

the Bulletin Board

VOLUME 13 - NUMBER 23

Published by BNL Personnel Office

FEBRUARY 3, 1960

RUSSIAN RADIOBIOLOGISTS AMONG VISITORS TO BNL

Five Russian radiobiologists visited BNL on Monday, February 1, at the invitation of the Atomic Energy Commission. The visitors were: Mikhail M. Pobedinski, Director of the Central Scientific Research Institute of Roentgenology, Radiology and Cancer, Leningrad; Valerie Bocharov and Moisey Domshlak of the Institute of Biophysics and Radiation Medicine, Moscow; Alexander Pavlov, of the Moscow Stomatology Institute; and Georgi A. Zedgenidze, Corresponding Member of the Academy of Medical Sciences, Moscow. The group visited the Medical, Biology, and Health Physics Departments.

On Wednesday, February 3, 35 teachers representing seven schools in the Union Free School District No. 2, Uniondale, Long Island, will visit the Laboratory, to tour the facilities and hear talks from our staff members.

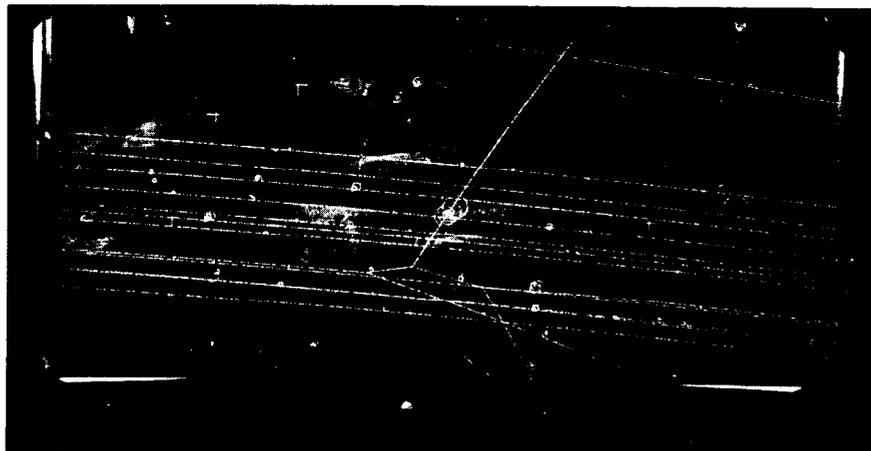
About 70 members of the American Institute of Electrical Engineers will visit Brookhaven on Thursday, February 4, in connection with the winter general meeting of the A.I.E.E. in New York City. The Laboratory tour will include visits to the Research Reactor, Instrumentation Laboratory, Merlin Computer, Cosmotron and AGS.

CAFETERIA CHATTER

The Buffet Lunch served in the East Room of the Cafeteria last Thursday was a huge success, with 110 diners partaking of Slater's tantalizing entrees.

Since the American Institute of Electrical Engineers is meeting at the Laboratory on Thursday, February 4th, the special weekly Buffet Luncheon will be served this week on FRIDAY, FEBRUARY 5TH, in the East Room of the Cafeteria, with both meat and fish entrees available. The hours are extended from 12 to 1:30 p.m. - but the price remains at \$1 per person. See you there Friday!

THE BUBBLE CHAMBER STORY



Liquid hydrogen bubble chamber photograph, showing tracks left by protons from Cosmotron. One proton collides with another in the hydrogen, resulting in production of other particles.

Even before its completion, the big new experimental area at the Cosmotron was crowded with bubble chambers and their associated equipment. In just the last five years, the bubble chamber has achieved extreme importance as a tool of the high energy physicist. He uses it in the investigation of the characteristics of the fundamental particles of matter. These include the familiar proton, neutron, and electron, which form the composition of all atoms, but they also include the less well-known families of μ , π and K mesons, and hyperons.

The particles in the last four families are all unstable. That is, they decay into other particles a short time after they are created. Their lifetimes range from about a millionth of a second for the μ meson to about a tenth of a quadrillionth of a second for one of the π mesons. The physicist asks about their lifetimes, masses, spins, etc., and also how they are produced and interact with each other. Since for each particle there is theoretically an anti-particle, he must also investigate these. The goal is to fit all of them into a consistent theory.

Bubble chambers make it possible to observe what happens when particles collide, and to make indirect measurements of many of their properties. In essence, a bubble chamber is a sealed metal box often having two opposite sides of glass. It must also have some means for quickly lowering its inside pressure, such as a large rapidly driven piston. The chamber is filled with a suitable liquid which is heated to slightly above its boiling point, but is held at a high enough pressure to prevent it from actually boiling.

The operation of the bubble chamber is synchronized with that of the Cosmotron, and what happens is this. The pressure on the liquid in the bubble chamber is suddenly reduced, but for a few thousandths of a second it does not boil. During this time, the Cosmotron sends out a beam of protons which pass through the chamber. These protons are electrically charged, and as they pass near the atoms of the liquid, they sometimes succeed in dragging an electron loose from an atom giving it some velocity. The electron collides with

(Continued on Page 2)

BUBBLE CHAMBER—Cont'd

other atoms nearby, resulting in some local heating. It is here that bubbles first begin to form. Less than a thousandth of a second after the protons passed through the liquid, the bubbles have grown large enough to photograph. At that point a very bright light on one side of the chamber is flashed. Several cameras on the other side record the image of the illuminated bubbles, for instance on 35 millimeter film. Then the chamber pressure is suddenly raised again to prevent the liquid from boiling freely, the film is advanced to the next frame, and the whole cycle is ready to be repeated.

What one has recorded on the film is a track of bubbles for every charged particle entering the chamber. Some of the particles may collide with protons or neutrons in the atoms of the liquid. These collisions sometimes produce one or more of the unstable particles, which may also leave bubble tracks. When these unstable particles decay into still other particles, these too may leave tracks. By making suitable measurements on the photographs of these tracks, physicists get clues which enable them to deduce many facts about the particles which left them.

The most frequently used liquids are propane and liquid hydrogen. The former operates at temperatures well above room temperature, while the latter must be kept in the vicinity of 415 degrees below zero, Fahrenheit. This presents severe insulation problems, which are partly solved by surrounding the chamber with a vacuum.

Most bubble chambers are operated in the center of a large magnet, so that the tracks of the charged particles will be curved. This enables one to measure their momentum, and to tell whether their charge is positive or negative.

At the Cosmotron now there are six bubble chambers. Three of them use liquid hydrogen, supplied by the BNL hydrogen liquefier. The BNL 20 inch chamber is illustrative of their size. The chamber itself is 20x10x10 inches with a long neck in which the piston is located. The magnet in which it is placed is 9 feet by 9 feet by 6 feet high and weighs 25 tons. When all of the associated equipment is added, the overall dimensions of the complete assembly are approximately 13 feet by 13 feet by 15 feet high.

Another chamber is under design at BNL, for use with the AGS. This chamber will be 80x27x25 inches, making it the largest bubble chamber in the world, and will operate in a magnet weighing about 350 tons.

ST. PATRICK'S DANCE

Everyone's asking for the next BERA dance. Our St. Patrick's affair is practically a tradition. We're all looking forward to it. However, it's your dance and to make it possible we must have YOUR cooperation.

What band are we going to hire? What decorations do we want? Who's going to hang them? Should we have additional entertainment? How about refreshments? These are some of the questions that must be answered. It's the DANCE COMMITTEE's job to help supply the answers, to organize, to plan and to carry out the dance program.

This is where you come in. The Dance Committee is now being organized. Help and enthusiasm are needed. Join

the committee now by calling G. Sabine, Ext. 391 or attend the first meeting at noon this Friday, February 5, at the Recreation Office.

ART EXHIBIT

Plans for an art exhibit for 1960 under BERA sponsorship will be discussed in the Recreation Building on Friday, February 12th, at 8 p.m. The exhibit will be of the same type as the Greene show which was held at the Research Staff Lounge in October 1959; it will consist of work by well-known professional Long Island artists.

This will be an organizational meeting to form a new working committee. All interested are invited. For additional information, call Henry Quastler, Ext. 367.

FOLK DANCE WORKSHOP

Eugene Tso, leader of the Cosmopolitan folk dance group in New York City, editor of The Folk Dance Bulletin, and author of several volumes of dance instructions, will give a special workshop in the Recreation Building on Saturday, February 13. The workshop will consist of two sessions; 2:00 to 5:00 in the afternoon and 7:30 to 10:30 in the evening. A buffet supper will be served at the Brookhaven Center during the intermission. Admission will be \$1.00 per session.

The program will include primarily dances which have not been previously taught to the local group, so all folk dancers are urged to come, regardless of their familiarity with our present repertoire. However, some knowledge of the rudiments of folk dancing must be assumed, by the leader, so complete novices are not encouraged to attend. For further information, call Neil Lark at Ext. 625.

WORKSHOP BUFFET SUPPER

To accommodate those attending the Folk Dance Workshop on Saturday, February 13th, the Brookhaven Center will serve a special Buffet Supper from 5 p.m. to 7 p.m., during the intermission between sessions of the Workshop. The price is \$2 per person, and the Slater System guarantees a satisfying repast. Make your plans to attend!

BNL SAFETY RECORD

**WHEN THE TOOL'S
NOT RIGHT
THE GUY'S
NOT BRIGHT**



**NATIONAL SAFETY COUNCIL
27 Days Since Last Disabling Injury
(Jan. 5, 1960 - Jan. 31, 1960)**

EXTRA!!! GYMKHANA RESULTS

The first BNL Sports Car activity got into high gear Sunday afternoon at 1 p.m. It was a very cold and blustery day but the turnout was excellent for our first event. The early afternoon was devoted to trial runs and the timed trials began about 3 p.m. The results are as follows for each class winners, both men and ladies, other contestants, and time in seconds.

CLASS C: Winner, Dennis Greenberg 104. A. Pinelli 121, R. Dobert 129, E. Raka 134, W.T. Walsh 166, and F.W. Thompson 187.

CLASS D: Winner, Ladies, Mrs. S. MacCormack 163. Men, Mr. S. MacCormack 110.

CLASS E: Winner, Ladies, M. Clasen 124. Men, R. Thomas 89. E. Guettinger 100, D. Thomas 126, and W. Link 148.

CLASS F: Winner, Ladies, E. Daniels 108. Men, H. Spiess 114. F. Moore 115, E.W. Rogers 115, R. Stephani 126, D. David 168, R. Larson 173, J. Lauer 190, S. Katcoff 191, and P. Spiess 200.

CLASS G: Winner, Ladies, T. Newhoff 160. Men, R. Meyer 101. B. Regan 158.

CLASS H: Winner, Ladies C. Brennan 142. Men, A. Francois 133.

The trophies for the winners will be presented at our first club meeting probably in February.

I would like to thank all those who attended, both spectators and participants, for their excellent cooperation and understanding. Many thanks to those who helped make this activity a success: H. Farrell, R. Schuster, T. Newhoff, M. Sautter, T. Wright, the Security Department, the Fire Department and G. Sabine.

—T. BROOME

UPTON RIFLE - PISTOL CLUB

The next monthly meeting of the U.R.P.C. will take place on Thursday, February 4 at 8:00 p.m. at the Recreation Building. Following the meeting there will be a lecture on the nomenclature and operation of the M1 rifle, the Springfield '03 and the 1917 Enfield.

The reloading equipment and materials for reloading are available to all club members. Interested members please contact F. German, C. Goodzeit, P. Buhl, P. Colombo, J. Ferrer, or F. Bugala.

BROOKHAVEN DIVERS CLUB**Diving Classes to Begin Feb. 15
Equipment Display Feb. 8**

The Brookhaven Divers Club will hold its monthly meeting on Monday night, February 8th, at 8 p.m. in their newly renovated quarters in the Recreation Hall on York Lane. High on the list of items to be discussed are plans for the first club dive on March 19th and future summer dives to such places of interest as Block Island and Gardners Island. On display at the meeting will be equipment used in the pursuit of the diving sport.

All those interested in taking the classes in skin and SCUBA diving are urged to attend the club meeting and register for the course. For those who cannot attend, registration may be done through the recreation office at the gym before FRIDAY, FEBRUARY 12TH. The fee for the seven lesson course will be \$4.00.

Those people interested in joining the club are cordially invited to attend the meeting, members are urged to attend. Remember the date. MONDAY, FEBRUARY 8TH, 8:00 P.M. AT THE RECREATION HALL ROOM 7 UPPER FLOOR.

THE MATCHMAKER THIS WEEK

This is the week you have been waiting for. THE MATCHMAKER, a rousing comedy by Thornton Wilder, will be on the boards at the BNL Theater this Thursday, Friday, and Saturday (February 4, 5, and 6) at 8:30 p.m. Tickets are on sale in almost every department, or you may buy them at the door. The price is \$1.00 for adults and 50¢ for school-age children, and worth every penny of it. Two hours of solid entertainment with a laugh a minute. Bring your family; bring your friends to the outstanding event of the theater season in Suffolk County. You will be glad you did. SEE THE MATCHMAKER.

Brookhaven Center Theatre Buffet

The Brookhaven Center is pleased to announce that a special Buffet Supper will be served before the performance of THE MATCHMAKER on Saturday, February 6th. The menu will include Chicken a la King, Tossed Salad, Strawberry Shortcake - all for \$2.00 per person. All theater-goers are invited.

**BERA
BOWLING****PURPLE LEAGUE**

The Chain Gang had no trouble taking four points from the Bowl Aids. Maile had 183, Brems 176, and Ed Hagelberg 171. For the losers Walsh had 180 and Schulz 166.

The Phoubars, took 3 from the Toppers. Dick Vogt had a fine 214-190, 589 backed by Red's 202, 537 and Ole's 182, 532. The losers had Nocar with a 192 and Reamy 170.

The Ptuiss and Fiscal teams fought it out to a 2-2 split. For the Ptuiss Taylor had 182, Stelly 178, and D. German 170. The Fiscals had Saletros 166, Bohn 168 and Eberbach 162. Rose had 170.

The Designers received a gift of four points as the Dirty Birds forfeited.

NOTE TO ALL CAPTAINS: The second half Bowling Party money is due, payable as of Wednesday, February 3.

GREEN LEAGUE

Chemistry whitewashed the Reefers 4-0. Audet had 190-507 and Webster 203, 189-552 for the winners. J. Lucas had 192-509 for the losers. The Oldtimers tied for first place by beating the Fire Department 4-0. Holmquist 188, 183, 195-566 and Tierney 204-526 for the Oldtimers. Rhodes had 203 for the Fire Department. The Electrons won over the Teasers 2½-1½. Levy had 526 series and Powers 519 series.

RED LEAGUE

Gil Spira, bowled a 572 series, to help his team take three points from the Woodbutchers and keep them in first place, only 1 point ahead of the Loopers. Gil had games of 211-206, Jim Gallagher had 210.

The Loopers took 3 points from the Gnats. Malloy 513 and Sick 205-507 were high for the Loopers. J. Sucher was high for the Gnats with a 488.

The rest of the league keeps hobbling along. The Nuclides took four from the not so hot Hot Lab. L. Kukacka had a 511 series for the winners and B. Vogt had a 514 to help out. The Hot Lab only had J. Walker with a 496. The 7-10's took 3 points from the Metalliks with W. Johnson hitting a 503 series.

CLASSIFIED ADS

FOR SALE

1956 FORD - 2 door station wagon. Ext. 423.

HOUSE - Cape Cod, E. Patchogue. 2 bedrooms, full cellar, expansion attic, lot 65x130 ft. South of S. Country Rd. \$10,500. B. Keck, Ext. 752 or G.Rover 5-0043 evenings.

1958 VOLKSWAGEN - sedan. Green, radio and heater, very good condition. A. Salee, Ext. 676.

1950 STUDEBAKER - Champion. Coupe. It runs. R. Baker, Ext. 791.

1955 CHRYSLER - 4 door New Yorker Deluxe. Full power, radio and heater. In excellent condition. Ext. 345.

1959 VOLKSWAGEN - blue. Excellent condition. BELLport 7-0945.

HOUSE - \$7500. 3 bedrooms. Stucco ranch. New hot water heat. 6 miles to Lab. Call BELLport 7-0611-J.

HOUSE - East Patchogue. Cape Cod. 6 large rooms. 3 bedrooms, 2 baths, large kitchen. El. stove, refrig. Dining room, living room with fireplace. Oak floors, full basement. Oil, hot water heat. Automatic washer. Two cesspools. Fully landscaped. lot 120x125. A terrific buy at \$14,000. G.Rover 5-0046. After 6, ATLantic 6-8461.

HOUSE - Center Moriches. 5 large rooms. Knotty pine kitchen. One acre land. Two car garage. A-1 condition. Phone evenings ATLantic 4-6350.

LOT - Beautiful view of the Sound. Last waterfront lot in a newly developed village on the North Shore. Private community beach. 8 miles from Lab. BELLport 7-0549.

FLOOR HEATER - Coleman. With 275 gal. oil tank. \$50. Also wringer type washing machine. Good condition. \$25. Assortment of inside doors. ATLantic 6-8946.

CRAFTSMAN PISTON-TYPE SPRAYING COMPRESSOR - for use with ¼ h.p. motor. Delivers 1.8 CFM at 30 lbs. working pressure. \$35. Used only twice. Ext. 2179.

FURNITURE - Walnut secretary, \$25. Studio couch with bolster and slip covers. \$25. Red easy chair - foam rubber cushions, \$30.00. Walnut chest drawers, \$15. Large walnut 3 drawer bureau and mirror \$25. Chinese red kidney shape telephone table and chair, \$7. Two 9x12 all wool broadloom rugs and underlays; green with floral, \$40; dusty pink, \$35. Chrome and light red kitchen set - 4 chairs, table seats 8, \$50. WI tea wagon, \$7. 2 bird-cages, one stand \$7. Also sport jacket. Man's size 42. Custom-made imported tweed plaid jacket. Original price \$100. Worn once. Ext. 2158, 440 or JAMESport 2-3227 after 5.

ICE SKATES - little girl's ice skates. Hardly used. White. Size 3. \$5. JUNiper 4-5244.

COUCH - 72 inches. Like new, re-upholstered in November. New slip cover. BELLport 7-1158.

SAILBOAT - 15 ft. cat-rigged scow. Stainless stays, thoroughly overhauled Spring '59. Very steady, excellent South Bay boat. Will sell as is or ready to go in the Spring. Bill Bornstein, Ext. 550 or PORT Jefferson 8-0927-R.

1958 OWENS EXPRESS - 12 v - 100 h.p. Flagship. 75 hrs, 23 feet. Three-sleeper, galley, stand-up enclosed head. Electric bilge. Compass, spotlight, horn, etc. Excellent condition. BAYport 8-1759.

FOR RENT

HOUSE - completely furnished house in Brookhaven. 4 bedrooms, 2 baths, dining room, garage and breezeway. Well insulated. \$100 per month. February 1 to June 15 or later - on leave to University. Call Ext. 2351 or Ext. 2148.

APARTMENT - an exceptionally attractive furnished and decorated 3 room apartment in Brookhaven. Want to rent during the spring semester, February 1 to June 1. Ext. 2148.

WANTED

HOME - for one young tom cat and one female cat. Moving away. Ext. 2148.

TENT - umbrella-type tent approximately 7x7x7 ft. Used or otherwise. J. Ferrero, Ext. 577.

SAILBOAT - small. R.C. Krueger, Ext. 301 or BELLport 7-0693-J.

PACKING CRATES - The Ceramics Club needs several packing crates (4x4x4 ft. or larger) to be used to build a spray hood. Please call Paul Levy, Ext. 427 or 407.

TV SET - 17 inch, not older than 1-2 years. In good condition. Ext. 733.

BOAT TRAILER - for 14 ft. light weight outboard. D. Cantor, Ext. 2102.

USED REFRIGERATOR - with freezing compartment. In good working order. Cheap. Call P. Delmonte, Ext. 577.

HOME - for pedigreed German shepherd female. 1 yr. old. JUNiper 1-4829.

CAR POOLS

Want ride from Lake Ronkonkoma, Mill Rd. and Allen St. Jo Capurro, Ext. 780.

Want to join or form car pool from vicinity of Bayview Ave., E. Patchogue. G. Dioguardo, Ext. 553.

Want ride to New York City to attend school one or two afternoons per week. Schedule flexible. Call C. Nagle, Ext. 458.

Drivers wanted to join three man car pool. J. Backes, Ext. 2341.

Wanted - two drivers to join existing car pool from the North Patchogue area, 8:30 to 5. Must be punctual. Daniels, Ext. 470.

Would like to form car pool to CCNY or Columbia, Wed. and Thurs. evenings. A. Tranis, Ext. 2255.

Wish to join car pool in vicinity of South Patchogue. Hennessy, Ext. 676.

Want drivers for existing car pool from Bayport. 8:30 to 5:00. Call G. Kissel, Ext. 734.

WANTED - ride from Bellport to Adelphi Div. at Sayville Monday and Thursday nights 7:00-9:30 for Spring Semester. Call Ext. 2106 or ATLantic 6-8205 after 5:30.