

## David Schweller Heads Local ERDA Area Office

David Schweller has been appointed Manager of ERDA's Brookhaven Area Office. Chief of the area office's Engineering,



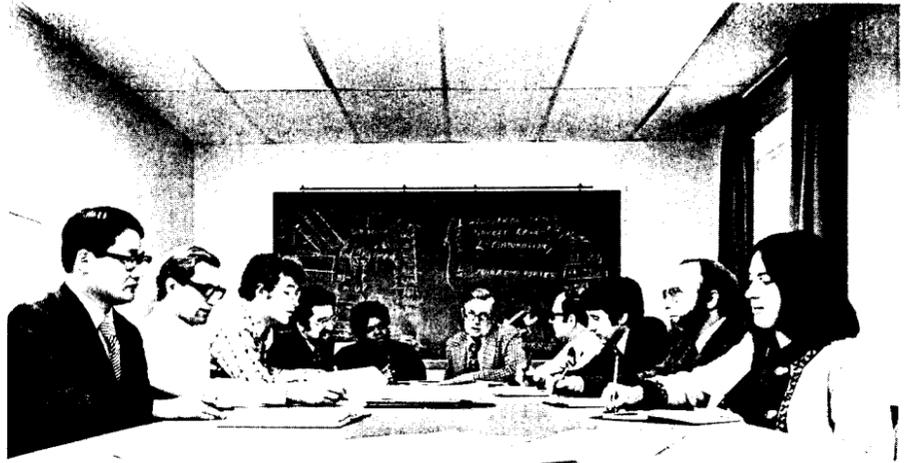
David Schweller

Operations and Safety Branch since September 1973, Schweller replaces John P. Jewett who retired last June.

He has been a member of the Brookhaven Office staff since February 17, 1963, when he joined the Operations Division as a reactor safety engineer. Since then he has held a number of positions, including Assistant Director for Reactor Safety and Safeguards, and Chief of the Operational Safety Branch.

Schweller received his bachelor of science degree in engineering physics from New York University in 1954. Following graduation, he began his career as a physicist with the Patterson-Moos Division of Universal Winding Corporation. Subsequent positions were with Sperry Rand Corporation as an engineer, with Combustion Engineering Company's Nuclear Division as a reactor physicist, and in 1960, with Martin-Marietta Corporation Nuclear Division in Baltimore, also as a reactor physicist.

Schweller's appointment was announced by Robert H. Bauer, Manager of ERDA's Chicago Operations Office.



Some members of the International Energy Agency project, headquartered at Brookhaven meet to discuss their findings. From left, Shigeru Yasukawa (Japan), Gunnar Leman (Sweden), John Brady (Ireland), Sheldon Licht (BNL consultant), Frances Ligon (BNL), Vance Sailor (BNL), Lance Heiko (U.S.), Vincente Gil-Sordo (Spain), Jan Nitteberg (Norway), Ann Reisman (BNL).

## On The International Front

Representatives of seven member nations of the International Energy Agency (IEA) have been working around the clock at Brookhaven since early May on a top priority energy systems analysis project, under the direction of Vance Sailor, DAS. They are nearing the end of phase I and expect to have a progress report ready for the IEA this month.

Their findings will be made public in a few weeks after the IEA review. Sailor says, "this report is considered a first, quick look" at the problems. In February they will embark on a two-year program and hope to provide the ground work to aid the political delegates in selecting a sound energy strategy for cooperative action.

Oil, or the lack of it, is the reason for the big push. The IEA came into being following the oil boycott of 1973, and the 19 member nations, which include most of western Europe, Canada, Japan and the United States, consume more than one-half of the energy produced in the world.

Peter Love, who represents the Commission of European Communities, the policy making arm of the European Economic Community, spoke to a group of senior political officials in Europe recently. He described the problem to them in rather stark terms: "If the IEA level of oil use is projected until oil demand exceeds oil supply (about the year 2000) then within five years of that date the projected demand would exceed supply to the extent that all motor transport in Europe would cease, or 25% of the industry would shut down."

In an effort to avoid such a catastrophe, the IEA has selected two major laboratories as headquarters for their crucial energy analysis project. At Brookhaven the project is under the wing of the National Center for Energy Analysis, and the other is at KFA in Juelich, Germany.

The Brookhaven contingent consists of

Gary Vollans (Canada), John Brady (Ireland), Shigeru Yasukawa (Japan), Jan Nitteberg (Norway), Vincente Gil-Sordo (Spain), Gunnar Leman (Sweden), Lance Heiko (U.S.) and Peter Love (CEC).

Operating out of the KFA base in Germany are representatives of Belgium, Denmark, Germany, the Netherlands, Switzerland and the United Kingdom. Members of the two working groups cross the Atlantic at frequent intervals to consult on their findings.

Austria, Greece, Italy, Luxembourg, New Zealand and Turkey, the other member nations of the IEA, are not yet participating in the study for one reason or another, mostly for lack of money or lack of manpower. If these problems are resolved, they may join the study groups in the near future.

The national representatives work both as individuals and as a team. Each participant is responsible for preparing a detailed quantitative description of his home country's energy system and projections of how that system might function in 1985 and 2000. Then they get together as a group to develop analysis techniques and to prepare technical descriptions of conservation and new technologies which reduce dependence on oil.

The possible impact of these technologies on each country and the International Energy Agency as a whole, are evaluated, for instance, in terms of changes in the flow of energy commodities and environmental impacts.

The project is unique as a multinational collaborative effort to evaluate collective energy research and development opportunities. Although Brookhaven has had the character of an international laboratory for many years and the presence of foreign scientists is not remarkable, the nature of

(Continued on page 2)

## 8° Magnet Turns Three

The end of the neutrino physics run in November and December marked the completion of three years of operation for particle physics of the 8° bend superconducting magnet. This pioneering system was brought into operation on Halloween night of 1973 as an integral part of the primary proton beam line to the 7-foot bubble chamber, a close approximation to having a superconducting magnet as part of the accelerator itself.

In addition to providing invaluable operating experience, this unique magnet system is used to study the effects of particle radiation heating on superconducting properties and as a test of computer simulations of radiation heating. Several of the most promising future applications of superconductivity require information about this question.

While the 8° magnet system has operated successfully many times, on two occasions it has given cause for concern because of interruption of physics running; once

with refrigerator troubles and more recently with a burned current lead. After repairs to the damaged lead were made, the entire system was found to be still as tight as when first assembled.

Meanwhile, a sister test magnet, called the "Model T," has been recently operated to 6.25 Tesla, as high a field as it is designed to be theoretically capable of attaining. It was tested with rise times to high fields of a few seconds, limited only by the voltage capability of the power supply, a standard AGS high voltage supply.

This magnet model is heavily instrumented. It can be used in the future as a supplement to the radiation heating experiments to test stability and quench propagation using implanted electrical heaters. It is believed that the results of these studies of stability are of great value not only to high energy physics, but also for the large magnet systems for MHD power generators and magnetically confined fusion devices.



Two of the "parents" of the 8° bend superconducting magnet, Jack Weisenbloom (left) and John Jackson, light the "candles" to celebrate its third birthday.

## Dover To Deliver Jan. BNL Lecture

In the 143rd BNL Lecture, Carl B. Dover, Physics Department, will talk on "The Interaction of Particles with Antiparticles and the Problem of Nuclear Forces" on Wednesday, January 19, at 8:00 p.m. in Berkner Hall.

"In one approach to the theory of nuclear structure," Dover says, "one tries to derive the properties of nuclei starting from an elementary nucleon-nucleon interaction potential. This potential is generated by the exchange of mesons between the nucleons. In a more general framework, the meson exchange forces between two nucleons are intimately related to those operating between a nucleon and an antinucleon."

In his lecture, Dover will discuss the prospects for achieving a unified description of low-energy, particle-particle and particle-antiparticle strong interactions, as revealed through scattering phenomena and the formation of weakly bound composite systems such as the deuteron.

He will also investigate the possibility

(Continued on page 3)



Carl B. Dover

## Saving Energy Pays

Everyone has complained that the cold air seemed to creep in earlier this year, and the weather seers are saying that we are in for a long hard winter. One would expect that fuel consumption would have risen accordingly at the Laboratory the last couple of months. Not so.

Even though there were 150 more degree days in October of this year than in 1975, and 289 more in November than in the same month last year, the consumption of fuel, per degree day, has been considerably less. A degree day is calculated by subtracting the average of the highest and lowest temperatures, for a given day, from 65° F.

According to the latest figures, we used 1,054 gallons of fuel per degree day in October 1976, against 1,347 in 1975. For the month of November, it works out at 687 gallons in 1976 and 861 in 1975.

This system of degree days is not concerned with the total number of gallons of oil used, but in the efficiency produced. It could be equated to getting increased mileage per gallon of gas in your car. How are we getting greater efficiency? Because the Laboratory's energy conservation program is showing results.

One of the main factors is the improved use of the Central Steam Plant. It is now operated by loading the large main boiler, rather than partial loading of three smaller units. Combustion controls on three of the older boilers have been updated to improve performance and efficiency. Boiler feed water treatment and control systems have been improved. Fuel oil pump heater sets and fuel oil heating system controls have been modified. Additional soot blowers have been installed in the main boiler which improves heat exchange efficiency.

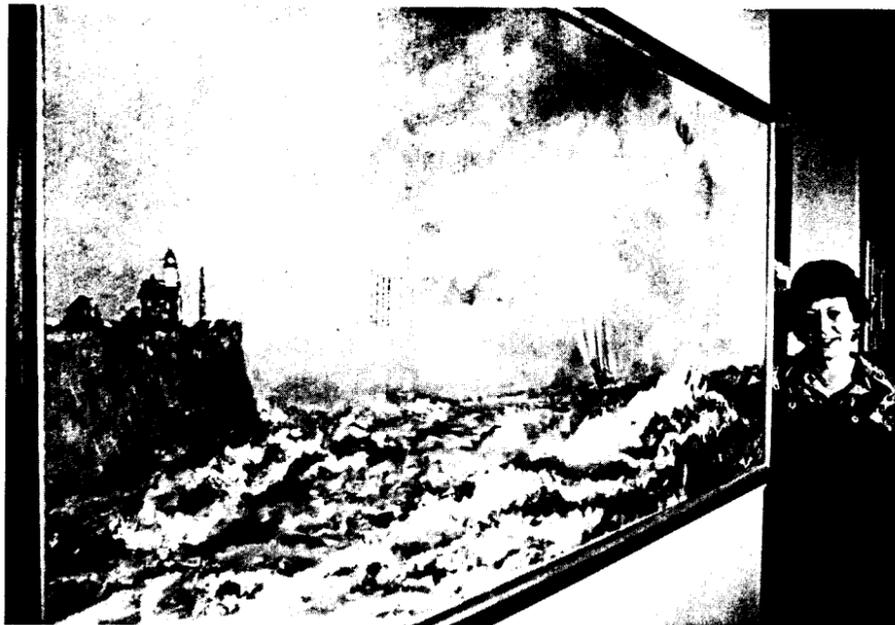
Automatic temperature setbacks have been installed in several buildings. Where these are not yet available, employees have been conscientious about keeping the thermostats at 68° during the day, and setting them back to 60° at night.

Fuel oil storage tanks have been painted black so that solar energy can aid in pre-heating fuel.

Storm windows have been installed on all windows in the wooden buildings and the wood frame windows in the block buildings have been replaced with aluminum frames. Weather-stripping has been added or replaced around all operable doors and windows. The exterior walls of the old Army buildings have been caulked and weatherproofed. Whenever hung ceilings are installed in these buildings, six inches of insulation is added.

These measures not only save energy, but dollars for the Laboratory. Current calculations show that over \$28,000 was saved in each of the months of October and November this year because of the increased efficiency per degree day.

In addition to the conservation effort the acquisition of about 2.5 million gallons of excess Navy oil was a "coup" for the Laboratory which saved it over \$500,000, compared to current market prices.



Margaret Thomas and her painting *Vision* which brightens up the lobby of the Hot Lab.

## Beautifying The Premises

Gracing the lobby of the Hot Lab is a large oil painting hung by the artist, Margaret Thomas. It replaces a grungy, outdated isotope map which previously occupied the spot.

Ms. Thomas is secretary to Lou Stang and one day asked him if she couldn't do something to spruce up the dismal lobby which had been a source of irritation to her for some time. "Sure," he said, "do whatever you like." He was astounded and pleased when she and her husband walked in one day with the 34½" x 90" painting which Margaret had finished in about ten days. In fact, everyone in the group was delighted.

She calls her painting *Vision* and on a card posted next to it, has explained her concept: "For want of vision, these sailors may perish. Night is falling and the Old Field lighthouse warns of imminent peril. . . At Brookhaven as we seek to make new strides in Nuclear Medicine, Pollution

Control, Energy Research and Development . . . may we always be a people of vision."

Margaret didn't go to art school, but as half her family are artists she came by it naturally. During a three-year stint in Japan when her husband was in the Air Force during the Korean war, she says she picked up a lot of pointers because painting seemed to be a national pastime. She particularly enjoyed watching children sitting on the sidewalks painting.

Although at one time she used to be quite active and sold some of her paintings, this is the first work she has done in about 11 years and it has inspired her to take it up again. She had discontinued her painting so that she could devote full time to her children while they were growing up. Now her daughter is married and her two sons are nine years old, so she expects to be able to spend more time at her canvases.

## CREF Unit Values

1976			
January	\$40.31	February	\$39.76
March	40.75	April	40.10
May	39.69	June	41.60
July	41.21	August	40.94
September	41.59	October	40.62
November	\$40.40		

## Pianist To Perform

The BERA Concert Group will present a recital by pianist Jeffrey Marcus in Berkner Hall on Tuesday, January 18 at 8:30 pm. Admission to this special midwinter concert will be \$3.00 for adults and \$1.50 for students and persons over 65.

## International

(Continued)

their collaboration is unusual. Instead of conducting research within a Brookhaven program, this group is concerned with seeking practical solutions to urgent problems which are shared by many countries.

The Brookhaven group is under extreme pressure to complete various phases of its work. They are well aware of the urgency of their assignment and of the deadline they face. "This common goal makes for remarkable *esprit de corps*," says Sailor.

Many of the BNL staff have been working alongside the national representatives, in particular, Andres Doernberg, Frances Ligon, Joseph Podhaski and Ann Reisman. Sheldon Licht, a private architectural consultant, and Ferdinand Shore, Professor of Physics at Queens College, have served as consultants to the group.

## Of Historical Interest



This photograph was taken at a Solvay Congress on the corpuscular vs. the wave theories of light in Brussels in the late 1920's. It was not just an ordinary gathering as a glance at the roster will show. First row, from left: I. Langmuir, M. Planck, Madame Curie, H.A. Lorentz, A. Einstein, P. Langevin, Ch.E. Guye, C.T.R. Wilson, O.W. Richardson. Second row:

P. Debye, M. Knudsen, W.L. Bragg, H.A. Kramers, P.A.M. Dirac, A.H. Compton, L.V. de Broglie, M. Born, N. Bohr. Standing, A. Piccard, E. Henriot, P. Ehrenfest, E. Herzen, Th. De Donder, E. Schroedinger, E. Verschaffelt, W. Pauli, W. Heisenberg, R.H. Fowler, L. Brillouin. This rare photograph was brought to our attention by Marshall Brown, AGS.

## Measuring Uncertainty

The IEA group is charged with assessing new energy technologies for possible future use in many different countries. An element of uncertainty is present as nobody can say for sure just what the quality of such technologies will be. Their concern is how to convey in quantitative terms this uncertainty and risk to the political officials who must make the decisions.

In trying to come to grips with this problem, the group is using a computer program devised by Peter Love. In this, "data is provided and processed in a manner which more clearly defines the meaning of any methods and assumptions that may have been employed. This is done by introducing the concept of probability."

In his paper "Uncertainty and Risk in the Assessment of New Technologies," Love says, "Probability may be either objective or subjective, or a mixture of the two. If used objectively, it usually expresses the frequency of occurrence of an event. When used subjectively, it expresses the degree of belief that one feels for the occurrence of some particular event."

In a recent interview Love gave the following example to illustrate this technique:

Imagine you have the choice of entering into one of two bets in which a successful outcome wins you \$10,000 on the first day of 2001. Failure to select correctly wins or loses you nothing. The choices are:

a) That a man will land on Mars by the year 2000.

b) Blindly drawing a red marble from an urn containing 500 red and 500 black marbles.

Which do you prefer (a) or (b)? Should you prefer (b), then you believe that there must be a better chance for you to win \$10,000 with this bet than with (a). The probability of a manned Mars landing by the year 2000 in your judgment is, therefore, clearly less than 50%.

By changing the red/black marble mix, it is possible to reach a point where you are indifferent as to which bet you prefer. When this point is reached, one is justified in assigning the same probability to both events. This will then have established a numerical value of an individual's degree of belief in any discrete event, simply by asking which is a preferred bet.

The system used by the IEA group is, of course, considerably more complex. To get a consensus view of experts, they ask a series of questions and eventually narrow down the probabilities. A curve is produced showing average opinion and distribution of opinion. One of the results of this system is to pinpoint the areas where the greatest degree of uncertainty exists and to indicate where further research needs to be concentrated.

Vance Sailor says that this system is much more satisfactory than the sometimes misleading single figure estimates and that they intend to use it to a greater degree in their forthcoming work.

Love's methodological approach is detailed in Report No. PEL/023.

## Cafeteria Menu

Week Ending January 14, 1977

Monday, January 10	
Corn Chowder	
Beef Liver & 1 veg.	1.10
Scrambled Eggs, Sausages & fr. fr.	1.05
Tuesday, January 11	
Beef Noodle Soup	
Knackwurst & Sauerkraut	1.05
Sauerbraten & Potato Pancake	1.30
Wednesday, January 12	
Cream of Potato Soup	
Beef Chop Suey on Rice	1.05

Davy Jones Fish Fry Special

\$1.40 plus tax

Thursday, January 13	
Chicken Vegetable Soup	
Cheese Ravioli & 1 veg.	1.00
Roast Chicken, Stuffing & 1 veg.	1.10
Friday, January 14	
Fish Chowder	
Spaghetti & Clam Sauce	1.00
Breaded Pork Chop & 1 veg.	1.30

# BROOKHAVEN BULLETIN

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## Letters To The Editor

To the Editor:  
Acknowledging with grateful appreciation your very kind and thoughtful expression of sympathy.

With great appreciation,  
Thelma Godbolt

## Hospitality News

A morning coffee will be held Tuesday, January 11, from 9:30 to 11:30 a.m., at the Brookhaven Center. "Ikebana," the Japanese art of flower arranging, will be demonstrated at this get-together.

Please come and bring the children. Babysitting will be provided at no charge. It is suggested that you bring along one or two toys for your children to play with.

## BNL Hot Line

Dial Ext. 2222 for all emergencies.

All telephones should have a sticker indicating Ext. 2222 as the only emergency number.

Please report to the Telephone Office, Ext. 2000, any telephone without emergency Ext. 2222 sticker.

Also report any telephone that still has the old emergency numbers 3333 - 4444 - 5555 so the sticker attached can be changed with the new emergency number Ext. 2222 sticker.

## Cooking Exchange Returns!

On January 12, the Cooking Exchange will begin a spirited New Year with a demonstration of cooking with liquors. Bourbon, rum, wine, and even beer, will add their mysterious touches to dishes that will delight the palate.

Make your New Year's resolution to join us on Wednesday, January 12, at 12:30 p.m. in the Recreation Building. Just 75¢ entitles you to tasting privileges, and 25¢ per child to all the babysitting you can use!

Advance notice - On January 26, the "terrific" Jackie Newman will make her one and only visit to the Cooking Exchange. Don't miss her classic and classy demonstration of Chinese cooking.

## Arrivals & Departures

### Arrivals

**Pierre R. Becker** ..... Plant Engr.  
**David R. Cattaneo** ..... Accelerator  
**Robert D'Angio, Jr.** ..... Personnel  
**Willem De Jong** ..... Accelerator  
**Marshall G. Elzinga** ..... Biology  
**Michael B. Faist** ..... Chemistry  
**Peter S. Keiner** ..... App. Math.  
**James J. Licari** ..... Ph. & Gr. Arts  
**Maureen Mazzilli** ..... Adm. Sys. & Data Proc.  
**Emma R. Mercado** ..... Fiscal  
**George R. Morris** ..... Physics  
**Barry E. North** ..... Biology  
**Susan M. Saccardi** ..... Staff Services  
**Martin M. Starke** ..... Physics  
**Benjamin M. Turner** ..... Plant Engr.  
**Muhammad Yaqub** ..... Biology  
**Ronald J. Zapasek** ..... Accelerator

### Departures

**Augustine O. Allen** ..... Chemistry  
**Herbert G. Davis** ..... Ph. & Gr. Arts  
**William F. Eberspacher** ..... Plant Engr.  
**Thomas Iarocci** ..... Safety & Env. Prot.  
**Mildred Pavelec** ..... Medical  
**Alice M. Perez** ..... Tech. Info.  
**Stephen J. Rigby** ..... Accelerator

## 1976 Football Champs



Playoff Champs - Slow Pokes - kneeling: Fletcher Johnson and Bob Jansson. Standing: Mac Thomas, Tom Jesaits, Ken Murtagh, Tom Prach, Ray Atkins, Dennis Nordstrom, Greg Donaldson.



League Champs - Roga - kneeling: Mike Losquardo and Jim Garrison. Standing: Bob Schuman, Ed Taylor, Leroy James, Wayne Smith, Leslie Lawrence.

## BNL Lecture

(Cont'd)

that new heavy mesons may exist which are formed as loosely bound aggregates of particle and antiparticle; these may be called "quasimolecular states." Dover will explore the extent to which the symmetry between particle and antiparticle forces constrains the class of nucleon-nucleon interactions which are admissible in the theory of the nucleus.

Dover is a Physicist in the Nuclear Theory Group. He joined the Laboratory in 1971 after four years of research in Europe at the University of Heidelberg and the University of Paris. He graduated from M.I.T. in 1967 with a Ph.D. in physics. His principal research interests are intermediate energy meson-nuclear physics, particle-antiparticle interactions and heavy ion nuclear physics.

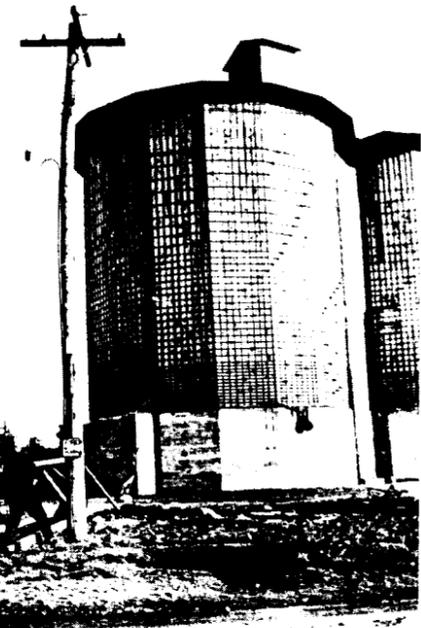
A buffet supper will be served in the Brookhaven Center before the lecture beginning at 6:30 p.m. Reservations should be made in advance by calling Ext. 3541 before 5 p.m. Refreshments will be available in the lobby of Berkner Hall immediately after the lecture.

## Fire Extinguishers

We wish to remind those people who had ordered fire extinguishers that the units have been delivered and are available for pickup at the BERA Sales & Services Office in the Cafeteria.

The office is open Monday through Friday from 11:00 a.m. to 3:00 p.m.

## The Way It Was



In the December 17 issue we ran a picture of a structure on site and asked you to identify it. It is the foundation of the building above which used to be the grain elevator at Camp Upton during World War I. When the buildings and equipment were put up for auction on August 15, 1921, nobody bought this building. The wood tops were demolished and the foundation is still with us. It is now used to store chemicals and is on the map as building 482 at the south-east corner of the warehouse area.

—photo by Thomas Bayles, a Brookhaven Town Historian

## Attention Aliens

Each year immigrant and non-immigrant aliens who are in the United States on January 1, must report their addresses to the U.S. Immigration and Naturalization Service during the month of January. This regulation applies even though there has been no change of address.

Any alien who is temporarily absent from the country must report his address within ten days after his return to the United States.

The parent or legal guardian of alien children under fourteen years of age must report for these children.

Alien address report forms are available from any U.S. Post Office. When completed the card should be stamped and mailed to the address indicated.

## Upton Nursery School

The Upton Nursery School for three and four year old children of BNL employees has a few openings. The school is a cooperative in which the parents assist the teachers at each session. The program is varied, including outdoor activities, crafts, music, art and some field trips.

There are two and three day a week sessions, tuition is \$24 a month for two days a week and \$35 a month for three days a week.

For further information call Sharon Paschos at 928-4270.

## The Wild Oat

On Friday, January 14, at 8 p.m. in Berkner Hall, *Le Cercle Français du BNL* will present the film "The Wild Oat," featuring one of France's best-loved comedians, the incomparable Fernandel. This film has French dialogue and English subtitles.

Fernandel (who never used more than the single name) played dozens of comic roles before his death five years ago. Somewhat like Chaplin, he was unmistakably the same actor in each part, with his long, lugubrious face, and a body that seemed to have more than the customary number of joints.

In "The Wild Oat," Fernandel is the only baker in a small Provençal town, a position that makes him at least as important as the mayor. The populace is in an uproar over the birth of a child to a young unmarried girl. Fernandel is furious when a group of the townspeople accuse his recently conscripted son of being the father. In retaliation, he refuses to sell bread to the accusers, and soon the whole town is divided into pro- and anti-Fernandel factions.

An absurd feud results, with each half of the townspeople boycotting the other half. Peace is finally restored when the errant son returns on leave and marries the girl.

All members of the BNL 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, which will be served afterwards.

## Sports News

### Mountain Club

There will be a meeting on Thursday, January 13, at 7:30 p.m. in the North Room at the Brookhaven Center.

Roger Tanner will show slides of his backpacking trip in Yosemite last September.

Plans for a cross country skiing day in January and a canoe trip through the Everglades in February will be discussed.

### Volleyball

#### Employees' League

On December 15, the Atom Spikers defeated the Road Runners two games to one, while the Cool Tools swept three from the Circuits, as did Phoenix over Chemistry.

As the Employees' League broke for the holiday season, the standings were:

	Won	Lost	Pct.
Phoenix	6	2	.777
Cool Tools	6	3	.666
Spikers	4	2	.666
Road Runners	4	2	.666
Atom Spikers	3	6	.333
Chemistry	2	7	.222
Circuits	1	5	.167

### Bowling

#### Red League

Congrats this week to E. Sperry with a 225 game/586 scratch/682 gross to win his 678 Club Award. Also for the Designers, A. Pinelli had two nice games, 210/200. The only other 200 in the whole League was J. Connelly with a 204. It's a pretty bad night for the Red, when only a 4-200 games are bowled, so let's blame it on the lanes.

Five teams still managed to win 11 points - Designers, Cosmos, Old Timers, 76'ers, and Anachems, and League standings changed quite a bit. The Anachems, by winning 11, now have a 17 point lead over the Red League, with only two more weeks of bowling to decide the first half.

#### Purple and White League

The Good Guys took 5 points to reclaim first place; the Plutoniums are not far behind. Jere Austin had a great night with a 192/189/177/558 for a 690 gross, earning him a Club Award. Nice games by Ben Belligan 214; Don Schug 210, and Ralph Taylor 208. Wilma Eriksen was high for the women with a 179/450. Ellie Murgatroyd was next with a 177/440.

#### Black N Blue League

Congratulations to Bill Kristiansen on his 678 Club Award with a 681 gross series. As we take our holiday break, the Power Meds move into first place with the Hot Stuffs and Welp close behind. High games: Dick Skelton 221, Bill Kristiansen 218/200, Elsa Kristiansen 191/169, Debbi Antonio 170, Renee Flack 165, Pat Lebitski 162, Terry Bugala 160. The high gross pots were a family affair, Bill 249, and Elsa 237.

## 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 whole.

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

1. OFFICE SERVICES ASSISTANT - Temporary position. Staff Services Division.

2. MESSENGER - Staff Services Division.

3. TOWER LINE PERSON - Under minimum supervision installs, repairs, and maintains overhead and underground electrical distribution lines, systems, equipment, controls and related devices, ordinarily of 2300 volts and over. Duties include rigging, electrical and mechanical work incidental to the installation, maintenance, and repair of equipment, wires, lines, instruments and fabricated metal on structures such as meteorology towers, pile stack and water tower.

Will otherwise perform duties of Electrician A. Plant Engineering Division.

4. CABINETMAKER A - Under minimum supervision lays out, constructs, modifies and maintains furniture, laboratory equipment and buildings and component parts. Works with wood, wood substitutes and combination materials and flooring, roofing and wall materials. Uses hand, portable and fixed tools common to building construction and cabinet making trade.

Works from prints, rough sketches and verbal instructions.

Requires broad shop skills to perform difficult operations requiring ingenuity on complex jobs where previous standards or methods of operation do not offer complete solution. May perform Carpenter duties as required.

Two positions. Plant Engineering Division.

5. RIGGER'S ASSISTANT - Four temporary, nine-week positions. Plant Engineering Division.

6. LABORATORY CUSTODIAN - Plant Engineering Division.

7. CLERK TYPIST - Under general supervision performs routine clerical duties requiring the use of several procedures and making minor decisions requiring some judgment. Typical duties include typing, filing, distributing documents and correspondence, maintain records, files and other miscellaneous office functions such as posting to registers, ledgers, or other records. Supply & Material Division.

8. MATERIAL HANDLER - Performs a variety of laboring and manual tasks in stores operations such as moving, loading, unloading, sorting and storing of materials. May operate motorized equipment pertinent to stores operations. Keeps stores facilities in neat condition. Supply & Material Division.

9. TECHNICAL SPECIALIST - Seeking BS degree or equivalent in chemistry or biology with quantitative analysis and experience in a biochemistry laboratory. Medical Department.

10. TECHNICIAN - AAS degree in electronics technology and familiarity with wide variety of medical and laboratory instrumentation. Candidate should be able to read and prepare schematic diagrams. Prototype construction may be requested. Medical Dept.

11. TECHNICAL SPECIALIST - Seeking BS to MS degree or equivalent in biology with experience in tissue culture and microbiological techniques for virus research project. Medical Department.

12. RESEARCH SERVICES ASSISTANT - Temporary position. Medical Department.

13. OFFICE SERVICES ASSISTANT - Part-time position. Department of Applied Science.

14. TECHNICAL SPECIALIST - AAS degree or equivalent in electromechanical technology and extensive experience in design, construction, checkout, troubleshooting, and maintenance of electronic circuits and equipment and electromechanical hardware using latest techniques. Department of Applied Science.

15. TECHNICIAN - AAS degree or equivalent in electromechanical technology to aid in the design and help implement the construction and employment of instrumentation equipment for power plant breech measurement. Department of Applied Science.

16. DEVELOPMENT ENGINEER - BS/MSME or equivalent with emphasis on thermodynamics and heat transfer to work with solar heat pumps and solar cooling systems. Two positions. Department of Applied Science.

17. TECHNICIAN - AAS degree or equivalent in electromechanical technology to perform lab work for the Reactor Materials Safety Group. Position involves setting up and operating sensitive electrochemical apparatus, the installation and operation of high temperature autoclaves and associated electronic equipment, construction of small high pressure water loops, testing for the degree of sensitization of stainless steels, and sample preparation and examination. Department of Applied Science.

18. SECRETARY - AAS degree or equivalent in secretarial science with knowledge of general office procedures. Department of Applied Science.

19. TECHNICIAN - AAS degree or equivalent in electronics technology and at least two years' experience in digital electronics breadboarding, fabrication and testing. Applied Mathematics Department.

20. COMPUTER OPERATOR - Possible shift work. Applied Mathematics Department.

21. LABORER - Three positions. Plant Engineering Division.

22. UTILITIES OFFICE ASSISTANT - Under minimum supervision, performs diversified office duties in connection with the work and operations of the utilities office. Prepares and maintains records in accordance with prescribed procedures. Performs tabulations and computations in compiling and consolidating data to be analyzed. Types correspondence, reports and other matter from rough drafts. Handles incoming telephone calls on work to be done, normally referring to supervisor involved; in cases of emergency and in absence of supervisors, relies on broad knowledge of utilities operations to get proper man out on job as required. Performs other miscellaneous office functions, including filing, checking of receiving reports and purchase requisitions and preparation of reports, as required. Plant Engineering Division.

23. PLUMBER A - Under minimum supervision lays out, constructs or installs, repairs, and maintains water and gas distribution systems, related facilities and auxiliary equipment, and equipment utilizing water, gas and heat distribution services. Plant Engineering Division.

24. CARPENTER - Under minimum supervision lays out, constructs, modifies and maintains buildings and component parts from construction drawings, rough sketches or verbal instructions. Works with wood, wood substitutes and combination materials and flooring, roofing and wall materials.

Uses hand, portable and fixed tools common to building construction trades. Installs cabinets, door frames, window glass, interior finishes and hangs doors. May perform Cabinetmaker duties as required. Two positions. Plant Engineering Division.

25. HEAVY EQUIPMENT MECHANIC-OPERATOR - Under minimum supervision maintains, operates, and repairs all material handling, earth moving, road and ground maintenance, and similar equipment, including complete repair and maintenance of gasoline and diesel engines and the use of required machine tools. Plant Engineering Division.

26. OFFICE SERVICES ASSISTANT - Two to four years' experience in general office procedures. Plant Engineering Division.

27. LIBRARIAN - Part-time position to set up, maintain and manage technical library. Department of Applied Science.

28. COMPUTER SCIENCE ANALYST - Seeking BS degree or equivalent experience in computer science with knowledge of operating systems development or maintenance and CDC Scope OS. Experience with CDC 6600 or 7600 Scope. Six positions located in User Services and Systems Programming Groups. Applied Mathematics Department.

29. TECHNICIAN - Temporary position. AAS degree in agriculture/agronomy or equivalent and familiarity with advanced chemical and biological laboratory and field procedures to assist in experimental studies of nutrient cycling in vegetation and soils. Department of Applied Science.

30. SENIOR BUDGET ANALYST - BS degree or equivalent in business administration with emphasis in accounting and three to five years' progressively responsible experience in a budget planning and control environment. Assignment includes heavy liaison with funding agencies. Requires excellent analytical and communications skills for the preparation of narrative and statistical material supporting budget requests for continuing and new research programs, supporting services, and research hardware. Experience in a high technology environment with exposure to and development of automatic data processing management information systems and techniques is very desirable. Two positions. Director's Office.

31. BUDGET ASSISTANT - AAS degree or equivalent in business administration. As directed, implements, coordinates and revises as necessary, procedures for maintaining records required for budget administration. Maintains records of all personnel assignments, analyzes and reports their effect on the budget. Prepares other budget reports and conducts information studies as requested. Director's Office.

32. BUDGET ANALYST - BS degree or equivalent in business administration with emphasis in accounting. As directed, responsible for the review, coordination, and preparation of data to establish budgets. Periodically analyze and prepare reports dealing with performance of cost to budget. Perform other miscellaneous administrative functions and management information studies as requested. Director's Office.

### Autos & Auto Supplies

2 RIMS - 14", 5-hole. \$5. John, Ext. 3403, 345-3097.

73 YAMAHA - 125 cc, low mi, elec start, excel cond, street & dirt. 878-9312.

75 YAMAHA - RD 250B, 6 mos old, 55 mpg, luggage rack, like new cond. Asking \$750. Neal, Ext. 4019.

2 SNOW TIRES - E78x15 (7.35x15) Atlas bias ply tubeless, practically new, excel cond. \$30/pr. Hendrie, Ext. 2912.

64 FALCON - 6 cyl, 4-dr, auto, good running cond, good tires, 2 snows on wheels. \$200. Lloyd Davis, Ext. 3952/4803, 325-0389.

66 CADILLAC - Coupe deVille, all options & all work, steel belted radials, near mint cond. Larry, 751-2149.

75 HONDA - CB-750, blue, slightly damaged, 2 bell helmets, crash bars, luggage rack, 10,000 mi. Jack, Ext. 2253.

69 CHEVY - 327 engine, standard trans, new paint job. \$575. 924-6101.

4 TRUCK TIRES - 9.50x16.5 Goodyear, hi milers, 8-ply nylon, brand new, take offs. \$75 ea. P. Valli, Ext. 2023, 744-3289.

2 TRUCK TIRES - 12.00x16.5 Goodyear, hi milers, mounted on 11 1/4" rims, GM, good cond. \$60 ea. P. Valli, Ext. 2023, 744-3289.

TIRES - 6.00 SL2. \$7.50 ea. 4 for \$25. Tom, Ext. 2902. CHEVY FRAME - W/327 eng w/trans & rear. Ext. 4661.

68 INTERNATIONAL SCOUT - 800, V8, 4 wheel dr, new paint, tires, carpet, in dash cass, excel cond. \$1500. 878-2196 after 5.

70 PEUGOT 504 - Completely rebilt eng, new batt, starter. \$750. Al, Ext. 3535, 929-6940.

72 SPORT VAN - 3 spd, 307 cu in V8, new battery, belted radial tires, less than 1 yr old, window van. 928-4481 after 6.

63 CHEVY IMPALA - V8, ps, A-1 cond. 281-4267.

SNOW TIRES - F78-14, used one season, A-1. \$40 for pr. firm. Ext. 2301/2302.

2 CHROME WHEELS - Reverse deep dish. \$40, fit 14" Chrysler or Ford or AMC. Ext. 2301/2302.

74 AUDI 100LS - 4 dr sedan, tan w/brown leather upholstery, am/fm stereo, standard shift, great gas mi, excel cond in & out, extra set of brand new snow tires. Ext. 2882/2883, 473-9121 after 6.

72 AUDI 100LS - 25,000 mi. \$1100. 363-7232.

FORD TORINO STATION WAGON - 13,000 mi, ps/pdb, auto, roof rack, CB radio, tinted glass, towing pkg, w/w, pwr window, excel cond. \$4750 firm. 732-0917.

14" RIMS - 5-hole, GM. \$3 ea. Ext. 2483, 473-7906.

AUTOMATIC TIRE MACHINE TOOLS - VW & Toyota, engine parts, cheap. 567-5381.

73 PLYMOUTH DUSTER - 6 cyl, automatic, ps/excel all around. \$1575. 286-9260 eves.

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

1 TIRE - W/w Firestone super belt, E78-14, fiberglass, very good cond. \$15. Ext. 2492, 475-8658 after 6.

GOODRICH TIRE - W/w steel radial, GR78-15, good cond. \$10. Ext. 2492, 475-8658 after 6.

WHEELS & HUB CAPS - 4 for 76 Dodge van, near new. \$5/set. Ext. 2492, 475-8658 after 6.

70 FORD FAIRLANE - Not running, has new tires & all new parts but motor must need work, best offer. 281-6130 eves.

67 VW BUG - Good cond, good trans. \$350. Len, Ext. 4675, 584-7258 after 6.

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

SNOW TIRES - Semperit radials, studded 165 SR 15 on VW beetle rims, used 500 mi. \$50 for 2. Ext. 4397. 19" B&W TV - \$20. Ext. 3486.

71 FORD GALAXY 500 - Ps/pb/ac, auto, reasonable. M. Rosen, Ext. 2382.

68 FORD LTD - 4 dr sedan, automatic, excel cond. \$750. Walter, Ext. 3358.

66 BUICK SKYLARK - Ps/pb, auto trans, good tires, good running cond. Helen Connell, Ext. 2601.

73 CADILLAC - Sedan deVille, 1 owner, low mi, full power, excel cond. Ext. 4851, 653-5555.

69 DODGE VAN - V8, very good running cond, very lg inside, extra seat, all windows, must sell. Ext. 4058, 286-0436.

FORD RIMS - 14" 5-hole, 1 pair. Ed, Ext. 4846.

68 PLYMOUTH ROAD RUNNER - 383 V8, 4 spd, mag wheels, many more extras. Steve, Ext. 4308, 4304.

SNOW TIRES - 1 pair 15", new w/studs. \$35. Steve, Ext. 4126.

SNOW TIRES - C78-13, Sears Dyna-glas, belted, mounted & balanced on Toyota rims. Will sell tires & rims separately. Ext. 4121.

67 SAAB - Sedan, 4 new tires, runs reliably. \$250. Bieber, Ext. 2924, 924-4551.

65 MERC CALENTE - 2 dr, body good, eng excel, 6 cyl, auto. \$400. Jim, Ext. 4040, 289-0876.

66 FORD FAIRLANE - Good mech cond, body clean in & out, must see. Asking \$375. 473-1295.

RED VW BUG - Motor good, body crashed, best offer, good for parts. P. DiDio, 286-0372.

73 HONDA 750 - Custom seat, new tires, sissy bar, crash bar, excel cond. \$1200. 744-2725.

### Boats & Marine Supplies

DINGHY - Plywood, \$75. 924-3756 after 5.

RADIO DIRECTION FINDER - Ray Jeff, 6 bands, self contained or house current, list \$109.95, sell \$60. C. Horn, Ext. 4278, 363-2042.

17' CANOE - Double-end, light weight w/paddles, excel cond. \$280. 473-4477.

ICEBOAT - Single, partially complete. Asking \$75. Joe, Ext. 4069.

14' MFG - 1974, fiberglass, excel cond. \$200. Bob Ext. 3080.

### Miscellaneous

COLONIAL BAR - W/2 matching swivel stools, must sell, new. \$175. 281-4451/475-3657.

GUITAR & STAND - Beginner's. \$20. 475-8658 after 6.

WOMAN'S COAT - Designer's by Jean Louis, dark blue, size 10, worn twice. \$25. 475-8658 after 6.

ELEC GUITAR & CASE - Sterling, \$70; Univox 65-RN guitar amp, \$45; microphone stand, \$5; all excel cond. 475-8658 after 6.

WESTERN SADDLE - Very good cond. \$200. 286-0443.

FLOOR LAMP - Driftwood cyprus, \$100; driftwood cyprus coffee table, kidney shaped glass top, \$150; contemp corner sectional, \$200; misc upholstered chairs, \$25 each; bench couch w/end tables blt in, \$100. 744-5261 or Ext. 3121.

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

### Real Estate

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

### For Sale

MIDDLE ISLAND - 3 bedrm ranch, fp, att garage. \$32,000 firm. P. Fallon, Ext. 3043, 878-2266.

ROCKY POINT - 3 bedrm ranch, 2 baths, den, priv beach, 1/2 acre. \$41,990. Ext. 4784/3566, 744-6767.

N SHIRLEY - 4 yr old high ranch, 4 bedrm, 2 bath, 1/2 acre, 2 sheds, many extras. Asking \$37,900. 878-9022.

A SACRIFICE - 6 rooms & bath, must be moved from present site. 298-8851 after 6.

SELDEN - Bargain priced 4 bedrm, family rm, formal dining, sm patio, fenced, \$37,500. 732-2720.

PATCHOGUE - 3 bedrm ranch, deep plot, wood shingles, full basement, garage, deck. \$43,000. 331-1718.

### For Rent

RIDGE - 3 bedrm condo, avail Feb '77, modern kitchen, nice location. 924-4837.

WADING RIVER - 3 rm apt, \$250/mo, util incl, walk to beach. 929-4822.

PORT JEFF STA - 3 bedrm, 1 1/2 bath, family rm, avail immediately. \$350/mo + util. 689-9509.

BROOKHAVEN HAMLET - Apt in older country home, furn, util incl, mature adults pref. 286-0129.

VERMONT VACATION - 3 bedrm mobile home, near ski areas. 473-8186 after 6.

PATCHOGUE - 2 bedrm, appl, quiet st, fenced, avail immediately. \$300/mo. 475-1964.

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

VERMONT - Furn chalet near ski areas. 757-5599.

VERMONT CAPE - 3 bedrm, fully equipped, near ski areas. 732-6499 after 6.

ROCKY POINT - Share house, water view, private beach, furn, all appl, 15 min to Lab. Jan 1-July 1. 821-0578.

PATCHOGUE - Priv apt, 2 bedrm, couple or couple w/1 child pref, no pets. Walt, Ext. 2907, 698-0576.

STONY BROOK - Lovely 2 story home, 3 bedrm, 1 1/2 baths, fp, screened porch, walk to rr sta, immed occupancy, no singles. \$400. Ext. 2424, 751-0453.

HOLBROOK - Condo, 2 level, w/w carpet, all appl. \$325 + elec. 732-5711.

WADING RIVER - 3 rm apt, immaculate, sunny, hard wood floors, walk to priv beach. \$225/mo. 929-4822.

PATCHOGUE - 2 bedrm, bath, priv entrance. \$240/mo, incl heat. Walt, Ext. 2907, 698-0576.

### Wanted

RIM FOR VOLVO - 145, good cond. G. Kinne, Ext. 3334.

MOTHERS - For babysitting pool in Coram area. Linda, 928-3973.

REGULAR TIRE - 8.55x14. Tony, Ext. 3658.

BABYSITTING JOB - Mother would like 5 days/week in her home. Esta, 281-7043.

SKI BOOTS - Inexpensive, men's size 9 1/2-10 for growing boy. G. Irving, Ext. 2318.

HOME - For an altered black & white cat, female, neutered, 3 yr old. Ext. 3060, 924-7662.

GAS POWERED CHAIN SAW - In reasonable cond. John, Ext. 3783.

FISHING REELS - Any age, any cond, will buy. George W., Ext. 3783.

### Car Pools

DRIVER - To complete 5-man car pool from Huntington. Irv, Ext. 4581 or Herb, Ext. 2929.

### Lost & Found

FOUND - Hat & gloves from 515 reading rm. Ext. 4129.

FOUND - Man's raincoat size 36-38 in personnel reception area. Ext. 2873.

### Services

ELECTROLUX OWNERS - Have your cleaner tested for suction & power, free of charge, also sales & service. 475-8456.

COPPER LOVERS - For your serving pieces, decorating access & gift. 399-2754.

AUTO REPAIRS - Reblid generators, starters, alternators, foreign cars my specialty. 473-4633.

STEAM CLEANING - Carpets, free estimates. Frank, 473-8279.

AUTO REFINISHING - Enamel, clean car. \$175. Bob, 698-7647.

AUTO REPAIRS - Good rates. Roy, 878-2486.

RESUMES & COVER LETTERS - Professional, let me help you write yours, experienced. Annalee, 878-4462.

HOUSE CLEANING - Professional job. Jack, 281-7043 after 5.