



HOTLINE

PRINCETON PLASMA PHYSICS LABORATORY

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July 22, 1982

TFTR Upgrade Unveiled

Plans for a future TFTR upgrade were unveiled to representatives of the Department of Energy, other research laboratories, and industry during the recent TFTR/TFET Information Meeting, held here June 24 and 25.

The Tokamak Fusion Engineering Test (TFET) upgrade would occur in the late 1980's and early 1990's. The upgrade, which will focus on supplying a long-pulse fusion research facility, will integrate nuclear testing, remote handling, radio-frequency (RF) heating, current drive, and heat and particle removal experimental objectives.

It is hoped that the TFET will serve as an interim step to the Fusion Engineering Device (FED) by providing a major reactor engineering test bed. The project would thus preserve both the spirit of the Magnetic Fusion Energy Engineering Act of 1980, and the United States' leadership in the worldwide magnetic fusion program.

The TFET will involve six second and 20-30 second pulses. The longer pulse lengths will allow for the study of high-power RF heating, RF and neutral beam current drive, and long pulse heat removal. The program will also demonstrate reliable high-level deuterium-tritium operation.

Much of the project will entail the upgrading of existing TFTR facilities. Additional TFET hardware would be designed and fabricated between 1983 and early 1988. After installation on TFTR, the TFET will begin operation in late 1989. The project has an estimated total cost of \$294.4 million.

Christmas Closing

Although the laboratory closing during the December holidays last year was successful and well-received by the staff, the laboratory will not be closed this year. It is expected that the massive effort required to meet the TFTR first plasma schedule in December will require a sizeable segment of the laboratory's labor force. Therefore, it would be impractical to schedule a holiday closing this year.

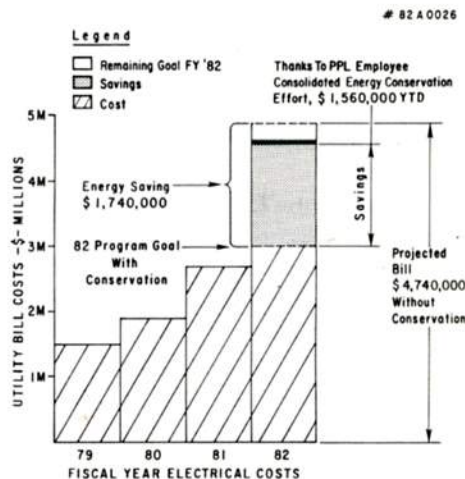
Energy Update

The Energy Management Administrative Committee, working with the Electric Power and Employee Energy Awareness subcommittees, has devised a number of methods to reduce energy use throughout the laboratory. Significant progress has been made toward full implementation of the following measures:

- Delamping of electrical fixtures by removing 25 percent of the existing lighting in the laboratory. Security forces have also been shutting off and reporting unnecessary lighting use.
- Electrical demand control program, which allows PPL to redistribute energy use to hours of decreased electrical demand. A dedicated program of turning off unnecessary equipment throughout the facility is also underway.
- Enforcement of temperature rules and regulations, as mandated by University policy.
- Building/area monitors, to seek out and eliminate all forms of energy waste.

- Displays of energy awareness posters, as part of the employee energy awareness program. The program also includes talks on energy conservation, saving and a "library" of energy-saving tips for home and office. Materials can be borrowed by contacting Joe Wood, Bldg. 1-K, ext. 3061.

- Janitorial cleaning done during daylight hours.



These measures are being taken to achieve PPL's goal of energy reduction. Energy usage is reported to the PPL Council on a monthly basis, and comparisons are made to determine the rate of reduction.

TFTR Site Visitations

While we are all pleased with the progress being made on the assembly of TFTR, it must be remembered that construction is still underway.

PPL staff are reminded that access to the TFTR site is limited to employees having a need to visit that is directly related to the performance of their jobs.

All group tours of the site must be arranged through the Information Services Branch.

Employee tours are conducted on Wednesdays at 3:15 p.m. Any employee wishing to tour the facility should call Pat Stephens Information Services on ext. 2750.

A TV monitor has been placed permanently in the LOB lobby and provides visual access to the TFTR test cell. There is another monitor in the TFTR gallery.

Questions regarding PPL's visitors policies should be directed to A.R. DeMeo or D.L. Carroll of the Information Services Branch.

Patent Award

As part of the laboratory's Patent Awareness program, the first annual PPL Invention Awards Dinner was held at Prospect House June 2. Sponsored by the PPL Committee on Inventions, the dinner formally recognized the 32 inventors of the 1981 fiscal year.

Chairman of the Patent Awareness Committee John Johnson presented certificates to the inventors, adding that awards of \$100 for each disclosure (to a maximum of \$300 per disclosure) would be made to each inventor. When DOE applies for a patent on the disclosure, the inventor will receive an additional \$200.

The objectives of the Patent Awareness program are to foster patent awareness in the laboratory staff; encourage filing of invention disclosures on innovative ideas or processes; and to provide appropriate recognition to the creative inventors. Twenty-four invention disclosures were filed during fiscal year 1981, the highest number of disclosures yet recorded.

Fifteen disclosures have been made thus far in fiscal year 1982. All disclosures have been listed in the HOTLINE -- an integral part of the recognition program.

Correction

In the June 1 issue of HOTLINE, the name Russel Kulsrud was inadvertently omitted as an inventor of "Enhancement of Ther-

monuclear Reactor by Polarizing the Plasma Ions." The HOTLINE staff regrets the omission.

Benefits Counseling

During July and August, Eleanor Schmitt will be available for benefits counseling every OTHER week. Eleanor will have office hours July 13 and 27, and August 10 and 24. Benefits counseling sessions are held in the LOB third floor Conference Room, Tuesdays from 9 a.m. until noon. For further information, call Eleanor on ext. 2046.

Major Medical Claims

To speed the payment of major medical claims and to help maintain the confidentiality of employees' medical records, a new procedure for submitting claims has been established, according to Manager of Human Resources Leonard S. Thomas.

As of August 1, employees will submit major medical claims directly to the Teachers Insurance and Annuity Association (TIAA) office. This procedure will cover both existing and new claims and will eliminate Personnel Services as middleman. Claims should therefore be processed more quickly, Thomas says.

Assistance will continue in the present mode for retirees, individuals with physical disabilities, language or any other restrictive barriers; special cases will be judged independently.

Personnel will continue to supply the major claim forms, along with detailed instructions for completing and submitting them to the insurance company. In addition, preaddressed, postage-paid envelopes will be provided. To obtain the proper forms, please call Eleanor Schmitt on ext. 2046.

Since the Personnel Office will no longer be involved in filing claims, it is important that employees retain copies of all information they submit to the insurance company. The laboratory no longer keeps records of major medical claims.

If there is a problem, the Benefits Section will be pleased to help resolve it. Employees should call Eleanor Schmitt, and be prepared to bring in the sheet they receive from TIAA explaining the reimbursement rate. Copies of all bills that had been submitted for the claim should also be included.

"TOKAMAK Power"

"Tokamak Power", an unpublished book written by former PPL Assistant Director Earl Tanner, is now available for consultation in the laboratory library. The volume presents an introductory overview of fusion concepts, examining the tokamak approach to fusion in detail. Industrial involvement in the fusion research and development process is also discussed.



"Run For Fun" Results

When Dennis Mueller crossed the finish line in May's "Run for Fun", he became the first repeat winner in the short history of the event. Mueller completed the two-and-a-half mile course in 13 minutes and 55 seconds, somewhat off his 13:09 pace in the 1980 edition of the race.

As in 1980, Dave Johnson of the Experimental Branch followed Mueller to second place. His time this year was 14:54.

Sue McMahon of Accounting led the women finishers, completing the circuit in 22:09. Barb Mollin of Ebasco placed



second, turning in a time of 23:13. Seven women were among the 46 runners participating in the event.

Manager of Human Resources Len Thomas presented trophies to Dennis and Sue for their winning efforts. Dennis and Beverly Laffin of Ebasco also received first place trophies to commemorate their victories in the original "Run for Fun".

Event organizer Barbara Sarfaty offered her thanks to all those who helped with the run, especially the Security staff. She added that the "Run for Fun" is slated to become an annual event, sponsored by Personnel.

Did You Know...

If you are a monthly employee and 55 years of age, you are eligible to elect a one-time transfer of all your accumulations from CREF to TIAA. The transfer can be made in either one lump sum or by partial withdrawals, minimum of \$1,000 each and only once every six months.

Remember, once this transfer is made, it cannot be changed.

Did You Know...

If you terminate your employment with the laboratory, and then resume employment at a later time, your retirement benefits may still be in effect — provided that your length of time with the laboratory exceeds your time away from PPL.

Did You Know...

If you have a Supplemental Retirement Annuity (SRA) contract and find you cannot afford to continue with your

current amount of reduction, you can either reduce that amount or discontinue the total reduction and resume contributions at a later date? You do not have to cancel your SRA contract in order to stop contributing to it. Remember, only one change per calendar year is allowed.

Singles Social

The Princeton University League's monthly singles wine and cheese social will be held July 15 at 5 p.m. in the Fine Tower faculty room on main campus. All single members of the University faculty and staff are invited to attend. For further information, contact Naoma Dorety at 272-4097.



The remains of Jerry Newton's iron reflects the intense heat buildup that resulted in the melting of the iron's aluminum components.

Iron Alert

Regardless of how many irons you may have in the fire, be sure you take the "fire" out of your iron!

That's the lesson PPL's Jerry Newton learned recently, when his iron abruptly melted. He had used it to iron some clothes, turned it off, and set it on his basement bar to cool.

Although the iron's heat control was turned off, it wasn't unplugged, and that apparently caused the problem. Jerry smelled "burning wood", returned to the basement, and found the iron's faceplate oozing liquified aluminum. "The iron was red and white hot," he recalled. "It was glowing just like a miniature sun."

Jerry disconnected the iron, which immediately began to cool. Rather than the fire that might have been, he now has two holes burned into the surface of his bar -- and a very damaged iron.

The incident emphasizes the necessity of being sure electrical appliances that generate heat (such as electric heaters, irons or hair care appliances) are unable to continue heating while unattended.

After pushing the "off" button, go one step further -- disconnect the appliance from the electrical socket. You may be pulling the plug on a potentially deadly fire.

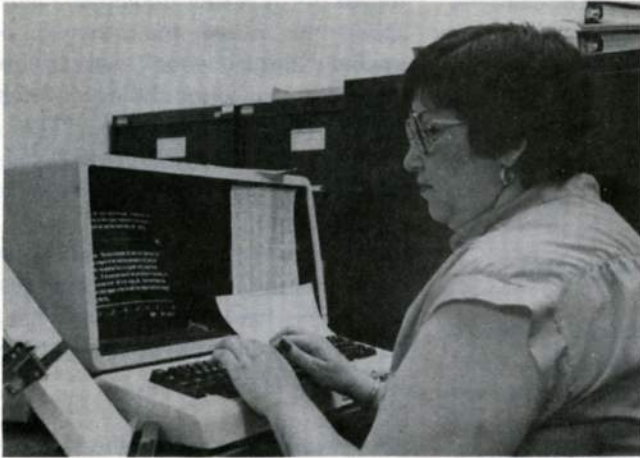
"Second Season" Softball

Teams are being sought to comprise a two-month "second season" for the PPL intramural softball league. In the recently completed "first season", the Theory Division team finished at the top of the four-team field.

Teams may be composed of any number of players, but only 10 members of each team will play per game. Teams will compete Wednesday and Thursday nights during August and September, with games played on the softball field adjacent to the laboratory airstrip.

All those interested in participating should contact Frank Wasiowicz Jr. on ext. 3572 NO LATER THAN JULY 23.

The PPL Hotline is issued by the Princeton University Plasma Physics Laboratory, a research facility supported by the U. S. Department of Energy. Correspondence should be directed to PPL Information Services, Module 2, C-Site, James Forrestal Campus, ext. 2754.



Faces and Places...

With this issue, the HOTLINE begins a campaign to help "recognize" employees who have recently earned promotions. Staff members promoted in May include (this page, clockwise from upper left) Barbara Sarfaty, secretary, Theoretical Division; Barbara Sobel, secretary, Research Department; Lawrence Owens, junior programmer, Management Information Services; Richard Gallagher, technical assistant, FOM-Materials Test Laboratory; and John Anderson, Director of Emergency Services, Emergency Services Unit. Promotees pictured on the next page include (clockwise from upper left) Nancy Jones, manager, Information Services-Word Processing; Dolores Bergmann, secretary, TFTR Operations; Ilse Gusciora, staff assistant, Travel Services; Frances Gantiosa, Elizabeth Manuel and Carol Goldenbaum, accounting assistants, Accounting and Finance; Jim Stefane, payroll supervisor, Accounting and Finance; and Frank Clark, senior buyer, Procurement. Not pictured is Michael Suydam, Maintenance technician, Plant Engineering.

Nine new employees joined the PPL staff in May. Among the new faces were John Bradish, electrical engineer, CICADA; John Bryer, scientific applications programmer, Computer Section; John Bartzak III, technician, FOM-Engineering; Edward Costello II, technician, Administrative Division; James DiPrato, janitor, Administrative Division; Fred Kelmer, technician, FOM-Rectifiers; Robert Mozak, janitor, Administrative Division; Martha Redi, applied physics, Transport; and Karen Tuttle, scientific applications programmer, PLT/PDX Applied Programming.

Congratulations to those receiving promotions, and welcome to the new members of the laboratory community!





Tours

We are popular! During the months of February, March & April, 1251 people were escorted through the lab on guided tours. The public's awareness of fusion research seems to be "blossoming".

Information Services would like to thank the 84 people who served as guides during the last three (3) months for their cooperation and willingness to help.

April was a record-breaking month with 811 "tourist" and 58 PPL guides.

FEBRUARY

Peter Bonanos
Charlie Bushnell
Henry Chandler
Fred Dylla
Don Hay
George Martin
Bob Mika
Dick Palladino
Felix Ullrich
S. Yoshikawa
Howard Zuvers

Ray Grim
Ed Lawson
George Martin
Gary Oliaro
Dick Palladino
Greg Rewoldt
Fred Tenney
Marilee Thompson
Philip Thompson
Al von Halle

Joseph Cecchi
Sam Cohen
Douglas Collins
John Coonrod
Steve Davis
Ernst de Haas
John Doane
Lawrence Dudek
Fred Dylla
Howard Eisenberg
Robert Fleming

Sid Medley
David O'Neill
Gram O'Connor
Bill Osborne
Paul Reardon
Greg Rewoldt
Paul Snook
Al Swain
Hironori Takahashi
Fred Tenney
Philip Thompson
Marilee Thompson

MARCH

Suzen Bayer
Bill Blanchard
Sal Cavalluzzo
Diane L. Carroll
Henry Chandler
Pat Colestock
Fred Dylla
Bob Fleming

APRIL

Hasley Allen
Dale Ashcroft
Suzen Bayer
Bill Blanchard
Peter Bonanos
Nelson Bowen
Gram Brown
Charlie Bushnell
Diane L. Carroll

Stu Foote
Don Grove
Donald Hay
Ken Hill
Harold Johnson
John Johnson
Fred Kloiber
Ed Lawson
George Levitsky
Ron Lusen
George Martin
Dale Meade

Harry Towner
Felix Ullrich
Ben Velivis
S. Von Goeler
Al von Halle
Roscoe White
S. Yoshikawa
Ken Young
Neil Young
Richard Cassel
Charles Clifford

ERC Notes

The ERC met on June 9. The benefits sub-committee reported that they will soon have a written summary of their findings with regard to dental plans and being self insured vs. subscribing to Blue Cross/Blue Shield. A lack of concern for safety procedures among the general employee population was discussed. The safety sub-

committee will try to initiate a plan for "safety awareness" by all employees. A committee member inquired as to why the lab purchased a new shuttle van of the same type as the others, when these vans are difficult to enter and exit. Last year the ERC had been informed that mini-busses would be taking the place of the vans. Len Thomas was asked to look into this, as well as why more shuttle shelters have not yet been erected.

Len Thomas reported that mandatory

training for supervisors will begin in the fall.

Several questions were raised; the sub-committee will look into each and submit a final report this month to both the ERC and Laboratory administration.

Pam Johnson, Don Hay, Nelson Rainier, Don Muschal, Chris Ritter and Greg Schmitt were elected to serve on the grievance panel.

Plans for the annual picnic were discussed.



Picnic '82

Over 1,100 people partook of the hayrides, the hot air balloon, the food and the fun at the annual PPL Picnic June 19.

Clowns helped entertain the youngsters during the afternoon. The kids also enjoyed the sandpile, space walk and pony rides. Their parents danced to music played by a deejay, tossed horseshoes and helped themselves to the picnic fare provided. According to picnic committee chairman Len Thomas, 17 half-kegs of beer and 24 gallons of wine were consumed during the afternoon, along with nine barrels of birch beer.

In addition to Len, the picnic committee was composed of John Anastasio, Sheryl Cargill, Anne Golden, Mary Alice Eubank, Flo Short, Bob Malinowski, Kris Mann and Ed Gilsenan.

On the committee's behalf, Len offered special thanks to Arlene White in Procurement and to Jerry Hart and members of the maintenance staff for their help with the event.



Travel Tips

A new Travel Approval Form, designed to more closely estimate traveling expenses, is now being used by Travel Services. Although it will not provide a committed figure, the form should help supply more accurate budgeting information to each cost center supervisor.

Since more than 100 people will be traveling to New Orleans for the American Physical Society conference in the fall of this year, that trip will serve an example of how the form works.

The traveler will need transportation to the airport. There might be buses available for such a large group, but plan for missing the bus and driving your own car. That's \$20 in mileage round trip to Newark Airport, and an additional \$24 charge for long-term parking for seven days.

Air fare is the largest cost on this trip. Although special discount fares might have been used, in estimating you should use

the standard economy air fare to cover contingencies (e.g., a change of flight, which can cause a discount fare to revert to a standard fare). For New Orleans, round trip air fare is \$490 at present.

When you arrive, the limousine fare to the major hotels is \$12 round trip. A group might take a taxi to reduce per person costs, but can you count on that?

The hotel rate is usually known in advance. The conference hotel in this instance is \$80 per night; a six night stay will cost \$480, plus tax. Round off the hotel bill to \$500.

The standard amount for meals in a moderate restaurant is \$24 per day; for six days, this cost is \$144.

There should be no car rentals, unless a group is not staying in the conference hotel because it is fully booked. Even so, in the New Orleans area (with all those Cajun taxi drivers), a rental car is usually more costly than taxis. A rental car also

adds the inconvenience of parking costs, so the traveler should assume it will not be necessary. On the return trip, if you do not have transportation at the airport, a group might do best by renting a car -- IF the car is turned in as soon as possible on return to Princeton. In that case, half the mileage costs cited above should be deducted from your calculations.

Miscellaneous costs include tips to hotel staff, limousine drivers, baggage handlers, and so on. Room service is the standard 10 to 15 percent of the bill, with a 50 cent minimum. Baggage is 35 cents per bag, or 50 cents minimum. Estimate \$10 for the week. Adding five dollars per day for possible unforeseen costs brings the total miscellaneous costs estimate to \$35.

Our total APS trip at this point costs \$1,235. To be on the safe side, round this off to \$1,250 for the trip, plus registration (which is not a travel expense).

Obviously, if you have a discounted air fare, a less expensive hotel confirmation, or use buses provided by the laboratory, expenses can be reduced considerably.



PPL employees got the opportunity to learn more about PPL when two of the laboratory's senior administrators spoke at May seminars. Laboratory Director Dr. Harold Furth detailed "the state of the laboratory" (above), while Assistant Director Robert Sheldon explained PPL's financial management and budget process.



ppl people



Handball Champ Courts Success

Many city kids have taken a small ball and bounced it against a storefront, repeatedly hitting it against the wall. Howie Eisenberg took that childhood pastime one step further, becoming a national handball champion. His exploits on the handball courts recently merited his induction into the Athletic Hall of Fame at Brooklyn College, City University of New York (CUNY).

Howie reaffirmed his championship status Saturday, defeating nemesis Steve Sandler for the United States Handball Association national masters' singles crown in one-wall handball. The match, played at the Castle Hill Beach Club in the Bronx, pitted Howie against the 14-time national singles handball titleholder.

Howie lost the first game of the match 11-21, but came back strong, stopping Sandler 21-14 and 21-17 in the final two games. In true championship style, he won the final point with an ace.

"This was a really significant win to me,"

Howie said later, "because Steve is the current national open champion. It's also a big win because the last time I beat him was in 1960 in the USHA national semi-finals!"

Howie, who has worked for the laboratory since 1976, is a member of PPL's professional technical staff. He's currently involved with systems analysis and applications software instrumentation for TFTR command and control with the CICADA group.

Howie's childhood was spent far from Princeton's green hills. "I grew up in the Brighton Beach section of Brooklyn," he explained. "At the time, handball was the sport most adults in the New York metropolitan area played. There were approximately 5,000 one-wall handball courts in New York city parks, so handball was accessible to everyone. The Brighton Beach Baths, a 15-acre beach club, had 60 handball courts. The best players in the country played weekend exhibitions there.

So, along with Joe DiMaggio, my childhood hero was Vic Hershkowitz, the best handball player of all time."

After winning the New York City junior handball championship, Howie got the opportunity to play with his idol in 1957 at age 18. They lost in the finals of the national Amateur Athletic Union (AAU) doubles championships.

Howie began playing handball when he was six, developing the skills necessary to play competitively. "There's a lot of athletic ability required," he says. "It's a two-handed game, with a ball traveling at speeds of up to 100 miles an hour. Therefore, the response time in reacting to a shot is minimal, and reflexes are at a premium. Good hand-eye coordination is also essential."

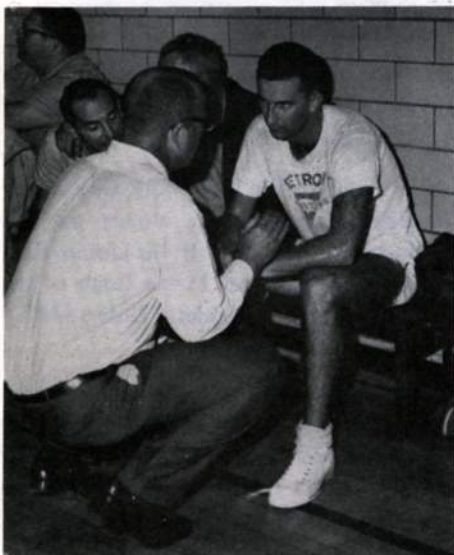
"Speed and stamina are the other important abilities in handball. There is more running to get positioned for effective shots than in racquetball. The extra foot and a half reach that a racquetball racquet provides is not there. In handball, you need to get your arm and body behind a stroke, as opposed to the wrist or the elbow with a racquet."

"I'd say that handball is at least 50 percent more exerting than racquetball, and results in proportionally greater cardiovascular benefits," Howie continued. "It's also a great release; you can hit the ball as hard as you like!"

Howie's career began with one-wall handball, since outdoor facilities were plentiful in the city. The game is played similarly to racquetball, except that the ball does not return toward the court's interior after rebounding off side and back walls. Thus, more speed and quickness are necessary to keep the ball in play, and power is more important.

Howie never chose to set specific practice times for himself as he learned the game. "I played because I liked playing," he recalls, "and when I was a kid I'd play all

day long. As I got older, I knew I had potential, and I exploited that potential. I've always had that competitive fierceness, that will to win."



Although he never had 'professional' coaching, Howie learned much from the pros who played at the Baths. Another early teacher was his brother-in-law, Arthur Neiderhoffer, a New York City police lieutenant "who was a top player and keen strategist. Arty taught me everything there was to know about the game, from the form to the mechanics to detailed strategies of play."

Handball strategy stems from the serve, which Howie deems "a very potent weapon." A strong serve wins the point, or results in a weak return which can be killed on the fly or after bouncing. A 'kill' shot is one that hits the bottom of the wall and bounces twice before it can be returned. The serve (as most other shots) is more effective when a spin is imparted to the ball, causing it to curve off the wall or on the floor in either direction—preferably at your opponent's feet.

According to Howie, the ultimate "strategy" reduces to brute strength. "The harder you hit the ball, the harder it is to return."

The expert tutelage paid off, as Howie went on to win an intercollegiate championship while at Brooklyn College, CUNY. He followed that with national AAU doubles championships in 1962,

1965 and 1971. In 1979, he became the U.S. Handball Association doubles champion, successfully defending his title and adding the masters singles crown in 1980. He is also a six-time U.S. Paddle Ball Association champion, having won national titles in both the singles and doubles divisions.

In recent years, Howie has been playing in the masters class (those over 40), as well as in open (any age) competitions. "Over the years, I hadn't done any conditioning exercise," he recalls, "and I wound up coming in second in 22 national tournaments. Frequently I was winning the first game but losing the next two, often reaching a point of utter exhaustion. I felt that if I wanted to continue to play competitively, I had to do something."

So Howie began running, with dramatic results -- his two 1980 titles. Shortly thereafter, however, he developed knee problems. "After getting into the best condition of my life, I damaged ligaments and cartilage in my left knee," he explained. Microsurgery and a knee brace have allowed him to return to the handball courts. He hopes to regain the peak he achieved before his injury by aerobic workouts on an exercycle and other conditioning exercises.



Howie and partner Mort Katz reached the final round of this year's national USHA masters championship, eventually losing to Joe Danielczyk and Artie Reyer.

Howie's ultimate objective is to gradually regain top condition through a series of invitational tournaments during the summer, culminating in the national open one-wall singles and doubles championships. He also expects to play in the national three-wall doubles championship, to be held in Toledo, Ohio in early September.

