BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Michael Directs MAP3S/RAINE

Doug Humphrey

Paul Michael

Paul Michael, head of the Atmospheric Sciences Division, DEE, was recently named director of the MAP3S/RAINE Scientific Program. Conducted by the U.S. Environmental Protection Agency and the Department of Energy, the program is a multi-laboratory research effort which seeks to understand how pollution is transported and deposited over long distances. MAP3S is an abbreviation of Multi-state Atmospheric Power Production Pollution Study, and RAINE stands for Regional Acidity of Industrial Emissions.

Besides Brookhaven, other laboratories participating in this program are Pacific Northwest Argonne and Lawrence Livermore. The universities of Kentucky and Iowa contribute computer modeling work, and various other universities maintain precipitation sampling sites. Previous directors of the MAP3S/ RAINE program have been Jeremy Hales of Pacific Northwest and Michael MacCracken of Lawrence Livermore.

The program was initiated in the mid-70's, originally to understand how sulfate pollution was transported over long distances (hence the term "multi-state"). According to Paul Michael, the focus is now on the acid deposition problem. He says there is scientific controversy over whether acid rain is caused by pollution traveling long distances or by more local conditions. The eventual goal of the program is to identify which regions deliver what, where, and to be able to predict how changes in emissions affect depositions. "To do this," says Michael, "we have to know a lot more about emissions, meteorological transport effects and the chemical transformations that take place in the air and in rain and cloud water."

This past April, a large-scale rain sampling experiment (see Bulletin story on OSCAR, April 17, 1981) was done across 16 states and involved close to a hundred researchers in the MAP3S/RAINE program. Michael says future studies in the next year will center on a number of local experiments to look at how isolated mechanisms incorporate pollution into precipitation. Building on the analysis of data collected during OSCAR and the local experiments, other large field studies will be conducted further in the future. He also mentions greater emphasis on developing new computer models that can simulate more

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Cut Costs — Save Jobs

Lab Director George Vineyard has announced the membership of a committee to review Laboratory expenditures and recommend ways to reduce operating costs. Members of the committee are Allen Goland, Henry Grahn, Joseph Hendrie, Geoffrey Hind, Vincent O'Leary, and Ronald Rau. Hendrie will chair the committee.

"This is a time for hard decisions," said Hendrie, "and in view of the budget difficulties we face this year and next, we have got to make Lab operations as efficient as possible." Hendrie stressed that doing all we can to decrease costs will be effective on two fronts: it will better our competitive position vis-a-vis other labs and government contractors, and it will have a lesser impact on staff reductions when budget cuts must be made."

Vineyard has asked the committee to report its recommendations to him in about six weeks so that prompt action can be taken on those measures judged by Laboratory management to be most effective. Vineyard directed the committee to consider all aspects of Laboratory operations and to recommend measures, including significant changes in operation and policy, that would reduce costs without substantially impairing the ability of the Laboratory to carry out its scientific program. The committee will not deal with changes in scientific programs that may result from the current budget situation.

The committee will be reviewing all areas within its charge and will do its best to come up with recommendations, but individuals can start right now, said Hendrie. He reiterated Dr. Vineyard's urgent request last week that "all employees take personal responsibility for helping to reduce costs, both by preventing waste and by deferring expenditures of lower priority during this uncertain period."

In addition, Hendrie said that the committee would welcome suggestions for cost cutting. All employees are invited to send their ideas to him at Bldg. 475. Even a small saving in one office or lab can have an impact when applied Lab-wide.

Holden Heads ICAW For Second Term

Norman E. Holden of the National Nuclear Data Center, DNE, was reelected for a two-year term as president of the International Commission on Atomic Weights and Isotopic Abundances (ICAW) at a meeting of the International Union of Pure and Applied Chemistry (IUPAC) in Leuven, Belgium, this past August. Holden, who has been a member of ICAW since 1971, served two terms as secretary, beginning in 1975, until he was elected president in 1979.

Atomic weight values, which are used in trade and commerce to fix the amounts of chemicals bought and sold and which are used in the laboratory and classroom to balance equations involving chemical reactions, have required standardization since the end of the last century. The request for an International Commission was made in 1899 and ICAW was formed in 1900. Thus, it is one of the oldest international scientific organizations still in existence, predating IUPAC, with which it is now affiliated. IUPAC was formed in 1919 and is a voluntary non-profit association of adhering organizations representing the chemists of 45 countries.

ICAW issued its first international table of atomic weights containing 76 elements in 1902. In contrast, the 1979 report contains 106 elements. The distinguished membership of the International Commission over the past eight years has included scientists who were awarded seven Nobel prizes in Physics and Chemistry.

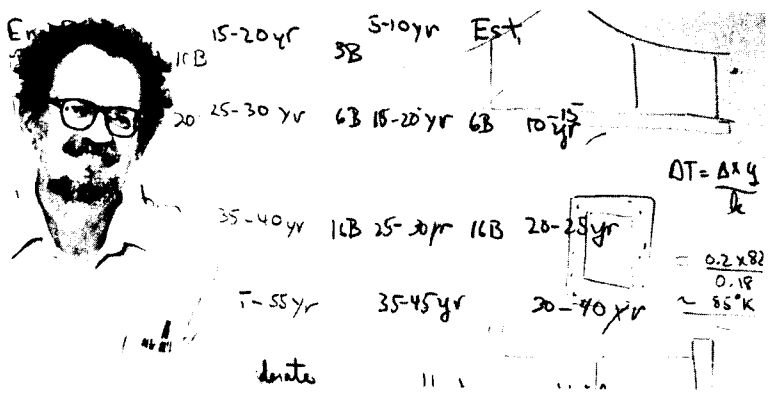
Over the past decade, ICAW has increasingly turned its attention to the problem of the isotopic composition of the elements, and the phrase "isotopic abundances" was added to its name two years ago. Atomic weights can, of course, be calculated from the masses of the isotopes of an element and the abundances of those isotopes. Recently, the Commission has begun to investigate the isotopic composition of elements from non-terrestrial sources to determine the variability or lack of variability in composition compared to those same elements found on the earth.

Until comparatively recent times, atomic weights were considered to be constants of nature, like the other physical constants, where any uncertainty in their value was strictly due to experimental error. However, Holden is concerned about the failure of the scientific community to realize that isotopic composition has a natural variation for many elements such as lithium and boron, which has

(Continued on page 2)

Doug Humphrey

Norman Holden


Doug Humphrey

James Powell

On The Lookout For That Better Idea

In his old office, books were piled in heaps, papers were strewn around, and general disorder reigned. In his new office, the books are neatly shelved —thanks to a secretary, he admits —and papers are filed in fat, brown envelopes. He takes credit for the filing and says he can put his hands on any topic, even though the envelopes aren't labeled.

In spite of the move to new quarters, however, the old habits are slowly creeping back, evidenced by small stacks of papers beginning to form on the floor around his desk. Jim Powell is settling back into the environment in which he thinks best.

Thinking is what Powell does for a living. He's one of the nearly 800 scientists who work at Brookhaven Lab, and coming up with ideas is a major part of his job.

About ten of his ideas are patented jointly with BNL employees with whom he has collaborated. And that's one reason Powell likes working at the Lab. He's surrounded by other creative people who can give him feedback.

Aother reason is that he has the flexibility to work in a variety of areas. Holding an undergraduate degree in chemical engineering and a doctorate in nuclear engineering, Powell is head of DNE's Reactor Systems Office, which explores advanced designs for fission, fusion and accelerator reactors. But in the 25 years he's been at BNL, Powell has occa-

(Continued on page 2)

Concert Season Begins

The BERA Concert Series begins the season with a performance by the Galimir String Quartet on Friday, October 30, at 8:30 p.m. in Berkner Hall. On the program is Beethoven's String Quartet in C Minor, Op. 18, No. 4, Schoenberg's String Trio and Brahms' String Quartet in A Minor, Op. 51, No. 2.

The original Galimir String Quartet was founded more than fifty years ago when Felix Galimir and his sisters, Adrienne, Renee and Marguerite, were students at the Vienna Conservatory. Present members of the quartet include, in addition to Mr. Galimir, violinist Hiroko Yajima, who appeared at BNL last year with "Music from Marlboro;" violist John Graham, who has appeared as guest artist with the Guarneri and Juilliard Quartets; and cellist Timothy Eddy, frequent performer in Music from Marlboro Tours, who has recorded for Columbia, Vanguard, Nonesuch and Vox.

Galimir String Quartet

Tickets will be sold at the door before the performance. Adults are $7; students and senior citizens, $4; and under 18, $3. A better buy would be to purchase a series subscription to all five concerts in the season, at the price of $25. Subscription tickets can be purchased the night of the concert.

Women In Science

A joint luncheon meeting of the Women in Science and the Professional Women in Government will be held on Wednesday, October 28, at noon in the Brookhaven Center. All women on site are invited. Corinne Ince from the Personnel Department will speak on "Employment Interviewing — Techniques for Conducting and Participating in the Job Interview."

The luncheon is $6, and reservations are requested. Please send a check payable to SAGA Foods, Inc. to Harriet Fadem in Bldg. 911C (Ext. 4853) by October 23.

On Camera

Dr. F.P. Blackstein, Assistant to the Director of Research at Chalk River, Canada, will speak on "The Scientist's Responsibility to Communicate with the Public" at 10 a.m., October 27, in Room B, Berkner Hall. Blackstein will address the recently formed Science/Media Operations Group, an association of scientists and engineers who wish to seek training and exchange ideas with regard to appearances on TV and radio, conducting interviews, and addressing the public. The meeting is open to all who are interested. If you are not yet a member of the group, call extension 3336 for further information.

French Poster Art

A historical survey of French poster art will be presented by Claude Verdier at the next meeting of *Le Cercle Francais de BNL*. The title of his lecture is *Cent Ans d'Affiches Francaises* (A Century of French Posters)", and will cover the period from Toulouse-Lautrec and Mucha up to the present day. The talk will be given in French, but will be generously illustrated with slides.

M. Verdier is visiting the U.S. on a lecture tour sponsored by the Federation of U.S. French Alliances. He is himself a graphic artist, with particular interests in drawing and design.

The meeting will be held in Room C of Berkner Hall, on Friday, October 23, at 8 p.m. Refreshments will be served after the lecture. Those who are not members of *The French Group of BNL* will be asked for a donation of $3 ($1.50 for students and senior citizens with I.D.).

Michael (Continued)

complicated meteorological and chemical phenomena. A number of BNL researchers in Michael's Division and in the Environmental Chemistry Division will continue to work on the program.

Paul Michael holds a Ph.D. in Physics from New York University. He came to BNL in 1958 to work on theoretical reactor physics, and in 1970 began work on a cooperative program between the Meteorology Group and the Radiation Division of the Department of Applied Science. In 1972, he was appointed head of Meteorology, which was subsequently expanded and renamed the Atmospheric Sciences Division.

Holden (Continued)

nothing to do with radioactive decay as in the case of lead. In addition, commercial material may have been subjected to an undisclosed or inadvertent isotopic separation, which can modify its isotopic composition and also its atomic weight. The Commission will continue to alert the scientific public to this problem.

A Weighty Question

Should the term "atomic weight" be abandoned in favor of a more precise phrase? The definition of atomic weight has been under intense discussion in recent years, says Norman Holden, physicist in the Department of Nuclear Energy, and recently reelected President of ICAW (see accompanying story).

In a recent paper, "Atomic Weight — Love It or Leave It," Holden writes that in the early nineteenth century, scientists considered the atomic weight of an element to be a constant of nature. But Aston's discovery of isotopes in 1920 and later Thode's work on the variation in nature of boron's isotopic composition and its atomic weight made scientists realize that atomic weights are not constants of nature.

The discovery of the isotopes of oxygen in 1929 by Giauque and Johnston led physicists to use a scale with $^{16}O = 16$, while chemists used an elemental oxygen = 16 scale. The physicists and chemists eventually agreed to a new scale with $^{12}C = 12$, and a new table of atomic weights was prepared in 1961. At the same time, the International Commission on Atomic Weights and Isotopic Abundances (ICAW) proposed to change the name "atomic weight" to "relative atomic mass."

Now, twenty years later, the ICAW strongly supports no change in the name "atomic weight," and instead proposes a new definition: "the ratio of the average mass per atom of the element to 1/12 of the mass of an atom of ^{12}C."

Holden says with this new definition, discussion is now shifting to the name of the quantity presently defined as "atomic weight." The name comes from a time when atomic masses could only be determined by procedures that involved weighing, that is, observing a mass reacting to the attraction of the earth's gravitational field. The term "atomic weight" is a misnomer since it really refers to atomic mass. Holden reports mounting pressure from various groups to replace the term.

He concludes, however, that the term "atomic weight" has been used for almost two hundred years now and is generally understood. Holden also points out that there is no rule in practice or by consensus that any definition of a noun modified by an adjective must have the dimensions of the noun. For example, resolving power is not a power, isotopic spin is not a spin and electromotive force is not a force. Holden writes, "As long as one defines what one means by atomic weight and uses it in a consistent fashion, there should be no problem."

Powell (Continued)

sionally ranged far afield from reactor designs. For example, he has explored the phenomenon of ball lightning and even simulated it in a laboratory to develop a theory. He has also been down in the bowels of a coal mine testing an optical device that can monitor mine roof sagging.

Most of his ideas, however, have been connected with his work. The latest one to surface, which he developed at BNL with Shih-Yung Hsieh, Gordon Danby, Paul Bezler, Donald Gardner and Charles Laverick, was a design for a take-apart, superconducting fusion reactor magnet. Powell says commerical reactors need either long-term reliability or easy repairability. Previously proposed magnet designs for fusion reactors have described relatively massive magnets. What's unique about Powell's design is that the magnet is assembled in sections so it can be easily taken apart for repair. The sections fit together like interlocking fingers and are held in place by an external clamp. Only small joint segments have been tested, with success, at the AGS. Still, Powell trusts the engineering and believes in the design even though a full-scale magnet has never been built.

In fact, many of his ideas are a couple of decades away, and now is not the time for building — like the minimal activity fusion reactor. At the request of the Atomic Energy Commission in 1974, Powell and John Fillo, also in the Reactor Systems Office, designed an aluminum reactor. Why aluminum? When neutrons from the reactor interact with aluminum, all the radioactive isotopes formed would have very short half lives of a day or less. Thus, only a few days after plant shutdown, there would be practically zero radioactivity to complicate maintenance and repair work. This means an aluminum reactor has significant environmental advantages, says Powell.

He is also working on an aluminum heat transfer device which would remove heat at the point where plasma particles from a fusion reactor core would hit a small section of the container surrounding the core. What Powell envisions is tiny aluminum pellets shooting across the edge of the plasma, absorbing extremely high fluxes of heat and defining the plasma limits.

Unlike these designs of aluminum, some of Powell's ideas have had more immediate application. This was true of the magnetically levitated and propelled train, which was built by those great train riders, the Japanese. Powell says he was inspired to work on mass transit when he was stuck in a traffic jam on the way to Boston, and later he and Gordon Danby developed the concept for the supertrain. Danby was in Japan in 1978 and saw a demonstration of the prototype built there. It goes over 325 miles an hour, far exceeding the speed of Japan's famous Bullet trains.

Most recently, Powell has been helping to organize a conference on district heating, to be held at Brookhaven next week. He says the initial work at BNL grew out of studies in the mid-70's on non-electrical applications of fusion energy. District heating is a system for urban and suburban population clusters that draws on a source of free energy: waste heat from power plants and industries. He cites growing interest by the federal government in this concept, which is already widely used in Europe.

Powell likes to see his ideas applied, but his greatest pleasure lies in thinking them up. He says he consciously works at ideas. While there might be an initial revelation, it's usually a long evolutionary process. When he gets his thoughts completely assembled, then he goes off to talk to other people.

He estimates a third of his ideas are bad and discarded immediately, a third are mediocre and worth only a bit of mulling over, and a third are truly good. What ranks in the top third? "An idea which results in a significant improvement over what already exists," says Powell. "I find it satisfying to take something that is in some sense ugly and turn it around."

— Mona S. Rowe

Basic Math Course

A tutorial session in basic mathematics is being offered in Personnel under the Technician Tutorial Program. The course will be given for the benefit of employees who intend to begin college technical mathematics courses and need a refresher course in basic arithmetic, algebra or geometry. If you would be interested in taking such a course, please call June Herbert on Ext. 2878 by Friday, October 23.

FTS User's Note

The Washington, D.C. FTS Operator, 967-1221, through whom FTS calls are placed outside normal working hours at the call destination, is no longer available 24 hours per day. Effective October 3rd, hours of operation are 8 a.m. to midnight, Monday through Friday.

Arrivals & Departures

Arrivals

Christopher J. Ashton ..... Chem.

Departures

Bahman Atefi ..... Nuclear Energy
Leonard F. Corette ..... Pl. Engrg.
Rhonda DiCunzolo ..... Appl Math
Harold E. Knudsen ..... Accelerator

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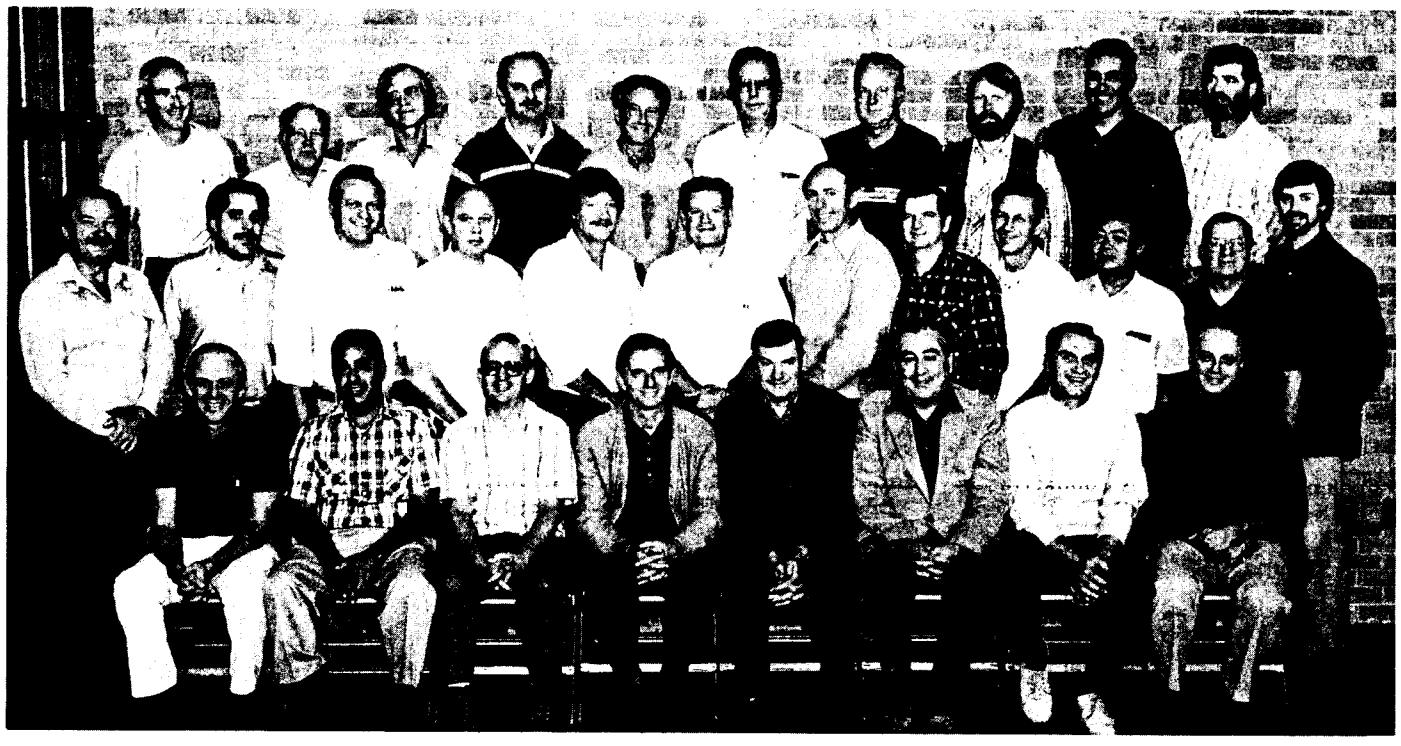
Accelerator Department Service Awards

On October 1, Derek Lowenstein, Deputy Chairman of the Accelerator Department, presented the 30, 25, 20 and 10 year Service Awards for the entire year to the eligible members of the Department.

Seated: (30 year Service) — Sal T. Giordano, Paul R. Hichborn, David A. McCutcheon, Bernard F. McLaughlin and Thomas B. Scheuerer. (25 year Service) —Hugh N. Brown, John F. Donnelly, Charles D. Freeman and **standing:** Robert F. Glasmann, Herbert J. Lutz, Edward F. Meier, Richard Skelton, Charles R. Staal, Richard K. Stoehr, William G. Walker.

—photos by Rosen



Seated: (20 year Service) — Henry Arnesen, Carl S. Avent, David R. Brady, John Bunicci, William H. Casswell, Leonard N. Chimienti, John J. Dabrowski, and Joseph H. Dilg. **Middle Row:** Alexander Wirszyla, Arnold J. Esper, Ernest Heppner, Robert S. Hulliger, Karl M. Kohler, Joseph T. Mayeski, Robert E. Meier, Carl N. Nagle, Kenneth Riker. (10 year Service) — Y.Y. Lee, John Boruch & Joseph F. Skelly. **Top Row:** (20 Year Service) — Philip H. Warner, Graham (Bud) Ryan, Ernest R. Schmitt, Arthur E. Scholtz, Edward T. Schwaner, William P. Sims, Stanley A. Staron, George Stenby, John D. Tilley and Franklin D. Timm. Those who could not attend were: (20 year Service) — Michael F. Clancy, Carl B. Eld, Eric B. Forsyth, Patricia R. Gassaway, Edward G. Gill, Frederick A. Schneider, Michael E. Stone and Manfred G. Thomas.

Register For Review

Suffolk County Community College will offer Part A of the Professional Engineers Licensing review course on site starting Wednesday, December 2. Classes will be held in Bldg. 184 (Stage II) from 5:15 to 9:15 p.m. and will run for 15 consecutive weeks.

The course will include such topics as: math, mathematical modeling, engineering economics, computer programming, statics, dynamics, mechanics of materials, materials science, chemistry, fluid mechanics, thermodynamics and nucleonics.

Registration is scheduled from Friday, October 30 to Friday, November 6, in Room 112, Bldg. 460. The tuition fee of $128 can be paid with Visa or Mastercard or with checks/money orders payable to S.C.C.C. Students will be eligible for 75% tuition refund upon satisfactory completion of the course. Books will cost approximately $15 and will be sold the first night of class.

For further information, call Renee Flack, Ext. 3316.

Theater Group

The Theater Group will meet at 8 p.m. on Wednesday, October 28, at the Physics Department Auditorium.

It is time to start planning for the next production. Suggestions for plays and volunteers for directing or producing will be solicited. After the business meeting, we will read scenes from a few plays that have been proposed to date.

Cafeteria Menu

Week Ending October 23, 1981

Monday, October 19		
Turkey rice soup	(cup)	.55
	(bowl)	.65
Corned beef & cabbage		1.65
Beef chow mein & rice		1.55
Hot Deli - Sandwich steak w/peppers & onions	(on bread)	1.70
	(on roll)	1.80
Tuesday, October 20		
Split pea soup	(cup)	.55
	(bowl)	.65
Roasted fresh ham w/barbeque sauce & 1 veg.		1.65
Spaghetti & meatballs w/garlic bread		1.60
Hot Deli - French toasted grilled ham & cheese		1.60
Wednesday, October 21		
Cream of mushroom soup	(cup)	.55
	(bowl)	.65
Beef stew over noodles		1.65
Roasted chicken w/cranberry sauce & 1 veg.		1.60
Hot Deli - Roast beef	(on bread)	1.65
	(on roll)	1.75
Thursday, October 22		
Minestrone soup	(cup)	.55
	(bowl)	.65
Braised Swiss steak a la mode w/rice		1.70
Baked lasagna & 1 veg.		1.60
Hot Deli - Baked Virginia ham	(on bread)	1.65
	(on roll)	1.75
Friday, October 23		
Manhattan clam chowder	(cup)	.60
	(bowl)	.70
Fried fillet & french fries		1.60
Veal pattie parmigiana & 1 veg.		1.55
Hot Deli - Meatloaf hero w/tomato sauce		1.70

Equipment Demo

Xerox Corporation's Printing Systems Division will present an exhibit in the lobby of Berkner Hall on Tuesday, October 20, from 10 a.m. to 4 p.m. Items on display will include communications terminals, plotting, and color graphics printing.

Mountain Club

The Mountain and Canoe Club is planning a canoe trip on the Carmen's River for Sunday, October 25. For the following weekend, October 31-November 1, a backpacking trip (destination negotiable) is in the planning stages. Contact Pat Thompson, Ext. 7635, for information.

Volleyball

This is a last call for rosters! League play begins on October 26, and it is necessary that *all* rosters be turned in by Friday, October 16, to Don Litcher, Bldg. 515. Team fees ($60 per team) should be sent immediately to Sandi Lane, Bldg. 830. Please make sure the team name and league desired is marked on the face of the check. This is all necessary so that schedules can be started.

I.B.E.W. Meeting

Local 2230, I.B.E.W. will hold its regular monthly meeting on Thursday, October 22, at 8 p.m. in the Knights of Columbus Hall, Railroad Ave., Patchogue. There will also be an afternoon meeting at 2 p.m. for shift workers in the Union office at 31 Oak Street, Patchogue. On the agenda will be regular business, committee reports and the president's report.

Home Energy Day

It will be Home Energy Day at the Suffolk County Farm and Education Center in Yaphank on Sunday, October 25, when the Suffolk County Cooperative Extension and the Suffolk County Solar Energy Commission will co-sponsor a community education conference, including workshops and seminars. Topics to be covered will range from energy-saving window treatments to home oil burner efficiency to basic home insulation techniques.

There will be no charge for attending the session, scheduled from 10 a.m. to 4 p.m. However, advance registration is required for the morning workshops. For more information and/or registration, call the Yaphank County Center at 924-4535, Ext. 507.

Bowling

Red & Green League

The Blue Jays won 8-3 over the Light Source with H. Marshall rolling a 200. The Sparks topped This Isa Team 8-3. M. Iarocci had a 202. The Freon Loaders (3039 pins) took the Pinball Wizards 7-4. F. Pond bowled a 239/669 gross, R. Eggert 232 and M. Israel 202. The Designers won 7-4 over the 76'ers. J. Ferrante had a 214, R. Larsen 214, J. Morris 202. The Sandbaggers split 6-5 with the Phoubars. R. Meier rolled a 200.

Pink League

The Lickety Splits are in first place after 4 weeks of bowling. Good games were bowled by Mary Grace Meier 234/190, Deb Johnson 220/593 scratch, Ellie Kristiansen 168, Renie Rosati 178, Kit McNally 181/184, Kathy Kissel (our newest bowler) 185.

Runners Corner

This Sunday, October 18, the BNL Roadrunners will hold the 10th Annual Fall Races. The 30 km Race will start at 8:30 a.m. (registration 7:30 a.m.—8:15 a.m.) and the 5 km and 10 km Fun Runs will start at 9:30 a.m. (registration 8:00 a.m.-9:15 a.m.). No registration fee, free refreshments (bagels & hot drinks), accurate courses, times and places posted at finish, and no awards, should add up to a fun time for everyone.

Classified Advertisements

Auto & Auto Supplies

RIMS - (2) 15", 5 hole. $10. ea., two for $15. Ext. 2952.

79 EL CAMINO CHEVY - 2 tone, blue, mint cond. Extras. $4,000. Pat, Ext. 2939.

78 HUSQVARNA - 250 CR Moto-X, raced one season. lighting coil, excel. enduro, accessories. Daryl, Ext. 7696 or 878-4740.

73 CAPRI HOOD - $45. Frank, Ext. 2311 or 567-5131.

72 BMW 2002 - excel cond. inside & out, sunroof, stereo. Asking $3,400. 878-2891 anytime.

79 RENAULT LE CAR - deluxe model, 45,000 mi. $2,800. or best offer. 286-1509.

74 DODGE COLT - Sta. wgn, orig. owner, 1.6 lit. eng., 4 cyl., recond. a/t (needs work) 130K mi, good cond. Best offer. George, Ext. 3636 or 759-1328 after 7 p.m.

74 FORD GRAN TORINO - 9 pass. sta. wgn, p/s, a/t, a/c, 81,000 mi. body & mech. good. $1,000. 878-4664.

78 HONDA - 550cc, 10,000 mi, crash bar, sisybar, quartz Halogen head lamp. $1,500. Rodney, 472-0499.

72 DODGE CHARGER - 4 spd, 318 cu. in., new am/fm cassette, new tires, new clutch & much more. $2,000. 732-0388.

66 BRONCO ENGINE - transfer case; 1973 Vega GT frontend, rear trans, tires. 744-9892 after 6 p.m.

TIRES - (2) FR78-15 steel belted, decent cond. $20. 399-4213.

72 DODGE CHALENGER - 340, 4 BBL, excel cond. in & out, stereo, booster. Must see. $2,200. 281-2257 after 5 p.m.

CUSTOM PARTS - accessories, performance for your vehicle, low prices, name brands. Hans, Ext. 4581 or 281-5563.

AUTO STEREO SPEAKERS - pair of Clarion 8 OHM, 5 watt speakers. $20. Terry, Ext. 3284 noon time.

80 CITATION XII - 2 dr, Hatch, 6 cyl, std., p/s, p/b, custom int., am/fm cassette, good cond. $6,000 or best offer. Allison, Ext. 2462.

80 KAWASAKI KX125 - dirt bike, excel cond. $850. 477-0264 or 477-2269 after 5:30 p.m.

FACTORY SHOP MANUALS - 1958, 1972 Ford, 1967 Chevy, 1971 Pontiac, 1970 Olds. $10. ea. Frank, Ext. 2022.

HEAVY DUTY TRAILER HITCH — formerly mounted on Olds wagon. $50. Charlie, Ext. 4758.

80 FORD BRONCO - XLT 4x4, p/s, p/b, a/t, new Dunlop all season tires, 302 V8, 9,000 mi, many extras. $9,500. Ext. 2192 or 473-1967.

TIRES - (4) General L78-15 belted Grippers, excel cond. Best offer. Jim, 924-7665 after p.m.

71 TOYOTA - good body, new tire & clutch. Needs engine. $400; 1970 Honda 350 motorcycle, excel cond, customized w/chrome. Asking $650. Frank, 399-1307.

79 FIAT X19 - 27,000 mi, excel cond, am/fm cassette, must sell. $5,000. Chuck, 821-1525.

79 PLYMOUTH - sta. wgn, orig. owner, like new, garaged, 25,000 mi. $5,500. 286-8759 after 6 p.m.

72 PLYMOUTH DUSTER - 6 cyl, 225 engine, p/s, a/c, v.g. cond. 399-5407.

79 DIRT BIKE - Honda XR80, v.g. cond, great for beginner. New parts. $395. 929-4850.

ROLL BARS - complete w/high density lights, fits small bed trucks. Ext. 4189.

69 PONTIAC - 4 dr., p/s, p/b, a/t, am radio, v.g. engine, transmission, reliable. $350. Ext. 7699 or 821-1435.

SNOW TIRES - (4) 6.00-12 polyester w/w, used only one season. $20. ea. Ext. 4039.

HELMETS - (2) McHall N.Y.P.D. Motorcycle, cost $70. ea., Now $40. ea. Sell as pair only. Excel cond. 281-6325 after 5 p.m.

77 XS400 - mags, 6 spd, slightly damaged. $750. 878-2891 anytime.

77 HONDA MOTORCYCLE - 400, good cond, excel MPG. $900. 281-2257 after 6 p.m.

74 HONDA MOTORCYCLE - CB125 windshield, luggage rack, excel, must sell. Asking $400. Jack, Ext. 4411 or 929-8287.

75 VOLVO - 244DL, a/c, p/b, p/s, am/fm, orig. owner, new exhaust system. $3,100. Days 348-2748, eves 289-7933.

70 RENAULT - body excel., $300. Toni, Ext. 2907 or 325-0594.

60 A.H. BUGEYE SPRITE - new engine, many spare parts. $2,000. Augie, Ext. 2419 or 325-0594.

Boats & Marine Supplies

WIND SURFING BOARD - fiber glass, 12'6" complete $695. Ext. 4666 or 477-1783.

14' ALUMINUM BOAT - mint cond, w/4 HP Evinrude motor & canope. $500. 929-8185.

18' GARVEY - w/1973 40 HP Johnson w/equipment, good cond., in water. Must sell. $850. or will sell separately. Jeff, 286-1348.

Yard Sales

YARD SALE - Sat. Oct. 17th, 9 a.m. to 3 p.m., parking lot at Suffolk County National Bank, Wading River/Manor Rd.

MOVING SALE - carpets: 17'x15' blue/brown; 12x11 yellow; chair w/ottoman, & more. Eves only, Ext. 2364 or 924-8765.

YARD SALE - Oct. 17, 10 to 4 p.m., 68 Central Ave., Pt. Jeff Sta. (Between Canal & Rt. 112).

Miscellaneous

DISHWASHER - GE portable, top loader, like new. $100. Stan, Ext. 3284 or 286-1062.

CHILDREN'S ACCESSORIES - Biltrite carriage, $40; nursery musical lamp, $20; Marx riding train and trax, $35; tricycle, $10. Don, Ext. 7611.

ASSORTED CHILDREN'S BOOKS - approx 30, $10; wrought iron hanging lamp w/4 lights, $40. Lois, Ext. 4904.

WOODEN HIGH CHAIR - $15; baby scale, $5; play guard, $7; cloth diapers, $5. 924-5495.

MAYTAG - washing machine, and electric dryer. $50 each or best offer. 751-6781.

SCONCES - black metal, 1 pr $5; Spaniard picture w/frame, approx 18"x24". Lois, Ext. 4904.

ALUMINUM STORM - screen windows, (7) 32x55, (1) 36x43, 25½x39. $15 for all. Jim Ryan, Ext. 2043.

DUNCAN PHYFE CHAIRS - 5 side, 1 arm, need work, $45; portable stereo, ages 10-14, $25. Ext. 4475.

SKIIS - wood w/cable bindings, $8; 2 pr children's wood w/cables, $2 ea; ski boots, buckles, men's 8½, $15; 13W, $25; laces ladies 9½M, 9N, $8; men's 11 and 12, $8. 924-5192.

NIKON - "FE" w/43-86mm f3.5 series "F" zoom lens, perfect. $325; w/o lens, $200. Phil, Ext. 7934.

PEAVEY BASS AMP - very good cond, 2 piece unit. $350. Joe, 878-1688.

ICE CUBE MAKER - vendor; brass cash register; antique fly rod reels. Best offer. 286-8706.

AM/FM - 8 trk stereo, like new, brand name Windsor. $40. 399-4213.

QUARTZ HEATER - termo tech, new, excel. Half price. 924-4991.

FIRM MATTRESS - and box spring, double bed, Stearns & Foster, used 1-2 yrs. $75 or best offer. 286-3301.

FREEZER - Wards upright; carpet dolly; base station CB w/antenna, unused; dishwasher; clothes dryer. Don, Ext. 2225.

TV - 25" color console, power tuning, very good cond. Edward, Ext. 3403 or 751-1826 after 6 p.m.

TICKETS - (2) Metropolitan Opera, Sat. eve Oct. 24, balcony, Madame Butterfly. $17 ea. Arnie, Ext. 2606.

CHILD'S CAR SEAT - infant travel bed, very cheap. Becky, Ext. 4386 or 286-8807.

SOFA - Danish Modern, $35; ¾ hp 2 stage deep well jet pump, tank, micro met filter, $75; kerosene heater, 7,000 BTU, slightly used, cost $189. Now $100. Joe, 281-8943.

BEDROOM - Mediterranean, excel cond, glass tops. $350. 281-3992.

MEN'S SUITS - (3) 40 long; boy's (1) size 20, $20 ea; 12" Sony Trititron, needs tube. $40. 331-1162.

TREES - fir and spruce, 20" to 40", U-dig, 2 for $7; old walnut china closet, glass all sides. $125. 727-1617.

BIKE - men's 5 spd, 27". $25. 727-3608 after 5 p.m.

SAXOPHONE - beautiful Bundy, perfect cond, like new w/case. $300. Marian, Ext. 3552.

HO TRAIN SET - many extras. Best offer. Tom, Ext. 3128.

PRE AMP - Thaedra ampzilla 200 watts per channel amplifier. $650 for both. Bill, 698-4605 after 7 p.m.

SPEED TUFTING KIT - includes loom and machine, similar to latch hook, used once. Paid $35. Now $20. Ext. 3431 or 744-9677.

OIL BURNER - 2 yrs old, brand new transformer, $30; fish tanks, 30 gal, 20 gal, all accessories, ready to set up. Brand new. $125. Chuck, 821-1525.

SKI BOOTS - "Hanson" shell size 3, men's shoe 9-9½, hardly used. Roger, 744-0716 after 6 p.m.

BEDROOM SET - 8 ft headboard, full size mattress and box spring w/frame, 2 nite tables, and 8 drawer dresser, all in good cond. $150. 281-0360.

TV - 13" GE color, $25; 21" RCA B&W console TV, $25. Both need work. 744-2295 after 5 p.m.

SKI BOOTS - Arlberg, made in Austria, size 10, perfect cond. $24. 924-4789.

BEDROOM SET - Early American, solid pine. $2,000. Dave, Ext. 7764 or 698-7213 after 5 p.m.

ELECTRIC RANGE - 40" white, old but good. $25. Joe, Ext. 7955.

ROUND BED - 84" dia. $150. Bob, Ext. 4547 or 473-3987.

WINDOWS - (5) 24"x37" wood storm and screen complete, $4 ea; antique pine wash stand, excel cond. $100. 363-6597.

BROWNIE UNIFORM - size 8, like new cond. $8. Richie, Ext. 4254 or 734-7342.

BICYCLE - boy's 20" Huffy, very good cond. $45. Ext. 2487 or 928-6930.

FREEZER - 19 cu. ft. Frost-Free upright, excel cond. $300. Tallon, Ext. 4547 or 473-3987.

BOOTS - russet, high heel, size 7M, like new. $35. Ext. 3482.

BILTRITE - baby carriage, like new, brown w/bad weather flap. Asking $35. 878-2891 anytime.

OIL BURNER - #2 oil used, perfect cond, transformer, fuel pump, electrode, nozzle. $75. Ext. 2050.

KITCHEN SET - white, 5 pieces, good cond, $50; GE pedestal stereo am/fm 8 track modern, $200; tempwood airtight stove, $100. Lois, Ext. 4904.

COPPER SHEET - 20 mils by 8" wide, $1.50 per linear foot, any length. Ext. 4058 or 286-0436.

REMINGTON - rechargeable razor w/spare head, new. $12; rechargeable hedge shears, $16. Ext. 5241.

CAPTAIN'S DECANTER - 14", hand cut, lead crystal, list $135. Asking $80. Ext. 4051.

OPENER/KNIFE SHARPENER - new, $8; complete HO-gauge train set, 3 engines, many cars, track switches, transformer. $50 firm. Ext. 4058.

CASSETTE TAPES - quality C-90 FeO CrO_2 and FeCr. $2.75 ea. Ext. 2521 or 928-8379.

REALISTIC STEREO - watt and peak meter from 2 watt, 200 watts w/blinking lights. Cost $50. Sell for $30. 821-1525.

DEMING WATER PUMP - w/30 gal. tank and press. switch; bugget; medicine chests; bath vanity; headboards; brass twin size bedframe; kitchen set. Jake, Ext. 4532.

WOOD STOVE - Lange airtight, small, takes 20" logs, used 2 seasons. $325. Phil, Ext. 7934.

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

MILLER PLACE - spacious tri-level ranch w/income apt. House: 2 bdrm, dinette-kitchen, l/r & full bath. Apt: large kit, large l/r with picture window, 1 bdrm, full bath, 2 car & storage shed, 3/4 acre, scenic view, patio's etc. 744-2536 after 6 p.m.

ROCKY POINT - assume $30,000 on a unique 3 bdrm, 2 bath Cape. Panoramic water view w/2 car garage, deck, new Blue Ray OHW heat. $64,900. 744-0843 eves.

VILLAGE PATCHOGUE - Mother/Daughter, fin. bsmt/bar, separate entrances/meters. New 2 car garage, 1 block RR/Village. $38 000. Excel cond. 289-8288.

ROCKY POINT - custom built Mother/Daughter, 2 car garage, practically maintenance free, s/s, hot water oil heat, nicely landscaped summer house on property, Middle 50's. Owner will hold mortgage. Low interest. 744-2332.

For Rent

HOLBROOK - large ranch, 3 bdrm, huge master, den, eik, l/r, patio, 2 baths, lots of closets, big yard. Dec. 1 occupancy. $650/mo. + security. 472-4573.

YAPHANK WATERFRONT - 3 bdrm ranch, l/r, d/r, den, eik, playroom, garage. Ext. 3706 or 862-6259 after 6 p.m.

ROCKY POINT - private, cozy, 1 bdrm cottage, w/fp, nice yard. Available Nov. 1st. $240/mo. Randy, Ext. 2965.

NORTH SHIRLEY - 3 bdrm ranch large l/r, d/r, eik. $325/mo. + util. 234-3964.

REMSENBURG - winter rental, 6 rm. passive solar house, fp, furnished, meadow view. $350/mo. 325-0582 after 6 p.m.

BLUE POINT - 2 bdrm house, eik, l/r, very private. Close to shopping. 363-2736.

SHIRLEY - garage, 5 min. from Lab. Avail. November. Ideal for storage. $360/yr. Ext. 7699 or 821-1435.

BELLPORT SOUTH - winter rental, beautiful Colonial, garage, until July 1, 1982. 286-2168.

BROOKHAVEN HAMLET - apt. in older country home, large l/r, kitchenette, bdrm, bath, furnished, util. incl. mature adults preferred. 286-0129.

SHIRLEY - new 3 rm. apt. large sunken l/r with skylight, eik, large bdrm, full bath, priv. entr w/deck, no children or pets. $450/mo. incl. util. Must see. 399-1985 after 5 p.m.

VERMONT CHALET - near Bromley, Stratton & Magic Mtns., XC trails adjacent to chalets, beautifully furnished, stone fp, rent: wkends, wks & partial seasons. 757-5599 after 4 p.m.

Wanted

FLUTE - for beginner, reasonable. John, Ext. 2269 or 281-2623.

CHILD'S CAR SEAT - in good cond w/tether strap. Bolt for tether need not accompany seat. 751-6781.

COAL BIN - 1 or 2 ton easy to (re) assemble. Ad, Ext. 3890.

TRAINS - Lionel, any "O" gauge or "027" gauge cars, track & equipment. Frank, Ext. 3120.

TYPEWRITER - Someone to donate a typewriter (preferably electric) to Upton Nursery School. Ruth, 928-8465.

SKI BOOTS - buckles, size 12W mens, in good cond. 924-5192 eves.

CLARINET - wooden. Jim, Ext. 3372.

TRIPOD - used, in good shape, suitable for spotting scope, must be sturdy. Kathy, Ext. 3406.

BARBIE DOLL ITEMS - girl's bike 20"; camping equipment; fast music note books. 924-4991.

RIDER(S) - to Boston or Philly. Various wkends. Rob, Ext. 3449 or 928-7564 for details.

HOME - to share, graduate student is seeking quiet home to share w/other quiet industrious people. 3 Village area. 286-8350.

GAS RANGE - propane, 24" or smaller. Needed for mobile home trailer. 744-4047.

BOOKCASE - 4½ ft. wide by 5 to 8 ft. tall. 286-3301.

RIDE - for reliable paying rider from Bellport on Mon., Wed., Fri. mornings, arriving at 8:15 a.m. 286-8724.

LAWN MOWER - not working, but repairable, very reasonable; Small Lathe for instrument model work. George, Ext. 3536.

USED REFRIGERATOR - for basement, reasonable. Ext. 3316 or 698-1362 after 5:30 p.m.

FOUNTAIN PEN — Collector wishes to buy your used fountain pen. Jerry, Ext. 2934.

ELECTRIC GUITAR CASE - reasonable price. John, Ext. 3292 or 286-1348.

ELECTRIC TYPEWRITER - and student desk, with or w/o chair for student. Ext. 2487 or 928-6930.

STEEL CHIMNEY PIPE - also 6 in. stove pipe & thimbles. Al, Ext. 3354.

DOG HOUSE - for medium size dog. Pete, Ext. 7513.

MOTORCYCLES - bent or broken, any age or cond. Kevin, 281-8031.

GAS RANGE - propane. 924-7489.

Car Pools

CENTRAL ISLIP - Individual living at Exit 57 of LIE wishes to join or form car pool. Call Ghosh, Ext. 4372.

FROM PATCHOGUE VIA BELLPORT - 9 yr. old car pool, on-time, has vacancy for paying rider. Alyce, Ext. 2901.

COMMACK ROAD - Exit 52 LIE, Park & Ride, additional driver, existing car pool. B. Peterson, Ext. 3284, K. Crowe, Ext. 4306, from 8:30 to 5:00 p.m.

Services

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

FIRESIDE CHIMNEY SWEEPS - fireplaces, wood, coal & oil flues. Professionally cleaned. Lab discount. Mike, 584-6425.

HOUSE PAINTING - Interior/exterior, professional, quality materials, insured. Call Bob, 289-7657 after 6 p.m.

LIMO SERVICE - Luxury chauffer driven for Weddings, airport, all occasions. Call Roy, Ext. 4664 or 744-8779.

CHILD CARE - responsible mother will babysit at her home in Wading River. 929-3590.

CARPETS INSTALLED - repaired, quick dependable service. Free estimates. Jim, 821-0187 after 5 p.m.

HOUSEHOLD SMALL APPLIANCE REPAIRS - vacuums, sew-mach., etc. North Patchogue. 654-3900.

FIREWOOD - red oak, split seasoned, delivered. $130. per cord. 698-0592.

CARPENTRY REPAIRS - and modifications, no job too small. Call Charlie, 929-4251 or Joe, Ext. 4660.

SPACKLING - and taping. Bill, 286-8185 after 5 p.m. wkdays.

KAYAK LESSONS - equipment supplied, wkends only. Introductory lesson $10; Local lakes & river tours on request. Ernie, Ext. 5383.

FREE NEEDLEWORK INSTRUCTION - needlepoint, counted X-stich. All materials available. 475-8581 eves & wkends.

RESUME PREPARATION - low cost, professional service. Bill Polvent, 744-8999.

RUBBER STAMPS - plastic laminating, pressure sensitive tapes & labels, desk, nameplate badge engraving. 286-3377 after 6 p.m.

ASPHALT PAVING - and sealing. Bob, 475-4382.

FIREWOOD - split, seasoned oak, 4'x16'x18". $110. delivered. 924-4284 or 924-3919.

SANDBLASTING - any kind metal equipment, trailers, headers, boxes, tanks, auto repairs. Reasonable rates. 744-3968.

WINDOW WASHER - 286-0269, eves.

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