



The Director's Corner

G.H. Vineyard

Each year at about this time, the congressional Joint Committee on Atomic Energy, now under the chairmanship of Representative Melvin Price of Illinois, holds hearings on the proposed budget of the AEC. Principal staff members of the Commission present statements on the programs for which they are responsible, and occasionally others are asked to testify or to be present for questioning.

Thursday, last week, Gerald Tape and I were privileged to be present when John M. Teem, the new Director of the Division of Physical Research of the AEC, reviewed the programs of his Division and its proposed budget for the coming fiscal year. (Dr. Teem visited Brookhaven in December, reviewed our programs and met a number of the staff.) The hearing was held in the public hearing room of the JCAE, which is among a suite of windowless rooms somewhere under the dome of the Capitol. It is reached by a small elevator which starts from a central area known as the crypt, and leads directly to the Joint Committee's rooms. Most Congressional committee rooms are in the House or Senate wings of the Capitol; since this one is a joint committee, it is centrally located.



Dr. Teem opened his statement with a tribute to his predecessor, Paul McDaniel, whom many of you know: "For the past 12 years you have heard testimony in support of the Physical Research Program from Dr. Paul W. McDaniel, former Director of the Division of Physical Research. Without fanfare, and with great dedication and enthusiasm, he addressed the varied problems associated with managing a complex scientific program. A broad spectrum of research activities was carried out under his direction with the scientific excellence and innovativeness that are the hallmarks of a viable and productive program of research. Visits I have made recently to the Commission's laboratories have driven this home to me. The quality of the scientific efforts at these laboratories is exceptionally good, and many of the research tools so indispensable to the successful conduct of their experimental programs are unmatched elsewhere. This combination of physical facilities and scientific competence comprising AEC laboratories constitutes a unique national resource capable of addressing many of the urgent scientific problems confronting the nation today. The Atomic Energy Commission can be justifiably proud of the Physical Research Program developed under Dr. McDaniel's direction during this period. Its vitality is a fitting legacy and a fine tribute to the service rendered this nation and to science by Paul McDaniel during his 25 years with the AEC."

Teem then summarized the AEC's 1974 budget requests, for his Division, which total \$250 million in operating funds, \$35.4 million in plant and capital equipment, and \$18.3 million in construction obligations. The Division of Physical Research contains the following branches: High Energy, Medium Energy, Low Energy Physics, Metallurgy and Materials, Chemistry, and Mathematics and Computers. Its programs are carried out in eleven research centers and national laboratories, belonging to the AEC on more than 100 university campuses, and in several industrial laboratories. The total sum being requested for next year is higher than this year's budget, but increases scheduled for the National Accelerator Laboratory and for the Los Alamos Meson Facility, both major facilities which are just beginning to go into operation, are larger than the increase in the total. At BNL, increases are scheduled for Metallurgy and Materials operating budgets, but decreases are slated in High Energy Physics and in Mathematics and Computers.

Dr. Teem's statement was accepted with a moderate amount of questioning by the



The Future In Your Tank?
A look inside your "gas" tank of the future? To get rid of the pollutants all fossil fueled engines now spew into our environment, your car of the future will probably use hydrogen, which is almost totally free of pollutants, as a fuel. Your "gas" tank will appear to the naked eye as solid metal of titanium or magnesium alloy granules, instead of gasoline. Shown "empty" (no hydrogen) in the left photo but "filled" (hydrided) in the right photo is an iron-titanium (FeTi) alloy. Both photos were taken by Jack Kelsch at a magnification of 500 times by an electron scanning microscope.

Chairman of the Committee. In the afternoon session, Chairman Price asked Dr. Louis Rosen, of Los Alamos, about the production of radioisotopes at the new Meson Facility. This gave him an opportunity to point out the important work in prospect there on the production of new isotopes for medical purposes, but which is being turned off in the 1974 budget.

I was then asked whether we had a similar problem at Brookhaven. The answer was that we do indeed, and I called attention to the BLIP (Brookhaven Linac Isotope Production facility) which is just now going into operation, but for which no money is provided in the 1974 budget. Members of the Joint Committee expressed a special interest in seeing that the medical isotope program be continued, and the General Manager of the AEC responded that the Commission was looking very carefully into means for doing this.

I was also asked how the national laboratories could help solve the energy crisis. This gave me an opportunity to describe some of the ideas that our own BNL scientists have had in this area, besides the reactor development program, which, of course, is a continuing concern of the AEC. In response to further questioning about problems faced by the laboratories, I told about the need for more funds to exploit fully the existing major facilities such as the AGS and the HFBR. The long waiting time for mounting new experiments at the AGS is one example of such difficulties. I also cited some of the exciting ideas for new experimental facilities which have not yet been budgeted, and ended by pointing out that in the face of all this we are now being forced to reduce our staff again by lay-offs. The Committee members present made no specific response.

Dr. Robert Wilson, Director of NAL, described the recent operation of the accelerator at his laboratory in which energies up to 400 GeV have been achieved, and more or less regular operation at 300 GeV is now going on.

The record of these hearings, which will continue for several weeks, will be published. Typically, the record fills four large volumes. Past years' proceedings are available in our library and make interesting reading for those concerned with the nature of AEC programs and Congressional attitudes toward them. The Joint Committee will recommend authorization by the Congress of a certain budget for the AEC, and an authorization bill will then be passed.

The long legislative process does not end there, however. A separate appropriation bill must also be passed, and this will require hearings by other committees of both the House and the Senate, starting in April. The appropriation does not have to be identical with what is authorized, and unfortunately has been known to be less. It is interesting that the AEC appropriation is traditionally a part of the Public Works appropriation bill, which includes rivers and harbors and many other items quite unrelated to atomic energy. At the end of this long trail, sometime next fall, will come apportionment by the Office of Management and Budget to the AEC and actual allocations by the AEC to the Laboratory.

Hydrogen Fuel Research

At Brookhaven's Department of Applied Science, hydrogen fuel systems in the form of reusable metal hydrides are being researched and developed.

Forcing hydrogen into the alloy forms FeTiH₂ and causes the granules to crack as shown in the right photo. Heating the alloy even slightly, which could be controlled by a foot "accelerator" pedal, causes the hydrogen to start to dissociate from the alloy (dehydride itself) and flow to the carburetor. Adding hydrogen re-hydrides the alloy, thus "refilling" your gas tank.

Scientists here at BNL who are researching and developing hydrided fuel systems say hydrogen can be made practical for all types of transportation, and may even be used to produce electricity via a fuel cell directly in the home. Engines and appliances now burning fossil fuels would require relatively minor modifications to use hydrogen instead.

In a hydrogen based energy economy, which they foresee as essential when our fossil fuels become too valuable to burn, utility plants would use their own power, particularly during "off-peak" periods, to produce and distribute hydrogen through currently existing natural gas lines. Hydrogen is one of the most abundant elements on earth and can be produced from petroleum or through the simple electrolysis of water.

Hydrogen in gas or liquid form is not considered practical for transportation purposes, but in the hydrided form shown above, it is safer to use than gasoline, and the technology has already advanced to the point where it is known to be technically feasible. The cost of using hydrided fuel sources on a per mile basis, after further development for large-scale applications, is expected to be comparable to other sources of energy. The metal hydride work is being done in the Department of Applied Science by Chairman Warren Winsche, Ken Hoffman, Dick Wiswall, Jim Reilly, Jerry Strickland, Jon Hughes, Al Holtz, Andrew Wolke, and Frank Salzano.

Accelerator Department Administrative Changes

Dr. R. Ronald Rau, Associate Director for High Energy Physics, announced recently several administrative appointments in the Accelerator Department.

Named to Associate Chairman for Special Projects was John Blewett. Currently there are two very important ongoing projects, the cooperative superconducting program, which has been so productive over the past several years, and the new Superconducting Transmission Line Project. Further projects are under active consideration with others in the Department and the Laboratory. This is in addition to Dr. Blewett's wide ranging interests in present Departmental programs.

Julius Spiro has been designated to be Associate Chairman with primary responsibilities for personnel, administration, and AGS facilities.

Horst Foelsche has been named Associate Chairman with primary responsibilities for experimental areas and facilities.

The Advanced Accelerator Development Division, and the study of ISABELLE will be headed by Harald Hahn.

In his letter to the Accelerator Department announcing the changes, Dr. Rau said, "During this interim period until the Director appoints a Chairman, I shall depend a great deal on John Blewett, Julie Spiro, Horst Foelsche, and Harald Hahn as well as the present Division Heads, Arie Van Steenberg, Dave Berley, and Bob Louttit, for counsel and advice in all Department matters."

Save Fuel The Easy Way

When leaving the Lab at the end of the day, turn your thermostat down by 5 or 6 degrees.

In the morning, put the thermostat up to 70 degrees maximum.

On weekends, set thermostat at 55 degrees.

Wear a light sweater or a suit jacket if you feel chilly.

Work harder . . . it will keep you warm!

L.I. Ecosystems

Mrs. W.Z. Lotowycz, curator of the herbarium at Planting Fields Arboretum in Oyster Bay, will give a lecture and slide presentation on different Long Island ecosystems. Her slides will show plants of the barrier beach at Fire Island, the Schu Swamp, the Riverhead cranberry bog, and Montauk in autumn.

The lecture will be held on Wednesday, March 7, at 8:00 p.m. in room 257 of the Bellport High School in Brookhaven. All those interested are invited to attend. Mrs. Lotowycz is being sponsored by the Bellport Garden Club and Students for Environmental Quality (SEQ) of Bellport High School.

Plants Grow In Garbage



Looking over plants growing in garbage and composted materials which will be part of Brookhaven Town's ecology exhibit at the Long Island Garden Show at Commack Arena on March 9-18, are (l. - r.) Max Small, Special Project Manager in Plant Engineering and Planning, Councilman Robert L. Hughes, Councilman Robert E. Reid, and Councilman William E. Regan. With the help of Brookhaven National Laboratory, the Town will show how to grow plants in many types of composted material.

Potpourri

Only the editor will claim any responsibility for this miscellaneous collection of unofficial and unconfirmed bits and pieces of information.

People generally write letters to the editor when they are annoyed at some action or some story. Right?

Last week the editor received several letters that didn't seem to express any of the above emotions. They were concerned with prepositions.

• Bruce Martin sent in a note as follows: Re: "prepositions" item, and the Potpourri column it was in.

My favorite example is: "A preposition is that which one may not end a sentence with."

Other (original) grammatical atrocities are: "A cardinal rule of English grammar is never to unnecessarily split an infinitive." and "Public speakers are required to carefully, and with phrases which are easy to correctly understand, avoid splitting infinitives." (The later is what a mathematician might dub a "nested split infinitive!")

• According to George Trigg, Winston Churchill answered a criticism about his use of prepositions with, "... this is the sort of errant pedantry up with which I will not put!"

• George Taylor says: "In continuation of the humor regarding ending sentences with prepositions, I have the following story which is also attributed to Winston Churchill. When interrupted during a speech for ending a sentence with a preposition he admonished his antagonist with - "That's the sort of impertinence up with which I will not put!"

Enough? No, not yet!

• Later in the week J. Vary wrote; "In regards to the item about ending sentences with prepositions, I believe it was George Bernard Shaw who responded to a criticism of his grammar received from a lady with this note: "Dear Madam: Yours is the kind of criticism up with which I will not put!"

• Jacob Seyfert sent in a copy of an editorial that appeared in the January issue of Welding Engineering. The editorial concerned itself with thoughts for the new year, and started with a quote from Elsie Jefferson as follows: "We struggle and cheat ourselves for a happier tomorrow - and we are fools. Tomorrow is a thief! Tomorrow is a trap awaiting to steal today and everything that is and never will be again."

• You never know where BNL will turn up in the newspapers. A few weeks ago there was an article in the sports section of Newsday about Tom Seaver of the Mets. So what does this have to do with BNL?

Well, the reporter who was interviewing Seaver about his thoughts on the high pay of baseball stars, noticed that Seaver was reading a newspaper article about the parasexual hybridization work at Brookhaven. Seaver is asked, "Does he ever think it is strange that scientists who go through years of preparation and work, earn maybe \$15,000, while he makes \$120,000 for throwing baseballs?" Seaver pauses a long time before answering "It's kind of funny, isn't it," he says, "but it is a reality nobody is going to change." Then he shrugs.

• In the Advertising and Sales Aids news section of the L.I. Commercial Review, we learned that Doug Humphrey, the Bulletin photographer, won first prize in the Commercial-Industrial category of the 12th annual photo contest of the Press Photographers Association of Long Island. His winning picture was of the grinding of glass polymer sewer pipe.

• Incidentally, don't plan on taking the evening flight from Islip to Chicago. American Air Lines has discontinued it because of insufficient revenue. The morning flight will continue as before.

Comments and suggestions welcome! - Carl Thien

EMERGENCY PHONE NUMBERS

Medical 2222
 Fire 3333
 Police 4444



Hank Thorwarth supplied the answers to the engineering questions.



Fire Chief Tom Newham and Fireman Dan Gilliam manned the Fire Department's exhibit.



Students were directed to the BNL exhibits by Alf Christoffersen.



Jerry Hudis answered general questions about all Lab functions.



Glassblower Irv Meyer, Mechanical Eng., had one of the most popular exhibits of the day.



Careers Day At Bellport High School

The third annual Careers Day at Bellport High School was sponsored again by the Bellport Rotary Club. Brookhaven Lab had several exhibits, and sent a delegation of staff members to man exhibits and advise students.

Careers in research, engineering and health sciences were the main offerings from Brookhaven, backed up by exhibits ranging from a movie about the AGS, a display of concrete polymer, a demonstration of glassblowing, a demonstration of high speed motion picture photography, information about the High School Cooperation Program, and an exhibit by BNL's firemen.

Vernon Buchanan, AGS, a member of the Bellport Rotary Club, acted as liaison agent. Alf Christoffersen and Ginnie Sayre were coordinators for BNL. On Wednesday, April 11, another Career Day will be held at Longwood High School with John Walker of the AGS, acting as liaison man.



LeGrand Newman and Mac Thomas visited with the Bellport contingent of the High School Coop Program members.



Bob Walton showed equipment used for high speed motion picture photography.

Cafeteria Menu

Week Ending March 8, 1973

Friday, March 2	
Fish Chowder	
Fried Fillet of Sole w/Tartar Sauce & French Fries	.99
Codfish Cakes & Spaghetti	.90
Baked Beef Loaf w/Savory Gravy & 1 Veg.	.90
Monday, March 5	
Cream of Tomato Soup	
Breaded Pork Chop & 1 Veg.	.99
Beef Ravioli w/Parmesan Cheese & 1 Veg.	.90
Beef Livers w/Smothered Onions & 1 Veg.	.90
Tuesday, March 6	
French Onion Soup	
Salisbury Steak w/Brown Gravy & 1 Veg.	.90
Frankfurters w/Baked Beans & Cole Slaw	.90
Sliced Turkey & Stuffing w/Cranberry Sauce, Gravy & 1 Veg.	.99
Wednesday, March 7	
Vegetable Soup	
Chinese Pepper Steak on Rice	.99
Chicken Stew Casserole	.90
Flounder Stuffed w/Crabmeat & 1 Veg.	.95
Thursday, March 8	
Turkey Noodle Soup	
Grilled Monte Cristo Sandwich & Pickled Beets	.85
Veal Patty w/Noodles Oregano	.90
Braised Beef a la Mode & 1 Veg.	.99

Cooking Exchange

Jane Love

Have I got a winter vacation for you! The cost is \$1.00, the time is 3 to 5, March 7, in the Recreation Building in the Apartment Area.

Think of it - The Bay of Bengal to the south, the Himalayas to the north, and your own special chef in the kitchen making Pulao, Chicken Kurma, Sabji Pakora, and Halva. Throw the kids in your private 747 and fly to Bangla Desh!

BERA Sales and Services

The Film Service, formerly located in the Gymnasium, is now conducting business at the Cafeteria. This service includes the processing of film, the sale of film, photo albums, projector lamps, and a more complete stock of photographic equipment to suit everyone's needs. It also offers a variety of athletic equipment.

In addition to the relocation, the new Cafeteria Office will conduct the BERA ticket services program which was formerly offered at the Personnel Office.

At the present time this service includes the sale of tickets for the Islanders hockey games, the Nets basketball games, and the Metropolitan Opera; the distribution of free Disney World discount coupons; mail order forms for the Ice Follies at the Nassau Coliseum (giving Brookhaven employees a discount of \$1.00 on each ticket); and the sale of season swimming pool passes. In the future, all tickets for BERA activities will be sold at this office.

For your convenience an information rack has all the recreation and entertainment periodicals and flyers previously displayed at the Personnel Office.

Please note the new office hours: 7:30 to 11:15 and 11:45 to 2:30.

Young Boatman's Course

Youngsters in the East Patchogue, Bellport, and Brookhaven area who are interested in taking the New York State Young Boatman's Safety Course may still enroll up to Saturday, March 18th.

Young sailors may enroll for the course at the Bellport Community Center at 9 Bell Street, Bellport, on Saturday, March 17 at 10:00 a.m.

Youngsters aged 10 through 14 must take the course, sponsored by the Conservation Department's Division of Motor Boats, and earn a safety certificate before they may lawfully operate a mechanically propelled boat alone on New York State waters.

Youngsters in this area are urged to enroll now so they will not be disappointed when the boating season gets into full swing this summer.

The course consists of eight basic units and is designed to be taught in two-hour sessions. All course material based on the boating safety handbook "Make Sure - Make Shore" will be furnished free to youngsters taking the course.

The course in this area will be taught by members of the Patchogue Bay Power Squadrons.

Physicists Needed

The 5 GeV Electron Synchrotron NINA, housed at Daresbury Laboratory, in north west Cheshire, England, is being used for research into high energy physics by university and resident groups. Research Associateships are available for high energy physicists to join teams either at Daresbury or at CERN (Geneva). Posts are available for a fixed term of up to 3 years.

The successful applicants will be appointed at salaries between 1,670 pounds and 4,390 pounds. The level at which an Associate is appointed is dependent on age, ability, and experience.

Applicants should possess a Ph.D. in high energy physics or expect to obtain their Ph.D. during 1973.

Superannuation is contributory under the Federated Superannuation System for Universities.

Please write for an application form, quoting reference DL/449, to the Personnel Officer, Daresbury Nuclear Physics Laboratory, Daresbury, Lancashire, England.

Bowling News

Grace Fales

Green League

Every team has their night, and the No Names could do no wrong this week with a 3068 series against the Sandbaggers. D. Plows 206, R. Taylor 202, and G. Guydish 206, contributed to that cause. Congratulations to B. Belligan for his 221/694 gross series, earning his Club Award. Other 200's were rolled by W. Kollmer 204/202/556, C. Spence 209, C. Gardner 217, and E. Sperry 203.

Red League

For the Charlie Browns, E. Fales 210, R. Brown 201, J. Ferrante 202 for the Phou-bars, C. Buzzeo 220 for the Lucky Strikes, and for the Neutrons, R. Larsen 203/225/616.

Pink League

The Pinsplitters are out in front by six points. The Medi-Tarsals have rebounded back into second bumping the Fiscal Assets and Spares to third and fourth position. The Bioboosers are making their move and the Alley Oops and Hopefuls are only three points behind. The PIU's are still trying to Pick-It-Up. Highs were: Audrey Bangel 161, Grace Fales 163/469, Frances Scesny 164/458 (Honorable Mention), Carol Beckner 165/484 (high series), Helen Kelly 167, Ellie Murgatroyd 170, Marge Stoeckel 171/477, and Helen Caisey 177/476 (high game).

Black and Blue League

Highs for 2/21: Lou Caisey 214/580, Frank Costello 211, George Morgan 202, Lew Jacobson 200, and Helen Caisey 172/196/505. Best wishes for a speedy recovery to Scott Spencer.

Marian McPartland Trio In Concert at Stony Brook

The First Lady of the Keyboard, Marian McPartland, will perform with her Trio on Sunday, March 4, 1973. The concert is the fifth in the IAJ Winter Series and will be held from 4 to 7 p.m. in the ballroom of the Stony Brook Union at the State University of New York at Stony Brook.

As well as Marian McPartland is known to her fellow Long Island residents, her reputation is international as one of the outstanding exponents of the art of jazz. A recording artist and clinician, Ms. McPartland was recently interviewed on the Arlene Frances and Mike Douglas TV Shows and has just completed a two-month engagement at the Cafe Carlyle in Manhattan. She has been conducting a jazz lecture/demonstration series for International Art of Jazz, Inc. which was funded by the New York State Council on the Arts, the National Endowment for the Arts and the Stony Brook Union.

The Sunday afternoon March 4th cabaret-style concert is open to the public. Ticket information is obtainable by calling (516) 261-5582.

Theatre Group

The Theatre Group will present a reading of *The Flounder Complex* on Tuesday, March 20, at 8 p.m. in the Recreation Hall.

February Retirees



Esther B. Semm, a Secretary in the Information Division who had been employed at BNL since May 2, 1955, retired on February 28.

BERA Election Results



Kay Hunt



Jo Gazzola



Mike Zguris

It's Kay Hunt, Josephine Gazzola and Michael Zguris. The above trio topped the voting and won the election for positions on the BERA Executive Board.

BNL employees, casting approximately 1,200 ballots, gave Kay the most votes and a three-year-term.

For the first time in the history of BERA elections, there was a tie for second place honors. Normally, this would not present a problem. However, this year the two candidates with the highest number of votes were to serve a three-year-term; the next in line, was to serve a one-year-term. Since Josephine and Michael came through with the identical number of votes (after three recounts) the BERA Board is now making a decision on how the length of service for these two people will be determined.

At this time, the BERA Board and George Sabine would like to take this opportunity to thank the other three candidates, James Petro, Jack Crow and Thomas Prach, for their interest in the Association.

Selected Reading

- Science 179, February 16, 1973
Casualties of governmental reorganization. P.H. Abelson. 641
- Construction of large accelerators: Scientific and political aspects. W. Heisenberg. 643-7
- New Sci. 57, February 15, 1973
Black Panthers in and on science. Dr. Curtis Powell and Clark Squire talk to Ann Rosenberg. 369-71
- Phys. Today 26, February 1973
AEC fusion division hopes for feasibility by 1982. 69+
- U.S. News World Rep. 74, February 19, 1973
More energy from the atom - but will it come in time? 41-3
- Time 101, February 26, 1973
Nixon v. the scientists. 75-76



Percival A. Vogt, a Refrigeration and Air Conditioning Engineer who began work at Brookhaven on July 10, 1957, retired on February 28.

World of BNL

The coming week's schedule for the Laboratory's own radio program, the World of BNL, with host Norb Dernbach, is as follows:

Sunday, March 4

Meyer Steirberg - Mine Roof Bolts at 8:15 a.m.

WRCM-FM (103.9), Riverhead
WHRF-AM (1570), Riverhead
WLIR-FM (102.9), Hempstead at 11:15 p.m.

WGLI-AM (1290), Babylon

Tuesday, March 6

Meteorology, Part I at 10:00 a.m.

WSHR-FM (91.9), Lake Ronkonkoma

BAFFA Symphony

The BAFFA Symphony Orchestra will perform music of the Romantic Period on Sunday March 4, 1973 at 3 P.M. in the Auditorium of the Sayville High School, Brook Street, Sayville.

Weather Information

As in past years Lab employees are urged to listen for notices affecting working hours before starting to the Lab on snowy days. Information on revised schedules due to inclement weather will be carried by the following stations:

Station	Area	AM	FM
WALK	Patchogue	1370	97.5
WBAB	Babylon	1440	102.3
WGLI	Babylon	1290	—
WGSM	Huntington	740	—
WHLI	Hempstead	1100	98.3
WHRF	Riverhead	1570	—
WLIX	Islip	540	—
WLNG	Sag Harbor	1600	—
WPAC	Patchogue	1580	—
WRIV	Riverhead	1390	—
WWRJ	Southampton	—	95.3
WBLI	Patchogue	—	106.1
WRCM	Riverhead	—	103.9

Security Office

Until further notice, the Security Office, at 24 Upton Road, will be open between the hours of 8:30 a.m. and 12:30 p.m.

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