BROOKHAVEN BULLETIN
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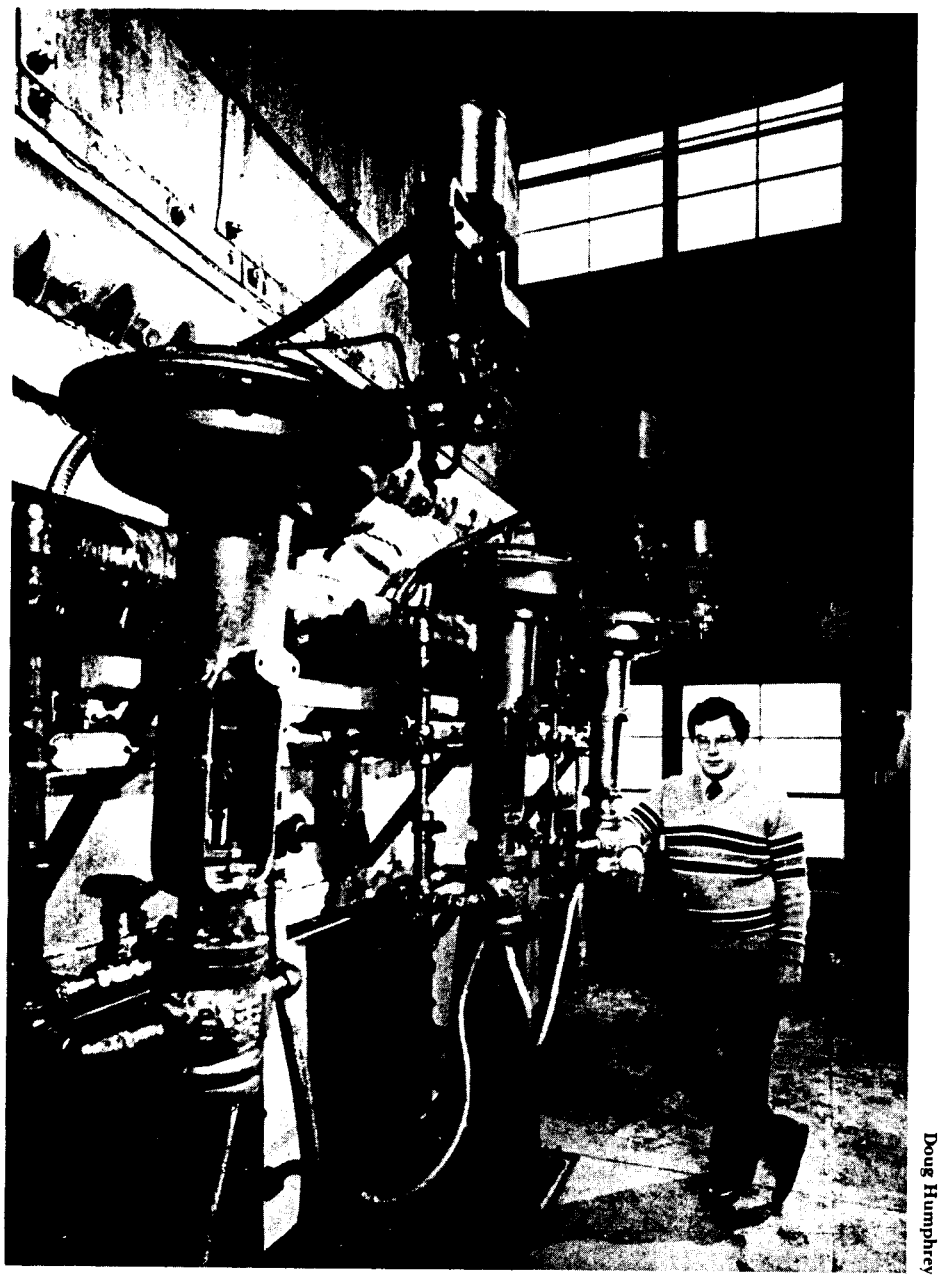
BROOKHAVEN NATIONAL LABORATORY



Doug Humphrey

Steam heat for the Lab is supplied by four oil-fired boilers. The largest one, bigger than a modest two-story house, generates 180,000 pounds of steam per hour, which is equivalent to boiling away a swimming pool full of water every hour. Ed Murphy, Plant Engineering Division, oversees two retrofit projects in the Central Steam Plant that will save energy and dollars for BNL.

No More $$$ Up The Chimney

Last month was the second coldest January on record since 1949, and the Lab burned over 800,000 gallons of heating fuel. You can imagine the bill.

With the soaring cost of energy, BNL is firmly committed to energy conservation. Just as homeowners are taking a closer look at the efficiency of their heating systems, so is the Lab being more critical of its own.

The Central Steam Plant has four oil-fired boilers. The oldest was installed in 1955, and the others in the early 1960's. Back then, oil was a nickel a gallon.

That's not to say the units are grossly inefficient by today's standards. Actually, boiler No. 5, which is the workhorse and keeps most of the Lab warm through winters, is about 80 percent efficient at full load. But that can be improved upon, and right now, two projects are under way to retrofit all four boilers.

Funding for the projects comes from DOE's Office of Construction and Facilities Management. As the cost of energy rises, retrofitting for conservation becomes more economically feasible. The steam plant projects will cost $2.3 million.

Of that, $800,000 will be spent to install a flue gas economizer on boiler No. 5, which will recover "waste heat." At present, flue gases at temperatures over 600°F are exhausted from the boiler. Instead, a heat exchanger will be installed in the flue to transfer that heat to water being fed into the boiler. Since the feedwater comes in at 226°F and must be heated to 350° to turn to steam (the system is under pressure), using this waste heat to pre-heat the feedwater will raise the overall efficiency of the boiler to 87.6 percent. Engineer Ed Murphy, who is overseeing the retrofit projects for the steam plant, says at the current cost of fuel the payback time is 3.4 years, with a savings of 326,000 gallons of fuel oil annually.

The payback period for the second project is about 1.5 years. Murphy explains, "Right now, all four burners use a 50-50 blend of ALF and No. 6 oil. The second retrofit project, budgeted at $1.5 million, will enable them to burn up to 100 percent ALF. That gives us complete flexibility."

ALF, an acronym for alternate liquid fuels, is made up of recycled or surplus combustible liquids such as alcohols, mineral spirits, fuel oils and solvents. It's generally half the cost of No. 6 oil, which means by burning 100 percent ALF, the Lab can cut its heating bill by 30 percent.

"It's also much less viscous than No. 6 oil. ALF has the viscosity of kerosene, while No. 6 resembles road tar," says Murphy. "That's why retrofitting is necessary. The current hardware can't handle more than 50 percent ALF, and if the mix exceeded that amount, we would have fuel atomizing problems."

The retrofit projects were conceived about two years ago by M. Joe Rose, Mechanical Division Superintendent and developer of ALF, and Robert Terwilliger, Energy Conservation Coordinator for the Lab. Both are in the Plant Engineering Division, which holds major responsibility for energy conservation at BNL.

The Lab's heating bill in January was $600,000. For all of fiscal year 1981, the projected heating cost is about $5.4 million. Plant Engineering estimates the cost would be $1 million higher without ALF and without an energy conservation program. Terwilliger says, "We have to do everything we can to reduce the amount of energy we use."

Keep It Down

You may have read that the Reagan administration has revoked the Carter order restricting public buildings to a maximum temperature of 65° F in the winter and a minimum of 78° F in the summer. But hear this! At the Laboratory, the ruling remains in effect. Energy costs take a large chunk out of the Lab's budget, and it cannot afford to have employees pushing up thermostats at will. So keep those sweaters on.

Researchers Share Findings On Airborne Agents

The air we breathe not only contains the oxygen needed to sustain life, but can also act as a carrier for agents capable of adversely affecting human health. To address this problem, BNL's Medical Department sponsored an international symposium Feb. 9-11 on the "Genotoxic Effects of Airborne Agents." Genotoxic refers to the ability of a chemical or physical agent to damage DNA, a process possibly associated with cancer and/or birth defects in the general population.

Specific airborne agents, selected for their potential impact on human health, were discussed. Ray Tice (Medical Department) presented data from animal studies suggesting that susceptibility to benzene, associated with aplastic anemia and leukemia in occupationally exposed workers, may be different depending on age and sex. Purushottam Kale (Safety & Environmental Protection) indicated that findings with ethylene dibromide, a grain fungacide, showed potent mutagenic effects in the common fruit fly. In a variety of animal studies, formaldehyde, styrene, vinyl chloride, and urethane, were shown to cause DNA damage or cancer. One agent of increasing concern was radon, a radioactive gas produced by the decay of uranium, and present in most building materials. It was expected that human exposure levels would increase as dwellings become more airtight to prevent heat loss.

On the bright side, scientists from Xerox reported that a paper toner constituent, a potent genotoxin, had been successfully removed from the product without any reduction in toner quality. Another presentation stated that commonly used inhalation anesthetics appear to be free of genotoxic potential.

At the symposium various methodologies for determining genotoxic activity were presented as well as techniques for monitoring human populations for exposure to such agents. Representatives of the U.S. Environmental Protection Agency and the Food and Drug Administration talked about risk assessment and the federal regulation of pollutants in the environment.

Doug Humphrey

At the symposium sponsored by the Medical Department, Elizabeth Anderson (third from left), Director of EPA's Office of Health and Environmental Assessment, spoke on EPA's attitude toward regulating carcinogens. Gathered for an impromptu discussion following her presentation are some of the conference participants, including Victor Bond (left), BNL Associate Director, and Donald Borg (on stage), Chairman of the Medical Department.

Att: Astronomers

An amateur astronomy group at BNL, made up of telescope makers, skywatchers and those interested in learning something about observational astronomy was sponsored by BERA. It seems to have lapsed long ago. Now, an unusual opportunity has arisen that might provide incentive for a new Astronomy Club.

The Vanderbilt Museum and Planetarium in Centerport owns a high-quality 8" Newtonian reflector complete with massive mounting, motorized slow motion tracking, precision setting circles, controls, photographic attachments, etc. Because of excessive light pollution in the Huntington area sky, they wish to explore the possibility of finding a new home for it at BNL, where the telescope would be kept, and used by both BNL/BERA Astronomy Club members and by their own Planetarium Astronomy Program participants. Vanderbilt would be happy to collaborate with us on joint research or educational activities, lectures, classes and demonstrations. The Planetarium has already sponsored a total eclipse expedition, to Canada in 1979.

All those interested in a cooperative BNL-Vanderbilt program centered on the 8" telescope should contact Gar Harbottle at Ext. 4387, or c/o Chemistry Department.

Say Goodbye To The Typewriter

Toss out your typewriters. They are soon going to be relics. Typewriters in the office are being replaced by something called a word processing system, which does just what it says. A word processor consists of a keyboard, screen, printer and disk drive — lots of hardware to take the place of a simple typewriter, but lots more capability.

The Lab already has close to 60 word processing systems and over 100 trained operators and back-up people. And with good reason. BNL's product is in paper form — scientific reports, which start as proposals and go through numerous drafts along the way. In fiscal year 1979-80, the Technical Information Division cleared about 1,750 formal reports, informal reports, journal articles and conference papers. While not all were handled by word processing systems, it's obvious that word processing at BNL is tremendous and chews up a big chunk of people and their time.

Two women have championed the cause of word processors on site — Catherine Tierney, Administrative Services Assistant, and Jane Bennett, Executive Secretary, both in the Department of Energy and Environment. Tierney first encountered a word processor when her department acquired a system. Bennett, faced with an increasing work load, did some research on office machines and chose a word processor over a "smart" typewriter.

That was two years ago. "We were some of the first operators," recalled Bennett. "I remember coming back from training sessions, sitting at the machine, everyone in my group standing over me, waiting for all the work to pour out of this marvelous piece of new equipment. I was scared!"

"I also remember the first time I lost a page," she continued. "You know it the instant you push the wrong button, and you want to grab it all back and you can't."

Both women have MICOM word processors, which is the brand of machine most of DEE acquired. MICOM users meetings were started early on because the few people who had machines decided to get together to share information. Susan Reinheimer coordinated the first sessions, and Tierney and Bennett took over later. Said Tierney, "A word processor is very powerful, but at the same time completely dumb. It can only do as much as an operator asks of it."

Tierney and Bennett admitted that not everyone takes to the new machines easily. Some don't believe they can handle them, and a few perceive the whole thing as a backward step for women and resist becoming machine operators.

Doug Humphrey

Jane Bennett (foreground) and Catherine Tierney

Most, however, think word processors help them in their jobs. And not all of these people work with scientific material. For example, Dorothy Schroeder, Administrative Assistant in the Directors Office, handles BNL conferences and official functions.

She said the machine relieves her of repetitive tasks when she makes local arrangements for conference attendees, which usually involve conference letters, visitor information sheets, meal tickets, and itemized statements to account for monies collected and dispersed. She also does personalized invitations and seating lists for official functions. Most of the time, Schroeder uses a standard format, only changing particulars like names, dates, times and fees. "So much is routine, yet so important," she said. "A word processor greatly reduces any chance for error."

Most of the word processors on site are used to handle scientific paperwork, but most of these machines, when first acquired by the Lab, lacked a simple way to do Greek symbols. Said Bennett, "It was frustrating to zip along on the word processor, come to a Greek symbol, leave space for it, and later fill in the blanks with a typewriter." So she and Tierney, along with Susan White de Pace, designed what is now called the BNL modified print wheel, which is compatible with machines using Qume printers. It contains 11 of the most commonly used symbols and is now a stock item. "A real time saver," added Tierney.

Both Tierney and Bennett are so enthusiastic about word processors that they have even organized seminars and a symposium. In July and September of last year, they arranged seminars for authors and supervisors to acquaint them with word processing systems. The basic message was, "hey people, this is not a typewriter." Said Tierney, "Editing techniques for word processors are different. No cutting and pasting, for example."

Tierney and Bennett have moved into the forefront of a revolution in office technology. Upon request of the Directors Office, they assumed chairmanship of the newly formed Office Technology Users' Group, which will integrate all units and operators of any kind of automated office equipment. Looking ahead, they think the office is going to change tremendously. "We see it happening already," said Bennett. "I needed to use my typewriter the other day. It had been sitting unused for so long, that I had to have someone come to oil it."

BERA Board

The slate of candidates for the 1981 BERA Board Election was chosen by the members of the Board-appointed nominating committee at a meeting held last week. Candidates are: James Ho — Applied Math, Andrew Kevey — Physics, Janet Sillas — Public Relations, and Nelson Tyler — Supply & Materiel.

During the week of March 23 through 27, BERA members will be invited to cast their votes in electing two of the above candidates to serve on the BERA Board for a period of three years.

The Brookhaven Employees Recreation Association (BERA) assists in the overall administration of the Laboratory's recreation program. All employees are automatically members of BERA and are eligible to vote in the annual election of the Executive Board. The Board consists of six members whose main functions are to recommend policies, rules, procedures and an annual budget, which are submitted to the Laboratory for approval. The Board also accepts proposals and gives approval for the formation of any new employee activities.

In view of the fact that those serving on the Board are elected to represent all BERA members, they may be called upon at any time to answer questions and listen to suggestions relating to recreation activities.

Speakers Bureau
February

Irvin Meyer (Chem.); Shoreham-Wading River Middle School, Glass and Glassblowing, February 5.

Miller Place Community Energy Symposium; **Richard Krajewski** (DEE), Oil Burner Test Facility at BNL; **Alfred Lewandowski** (DEE), Solar Collectors. February 7.

John Usher (DNE); Kings Park High School, Nuclear Fusion, February 12.

Edward MacDougall (DNE); Town of Islip Flower and Garden Show, Solar Heated Greenhouse and Henhouse, February 21.

Harvey Thomas (DO); Wyandanch High School Career Day, Careers in Science and Engineering, February 25.

R.C. Anderson (DO); Medford-North Patchogue Lions Club, Energy Conservation for the Home, February 26.

Arrivals & Departures

Arrivals

Alfred G. Williams ..... Safety & Env. Prot.

Departures

Marie L. Canner ..... Nuclear Energy

Fuller Explanation

Last week's article on power monitoring contained an error in the explanation of the equation, although the equation was correct. The equation and explanation should read:

Power in kilowatts=
(3.6×revolutions×Kh)/seconds

where 3.6 is a time factor; revolutions is any number of turns of the meter; Kh is a factor taken from the face of the meter; and seconds is the amount of time it takes the meter to complete the chosen number of revolutions.

Focus on Black History - Part IV

This week's quiz is the last in a series prepared by the Affirmative Action Office to commemorate Black History Month (answers on page 4).

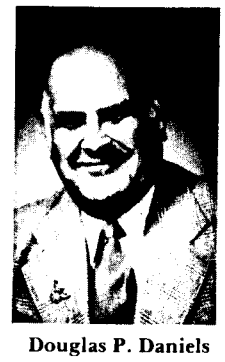
1. Willa Parks
2. Samuel R. Pierce
3. Thomas W. Stewart
4. John B. Slaughter
5. Hyram S. Thomas
6. J. Ernest Wilkins Jr.
7. Jeannie Patrick Yeboah

A. The Executive Director of the National Technical Association, the oldest professional organization for blacks in technology.
B. The Ph.D. she received in 1979 for Chemical Engineering was the first such degree awarded to a black woman.
C. This former President of the American Nuclear Society developed shields against gamma rays from the sun and nuclear sources.
D. He is the first black to head the National Science Foundation.
E. The potato chip was invented by this man.
F. He introduced the mop handle to society.
G. As Secretary of Housing and Urban Development, he is the only black appointee to President Reagan's Cabinet.

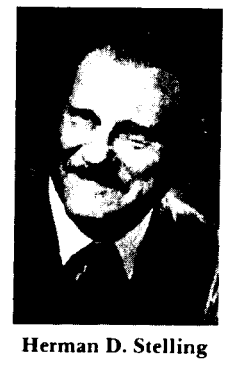
Retiring Today

Herman D. Stelling retires today with 20 years of Laboratory service. He is a Master Metal Worker wih Central Shops. For a couple of years, he plans to "stay around the Island, then eventually go south to Florida or Atlanta, Georgia." In the meantime he will spend part of the summer in Maine, part of the winter in Florida.

Douglas P. Daniels retires today from his position as Storeskeeper in the Supply & Materiel Division. He came to the Lab in 1947. Although he admits there's "lots to do around the house," he does plan to do some traveling to "see the good old U.S." and to visit a grandson who lives north of Rochester.



Douglas P. Daniels



Herman D. Stelling

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BERNICE PETERSEN, Editor
MONA S. ROWE, Assistant Editor

35 BROOKHAVEN AVE., UPTON, N.Y. 11973
Telephone (516)345-2345

CARL R. THIEN, Public Relations Officer

Letters To The Editor

To The Editor,

Your article on BNL's first co-op student, Marshall Jones, was of great interest. I would like to add some further information to it. Jones' wife, the former Annie Ruth Cornelius, was one of the first Brookhaven Semester Students, and she worked in the neutron physics group in the fall of 1968, having attended Tougaloo College, in Tougaloo, Mississippi. Miss Cornelius met Jones at BNL. She later attended the University of Massachusetts, in Amherst, as did Jones. Marshall Jones and Annie Cornelius were married in Riverhead, as near as I can recall, in 1969. I remember Annie as my brightest and best Semester Student.

R.E. Chrien
Dept. of Physics

Music Fair Tickets

The Recreation Office was recently notified that the Westbury Music Fair Industrial Sales Program has been revived and BNL has been invited to be a participating company. Since the BERA Board feels that the 15% discount being offered on tickets would be an appreciated saving to our employees, the invitation has been accepted. (Exceptions to discounts: Saturday evenings and when prohibited by performers' contracts.)

Ticket orders will be taken at the BERA Film Service in Berkner Hall between the hours of 11:00 a.m. and 12:30 p.m. Mondays through Thursdays. Payment will be required at the time orders are placed, and admission vouchers will be ready for pickup on the following day. **No refunds or exchanges will be permitted after orders are called in to the Music Fair Box Office.**

Service Awards

The following employees will receive service awards during the month of February.

Thirty Years

Frederick C. Merritt ... Instrumentation
Arthur L. Minardi ..... Energy & Env.
Edward E. Shelton ..... Plant Engrg.

Twenty-Five Years

Walter W. Becker ..... Nuclear Energy
Elizabeth B. Mill ... Supply & Materiel
R. Ronald Rau ..... Director's Office
James J. Reilly, Jr. ..... Energy and Env.

Twenty Years

Henry Arnesen ..... Accelerator
George W. Baer, Jr. ..... S. & Env. Prot.
Ronald E. Brewer ..... Central Shops
David A. Comstock ..... Chemistry
Paul V. Hough ..... Biology
John T. Koehler ..... Physics
Robert E. Meier ..... Accelerator
Richard N. Ruffing ..... Medical
Florian Swan ..... Supply & Materiel
Elizabeth A. Symonds ..... Appl. Math
Fred Traxel ..... Plant Engrg.
Alexander Wirszyla ..... Accelerator

Ten Years

Mary Ann Roberts ..... Medical

ANS Meeting

The Long Island Section of the American Nuclear Society will meet at the Bavarian Inn, Lake Ronkonkoma, on Tuesday, March 3, Guest speaker is BNL's Vance L. Sailor who will address the subject of "Low Level Radwaste Disposal Policies and Future Developments." Cocktails are at 6 p.m., dinner ($9.50/person) at 7 p.m. For reservations, call Peggy Nickerson at 677-2416 before March 2.

Cafeteria Menu

Week Ending March 6, 1981

Monday, March 2		
French onion soup	(cup)	.55
	(bowl)	.65
Baked filet of fish w/1 veg.		1.55
Turkey Brazil & rice		1.55
Hot Deli - Grilled Reuben		1.60
Tuesday, March 3		
Cream of cauliflower soup	(cup)	.55
	(bowl)	.65
Roast top round of beef & 1 veg.		1.60
Seafood Creole w/rice		1.55
Hot Deli - Pastrami	(on bread)	1.65
	(on roll)	1.75
Wednesday, March 4		
Chicken vegetable soup	(cup)	.55
	(bowl)	.65
Baked lasagna & 1 veg.		1.50
Beef hash & 1 veg.		1.50
Hot Deli - Roasted fresh ham w/barbeque sauce	(on bread)	1.65
	(on roll)	1.75
Thursday, March 5		
Navy bean soup	(cup)	.55
	(bowl)	.65
Southern fried chicken & 1 veg.		1.55
Spicy chili w/rice		1.55
Hot Deli - Philadelphia-style steak sandwich		1.75
Friday, March 6		
Seafood chowder	(cup)	.55
	(bowl)	.65
Beef roulade & 1 veg.		1.65
Broiled filet of fish & 1 veg.		1.55
Hot Deli - Roasted turkey breast	(on bread)	1.65
	(on roll)	1.75

Stony Brook Events

Five major events are scheduled during March at the Fine Arts Center. For ticket information and reservations call the Box Office, 246-5678, which is open from 9 a.m. to 5 p.m. weekdays. Mail orders with self-addressed, stamped envelopes are also accepted.

Violinist: Salvatore Accardo; works by Shumann, Prokofiev, Brahms, Ravel, on Sunday, March 1, at 3 p.m.

Ballet: The Oakland Ballet; two evening performances, "Scheherazade" on Saturday, March 7, and "The Rite of Spring" on Sunday, March 8. Sunday afternoon, March 8, a children's program with Copland's "Billy the Kid," tickets half price for children under 14.

Opera: The Long Island Opera Society; "Macbeth," Saturday, March 14.

Music: The Czech Philharmonic Orchestra; Sunday, March 22.

Ballet: The Seiskava Ballet School; Saturday, March 28.

Volleyball

Standings as of 2/23/81

A Division	
No Names	8-1
Mixed Ups	8-1
High Society	4-5
Las Bolas	5-4
Nuts & Bolts	3-6
Kings Court	0-9
B Division	
TNT	7-2
Puff & Stuff	6-3
Oh Nos	5-4
Leftovers	5-4
Lemufs	3-6
Semi-Tough	1-8

No Names over Nuts & Bolts, 15-6, 14-16, 15-5. High Society over Mixed Ups, 15-9, 16-14, 13-15. Las Bolas over Kings Court, 15-6, 15-10, 15-4.

TNT over Semi-Tough, 15-10, 15-3, 15-10. Leftovers over Oh Nos, 15-3, 15-12, 15-7. Puff & Stuff over Lemufs, 15-3, 15-11, 15-7.

Let's Dance

Live music! Live entertainment! Cash Bar! These are the special items that will make Think Spring a very special event. Sponsored by BERA, it begins at 8 p.m. tonight in Berkner Hall.

Hospitality News

Bonnie Gafney, a Long Island Park Ranger, will join us at our monthly coffee get-together on Tuesday, March 3. She will present a film on the "Fire Island National Seashore" and answer any questions you may have concerning it.

We would like to have you join us on Tuesday at 9:30 a.m. in the Brookhaven Center. Coffee, tea and danish will be served. Please come and bring the children. Babysitting will be provided free of charge. We suggest you bring along a toy or two for your child to play with.

Secretarial Science

Women in Secretarial Science will hold a meeting Wednesday, March 4, from noon to 1 p.m. in Berkner Hall. After a half hour business meeting, Janet Whitehead will speak. All those interested are invited to attend. For information, call Pat Kavanagh, Ext. 7931.

BERA Film Service

Starting on Monday, March 2, and continuing until further notice, the BERA Film Service Office in Berkner Hall will be open between 10:00 a.m. and 1:30 p.m., Monday through Friday.

BNL Heating Degree Days

When indoor temperatures drop below 65°F, most people reach for their thermostats to turn up the heat. Here at the Lab, 65°F is the maximum indoor temperature allowed.

65°F is the standard commonly used to calculate heating degree days. The maximum and minimum temperatures for a given day are added and then divided by 2 to approximate the mean temperature in degrees Fahrenheit. If the mean temperature is less than 65, then that number is subtracted from 65°F, which yields the number of heating degree days for that day.

Meteorologists in the Atmospheric Sciences Division of DEE have been keeping records of degree days since 1949. Recently, they have been besieged by employee requests for degree day information both past and present, since degree-day figures are an index of fuel consumption.

Through the heating season, the *Bulletin* will print daily degree days for the week preceding each issue. Here are degree days for the first three weeks this month.

February

1	2	3	4	5	6	7	8
40.7	24.7	50.0	52.7	56.7	49.0	36.0	33.0
9	10	11	12	13	14	15	
42.2	38.2	20.2	46.2	46.5	44.0	39.7	
16	17	18	19	20	21	22	
33.0	20.7	15.0	17.5	15.7	19.5	18.5	

Below is a table of monthly degree totals from 1949 through 1980. For January 1981, the total was 1409.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
1949	862	820	823	472	246	62	4	13	148	263	697	953
1950	839	1012	988	648	358	95	11	29	195	349	647	1024
1951	1014	929	845	524	259	99	6	27	129	370	726	927
1952	1012	959	875	486	310	33	4	25	144	480	662	933
1953	985	840	804	537	219	111	24	52	152	383	654	854
1954	1194	850	859	526	351	61	16	23	149	348	738	1024
1955	1148	979	863	492	230	98	2	37	160	332	748	1250
1956	1146	940	985	688	398	92	30	44	221	438	695	894
1957	1282	880	828	504	284	54	10	54	136	414	592	873
1958	1092	1106	858	548	366	148	16	26	132	461	678	1263
1959	1156	1046	907	536	258	120	6	18	130	371	670	938
1960	1068	876	1056	527	239	60	4	22	176	464	620	1168
1961	1292	995	884	608	338	60	7	26	68	236	668	1006
1962	1091	981	862	578	307	62	44	44	218	448	773	1142
1963	1147	1096	808	538	314	56	27	34	190	292	557	1168
1964	1079	1090	840	636	222	77	10	74	158	442	666	930
1965	1224	1006	907	636	216	98	20	40	142	439	729	954
1966	1152	977	846	696	378	64	6	8	152	509	652	1048
1967	994	1118	1020	624	460	60	7	18	174	478	800	1000
1968	1264	1166	848	550	356	84	13	50	80	318	688	1092
1969	1150	992	960	536	316	97	24	15	164	419	722	1058
1970	1342	1016	944	560	250	49	0	4	115	360	616	1013
1971	1260	956	868	660	342	68	15	36	74	214	714	866
1972	1004	1058	899	661	262	68	8	43	89	549	775	916
1973	1042	967	686	478	312	30	7	2	168	396	634	870
1974	1014	1050	792	472	318	74	16	5	124	530	650	931
1975	958	966	920	634	216	56	3	12	146	336	518	988
1976	1283	873	822	472	286	72	4	19	146	486	820	1192
1977	1414	996	716	540	231	87	12	27	96	448	638	1024
1978	1207	1200	944	570	276	94	34	7	220	494	674	945
1979	1108	1252	721	588	192	107	22	26	147	392	539	840
1980	1089	1116	926	532	198	106	1	0	92	384	738	1114
Mean	**1122**	**1003**	**875**	**564**	**291**	**78**	**13**	**27**	**145**	**401**	**678**	**1006**

Bowling

Purple & White League

For the week of 2/12, Gerrie Riker had high game with a 236. Last week Ken Riker had high series of 613 with games of 181/221/211. Jim Griffin rolled the high game with a 254. Other good games were bowled by Larry Musso 216, Denny Klein 214, Tom Romano 210, Ben Belligan 201, Mary Grace Meier 195, Mickey Haller 193, Nancy Erickson 189, Pat Manzella 189, Jeanne Penoyar 185, Millie Connelly 181.

Pink League

Deb Johnson socked it to the Lickety Splits by bowling games of 207/178/163 for a 548 series. Mary Grace Meier rolled a 196 and Marie Grahn 162. Other good games were bowled by Audrey Blake 182, Millie Connelly 165/163/155-483, Maria Apelskog 143, Ann Parinello 137 and Claudia Tyler 136.

Red League

The Freon Loaders took the Designers 11-0 with T. Rudolf grossing 645 and F. Powers 612. The Old Timers won 8-3 over the Sandbaggers with R. Meier (211) grossing 620, C. Bohnenblusch rolling a 203. Isa Team split 6-5 with the Old Timers II. M. Iarocci (203) grossed 626. The 76'ers won 7-4 in a match with the Phoubars. J. Connelly bowled 200, M. McKenna grossed 621. The Strangers bowled unopposed due to a postponement with F. Griswold grossing 622.

Green League

The Light Source continue to extend their lead as they took 11 from the Sparks. The Old Timers II took 5 from Isa Team, the Blue Jays postponed, and the Pinball Wizards took 8 from the Trouble Shooters with R. Eggert rolling a 204. The Phoubars managed 4 from the 76'ers with A. Lorenson rolling a 214.

Scorekeepers are needed for the Women's L.I. Industrial Tournament being held April 11, 18, and 25 in Hempstead. Volunteers can contact Helen Keeley on Ext. 4649.

The annual Scotch Doubles Bowling Tournament is scheduled for Sunday, March 15, at 2 p.m. at the Port Jeff Bowl. Team entry fee of $16 includes the cost of bowling and buffet. At least one member of each team must be a BNL employee. Entry forms are available at the BERA Sales and Services Office in the cafeteria. Information can be obtained from Helen Keeley on Ext. 4649 or Betty Jellett on Ext. 3631.

Answers to Quiz

1.A; 2. G; 3. F; 4. D; 5. E; 6. C; 7. B.

Classified Advertisements

Placement Notices

The Laboratory's placement policy is to select the best-qualified candidate for an available position, with consideration given to candidates in the following order of priority: (1) present employees within the department, with preference to those within the immediate work group; (2) present employees within the Laboratory as a whole; and (3) outside applicants.

The determination of the best-qualified candidate for available positions will be based upon education, experience and other job-related criteria. Such factors will be evaluated and measured against the demonstrable requirements of the available vacancy, as well as the Laboratory's Affirmative Action objectives.

The Laboratory is committed to a policy of Equal Opportunity in its selection and placement of personnel. Its objective is equality of opportunity in employment, training, and promotion without regard to race, color, religion, national origin, sex or handicap.

Each week, the Personnel Office lists new personnel placement requisitions. The purpose of these listings is, first, to provide open placement information on all non-scientific staff positions; second, to give employees an opportunity to request consideration for themselves through Personnel; and, finally, for general recruiting purposes. Because of the priority preference policy stated above, each listing does not necessarily represent an opportunity for all candidates. As a guide to readers, the listings are grouped according to the anticipated area of recruitment, as indicated below. Except when operational needs require otherwise, positions will remain open for one week following publication date.

For further information regarding a placement listing, contact the Personnel Placement Supervisor, Ext. 2882.

LABORATORY RECRUITMENT: Opportunities for present Laboratory employees.

1577. SECRETARIAL POSITION - Secretary to Deputy Chairman. AAS in secretarial science or equivalent experience. Requires initiative, demonstrated secretarial and administrative ability for diverse responsibilities, as well as technical typing experience. Knowledge of shorthand useful. Physics Department.

OPEN RECRUITMENT: Opportunities for present Laboratory employees and outside applicants.

1578. COMPUTER SCIENCE ANALYST - Requires BS in computer science or equivalent background. Responsibilities include performing scientific and/or PDP-11 relating to the operation of non-standard hardware. Requires familiarity with programming of non-standard computer hardware (e.g., Camac devices), acquaintance with a PDP-10 environment, and knowledge of FORTRAN. Knowledge of or willingness to learn MACRO-10 language is desirable. Accelerator Department.

1579. ELECTRONIC ENGINEER - Requires BSEE or equivalent capabilities. Will be part of team to develop the FASTBUS standard at BNL. Requires computer hardware experience, preferably with high-speed data acquisition systems. Accelerator Department.

Autos & Auto Supplies

73 VW BUG - stick shift, gas saver. $1,700; 1980 Suzuki 1000cc Dyno bars protect engine, all chrome. Make fair offer. 277-1284.

77 CAMARO - 350 cu. in., body damage. Asking $2,400. Claire, Ext. 3260.

WHEELS - for front end drive Olds 15", in good cond. $15 pair. Bob, Ext. 2819 or 289-0357.

76 VOLARE - as is or engine, trans and parts. Ext. 7611 or 744-4167 eves.

75 CORDOBA - mint cond, p/s, p/b, a/c, velour int. $2,200. 589-6151 after 6 p.m.

77 YAMAHA - 360cc, elec start, luggage rack, 7,500 mi, very good cond. $1,000. John, Ext. 4185 or 929-8204.

SPARK PLUG - wire sets, 4-6-8 cyl. $5. Bill S., Ext. 4434.

WHITE ROLL BARS - for mini pickup, excel cond. 698-3030 after 6 p.m. wkdays.

68 VW SQUARE BACK - rebuilt engine, several new parts, snows, spare tires. $360. Maggie, 744-4787.

75 FORD - F250 Camper Special pickup truck w/10½' Hornet camper slide-on, self-contained, many extras. $6,500. Will sell camper separately. Ext. 4622 or 929-4840.

RIMS - 14", fit Chevy and other GM cars. $4 ea or 3 for $10. Ext. 4022.

74 CHEVY IMPALA - good tires, new exhaust. $800 or best offer. 286-0372.

77 DODGE - Ramcharger, 4x4, excel cond, low mi reg gas. $4,600. Sheldon, Ext. 3354.

MOTORCYCLE - Honda MR50, youth size, 3 spd, red and black, $350; mini-bike, 4 hp, black, front and rear shocks, new clutch, excel cond. $125. Ron, 732-6712 after 5 p.m.

79 FORD VAN - E150, 320 V8, excel cond, 15 mpg, 2 gas tanks, full int, must sell. 924-5192 eves.

79 TOYOTA COROLLA - 2 dr sedan, 4 spd, am/fm 8 trk, rear defroster, excel gas mpg, clean in and out. $4,000, negotiable. Paul, 286-2517.

SNOW TIRES - (2) D78-14 w/w on AM wheels, used 2 mo, Goodyear. $85 for pr. Claudia, 286-9665 after 5 p.m.

76 FORD VAN - E250, 6 cyl, auto, p/s, p/b, 138" wheel base, windows, s/door; new tires and tune up and exhaust system; no rot. $2,800. Earl, 744-1429.

71 DATSUN - 240Z, mech good, needs some body work. $1,500. Gary, Ext. 4581 or 288-6453 after 5 p.m.

78 HONDA CIVIC - 24,000 mi, excel cond. $3,200. Ext. 2979 or 345-3237 after 5 and wkends.

UTILITY TRAILER - wooden sides, storage space. $150. Mike, Ext. 2528 or 399-4636.

72 FORD - sta wgn, p/s, p/b, excel mechanically but some body dents. Arnie, Ext. 2606.

75 FORD GRANADA - 6 cyl, 4 dr, a/t, 72,000 mi, very good cond. Eddie, 288-6834 after 6 p.m.

73 BARRACUDA - mint cond, $750; (2) brand new 50N 15" pro-racing tires, $175 for 2. 924-0960.

FORD ENGINE - 302, V8, $150; (2) 14" Ford rims, $10. R. Jimenez, Ext. 3284.

74 MUSTANG - V6, a/t, a/c, am/fm stereo console, p/b, p/s, dual exhaust, white/blue buckets. $1,595. Bob, Ext. 4547 or 473-3987.

71 VOLVO - 145 S.W. auto, 105,000 mi, runs OK, looks OK. $950. Tom, Ext. 7196 or 286-2505.

73 OLDS - Cutlass, V8, p/s, p/b, a/c, am/fm cassette, many extras, clean and excel cond, 55,000 mi, must sell. $1,050. Tohru, Ext. 3627.

CAR RADIO - Sanyo am/fm cassette, auto-reverse, cost $169. Sell for $70. 281-8274.

73 OLDS - Delta "88" 4 dr, gold/brown vinyl top, a/c, full power, 75,000 mi. $1,200. Diane, 732-9598.

78 OLDS - Cutlass Supreme, small V8, p/s, p/b, a/c, am/fm, excel cond, 28,000 mi new tires. $4,500. Beth, Ext. 3325.

75 VW BUG - custom, am/fm radio, new upholstery, 55,000 mi, good cond, good gas mi. $2,500. Ext. 4622 or 929-4840.

CAR STEREO - am/fm stereo w/two speakers out of '78 Datsun, made by Clarion, all in good cond. $50 firm. 281-0360.

68 CHEVELLE TRACK CAR - excel cond, 331 pro motor, Ford top loader trans, motor setback, alum fire wells, 5.38: 1-12 bolt rear E.T. 11.5 sec. $3,500. Fred, Ext. 4407/35 or 499-1214 after 6 p.m.

Boats & Marine Supplies

73 WELLCRAFT - 24'8" twin I/O 188 Merc, full canvas cabin, extras, 77 shor-liner less than 100M. $7,500. Days 924-4100 or 744-0551 eves.

26' PEARSON - 1975 MJG, VHF, DF, KM cradle, many extras, cruise equipped. Ext. 3790 or 751-8158.

64 GREY MARINE - Model 620, 4 cyl, 60 horse w/trans, very few hrs. $350. Garry, Ext. 4581 or 288-6453 after 5 p.m.

20 HP EVINRUDE - short-shaft, excel cond, rebuilt in 1977. Best offer. 878-4474 after 5 p.m. and wkends.

Miscellaneous

AIREQUIPT - circular slide trays, four of them. $2.50 ea. Ext. 2323.

HEATER - kerosene infra red Energy Mart Model No. EM-M221, 9,880 BTU. $175. Lou, Ext. 4615.

TV - B&W 19" Sharp, 2 mo old, $125; triple dresser, full bed and mattress. 928-5737.

ICE SKATES - boy's sizes 2, 3, 4 and 5. $5 per pr. 289-1754.

WASHING MACHINE - Sears. $30. Bob, Ext. 2819 or 289-0357.

FREE - used knitting, crocheting magazines to anyone that can use them. 878-1192.

CHAIRS - black tweed living room w/green slip covers. $150. 289-1754.

NIPPON CHINA - dresser set, 7" tray, 3 dishes w/lids. $75. 744-3744.

FIREPLACE HYDROHEARTH - $80. Frank Rumph, Ext. 4581 or 588-3565.

ELECTROLUX - recond Model L, w/one yr guarantee plus parts. $125. Power nozzle also avail. $50. Joe, 475-8456.

LEATHER JACKET - size 42, cost $150 new. Selling for $50. 929-3130 after 6 p.m.

UNSEASONED FIREWOOD - split or logs. $110 a cord. Greg, 399-4213 eves.

VIP HOLIDAY SPA - membership, $29 renewal per yr, valued over $600. Asking $425. George, 288-5697.

TENT - 14' wall tent, the best, like new. $140. Ext. 4586.

ELECTRIC GUITAR - Carlo Robelli solid body Les Paul, natural finish w/case, good cond. $130. Sanchez, Ext. 3848 or 698-3145.

BATH CABINET - w/mirror, 18"x14"x3½", new, Miami Carey CRW 308-18. $10. Ext. 2831.

DINETTE SET - table w/leaf, 4 chairs, small china cabinet. $150. Jim, Ext. 7772.

STEREO SET - excel cond, suitable for child. $20. 744-3744.

TAPPAN RANGE - bottled gas, 36" white, automatic timer clock, oven light, excel cond. 732-6334.

PUPPIES - standard poodle, snow white, males, $50; females, $25. E. Edwards, Ext. 4027 or 286-1121.

DEHUMIDIFIER - Admiral 22 automatic, 22 pint capacity, excel cond, $50; low shag brown and tan rug. 18'x10', good cond, $50; indoor leather roller skates, size 8, $10. 732-3350.

HOSPITAL BED - crank type, very good, reasonable offer; artists canvas remnants, 4/$1. Helen, 588-3779.

ROLLER SKATES - ladies size 7. $15. Ext. 4447 or 924-8213 after 5:30.

ANTIQUE WOODEN ICE BOX - steamer trunks (3), misc chairs. 669-9234 after 6 p.m.

WINE PRESS - crusher and barrels, like new. $265 takes all. JU8-8105.

TOAST MASTER - toaster oven flip over, brand new, still in box. $20. Bob, Ext. 4021.

RADIO - Aero Sport, 4 channel R/C, new. Asking $150. Paul, 878-1080 after 4 p.m.

EFEL COAL - or wood burning stove, fireview glass door, ash drawer, cost $650. Sell for $300. Ext. 2434.

ORGAN - Hammond sounder, excel cond, electronic rhythm section, auto chord. $300. 277-2671 after 6 p.m.

SKATES - ladies figure skates, size 5N, white w/guards and pom poms. Ext. 4763.

DOG LEASHES - and collars (obedience) breed stationary, grooming supplies, poodle grooming service. Ext. 2050 or 473-6432.

LIVING ROOM - 10 pc set, 3 tables, 3 chairs, 3 brass lamps, one 7 ft sofa, mint cond. Best offer. Ext. 2065 or 981-1327.

HEAVY BAG - canvas Everlast, like new. $75. Bob, 286-8116 after 5 p.m.

DOUBLE BED handsome mahoghany (W.J. Sloanes) Beautyrest mattress and box spring, very good cond. $350 or best offer. Ext. 2959 or 286-0379.

CAMERA - 35mm SLR, 50mm lens, 135mm telephoto lens, 24mm wide angle lens, auto recharge, flash. Ron, Ext. 2491.

VACUUM CLEANER - Hoover upright. Only $15. 473-2473.

RABBIT - beautiful white healthy male, 5 mo old, great for pet. $5. Ext. 3578 or 878-4864.

AIR CONDITIONER - $25; porta crib, mattress, pads, sheets, $8. 751-8158.

KEROSENE HEATER - 9300 BTU radiant type, 1 gal removable tank. $125. Joe Disparti, Ext. 3284.

FREE - small collie/mix, spayed female, 1 yr old. Don, Ext. 3800.

FIGURE SKATES - boy's size 4, excel cond. $10 or best offer. Ext. 2914 or 286-3742 eves/wk ends.

RANGE - G.E., excel cond, elec, 30". $85. 744-3744.

POPULAR MECHANICS MAGAZINE - 1957-1974 complete. Dennis, Ext. 4259 or 736-2534 eves.

MAGNAVOX - channel plus converters, wide range stations including HBO. 281-3988 between 6 and 10 p.m.

MAGNUS - elec chord organ, floor model, $25; ladies ice skates, size 9, hardly used, $7. 727-1617.

BARBELLS - and multi purpose bench (Sears), 135 lbs of weights. All for $50. 331-2779.

AIR COND - Coldspot, 23,000 BTU. $50. 473-0537 after 6 p.m.

COLONIAL SOFA - wood frame w/cushions, $75; rocker, wood frame w/cushions, $25; good cond. Ext. 3995.

8-TRACK PLAYER - Realistic, excel cond. $30. Ext. 3431 or 744-9677.

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

RONKONKOMA AREA - Cape, 2 bath, 3/4 bdrms, fin bsmt, siding and extras. 588-3779.

WESTHAMPTON AREA - mobile home, 12'x60', 2 bdrms, eik, stove, refrig, washer/dryer, laundry rm, 2 tool sheds, porch, patio, wooded landscaped plot. $10,500. 698-2501 after 5 p.m.

For Rent

ROCKY POINT - immac small house, 2 bdrm, l/r, eik, full bath, patio, shed, secluded quiet cul-de-sac location, fully carpeted. $290/mo plus util. For information call neighbor Mrs. Zimmer, 744-3157.

MASTIC BEACH - 3 bdrm ranch, panelled, carpeted, Fla room/den w/fp, private, quiet, economical. $350/mo plus util. 399-0132 or 399-1736.

BELLPORT VILLAGE - 2 bdrm apt, l/r, eik, garage, lg lot, lease. $460/mo incl util. 286-8850.

SHIRLEY - 3 large rooms, apartment w/full bath, priv entr, available April 1. $375/mo incl heating and utility. 281-2561 eves.

SHIRLEY - attractive furn apt, priv entr, util incl excel location, 5 min from Lab and stores, mature working gentleman, security. $285/mo pays all. 281-8044.

Wanted

SUNLAMP - for acne sufferer. Reasonable price. Ext. 4051 or 286-3377 after 6.

SECRETARY - in good/fair cond. Annette, 929-3061 after 6 p.m.

ARTIST SUPPLIES - oils, canvases, brushes, etc, cheap or free; also wanted, a hard top for Fiat 850 Spider. Doris, Ext. 3488 or 924-7832 after 5 p.m.

PORTABLE PLAYPEN - in excel cond. Connie, Ext. 2028 or 277-6721 after 6 p.m.

HOUSE - to rent, 3-4 bdrms, beginning Sept for visiting scientist and family. Ext. 3786.

SAILING DINGHY - 8 ft, under 100 lbs. Pete, Ext. 4782 or 289-7218.

EXPERIENCED PERSON - for sitting and light housekeeping, Wading River, 1 or 2 days, references. 929-6634.

SAILS - and mast, preferable for Hobie Cat. 475-4199.

MAZE - for mice, needed by H.S. student for research for school project. 744-3069.

HOUSE - married couple w/no kids/pets needs 2 bdrm house to rent by April 1. Ext. 4393 or 473-8941.

USED FARM EQUIPMENT - med size flat-bed trucks, tractors and any other equip. 722-4144 after 6 p.m.

WOODWORKING - a chance to use your radial arm or table saw. Bruce, Ext. 4179.

WALDBAUM'S BLUE REGISTER TAPES - will pay $2.00 for every $100 worth of tapes. I. Merritt, 589-5126.

SEAT BELTS - Toyota, 2 pr rear seat, non-retracting. Dennis, Ext. 4259 or 736-2534 after 6 p.m.

UTILITY TRAILER - reasonably priced. 281-8274.

APARTMENT - studio or 1 bdrm, in Stony Brook, E. Setauket, Pt Jeff area, quiet graduate student. 289-0453.

BABYSITTER - who lives on site, non-smoker, please. Mon thru Fri 8:30-5:00 for 10 mo old. Mona, Ext. 2347.

Car Pools

CENTER MORICHES/S. MANORVILLE AREA - want to start car pool. Ext. 3578 or 878-4864.

HUNTINGTON - interested in joining or starting car pool. Jim Brower, Ext. 2027.

WEST ISLIP - driver wants occasional rider to help defray gas costs. Adrienne, Ext. 4393.

Lost & Found

FOUND - scarf, in front of Bldg. 480, identify and claim. Sharon, Ext. 3508.

FOUND - black leather glove (ladies) near Chem. Bldg. Ellie, Ext. 7328.

Services

Services are listed as a courtesy to BNL employees. They are neither screened nor recommended by the *Bulletin*.

1980 TAX RETURNS - by experienced tax accountant, low fees. Bob, 475-3981 eves and wkends.

LOG SPLITTING - by machine, no job too big or small. Very reasonable. HR2-1875 after 5:30 p.m.

ADULT CLASSES - ballet and jazz exercise, 8 wk course beginning March. $35. June, Ext. 2085.

MOTORCYCLE ACCESSORIES - for street and dirt. Best prices, lab discounts. Ext. 2311.

PROFESSIONAL INCOME TAX - service by experienced preparer. Jack, Ext. 7942 or 864-2236.

HOUSE CLEANING - professional results, references. Reasonable rates. 924-4298.

SANDBLASTING - boat trailers chassis, any kind equipment w/wo primer coat. Reasonable rates. 744-3968.

FIRESIDE CHIMNEY SWEEPS - fireplaces, wood coal and oil flues, dustless removal, insured, lab discount. Bill, 584-6425.

INSULATION BLOWN - cellulose, any attic, 40¢ per sq ft, 6" depth R-22, free estimate. 286-3308.

BABYSIT - your children, my home, Sound Beach, any time. 744-3069.

PROFESSIONAL TYPING -727-5475.

NEED A BABYSITTER? - exp'd and reliable, 16 yrs old, will also be mother's helper, 3 Village area. 751-8128 after 5 p.m.

PIANO TUNING - and repair. Reasonable rates and conscientious service. 751-4985.

SIGHT SEEING FLIGHTS - aerial photogr, Long Island, Conn, New York. Modern all weather aircraft. Ron, Ext. 2491.

TAXES - prepared by tax consultant, your home or mine. Reasonable. John, 732-2472.

PILLOWS - custom patchwork by Un-Hee. 736-2534.

LEARN BREADMAKING - 3 classes, begins March 3. $15 includes everything. Mary, 744-1898.

Classified Ad Policy Deadline is 4:30 p.m. Friday for publication Friday of the next week.