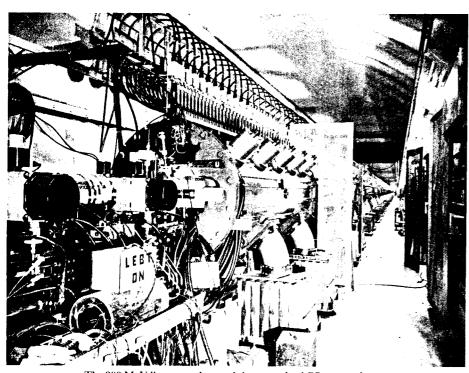
BOULLETIN Volume 31 - Number 2 / January 14, 1977 BROOKHAVEN NATIONAL LABORATORY



The 200 MeV linear accelerator injector to the AGS, currently one of the most powerful linear accelerators in the world.

Accelerator-Breeder Technology To Be Examined At BNL Meeting

Responding to a proposal by the Department of Applied Science, ERDA requested Brookhaven to host an information meeting on accelerator breeding. Representatives of all the national laboratories, interested universities, utilities, and industry will meet here on January 18 and 19 to discuss the potential importance of this concept in the light of new scientific knowledge.

In the past year there has been renewed interest in the use of particle accelerators for breeding of fissile fuel for nuclear power reactors, another facet in ERDA's research program to provide energy security for the country.

This concept is to convert fertile nuclei (natural U-238 and thorium) to fissile nuclei (Pu-239 and U-233) by means of neutrons produced by bombarding a heavy metal target with high energy protons or other particles from an accelerator.

Proponents of this alternate technology for nuclear power cite that it is able to produce fissile fuel in a sub-critical fertile target material, and that it could insure a fuel supply for the 64 light water reactors now in operation in the United States.

With the accelerator-breeder technology, it may also be possible to produce nuclear fuel elements for nuclear power plants without enrichment and reprocessing plants, thus reducing the possibility of diversion of fissile material for nuclear weapons

It may also be possible to transmute longlived radioactive waste from the nuclear power plants to shorter-lived and stable isotopes, thus ultimately solving the nuclear waste problem.

The use of accelerators for this purpose was first attempted at Livermore in 1952 with the construction of a Material Testing Accelerator (MTA). Although the work showed that the process was possible, the MTA was inefficient and costly. In the intervening 25 years, accelerator technology, developed for basic high energy research, has progressed to the point where linear accelerators with high beam power and efficiency can be built at reasonable cost.

Because of the strong linear accelerator development group at Brookhaven, the presence of a number of reactor physics analysts and the interest of DAS staff members, the Laboratory submitted an analysis to ERDA last November of a Linear Accelerator-Breeder (LAB). This system would use a combination of linear accelerator and reactor target technologies to produce fissionable nuclear fuel from natural uranium and thorium, particularly for the conventional fueled light water reactors now in operation.

Chaired by H. J.C. Kouts, coordinator of

the Brookhaven Fusion Energy Program, the meeting next week will explore the state of the art in accelerator breeding at Brookhaven and at other laboratories. Advocates of such a system envision it as at least insurance against a lack of natural uranium fuel and as a backup in case of a delay in the development of the Liquid Metal Fast Breeder Reactor. A demonstration accelerator breeder could be constructed within ten years.

After their deliberations, the conference participants will propose a course of action to ERDA on the further research and development of accelerator breeders.

Slate Of Candidates For BERA Board

The BERA Nominating Committee has selected the following slate of candidates for the 1977 BERA Executive Board election.

Elbert (Nate) Carter - Technical Associate, Safety & Environmental Protection. BERA activities: Participation in bowling, softball and football.

William Love - Physicist, Physics Department. BERA activities: Participation in badminton, volleyball, softball, cricket, and member of the Camera Club. Bill is very active in the Theater Group having served as past vice-president, treasurer, chairman of the Advisory Committee, and director of "The Devil's Disciple." Starring-role performances in many Theater Group productions have proven Bill's fine acting ability.

Marguerite Stoeckel - Executive Secretary, Fiscal Division. BERA activities: Past president and secretary of the Bowling Executive Board, member of the Bowling Rules Committee, Tennis Committee and Special Events Committee.

Gail Williams - Personnel Assistant, Director's Office. BERA activities: secretary of the Theater Group, Tennis Committee, and Badminton and Cricket Leagues.

From this slate of candidates, BERA members will cast their votes to choose replacements for Audrey Blake and Charles Flood, whose terms of office as BERA Executive Board trustees will expire on March 1.

Election week is scheduled for January 24 through 28, at designated polling stations. A list of station locations will be published in the next edition of the *Brookhaven Bulletin*

ERDA OK's First Step In Sun System

The development of a heliostat, the central component in a solar-powered steam generator, has been funded by ERDA for fiscal year 1977. This \$200,000 Accelerator Department project is also expected to be supplemented by \$115,000 from the New York State Energy Research and Development Authority.

In two years, Garry Cottingham, who heads the research, expects to demonstrate a workable and cost effective heliostat (a movable reflector) which, with 29 others, would provide a solar powered generator to supplement existing steam plants. This system could have significant application in the northeast and makes good sense economically.

There are many schools, hospitals and churches in the northeast region of the United States powered by steam plants, which are hurting from the high cost of oil and are concerned about future fuel supplies. These and similar industrial buildings would be "naturals" to employ such a supplementary system.

Cottingham estimates that the Brookhaven array would have a ten-year life and would save the owner \$20,000 in fuel oil bills per year. Present estimates are that the system would cost \$89,000 with a cost return ratio of 4½ to one. In other words, in four-and-a-half years, the system would pay for itself. This is a radical improvement over other comparable solar powered generating systems which, Cottingham says, generally have no better than a 30 to one ratio.

Present plans are for the heliostat to be made of thin gauge aluminum with a reflecting surface. A designer, especially hired for this purpose, is now at work preparing detailed drawings prior to the start of construction of the first mirror this summer. To prove the workability of the heliostat, it will then be operated against an instrumented target. A second prototype will be built which will iron out any bugs in the first reflector. As Cottingham says, "First we make it work, then we make it cheaper."

Once the heliostat has been verified as a practicable component, the rest apparently is straightforward. It is hoped that subsequent funding will be available for a full-fledged steam plant which would be hooked





Garry Cottingham and a free style drawing of an early version of the solar powered steam generator. Detailed drawings are now on the board for the construction of one of the reflectors.

in to Brookhaven's central steam system. The next step in the scenario would be for industry to take over the plans and put the system on the market.

Paul Michael's Atmospheric Sciences Division will assist the project by doing certain instrumentation and measurement of direct solar radiation. Crucial to the design of the heliostat is the relationship of the degree of solar energy received and wind speeds. Michael's group will search the weather data and determine these relationships.

Besides Cottingham, other Brookhaven scientists instrumental in developing this solar concept included Ken Green, John Blewett and Bill Wilhelm.

Inside Info

Myron C. Ledbetter, Biology Department, has been elected President-Elect for 1977 of the Electron Microscopy Society of America. He will serve as President in 1978 and Past-President in 1979. The 35th Annual Meeting of the Society will be held in Boston, August 1977, in conjunction with the International Conference on X-ray Optics and the Microbeam Analysis Society. The 36th Annual Meeting will be in August 1978 in Toronto, in conjunction with the 9th International Congress on Electron Microscopy.

Powell Richards, DAS, has been honored by Mallinckrodt, Inc. in its 1977 calendar which features "The Founders of Nuclear Medicine." Richards is cited for being instrumental in the introduction of ⁹⁹Mo^{99m} radionuclide generator in nuclear medicine (1960), developed first technetium-99m – sulfur colloid (1963); and developed first technetium-99m "instant labeling" kit (1970).

BNL Lecture

Carl B. Dover, Physics Department, will present a BNL Lecture on "The Interaction of Particles with Antiparticles and the Problem of Nuclear Forces," Wednesday, January 19 at 8:00 p.m. in Berkner Hall.

Smoke Detectors Get S&EP Seal Of Approval

Recently the Safety and Environmental Protection Division has been receiving calls from employees asking about the safety of the smoke detectors that were recently made available. These calls were occasioned by published reports that Ralph Nader's group, the Public Citizen Health Research Group, had asked that the detectors be banned because of possible radiation hazards.

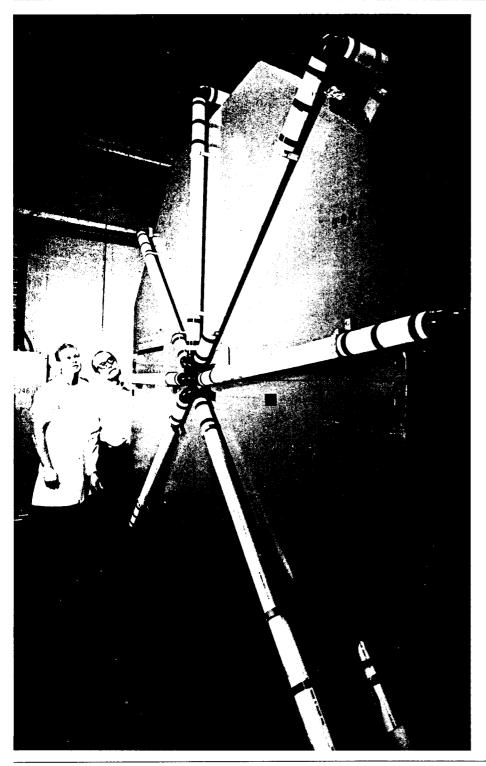
The S&EP Division heartily endorses the use of these detectors and says the radioactive hazard from them is negligible. They are supported in this view by groups concerned with safety and fire prevention.

The Nuclear Regulatory Commission requires extensive testing of the devices, and as evidence of their safety cites the fact that "a person flying round-trip across the United States receives about 5 millirems because of the increased radiation at high altitudes. This is ten times greater than the exposure you would receive by holding the detector next to you eight hours a day for an entire year."

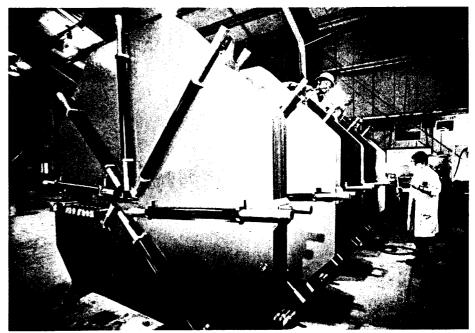
The National Fire Prevention & Control Administration and the National Bureau of Standards agree, as does Consumer's Union, an independent testing laboratory.

The president of the National Fire Protection Association said, "I would urge anyone who has an ionization detector to leave it exactly where it is. Smoke detectors save lives. NFPA has ample evidence of this in its fire records."

Brookhaven Bulletin January 14, 1977



Cosmotron Magnet Blocks Taken Out Of Moth Balls



After operations at the Cosmotron were discontinued in 1966, the "blocks" of the 2000 ton magnet were kept in storage at the igloo area. Now, six of these blocks are being remodeled for use as the core of Toroid magnets in a Columbia University-University of Illinois experiment. At left, Lloyd Chadwick and Rod di Girolamo, group supervisor of Experimental Area Operations, check out Toroid I, the first of the "new" magnets to be finished. Above, Melvin Tardd and Christopher Cyran do some soldering on the remaining blocks in the mechanical Assembly Bldg, at the AGS.

Preventive Guidelines

Dr. Arthur Upton, Stony Brook Professor of Pathology and a Guest Senior Scientist at Brookhaven's Medical Department, offers some preventive measures anyone can take to reduce his chances of becoming a victim of cancer. As reported in the Stony Brook Review, Dr. Upton says that a key to survival is effective screening of the environment against cancer-causing agents:

- Don't smoke or hang out in smokefilled places.
- Avoid car and factory exhaust fumes in so far as possible.
- Refuse needless X-rays
- Don't overexpose yourself to sun or ultraviolet light.
- Avoid over-use of aerosol sprays.
- Be cautious about prolonged exposure to household cleaners, cleaning fluids and paint thinners.
- Avoid excessive intake of smoked foods.
- Eat sparingly of bacon, pastrami and corned beef.
- Go easy on fatty foods.
- Exercise discretion in the use of pesticides, fungicides and other home garden and lawn chemicals.

DRIVERS: ATTENTION! Effective Jan. 1, 1977



NEW STATE LAW PERMITS RIGHT TURN ON RED LIGHT AFTER FULL STOP

BUT REMEMBER . . .

Pedestrians have right-of-way
Traffic entering intersection on
green light has right-of-way
NO right turn on red in New York City

NO right turns when prohibited by this sign

Raymond T. Schuler, Commissioner NEW YORK STATE DEPARTMENT OF TRANSPORTATION

NO TURN ON RED

Events At BNL

Tuesday, January 18
ERDA Information Meeting on Accelerator Breeding – Berkner Hall (18-19)
Wednesday, January 19

BNL Lecture
Friday, January 21
Adelphi University Biology
Student Tour

Tuesday, January 25 Rutgers University Tour

A Poetic Response

When California Senator-elect Dr. S.I. Hayakawa, a former college president, visited Lawrence Livermore Lab recently for a briefing, he sent word ahead to Dr. Edward Teller, Associate Director Emeritus at LLL, requesting an explanation of the difference between fission and fusion "in terms a college English major could understand." Dr. Teller responded with a poem he had written in 1950:

"F" is for fission.

That is what things do
When they get wobbly and big
And must split in two;
And just to confound
The atomic confusion
What fission has done
May be undone by fusion.

— ERDA News

Arrivals & Departures

Arrivals

Kevin M. Clark	Plant Engrg.
Joseph C. Dudek	Plant Engrg.
Sarah S. Gary	Plant Engrg.
Bernard C. Jasper	Plant Engrg.
Purushottam G. Kale	Saf. & Env. Prot.
James Makoulis	Accelerator
Florence F. Mignano	Plant Engrg.
Doraliza Tavarez	Staff Services
Earl L. Vessup	Personnel

Departures

NONE

BNL Camera Club Facilities Are Better

The BNL Camera Club has improved its darkroom facilities by providing more room and lots of new equipment. The darkroom, located in the Recreation Building, contains two separate printing rooms equipped with enlarging equipment for both color and black-and-white printing.

Membership in the Camera Club is open to all BNL employees and members of their immediate families. Prospective members are invited to attend the next Camera Club meeting, to be held Wednesday evening, January 26, at 7 p.m., in the lounge of the Recreation Building. Previously enrolled members are also urged to attend this meeting.

Further information can be obtained from Ed Hagelberg Ext. 3120, Keith Jones Ext. 4581, or Mike LeVine Ext. 4581.

Service Awards



Dr. E.P. Cronkite, Chairman of the Medical Department, recently presented service awards to Isadore Danowski (left) - 10 years and Don Sacker (right) - 20 years.

Stony Brook Events

Special Medical Problems Of Women – Monday, January 17, 8:00 p.m., Lecture Hall 2, level 2, Health Sciences Center, Presentation by Dr. Penny W. Budoff, a family practitioner from Woodbury.

Continuing & Developing Education – Registration for part-time educational opportunities for credit or non-credit during the week of January 17. Designed for those wishing to obtain the Master of Arts in Liberal Studies degree (MA/LS) and for those who desire to take advanced courses for personal, educational pleasure. For further information contact the CED office 246-5936.

Master Of Science Degree - Registration during the week of January 17. For those interested in pursuing careers in engineering, industrial management, statistics and other related fields. A part-time program offered by the Postgraduate Extension Program of the College of Engineering and Applied Sciences. Must contact Mrs. Weitzman or the CED office at 246-5936 before registration. Classes begin the week of January 24.

An Evening With Computers - Thursday, January 20, 7:30 p.m., Lecture Center 100, basic introduction to computers, lecture, tour of computing facilities and "play" with the Univac 1110 computer system. Reservations urged, 246-7146 during business hours.

As Ye Sow, So Shall Ye Reap

The French Group of BNL will sponsor a showing of the film "The Wild Oat," on Friday, January 14, at 8 p.m. in Berkner Hall. The famous comedian Fernandel is the star of this movie, which has French dialog and English subtitles.

All members of the Laboratory community and their friends are invited to attend. Those who are not members of the French Group will be asked for a contribution of \$1.50 to help pay for film rental and refreshments.

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CARL R. THIEN, Public Relations Officer

TUNE IN!

Why are the W-2 forms needed for filing income tax returns always so slow in arriving? They usually don't arrive until about the last week in January, almost the legal deadline. It seems that with the computerized payroll system these forms could be sent by the first week in January instead of the last. The earlier one files his return, the sooner the refund arrives Answer:

The W-2 forms have been mailed to employees usually no later than the third week in January. On occasion, they have reached employees by the middle of the month.

The payroll system is indeed computerized. However, all information required on W-2's is not. Additional information, requiring a manual effort by the Payroll and Accounting Departments, must be incorporated in the return together with the salary and tax information. Pertinent information required for some employees, such as, moving expenses and consultant's fees, must be extrapolated and introduced into the computerized payroll

Cost of excessive group life insurance (calculations based upon year of birth, individual changing coverages during the calendar year, premiums paid and premiums taxable) are required by the IRS and must appear on W-2's. Of necessity, these calculations cannot be initiated until the end of the calendar year since they are de pendent upon a full year's history. When these figures are compiled, they, too, must be integrated in the file.

--- B. McAlary

SUNY/BNL Registration

Final registration for the Stony Brook/ BNL extension courses will be held from 10:00 a.m. to 12:00 noon, Thursday, January 20, in the Radiation Division Conference Room (Bldg. 318 opposite the bank). Dr. Daniel Dicker, Director of the Stony Brook Postgraduate Extension Program, and Mrs. Esther Weitzman will be present to enroll and counsel students.

If there are a sufficient number of registrants, the courses to be offered at BNL in the spring term are: MSA 507, Introduction to Probability and Stochastic Processes, Professor H. Schreiber, Tuesdays; and MSA 511, Introductory Methods in Applied Mathematical Analysis, Professor N. Greenspan, Wednesdays. Both courses will be held from 5:30 to 8:00 p.m.

These courses are available to BNL employees, guests, and collaborators, and to a limited number of persons not affiliated with the Laboratory. Persons who did not pre-register should call Mrs. Weitzman 246-5967.

Cafeteria Menu

Week Ending January 21, 1977

Monday, January 17	
Tomato Bouillon	
Franks & Baked Beans	1.05
Barbequed Fresh Ham & 1 veg.	1.30
Tuesday, January 18	
Cream of Chicken Soup	
Chopped Steak & 1 veg.	1.10
Chinese Pepper Steak on Rice	1.25
Wednesday, January 19	
Shrimp Chow Mein on Rice	1.10
6	

Special

New England Boiled Dinner Cup of Split Pea Soup Corned Beef & Cabbage Boiled Potato or Mashed Turnip Choice of Pie-Small Beverage \$1.87 plus tax

Thursday, January 20	
Puree of Mongol	
Spanish Omelet & fr. fr.	1.10
Short Ribs of Beef & 1 veg.	1.30
Friday, January 21	
Clam & Celery Soup	
Seafood Cakes & Spaghetti	1.05
Pot Roast & 1 veg.	1.30
Friday, January 21 Clam & Celery Soup Scafood Cakes & Spaghetti	1.0

Special Winter Concert Features NY Pianist

The BERA Concert Group will present the young American pianist Jeffrey Marcus in a special midwinter concert on Tuesday, January 18, at 8:30 p.m. in Berkner Hall.

Jeffrey Marcus has won many prizes and competitions leading to performances throughout the New York area as a soloist with orchestra, recitalist, and chamber player. As a recitalist and collaborating artist Mr. Marcus has made an extensive tour of Poland appearing in six cities and including a concert at the Chopin Palace in Warsaw. Radio concerts include Iceland



Jeffrey Marcus

(sponsored by the USIS), Poland and in New York on stations WQXR (listening room) and WNYC (Herman Neumann) and a live concert from Alice Tully Hall -Lincoln Center.

Mr. Marcus has performed the music of many contemporary composers including Vincent Persichetti, Alan Leichtling and Krystoff Penderecki. His work with Mr. Persichetti has included collaboration and performance of that composer's Third Piano Sonata at the Dartmouth College Congregation of the Arts and a performance of the Persichetti Ninth Piano Sonata on the "Wednesday One O'clock Series" at the Juilliard School.

Mr. Marcus has recently concluded the second of two successful concert tours of West Germany during 1976. In addition to concerts and recitals in important German cities, Mr. Marcus recorded for Süd-Deutsche Rundfunk the music of Beethoven and Richard Strauss. Many of these concerts were with the American cellist Rebecca

For his second appearance at BNL in three years, Mr. Marcus has chosen works by Bach, Beethoven, Schumann, Schubert-Liszt and Chopin-Liszt. Regular admission will be \$3.00, \$1.50 for students and per-

Service Awards

The following employees will receive Service Awards during the month of January 1977:

Twenty-Five Years

Mary R. Burns	Physics
Norma G. Gillespie	Medical
Martin F. Montag	Reactor
Edward V. Sayre	Chemistry
Rudolph M. Sternheimer	Physics

Twenty Years

Charles Bachsmith	Applied Science
James P. Clint	Accelerator
Joseph R. Cuccia	Applied Science
Doris M. Franck	Chemistry
Georgina A. Fuld	Accelerator
Josephine C. Gazzola	Fiscal
William A. James	Medical
Richard Lingg	Accelerator
Edward Rogers	Plant Engineering
Dmitri Stephani	Instrumentation

Ten Years

Thomas H. Albertina	Applied Math.
John J. Bland Admin. S	ys. & Data Proces.
Matthew V. Conforte	Physics
Ralph W. Tuthill, Jr.	
William G. Wilhelm	Accelerator

Order Revised Form

The Permanent Property Form 1218-B is currently in stock and should be used by all departments and divisions. It replaces form 1218-1 which is now obsolete. Please order the new form

(stock number S-82312)

Sports News

Congrats this week to the Anachems for 14 point lead going into position night, they have locked out everyone else. E. Gill

Larsen's 229/220/640 scratch led the team, with J. Connelly bowling 230 and J. Dio-

Ed Sperry had another good night with a 245 game. Looks like he conquered that new ball! His average is up 8 pins in the last three nights of bowling.

The remaining 200 games for the night were bowled by E. Woessner 221, J. Cain 202, and R. Jones 201.

Black & Blue League

Going into position night, the Power Meds have a one and a half point lead over the Hot Stuffs. This night's bowling will determine the winner of the first half. High games were Charlie Tomesch 218, Bill Kristiansen 204. High gross pots were won by Bill Kristiansen 232 and Renee Flack

Green League

With one week to go in the first half, the Sparks managed to get a 14 point lead making them the winners of the first half. Congrats on their victory! The Pick-Ups only took three points from the Designers to stay in second place. B. Vignato had a 209 game. The Blue Jays took five points from the Old Timers as Nick Combatti had a 201 and M. Iarocci a 204. The Charlie Browns took 11 points from the Cosmos. For the Charlie Browns, M. Guacci had a

Bowling

Red League

winning the first half of the season. With a bowled a 209 for the winners.

Great bowling again by the 76'ers. R. guardo having a 222 game.

Employees' League

Volleyball

in double figures.

Play resumed after the holiday break with the Cool Tools sweeping three games from the Road Runners 21-15, 21-14 and 21-5. The Atom Spikers defeated the Circuits 21-2, 21-16 and 21-10. Finally, the Spikers won three from Chemistry 21-12, 21-17 and 21-4.

201/204. J. Scott bowled a 244 game and

The Good Guys took all seven points in-

Dick Murgatroyd was high for the men

Betty Roche led the women with a 195.

with a 201. Nice games by Ben Belligan 200

Nice games also by Elizabeth Bull 177,

Wilma Eriksen 171, and Diane Schug 167.

In the fourth double-header of the season

the Spuds led by Bob Dory's 32 points and

Stanley Gilbert's 23 points, soundly defeated the Dribbles 97-80. The Dribbles

were paced by Jeff Gaffney and Brandt

Johnson who had 23 points and 20 points,

respectively. The Persuaders forfeited to

bles against the Browns. However, a twisted

ankle in the second quarter eliminated the

Brown's star guard Jerry Hobson from

play and despite 42 points scored by the

Moose, the Browns were defeated 114-98

by the Dribbles who were paced by Jeff

Gaffney's 39 points. In the second game,

the Spuds exterminated the newly reorgan-

ized Persuaders 106-77. Fletcher Johnson's

35 points led the losers while the winners

had excellent performances from all their

players, especially Bob Doty with 24 points

In the sixth double-header, the Persuad-

ers surprised the Dribbles by outscoring

them 92-86. Excellent performances by

Fletcher Johnson (21 points), Greg Donald-

son (27 points and a lot of rebounds) and

Ron Webster (18 points) sparked this ef-

fort. Dennis Nordstrom scored 30 points for

the losers. In the second game, 35 points

by The Moose and 18 points by Willis

Smith were not enough to keep the Spuds

from soundly defeating the Browns 89-72.

Stanley Gilbert paced the Spuds with 28

points, although Bob Doty, Rich Sapienza,

Richard Kayte and Bob Kowalski all got

and Rich Sapienza with 26 points.

The fifth double-header pitted the Drib-

creasing their first place lead to nine points. The Plutoniums and Alley Oops are tied

Frank Green a 204.

for second place.

and Jere Austin 198.

Basketball

Purple and White League

Standings (after January 5)

	Won	Lost	Pts.
Phoenix	7	- 2	.778
Spikers	7	2	.778
Cool Tools	9	3	.750
Atom Spikers	6	6	.500
Road Runners	4	5	.444
Chemistry	2	10	.167
Circuits	1	8	.111

Mixed League

Games played in Division A were:

Oceanography-Pushovers 15-9, 15-11, 10-15 Upstarts-Spikers 1-15, 16-14, 15-13 **Trolls-Parton Propellers** 15-8, 15-7, 15-7 In Division B:

Nuts & Bolts-Center Crew 15-5, 15-6, 15-10 Diamonds-Nuke Powers 15-9, 1-15, 15-5 15-13, 15-6, 15-10 Terabits-Looking Good

Standings (after January 3)

Won	Lost	Pts.
11	1	.917
7	4	.583
6	6	.500
5	7	.417
5	7	.417
2	10	.167
9	0	1.000
8	4	.667
6	3	.667
6	6	.500
4	8	.333
3	6	.333
0	9	.000
	11 7 6 5 5 2 9 8 6 6 4	11 1 7 4 6 6 5 7 5 7 2 10 9 0 8 4 6 3 6 6 4 8 3 6

Coming Next Month **BNL Theatre Group Presents**

A MAN FOR ALL SEASONS Feb. 11-12, 18-19, 25-26 Stage II



Ed McFadden shows students from Queensborough Community College the 844 Disc packs which are used on the 7600 computer at the Central Scientific Computing Facility.

Classified Advertisements

Placement Notices

Each week the Personnel Office lists personnel placement requisitions, currently being processed. The purpose of these listings is, first, to give notice of all non-scientific staff positions being filled and, second, to give employees an opportunity to request consideration for themselves through the Personnel Office. In filling vacancies, the Laboratory's objective is to give first consideration to present employees, as follows: employees within the immediate group having the vacancy, employees within the department or division, employees within the Laboratory as a

For further information regarding a placement notice, or to request consideration for an available position, contact Supervisor, Personnel Placement & Development, extension 2874 or 2882.

33. MECHANICAL ENGINEER - BS or equivalent in mechanical engineering with extensive background in hydraulics and high temperature/high pressure flow, for design and construction of two-phase flow water loop in Reactor Safety Group. Department of Applied Science.

34. REACTOR SAFETY ENGINEER - BS or equivalent in engineering with experience in development and implementation of fire protection criteria for commercial nuclear power plants. Department of Applied

35. PATROL OFFICER - Safety & Environmental Protection Division.

36. TECHNICIAN - AAS degree or equivalent in mechanical technology or engineering science to assist in the operation, maintenance and repair of the seven-foot bubble chamber and the 8° bending magnet. Shift work. Particle Detector Division. Accelerator Department.

37. DEVELOPMENT ENGINEER - Seeking BS degree or equivalent in mechanical engineering or aero engineering and a minimum of five years' experience to design a heliostat solar energy collector. Position requires background in force analysis due to wind flow and stress analysis of light structures, practical design ability, and experience in production techniques and cost analysis. Accelerator Department.

38. FACILITIES ENGINEER - BS degree or equivalent in architecture with extensive experience in architectural analysis, design, estimating and project coordination associated with buildings and/or structures erection. Two positions. Plant Engineering Div.

39. SECRETARY - AAS degree in secretarial science with knowledge of general office procedures. Director's Office.

40. TECHNICIAN - AAS degree or equivalent in mechanical technology to assemble small components of close tolerances and from exotic materials. Knowledge of precision measuring equipment, machine tools, cleaning equipment and vacuum techniques is essential. Accelerator Department.

41. TECHNICIAN - Background in mechanical technology to fabricate, modify and install power and water connections for large magnets. Occasional shift work. Accelerator Department.

42. CHEMISTRY ASSOCIATE - Minimum BS degree or equivalent in chemistry or chemical engineering with fundamental working knowledge of physical or analytical chemistry. Two positions. Department of Applied Science.

43. LABORER - Four temporary positions. Plant Engineering Division.

Autos & Auto Supplies

68 CHRYSLER/NEW YORKER - 2-dr, 400 engine, 6 tires, 2 snow, AM/FM tape deck. \$300. AI, 281-9199.

69 DODGE VAN - Very large, all windows, very good running, clean body, one door rusted, 115K mi. \$650. Ext. 4058, 286-0436.

VW LUGGAGE RACK - Good cond, has surfboard adapter. \$15. Austin, 286-1076.

74 GREMLIN - 23,000 mi, auto, ps/pb, radio, roof rack. Dick, 286-8906.

W/W STEEL RADIAL TIRE - (1) GR78-15, Goodrich Lifesaver, good cond. \$10. Ext. 2492 or GR5-8658

76 FORD TORINO WAGON - 13,000 mi, ps/pdb, auto, towing pkg, hitch, CB radio, tinted glass, w/w, excel cond. \$4,750. 732-0917.

70 HONDA 350 MOTORCYCLE - Asking \$450. 286-1251 after 5.

SNOW TIRES - (2) Firestone L78-15, excel cond. \$60. Don, Ext. 2514

SNOW TIRES - (2) Firestone H78-14 mounted on wheels that fit 68 Pont. \$25. Don, Ext. 2514.

73 GREMLIN - 6 cyl, stick shift, 56,000 mi, snow tires,

SERVICE & OVERHAUL MANUALS - For 74 Chevy

economical, excel cond. \$1495. 473-2944.

trucks series 10-30, Pair \$10, Phil. Ext. 4722. 71 PINTO - 62,000 mi, excel cond, stick shift, \$1000.

Arnie, Ext. 4161, 698-1560.

4 RIMS - 15" 6 bolts, Chev. \$10; 1 gas tank, 6 gal Evinrude. \$5. Ron, Ext. 4082, 289-1003.

63 ALFA ROMEO SPYDER - Convertible, 22,000 orig mi, 90% restored. \$2,000. 473-8680 days; 928-0230

68 DODGE DART - 4-dr, auto, ps, radial tires, runs very well. Asking \$450. Padwa, 698-3856.

2 RIMS - 16.5 ten lug. \$25. Russ, Ext. 3460 or 744-

73 VEGA GT - 4 spd, radial tires, cust. int, 54,000 mi. Steve, Ext. 3822, 929-6527

71 VEGA HATCHBACK - Air cond, H.D. suspension, bucket seats, 4 spd trans, 110 hp (4 cyl, 140 cu in), 2 barrel carburetor, red, immac cond. \$875. 269-6344.

72 VEGA GT - 4 spd, chettah sticks, 8 track stereo, alum ET mags, red carpeted int, good cond. \$700. 928-2130 eves.

VW TUNE UP KIT - 64-67, \$2; fuse kit for VW, Opel, MG, Austin Healey, & Volvo, 604/kit. Ext. 3609.

67 SAAB SEDAN - Runs reliably, 4 new tires. Bieber, Ext. 2924, 924-4551.

Ads left out of this issue because of lack of space need not be re-submitted in order to run in next week's issue

Miscellaneous

CAMERA - 35 mm Cannon SLR. \$95. Ron, Ext. 4082 or 289-1003.

TICKETS - (2) N.Y. Philharmonic, Avery Fisher Hall, 2nd Tier Box, Feb 25, Beethoven Violin Conc. (Miriam Fried). \$8 each. Lisa, Ext. 3193.

CAMERA - Kodak Instamatic 18, perfect condition. \$17.50.751-6431.

WARDROBE - Upright, wooden-louvered doors, very attractive, $6\frac{1}{2}$ ft x 3 ft x 5 ft. Asking \$50. Ext. 3535,

COLOR TV - Zenith, 23 in console. Requires some repair to bring to peak performance. Will demonstrate. \$50. Goodzeit, 286-0271.

DRUM SET - 5 piece. Excellent condition. \$150. Boy's hockey skates, sizes 6, 9. \$5 each pair. 286-0761. BICYCLE - Girl's Schwinn Stingray, white banana

seat, excellent condition. \$25. Ext. 2493. SKI BOOTS - Henke plastic, 8½ M, good cond. \$25.

John, 744-2461. ARTLEY FLUTE - Sterling silver mouthpiece, closed

holes, very good cond. \$125. 286-8256 after 5 pm. SKI BOOTS - Lace size 5-6, good cond. \$3; buckle size 6-7, good cond. \$5; buckle 7-8, very good cond. \$7.50. 286-8256 after 5 pm.

19" B&W TV - \$20. Ext. 3486.

REFRIGERATOR - 15 cu ft Westinghouse, 2-dr, frost free, excellent cond. \$150. Mort, 286-8448.

WALL DESK-BOOKCASE COMBO - Suitable for young student. \$25. Ext. 2041.

DEACON'S BENCH - 4 ft, black, \$60; Antique stain drapes, kelly green for 13 ft wall with traverse rods. \$150. Steve, Ext. 3469, 281-4371.

END TABLE - Antique white, inlaid walnut top, \$40. Hand painted hurricane lamp, \$40; velvet tuxedo couch, \$175. Steve, Ext. 3469, 281-4371.

ELECTRIC KNIFE - Used once, \$6. Sun lamp, \$15; 18" electric grandfather style clock, \$8. Steve, Ext. 3469, 281-4371.

MUZZLE - \$1; new men's shoes, 9 M, \$12; 3 sport jackets, good cond, 38, \$6, \$5, \$1. Ext. 3609.

ARTIST'S CANVASES - New, 6×8 , 7×9 . 504/packof 3. Ext. 3609

BICYCLE - Raleigh 10 spd, 20 tools & odometer, excel cond. \$75. 744-5871.

SPRING-FALL COAT - Size 14, green check, \$8; brown jeans, 32-30, \$5; light fixture, \$3; plant holders, \$2/3. 744-5871.

SPRING-FALL COAT - Size 12, melon, \$8; blue blazer, 12, \$4; rabbit fur coat, 14 or larger, \$30. Ext. 3609.

WURLITZER ORGAN - Classical/Theatre sound, 3 keyboards, 25 pedals, rhythm-chimes-recorder. Perfect. \$2200. 728-0273 eves, 4722 days.

SWIMMING POOL - Coleco, 18'x4', filter, ladder, new liner. \$150. George, 281-5498.

ACCORDION - Lira, 250 base, adult, black with case, excel cond. \$75. 722-4784.

WATER PUMP - Old long handled, good for lawn

ornament, about 50 yrs old. \$25. 727-1617.

KIDNEY SHAPED COFFEE TABLE - & step end table. sturdy, beige formica. 2 for \$30. 727-1617.

SKI BOOTS - Lange Pro, size 11, perfect cond, cost

\$150, asking \$60.751-6431. SNOW BLOWER - Sunbeam 16" elec. \$45. Ext. 4240,

286-0295.

STEREO - Heathkit stereo amp, 50 watts, Knight FM tuner & 2 lg 3-way bass reflex speaker systems, will sell separately. Brian, Ext. 4121.

SKI EQUIPMENT - Jr metal poles 35" & 41", \$1.50 each; jr skis w/bindings 40" & 47", \$2 & \$2.50. Bob,

SKI BOOTS - Rieker, leather, size 7M, \$4; rubber size

7, \$3; leather size 5, \$3. Bob, Ext. 4637.

DINETTE SET - 40" round formica top table, 4 swivel chairs. Padwa, 698-3856.

MANUAL TYPEWRITER - Remington office model,

excel cond. \$35. Ext. 4058, 286-0436. BANJO - Beginner's model w/case, \$25; singer sewing machine, portable, wood case, all accessories,

manual, \$25, 589-2884. 73 CHATEAU TRAILER - 18 ft, fully self-contained, sleeps 6, screened-in room 10x12, excel cond. \$2500

TRAILER - 16 ft Tag-a-long, self contained, sleeps 6. 924-8547 after 6

firm. 732-0917.

68 COX CAMPER - New canvas, fully equipped, very good cond. \$750. George, 281-5498.

UTILITY TRAILER - Homemade 71, 8' bed. \$160. Ray, Ext. 4280 or 727-3463 after 5.

SKI BOOTS - Koflach men's buckle, size 8M, \$10; ski pants, girl's size 10, \$5. T. Morris, 744-5096.

FIREWOOD - Seasoned, delivered & stacked. 589-

TRUMPET & CASE - Excel cond. \$100. 286-2265.

JEWELRY - Jade, coral, ivory, pendant necklaces, bracelets, rings, earrings, low prices. 744-6767 after 7. LONG GOWN - Pink, size 11/12, used once, \$10. 281-6130 eves.

TABLE & CHAIRS - Early Amer, 4 chairs, \$75; heating lamp, old but works, \$5; long black gown 9/10 almost new. \$10. 281-6130 eves.

1 GHI JUDO - New, never used, \$20; GAF weather board siding shingles, red, new, still in box, \$8. 281-

JR SKIS - Cubco bindings, ski boots, excel cond, reasonable. Ext. 4850, 286-8433.

20" BICYCLE - Boy/girl, incl training wheels, \$15. Walt, Ext. 2907, 698-0576.

INFANT'S DRESSING TABLE - White wicker, \$12; baby's swing-o-matic, \$5, needs new seat; playtex nurser, new, \$8. Ext. 3158.

PHOTO TYPE COMPOSER - Typro w/desk, used very little, best offer. 281-6130 eves.

SPACE HEATER - Kerosine, Kenmore, 45,000 btu, used one winter, price incl 3 55-gal fuel drums & damper. \$30. 286-0237 after 6.

FIGURE SKATES - Women's size 6, white, used twice,

like new, my daughter outgrew them. \$8. Paul, Ext. 3277. CLOTHES DRYER - Norge, good cond, heating ele-

ment needs work, free for carting. Ext. 3075, 924-

14" B&W TV - Portable, 3 yrs old. \$35; 19" B&W portable Zenith, \$30. Jack, Ext. 4581. SKATES - Black, hockey size 1; figure size 2, hardly

used, orig box. \$5/pr. 929-4530. BOOK - Blind Ambition: The White House Years by

John Dean, new, sealed, great gift. \$9. 929-4530. TAPE DECK - Crown B824 stereo, 4-track, \$550, will

haggle. Ext. 4505, 928-2803. PORTABLE SPEAKER/AMP - For guitar, Utah 8", 8 ohm speaker, 10 watt amp, \$75. Ext. 3121, 744-5261.

YORKSHIRE TERRIER - Female, tiny toy, 4 lbs, AKC, health guarantee. \$250 firm. Fran, 246-3475.

KODAK PROJECTOR - For pocket instamatic slides w/tray, zoom lens & case, all new, \$45, Fred, Ext. 4613.

KODAK MOVIE DECK - #725 used twice, going to sound #150. Naomi, Ext. 3699.

DUPLICATING OUTFIT - Professional 35 mm SLR. Spiratone, 22 piece filter set, some film, etc. \$45. Tom,

DOBERMAN PUPPIES - Black males, championship lines. \$200. 751-0182.

20 GAL FISH TANK - Dyna flo filter, heater, thermostat, shells, artificial plant. \$30 firm. Ann, Ext. 3143. HOLLY CARB - 650 double pumper, brand new, still in box. \$100. Mike, 878-2486.

DRUM SET - Ludwig w/Hi Hat cymbals in very, very good cond. \$300, or best offer. Mike, 878-2486.

KITCHEN FAUCET - Dual control washer type, 8" center, good cond. \$10. 286-0517.

TWIN SET - Excel cond. \$25. 286-8379.

DOBERMAN - Beautiful looking dog, needs a good master. Ext. 4756.

21" B&W TV - Incl am/fm radio & turntable, everything works. \$50. J. Bennett, Ext. 4129. SKIS - Metal, Head Masters, w/bindings, 175 cm,

very good cond. \$20. Ron, Ext. 4449. SKI BOOTS - Buckle size 7 w/carrier, good cond. \$7.

Ron, Ext. 4449. SOFA - Rose beige, excel cond, any reasonable offer; arm chair, green, needs recovering. Walt, Ext. 2627,

744-3443 after 5. HOUSE/GARAGE SALE - Moving, Wading River,

Sylvan & Howard. 345-3535, 929-6940. CHILD'S TABLE - 30" diameter round formica top, very sturdy, 2 chairs, maple finish. \$35. Joan, 744-

3919 or Jack, Ext. 4447. DINING RM SET - 6-piece, modern, walnut sliding glass door china closet, very good cond. Asking \$250.

289-1086 after 5.

SOUND MOVIE CAMERA - Kodak Ektasound 130 model. \$100; deluxe carry case, \$15. Bob, 286-0678. CAST IRON STOVE - Wood burning, Beacon Wind-

sor, circa 1900's. \$200. 286-3623. BICYCLE - Girl's Schwinn sting ray, very good cond. \$25. Ext. 2493.

FLOOR SCRUBBER - Elec Hoover, good cond. \$5. Ann, 286-2280.

TOASTER - Toast Master open face, only used twice. \$8. 727-3608 after 5.

FIREWOOD - Seasoned oak, split, delivered, stacked. \$60/cord, \$35/½, \$20/¼. Hanford, 878-1958.

CUTTING TORCH - Ox-acel w/2 regulators & 4 cages, a bargain at \$25. Joe Bush, 732-8877.

22 CAL RIFLE - Bolt action. \$25. Joe Bush, 732-8877 after 5. CB BASE SET - 6 watt, 4 channel, 115 V. \$35. Joe

Bush, 732-8877 after 5. MAYTAG MINI DRYER - Coppertone, excel cond, 115

V. Asking \$75. Joe Bush, A/c shop, Ext. 3284 at noon. PLAYER PIANO - Gilbransen records electric player piano, completely reblt, rare antique in A1 cond.

CLARINETS - 2 B-flat professional woodwinds, Paris, in excel cond, Buffet, \$175; La Monte, \$125. Ext. 2497, 286-2203 after 6.

20 GAL AQUARIUM - Long tank w/background & heater, \$15; cymbal, 16" krut ride-crase, w/stand, \$25, 289-1069 after 6.

CLOTHES WASHER - Portable Hoover, like new, \$80. Grace, Ext. 4464, 286-8374 after 5:30.

LENS - Vivitar auto-telephoto, 135 mm, 2.8, hardly used, bought zoom. \$60. Ext. 2885.

AFGHAN HOUND PUPS - Black & silver, shots, AKC registered, Ch. Dam, excel health & temperament. L. Decker, 286-0128.

36" SNOW BLOWER - 6 hp fits tractors w/attachments, excel cond. used 1 winter, 878-0038 before 5.

COLOR TV - 1970 Zenith console in working order, 23", asking \$50. Eileen, 475-0443 after 5.

TABLE & CHAIRS - 42" round black pine pedestal table, 2 captains, 2 mates chairs. \$375; $\frac{1}{4}$ " glass top,

BED & END TABLES - Heyward Wakefield maple, excel cond. \$200. 363-2177.

GUITAR - Tatay hand-made, \$75; Royal manual office typewriter, \$45; army rifle 30-06 Enfield bolt w/o scope, \$50; GE b&w TV, 2 yrs old. All good cond. Daniel Shreeve, 286-0703.

19" B&W TV - \$20. Ext. 3486.

Real Estate advertised for sale or rent is available without regard for the race, color, creed or national origin of the applicant.

For Sale

EAST HAMPTON TOWNSHIP - Clearwater Beach, 100x150 building plot near Gardiner's Bay. Walk to private beach, marina rights. Asking \$13,500. Steve Marino, Ext. 3469, 281-4371.

SOUTH SETAUKET - Three Village Schools, attractive 3 bdrm ranch, Ig liv rm, den with fireplace, eat-in kitchen, basement, garage, brick patio. \$35,000. 751-6921.

E PATCHOGUE - Spacious 7 rm, 4 bdrms, liv rm, fp, formal dining, eat-in kitchen, 2 baths, 2-car garage, enclosed porch, s&s, air cond, lg lot-part wooded, must be seen. 475-6916.

ROCKY POINT - 3 bedrm ranch, 2 baths, den, priv beach, ½ acre. \$41,990. Ext. 4784/ 3566 or 744-6767. PATCHOGUE - 3 bedrm ranch, deep plot, wood

shingles, full basement, garage, deck. \$43,000. 331-

For Rent

1718.

PATCHOGUE - 2 bedrm, \$250/mo, heat incl, near bay, avail Mar 1. Walt, Ext. 2907, 698-0576.

MT SINAI HARBOR - 2 bedrm cottage, wooded, quiet, walk to harbor. \$250. Fran, HR3-3662.

WADING RIVER - 3 rm apt, sunny, immaculate, walk to beach. \$230/mo, all util incl, private parking, own entrance, patio. 929-4822.

VERMONT VACATION - 3 bedrm mobile home w/fp, located on 10 acres, 10 min from Okemo Mt, close proximity to 7 other ski areas, avail weekly or weekends. 473-8186 after 6.

VERMONT - Ski: Bromley, Magic, Stratton, crosscountry ski on grounds, beautiful furn chalet, stone fp, weekly, weekend and share season rates. 757-

WADING RIVER - 3 rm apt, downstairs. \$250/mo

Wanted

RELIABLE BABYSITTER - My home, 2 afternoons wkly (2:15 to 5:15). References required. Don, Ext. 2514 or 744-7542.

HOME FOR DOG - Chu Ling is a black & white male Shi-Tsu, approx 8 yrs old. Very lovable. Don, Ext.

2514.

incl all util, walk to beach. 929-4822.

REG. TIRE - 8.55x14. Tony, Ext. 3658. TYPIST - For PhD thesis. Mostly straight text with few equations. Must be complete by end of Feb. Bieber, Ext. 2924, 924-4551.

MT SINAI - Wanted compatible person to split ex-

penses for 2 bedrm furn beach house. \$230/mo. Ext. 2008, 928-5875 after 6. FLY-TYING - I would like to watch an expert tie flies.

Ext. 3601, Stoner. WEIGHT-LIFTING SET - Or replacement weights.

Ext. 2493.

Car Pools DRIVER - To fill 4 person car pool from Nassau County. Pool meets near Exit 48 LIE. Call Al or Joe,

CORAM - To and from, working hours. Will pay gas or share driving. Bob, Ext. 3363.

MASTIC - Rider looking for car pool. Kathleen, Ext.

Lost & Found

LOST - Brown leather glove (right hand). Lisa, Ext. 3193.

Services

COPPER LOVERS - Receive gifts plus decorative pieces for home. Further info call 399-2754. ELECTROLUX OWNERS - Have your cleaner tested

for suction & power, free of charge, also sales &

HOUSEWORK - Young woman, reasonable rates.

DOG OBEDIENCE CLASSES - In Riverhead, begin Feb 4, register now. 727-3200, Ext. 231 days. Phil Warner, Instructor.

SILVERSMITHING - And jewelry classes. 286-9253. CREATIVE DESIGNS - By Robert, Christmas gifts such as cartoon drwgs; cartoon characters on a stand, etc. 744-5871.