conservationist attitude to his position.

Site Plans

The existing fences around the individual former farms on the NAL site will be removed. Many of the farm homes may be preserved for possible use as campus-associated housing. Farm areas will be seeded, with a limited amount of machine-mowing (possibly a herd of angus or herefords, or even buffalo, doing what comes naturally!) Except for several necessary access roads, there are no plans for expressway-type highways to commercialize the area. Water catchment lakes, streams and reservoirs will be plentiful on the site. Some thought has been given to using a portion of the land for a model farm.

The former Village of Weston may sometime be used as a residential area for Laboratory visitors—a neighborhood-type com-

plex consisting of individual homes surrounding a beautiful lake with groves of trees and other landscaping to complement the village (honestly, no attempt is being made to duplicate the original "Big Woods.")

A nursery, to build up and maintain the overall landscaping, will be a long-term, perpetuating program to insure that the area will be maintained in a natural, park-like atmosphere. Planting around the Accelerator's Main Ring and the other scientific structures will blend into the existing landscape.

Historical Displays

NAL hopes to have an historical display of past and present memorabilia, probably housed in one of the beautiful large barns on the site. The southwestern corner of the land might provide a recreation area, including picnic areas and a large lake (possibly encompassing 50 acres) for summer and winter sports. If the Midwest will provide the snow, there may be a ski slope for the hardier "sports."

An interesting project now in the planning process for the summer of '69 is a Farmstead Day Camp for urban, suburban and rural young people to join in mind and skill-building activities. Although gardening on ten acres is the primary concern of this program, film-making, birdhouse-building, creek-wading and meadowbaseball, plant-naming, and bonfire-singing are also on the schedule. It may well be that this group of youngsters, with a "back-to-nature" concept, will take the first step toward creating the attitude Bob Hines is seeking to establish as a conservation criterion for the Laboratory.

Two-Fold Legacy

The preserving and improving of the presently-productive land will be a fitting legacy for NAL personnel to leave for future generations, along with the knowledge that the scientific progress the Laboratory will surely generate will be productive in improving men's minds, in creating new ideas and in producing knowledge for many generations to come.

Bob Hines, farm manager, reports that 50 garden plots in the Village have been allocated to employees for their agrarian interests. The plots are 25 feet by 50 feet, have been plowed and are ready for planting.

The plots were gone within three days' time after their availability had been announced.

Hines said that most of the part-time gardeners plan to raise tomatoes, beans, squash, etc. Adjacent to each plot, he said, there are 12 rows of sweet corn which will be given free of charge to whoever has the lease on each plot.

DUSAF: Mother Nature

DUSAF's civil engineers have been spending considerable time studying and developing a plan for utilizing the natural resources that will satisfy the requirements of the Laboratory. This development plan will adhere to depletion and pollution standards which will be more stringent than the current laws stipulate.

Water Conservation

The biggest demand on mother nature will be water for cooling of the large number of electromagnets which will be required for the Laboratory operation. Fox River water now appears to be the most logical source for satisfying this need. Pursuant to the National Accelerator Laboratory's firm conservationist path, DUSAF engineers have designed a series of catchment basins which will collect on-site runoff waters as a supplementary source for supplying industrial cooling and fire water supply. Each catchment basin will have overflow facilities capable of handling major flood flows.

Waste Water Conservation

Deminerization facilities are planned to clean up the industrial waste waters, giving up water only through cooling evaporation and process losses. By using this method of treating industrial waste there can be no polluting surrounding rivers or streams.

On-Site Wells

On-site shallow wells may be the most suitable supply of potable water to meet the needs for human consumption, light laboratory use, cafeteria facilities, sanitary facilities and irrigation. Wells drilled into the shallow aquifers could produce sufficient supplies for years to come without danger of depletion, and without effect on off-site water supplies.

In developing the site, much thought went into locating the road systems, utility buildings and corridors and drainage ponds, so that the natural beauty of the landscape would be preserved.

"Mother nature is bountiful, but she is not unlimited." With this axiom in mind, the plan for the 6,800-acre accelerator site has been developed.

DUSAF Personals

Congratulations are in order to Mr. & Mrs. Samuel Akeredolu (Electrical) on the birth of a son, Olufemi Daniel Akeredolu, born May 17, 1969, weighing 8 lbs. 2

Chart Beam at NAL

(Continued from Page 1)

linear accelerator, although some modifications must be made for the higher energies. Such measurements will assist in diagnosing unusual behavior of previous accelerator sections and in determining settings for focusing magnets for subsequent parts of the system. It is important to be able to acquire the data quickly and automatically so that it can be used without materially interrupting the overall accelerator operation. The system requires about 5 seconds to make the measurements, analyze the data and present the information to the operator.

This project was directed by Michael F. Shea with the assistance of Edward R. Gray, who wrote the computer programs needed to gather the data and perform the required calculations, and Norman J. Lau, who wrote the programs to prepare

ozs.
Mr. & Mrs. F. Marshall Smith (Architecture) are the proud grandparents of a granddaughter, Elizabeth Daniel Moore, born to their daughter Nancy on May 29.

Congratulations are in order for Lucille Lynch's (Switchboard Operator) daughter, Therese, who was awarded a Merit Scholarship for her second year at the College of DuPage.

Bryant Lemon (Scheduling) gave a speech to the 5th and 6th graders at the McQueen School in Batavia on May 23 on the Accelerator presently under construction at Batavia.

Tom Downs, Architecture; and Bob Scott, EEO; drove to California for an extended weekend, but returned by plane.

George Eliopolous, Architect, became a proud home owner by purchasing a new home in Downers Grove. George is a native of Greece.

Lou Bolwahn, Architecture, gave his girl a lovely engagement ring. The date has been set for August. Sorry Girls!

George Adams, Architecture, has finally taken the big step and said "I Do" on May 17. The new Mrs. Adams name is Heide. They had a wonderful honeymoon in Canada.

Ivan Alten, Master Planning, has just returned from a visit to the colorful land of Mexico where he took innumerable shots of the Aztec Structures and scenic views.

Jorge Boada took a two week vacation and had a fabulous time visiting the Marimac Caverns in St. Louis, Missouri.

Congratulations are in order for Dr. Ashok Lagvankar, Civil Department, who has recently been awarded the Ambery Award for the best research thesis of 1968 by the American Water Works Association. Excellent work, Dr. Lagvankar.

Dave Farchill, Civil, is soon to be married. His future wife's name is Lucille and the date has been set for June 18. Congratulations Dave.

We are happy to hear that Paul Mizevitz's wife Florence has recovered from her recent illness.

Aswin Jhaveri, Civil, plans on taking a two week vacation in July and visit the United States. Aswin comes from Bombay, India and primarily plans to visit southern California, which he hopes will remind him somewhat of his homeland.

the displays and supervise the sequences of computer operation. Glenn M. Lee designed the mechanical devices and Elton W. Anderson designed the digital electronic equipment. The technicians principally engaged in this program are Robert Konda, Frank Mehring and Roderick Wischermann.

Historical Notebook

Waubonsie was the war chief of the friendly Potawatomi Indians who lived on a reservation about 5 miles south of Batavia on the west bank of the Fox River in 1835. It is said that he had such a good communication system with his warriors that he could assemble 500 men, armed and equipped for fighting in 6 hours.

Samuel McCarty and his brother, who were the first settlers of Aurora, described Waubonsie as a large and powerful man, 6'4" tall and weighing about 200 lbs.

The Library

By Roger Thompson

DIAL 209 (LIBRARY) FOR NAL CURRENT AND CHOICE

It has become increasingly apparent that until the library joins the Director's Complex, potential readers will have to be encouraged by continuing communication and other techniques to bring about an "interface" between reading material and readers. In this effort, may we point out that a telephone call to extension 209 is all that is required to be put on a list to receive a book of your choice.

Besides the many technical books received this month, there are three which are of general interest: Dr. Livingston has yet another publication entitled "Particle Accelerators, a Brief History" published by Harvard University; Leone Schmidt, whom some of us know as a native of Warrenville, has a charming history of the area, "Come Fly to the Prairie"; and we have received another Negro history entitled "Before the Mayflower" by Lerone Bennett Jr.

As a reminder, some of the titles mentioned in previous issues of the VILLAGE CRIER include:

- Born, Max, "My Life and Views"
- Childs, "American Genius, the Life of Ernest Orlando Lawrence"
- Davis, "Lawrence and Oppenheimer"
- Gustafson, "Historic Batavia"
- Jungk, "The Big Machine"
- Parry, "Peter Kapitza, on Life and Science"
- Shumway, "Batavia, Illinois, Past and Present"
- Wilson, "Accelerators, Machines of Nuclear Physics"

It should be pointed out that when readers are waiting, the borrowing period is set at one week. Thus a request should be filled within a relatively short time.

Note: A policy on the routing of journals is being considered. We would like to hear from anyone interested.

A Grand Tour

NAL Librarian Roger Thompson, his wife and family, will leave June 16th for what Roger describes as the "grand tour" of Europe. After a motor trip to New York, they will fly to Amsterdam, rent a car, and from there will journey through West Germany, southern Germany; to Venice, Florence and Rome in Italy; the French Riviera; Paris, Their itinerary will take them both to the French Alps and to the Swiss Alps. The Thompsons will also visit London, returning home from there at the end of their four and a half week junket.

See you in September . . .

This will be the last issue of the Village Crier until the month of September, 1969. We look forward to returning after the summer study, and vacations.

NAL Village Crier

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News From NALWO

NALWO INTEREST GROUPS—
by Nancy Carrigan

With the coming of summer the NALWO Interest Groups end their first season of activity. The Chairmen have done a wonderful job of developing the programs of these groups to fit the special wishes of their members. While the numbers have remained small, interest has been high.

Music Group . . .

For example, Gregorian chants and early polyphony has become the special "thing" at the Music Group this spring. The members have studied these musical modes with records, books and through playing and singing them. A review of their last session is planned for early fall and anyone interested in placing his or her name on the mailing list for this group, may contact Mary Ann Ryk, 4409 Stonewall Ave., Downers Grove, Ill. (968-8651).

Literature Group . . .

Another group which turns to books for fun and information is the Literature Group. Mystery, culture, current literature — the wide world of reading will be explored in the program resuming again in early fall. If books are your "thing," tell Betty Snowden, 1590 Surrey Drive, Wheaton, Ill. (665-4691) and she'll see that you hear about the first fall meeting.

Gourmet Club . . .

And now to the less esoteric pleasures. Fancy crepes; borscht with Piroge Paste pie; herb steak with artichokes — sound like a gourmet's dream? All these delicacies and more have formed parts of meals cooked by and for members of the Gourmet Club. If the wire shisk and casserole are your favorite tools, Marilyn Dinkle, 35 Croydon Lane, Oak Brook, Ill. (654-1087) can tell you more about this group.

Outdoor Club . . .

We walk off our gourmet dinners with the Outdoor Group (and then put away a big picnic lunch afterwards). A hike along the prairie trail and a family picnic at Johnson's Mound have been fun for this group. How about a Family Campout? If you're interested in these activities, Bonnie Hubbard, 622 Newton Ave., Glen Ellyn, Ill. (469-8037) welcomes ideas and new members to the group.

Hand Arts Group . . .

Hand made sgraffito files came out of the last meeting of the Hand Arts Group. Each new craft explored has opened new horizons to members of this group. If you have the itch to slitch(ery) or just want to pot(tery) let Joan Sculli, 4633 Beau Bien Blvd., Lisle, Ill. (355-4109) know and she'll inform you of our new fall program.

Bridge Club . . .

The June meeting of the Bridge Club is slated for the 18th at Betty Snowden's. If you'd like to join this group please call Catherine Pehta at 469-6009 so that she can make up tables for this (or future) get togethers. We end with a bow of thanks and best wishes to Bridge Chairman, Ruth Shoemaker, as she returns to Princeton. Both as teacher and organizer of the Bridge Group, she has done a wonderful job and we will miss her.

New Area Chairman Welcomed

Carolyn Robb, 456 North Street, Elgin, Ill. 60120 (Phone 742-6033) is the new Area Chairman for the Elgin, Barrington, Carpentersville and surrounding towns area. She will replace Susan Steky who will be returning to Massachusetts sometime this summer.

Softball Team Joins Aurora Competition

The myth of the flabby American seems to be seriously jeopardized by the current rise of jogging cults and health clubs across the land. This grass-roots threat to the individual's inalienable right of lethargy has even established a fifth column here at NAL, where activity was heretofore largely cerebral. If participation in the sports program is any indication of things to come, then NAL may soon be the swiftest of major research laboratories.

Softball

The ball and bat set will begin actual competition in the Aurora City Softball League on Tuesday evening, June 10, at 8:30 p.m. As one of ten teams sponsored by various industrial and commercial concerns from the area, NAL's stalwarts will play their games at Greene Field, located on Illinois Avenue in Aurora. With the start of play nearing, the team's coach, Leo Ray, is confident of disproving the maxim of another diamond sage named Leo, that "nice guys finish last." Hopefully, the optimism expressed by Mr. Ray and company will remain intact throughout their eighteen game schedule.

Golf

Although the golf league's schedule has suffered at the hands of the weatherman, with one playing date already rained out, the tenacity of competition evident in those matches that have been completed seems to belie golf's characterization as a genteel and leisurely game. It is still too early to make any meaningful evaluation of team standings, but, at least, the league gives every indication of being well-balanced with no single team dominating either flight.

Bowling

The members of the NAL bowling league turned epicurean for the evening of May 16, when they formally ended their season, which had run since September of 1968, with an awards banquet in the Laboratory's cafeteria. Some forty-five people attended the function, which prefaced the presentation of prizes with a cocktail hour and dinner.

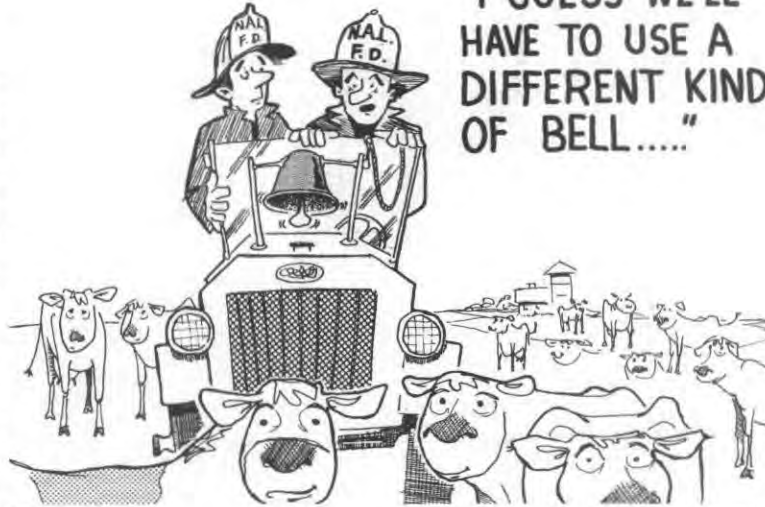
Bob Wagner, league secretary from DUSAF, and Jerry Reid, Organizer of the league from NAL's Construction Group, conducted the after-dinner ceremonies, which included the giving of awards in the following categories: team—the Boosters (Mildred Meyer of Personnel, Bob Wagner of DUSAF, and Harland Gerzevske of Booster); high average for women—Doris Ferrell of the Director's Office; high average for men—Harland Gerzevske; high game for women—Doris Ferrell; high game for men—Mike Hitt of DUSAF; high series for women—again Doris Ferrell; high series for men—Harland Gerzevske. Loine Riggs of Personnel was voted the most improved bowler for the season.

NALite To Wed

Nancy Redmon, administrative assistant, Public Information, will become Mrs. Prentiss Budd on August 9. The wedding and reception will take place at Saugatuck, Michigan. The Budds will honeymoon in Bermuda and the East Coast. They will live in Hinsdale.

Nancy recently announced that she will leave the NAL staff on June 20th. "I wish to express my feeling of pleasure in knowing and working with the fine group at NAL. I will miss you."

"I GUESS WE'LL HAVE TO USE A DIFFERENT KIND OF BELL...."



Stray Particles

by Geno Loro - DUSAF

Personnel Notes . . .

I have had many inquiries in the past few months regarding the drawing of blood for premarital exams. It can be done in the medical department. However, it is best to have the blood drawn at least two weeks before you plan on getting your marriage license.

Since we are in a farm area and the tetanus spore remains viable for years in soil or in animal feces, the chance of even a small wound becoming contaminated is greater than usual. Therefore, the medical department is recommending that any employee needing a booster on his tetanus injections get one. If it has been longer than four years since you last received a tetanus injection, or if you are injured, get a tetanus injection. They are available to any employee.

Gregg Urban, Robert Scherr and I completed the 5-week Red Cross Instructor's classes on May 15th. We are planning on teaching the First Aid classes to employees who are interested in taking such classes next Fall. The exact date will be announced later.

Dorothy Poll, R.N.

Thirty-five students will join the work of the Laboratory for the 1969 summer season. Ranging from juniors in high school to a candidate for Ph.D. in music, they will hold such positions as maintenance workers, lab assistants, office clerks, etc. Three of the seven women students worked for NAL last summer. It will be the first summer for the twenty-eight men.

In cooperation with the United States Treasury Department, NAL has arranged to provide its employees an opportunity to enroll in a U.S. Payroll Savings Plan for the purchase of United States Savings Bonds and Savings Notes. Ralph Wagner, Personnel, is administering the plan.

The plan will be explained to anyone interested by the following: Ken Fischer — Accounting; Robert Scherrer — Beam Transfer; Louise Latrielle — Lnac; Judy Michaud — Booster; Carl Ohn — Machine Shop, Downers Grove; William Fray — Machine Shop, Village; Barbara Rozig — Main Accelerator; Tony Frelø — Photography; Stanley Tawzer — Radio Frequency, and Donald Smith — Village Services.

New Faces in the Village

The following are brief biographical summaries of employees hired during the month of April and up to May 15, 1969, written by Mrs. Gloria Moore, Personnel:

MRS. CAROL ASHBY of Clarendon Hills, Illinois is a Secretary with Contract Administration. Mrs. Ashby attended the Katherine Gibbs Secretarial School, graduating in 1952.

C. LEON BARTELSON, Technical Aide with Beam Transfer, is a resident of Downers Grove, Illinois. He attended Lyons Township Jr. College and the College of DuPage. Mr. Bartelson received his A.A.S. degree in 1962 from DeVry Technical Institute, Chicago, Illinois.

ROGER L. BRAUN resides in Warrenville, Ill. and is a Warehouse Man with Material Services. He attended school in West Chicago, Ill. and formerly with W. R. E. Baker, Inc. of Glen Ellyn, Ill.

DELWYN A. BURANDT is a Technical Aide with Experimental Facilities and lives in Oak Lawn, Illinois. Mr. Burandt received certificates in electronics from the Army Signal Corps, Ft. Monmouth, New Jersey in 1942 and from the American Television Trade School in 1959.

DON C. CARPENTER, Technical Aide, Beam Transfer, received an Associate degree from Purdue University, Division of Applied Technology in 1960. He is presently attending Joliet Jr. College in the evenings and is a resident of Lockport, Ill.

DAVID P. EARTLY of Hammond, Ind. is a new Physicist with Experimental Facilities. Dr. Eartly received his B.S. in physics from the University of Notre Dame in 1963; M.S. in physics (1965) and Ph.D. in physics (1969) from the University of Chicago.

RAYMOND C. GAILEY of Bolingbrook, Illinois is a Draftsman with the Beam Transfer section. He attended Westinghouse Tech. in Turtle Creek, Pa. receiving a diploma in 1959 as a Drafting Engineer.

MARTIN C. GLASS is a Technical Specialist with Experimental Facilities. He received a diploma from Springfield Trade School in 1943, attended Lyons Township Jr. College and has also received several certificates in various subjects from ANL. Mr. Glass re-

sides in Lisle, Ill.

RAYMOND F. HARTMAYER, Contract Administrator with Contract Administration, plans to bring his family to the area from their home in Pomona, California within the next several months. He attended Fullerton Jr. College and Chaffey College in California, and is a member of the National Management Association.

JAMES T. HICKEY comes to NAL from the U. S. Navy and is a Technician with Lnac. He received several certificates in various technical fields while in the Navy and presently is a resident of Forest Park, Illinois.

JACK M. JAGGER of Batavia, Ill. is a new Designer with Main Accelerator. Mr. Jagger attended Diablo Valley College in California and formerly was with Wm. M. Brobeck & Associates.

DWAINE C. JOHNSON resides in the village of Batavia, Illinois. A new Design Draftsman with the Main Accelerator division, Mr. Johnson attended Pomona Jr. College in Pomona, California.

RALPH D. MATAYA of Lemont, Ill. is a Groundsman with Village Services. Mr. Mataya attended school in Joliet, Ill. and was formerly with the Berwyn Stickney Tree Service, Orland Park, Ill.

EUGENE C. OLSZANOWSKI, Instrument Machinist with Technical Services works in the Downers Grove Machine Shop. He attended Louisiana State University and received a certificate in drafting & design from Chicago Technical College in 1946. Mr. Olszanowski resides in LaGrange Park, Ill.

DANIEL SNEE, Instrument Machinist with Technical Services, will be moving his family to the area from Clinton, Wisconsin in the near future. Mr. Snee is a native of England and received a certificate in Engr., City & Guilds of London Institute, Charles Travelyan Technical College, Newcastle Upon Tyne, England in 1966.

DAVID F. SUTTER, Physicist, Main Accelerator, is a former resident of Ithaca, New York. He is building a home in this area and will be moving his family to Illinois this summer. Dr. Sutter received his B.S. in physics in 1958 from Purdue University and his Ph.D. in physics in Sept. 1968 from Cornell University.

'Save Our Trees'

(Continued from Page 1)

because the tree was a beautiful and significant landmark, Allen said.

Members of the NAL and DUSAFAF staffs have been marking trees on the NAL site with printed notices to contractors and others that the trees are not to be disturbed without the permission of the NAL management. John Barry, of the NAL Director's Office, has been in charge of this effort.

Also, the first floors of all of the farm homes that have been vacated on the NAL site have been boarded up to prevent prowlers from vandalizing them on weekends and at night. A number of the farm homes represent aspects of significant history in the Fox River Valley. It has been estimated that several are about 100 years old.

"We want to preserve some of these places," explained Donald R. Getz, assistant director of NAL, "so that in the progress of developing the accelerator we do not erase all of the history that has gone before us."

"Our staff has been working diligently to provide an attractive setting for the Laboratory," said Poillon. "I am pleased to report that we have already completed much of the work aimed at making life in our village more pleasant, and we are working hard on the continuing job of improvements in the village. Our maintenance staff has been instructed about the need for a constant effort to keep up the appearance of our temporary home until our



More tree damage . . .

permanent research and office center is completed."

Edwin L. Goldwasser, Deputy Director of NAL, also commented on the need for concern about the Laboratory's environment. He said:

"We believe that a research laboratory should not look like a military barracks. Nor should it look like a factory. We feel that both the site and the buildings should reflect something of the spirit of the work that is to be carried on there. This will be important not only to the staff of the Laboratory, but also to our visitors and to potential employees."

A positive indication of the Laboratory's conservation program was the planting on Arbor Day of nearly 100 trees by NAL staff members — men and women, scientists and office clerks — near the cafeteria in the NAL Village. By next Spring, it is expected that the trees will have grown considerably and offer a shaded park for employees to sit during lunch hours.

USAEC 200 BeV Accelerator Facility Office Notes

By Minerva Sanders

Kenneth Walker, our mechanical engineer, will attend a training course on "Waste Water Treatment and Disposal" which will be held from June 2 - June 6, 1969, at the University of Wisconsin in Madison, Wisconsin. Ruth has been trying (without success) to convince Mr. Walker that she should accompany him to take notes — that is, when she's not sight seeing, swimming, etc.

A warm welcome is extended to Ronald Hosford, Office of the Chief Counsel, CH, who will assist William Donato with our legal problems.

Sad Note: We extend our sympathy to Dawn Pitts on the recent death of her grandfather.

When you think of talent unlimited — think of the 200 BeV. Just look at what was accomplished within two weeks' time:

May 6 — Fred C. Mattmueller, our Deputy Area Manager, was the guest speaker at the April PTA meeting of the East Aurora High School, which was held at the St. Paul Lutheran Church in East Aurora, Ill.

May 12 — Kennedy C. Brooks, Area Manager, and Mattmueller gave a short talk to Professor W. H. McArthur and five undergraduate students from Knoxville College, Knoxville, Tennessee. These students, all members of the Spellman Job Consortium, visited the BeV to learn more about the types of positions that are available to graduates and



Fred C. Mattmueller

the qualifications required to fill these positions.

May 14 — Kenneth A. Dunbar, Manager, CH, presented K. C. Brooks with a "Certificate of Recognition" for being nominated under the Federal Employee of the Year Awards Program.

May 19 — Tho' small in number, the following represented the AEC in a big way at the NAL May Fete: Ruth Flegel and her date, Ken; Barbara Blackwell and her charming brother Billy; and yours truly. Everyone had a wonderful time.

See — NO BRAG, JUST FACTS.

Well, Linda Weinberg finally "did her thing." On April 30, Linda dropped her "single girl" status and became Mrs. Michael Duckett. At present, Mike is out to sea and Linda is writing Dear John letters.

200 BAFFLER:

Ron: Dawn, why did you tell Jack that I was late getting to work this morning?

Dawn: I DID not.

Ron: Well, who then?

Dawn: I don't know. When he asked me what time you came in, I told him I was too busy getting ready for lunch to notice.

NAL Physicist on Television

Dr. Robert E. Peters, Physicist, Booster, appeared on June 11th on the recently-opened WLXT-TV Channel 60 television station in Aurora, Illinois, as a guest of the program produced by Mrs. Beth Lisberg, shown at 4:30 p.m. Dr. Peters described the site plans for the Laboratory and answered spontaneous questions from a group of sixth grade boys.

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Classified Ads

This classified section may be used only by active employees of NAL, DUSAFA, & AEC. Ad copy should be restricted to 20 words or less and typewritten. All items for sale or rent must be the property of the person submitting the ad. It must be understood that houses, apartments, or rooms for sale or rent must be available without regard to race, creed, color, or national origin. No ads will be accepted for resale in connection with a commercial enterprise. The Crier reserves the right to review all ads submitted for publication. Copy should be sent to Gloria Moore, Personnel, 14 Sauk Boulevard.

Portable Crib \$10; Play Pen \$10; Blonde Muskrat Fur Cape \$12; SPEED-CRAFT RUNABOUT BOAT, 14' 35 HP Evinrude Electric Start Motor, Gator Trailer, skis, extras \$430.00, Frank Meiring, Ext. 242 or Home: 424-3429.

Oodles of Poodles!!! Besides my Black Toy Female 6-month old AKC Registered Poodle, we are expecting several new arrivals the 2nd week in June. Contact Dorothy Pohl, Ext. 222.

Fireplace Screen, Grate, Canvas Log Carrier with hardwood handles. Plus one box of very long matches and one nice-sized log. All new; total value \$30. Will sell for only \$15. Gloria Moore, Ext. 348.

White enamel six-year crib, \$25; infant dressing table, \$10; combination baby carriage-bed-stroller, \$15. Margaret, Ext. 242 or 353-1511.

75' x 121' lot at beautiful Lake Holiday 11 hr. from the Loop, approx. 30 miles from NAL, high ground, water and electricity available. Clear, excellent for year-round home. Lot No. 1796. Asking \$2,995. Warren Gotwald, Ext. 373.

Small Lambretta motor scooter; fair condition. Cheap. Call Frank Cole Ext. 278.

1957 Ford Station Wagon. Good condition Best offer. Springfield 22 Rifle. Best offer. John A. Valene, Lombard, Ill. Phone: 927-1622.

Wanted To Buy

Used sewing machine. L. Santiago Ext. 224.
Croquet set. M. Pearson. Ext. 351.

Apartment to Share

Air-conditioned, carpeted, 2BR, in Aurora, Wincrest Apts., to share with another man. Expenses approx. \$90-\$100 month per person. Apt. furnished except for 1 BR available. Contact Ernest Wilkinson, Ext. 354 or 979-2260 (DUSAFA Field Office).

Air Conditioning Service

Automobile and home. Call Don Richied Ext. 370 or 253.

News Briefs . . .

A "land and lake tour" of Chicago will be taken by NAL employees and their families Sunday, June 22. The group will leave from the NAL cafeteria at noon and return about 6:30 p.m. after seeing the city's points of interest on the North Side and a two-hour lake and shoreline cruise plus a one-hour stop in Old Town. The \$2.75 fee includes the tour and the boat cruise. Arrangements are being made by Mrs. Gloria Moore, Personnel, who reported that only 50 tickets are available.

Charles F. Marofske, personnel manager, delivered the second annual commencement address at Waubesa Community College in Yorkville June 12.

Arthur Roberts: Musical Physicist

The two cultures—science and the humanities—are meeting in many ways in the development of NAL.

For example, Arthur Roberts, a physicist in Experimental Facilities at NAL, also is a professorial lecturer in Physics at the University of Chicago. There, he instructs a class called "The Physical Basis of Music." It explores the sound, physics and the psychology of hearing in both musical and scientific terms.

As a special project, Roberts' students are creating their own musical works — and submitting them to a one-man orchestra — the computer.

Someone asked: "A symphony based on physics, logarithms, trigonometry — and performed by a computer?"

It may be the most exciting musical style of the future, according to Roberts.

Roberts, who holds a degree from the Manhattan School of Music and a Ph.D. in physics from New York University, said:

"Computer-produced music offers the composer unlimited horizons. Many of my students have been able to write original pieces or to translate Telemann, Bach, and Brahms by programming the computer. What distinguishes the computer is its ability to produce an unlimited range of sounds.

"For instance, the computer can produce tones no conventional instrument can, such as a 22-tone scale, or a 29-tone scale. It also possesses an infinite variety of tone qualities and a flawless technique."

Roberts offered interested students extra classes to teach them

computer programming for the ORPHEUS music-generating program. After eight hours of lessons, they began to write their own pieces, and then fed their compositions into a computer at the Atomic Energy Commission's Argonne National Laboratory.

"Interestingly enough," Roberts said, "out of 12 students taking the course, only two are music majors, the rest coming from six other fields. The students in the sciences seem to be the most enthusiastic computer composers."

Roberts lectures his students on musical acoustics, which includes "the physical descriptions of musical sounds, the nature and characteristics of auditory perception and the relations between them."

Roberts and his students also study briefly the anatomy and physiology of the ear and its role in sound perception.

He explained, "Some of the

questions we discuss are, 'what's the softest sound you can hear as a function of frequency?' or 'How many different pitches can be distinguished by the ear?' The answers to such questions affect the nature of new musical instruments and the kind of musical effects perceptible to the ear."

Another feature of the course is an analysis of the structure and operation of musical instruments to determine their effects on sound.

Although musical acoustics is a common subject at most universities, he said, "Our course is unique in its scope, because it offers the student an opportunity to put his knowledge into practice by composing music. I'm hoping some of my students will continue to perfect their technique so that they will be able to produce complete compositions or performances."

He compares the computer's musical output to that of a "sound synthesizer," which is the most frequently used source of electronic music. "However," he added, "computers are much more flexible than any synthesizer currently employed in the recording studio."

Roberts has written a number of musical compositions, most notably, An Overture for the Dedication of a Nuclear Reactor, performed by the Rochester, New York, Philharmonic in 1952.



Dr. Arthur Roberts