BROOKHAVEN BULLETIN
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BROOKHAVEN NATIONAL LABORATORY

Human Experimentation

What's Ethical in Medical Research

The right to conduct experiments involving live human subjects is not something to be granted without due deliberation. The federally mandated institutional review board at Brookhaven, called the the Human Studies Review Committee (HSRC), is responsible for dealing with precisely this issue. As an arm of Health & Human Services (HHS), the HSRC follows HHS and Food & Drug Administration (FDA) regulations concerning the setting of standards for the practice of medical experimentation with human subjects.

The HSRC is often confronted by controversial issues involving the reality of human experimentation. These issues concern individuals who are or who could be subjected to experimental research without being fully apprised of what they are doing, or of what effect it could have on them, either physical or psychological.

As the social implications of the advancement of medical technology mount ever higher, so must the ethical considerations. The HRSC provides that clearly needed means of ensuring that ethics are not lost to view.

Who Controls the Research?

The Committee is currently composed of physicians, lawyers, ethicists, non-institutional members, and other professionals who reflect community standards. Mike Goldman, general attorney for Brookhaven and chairman of the HSRC, explains that "the HSRC does not try to judge the scientific merit *per se* of the proposals that come up before us. We are required to conduct risk/benefit analyses to determine if the risks [of proposed experiments involving human subjects] to the participants are outweighed by the benefits to be achieved through the research."

But the requirements don't stop there. The HSRC is also charged with ensuring that research subjects agree to participate in the experiment and know what they are agreeing to. "Assuring that the participants give their informed consent for an experiment is probably where we spend the bulk of our time," says Goldman. "Every proposal that comes to us is accompanied by a consent form that must explain what the potential risks are, what the expected benefits are, and what the participant can expect to undergo. Based on a consideration of the proposals in light of these requirements, we determine whether or not the subjects would have enough information about the research at the time when they are asked to give their consent to warrant their participation in the experiment."

Usually, Lab scientists who want to proceed with research involving human subjects bring their proposals before the HSRC for approval after they have been cleared by the chairman of the Medical Department. The HSRC approval is good for one year before the protocol must again come up before the Committee to be re-evaluated and, if accepted, re-approved.

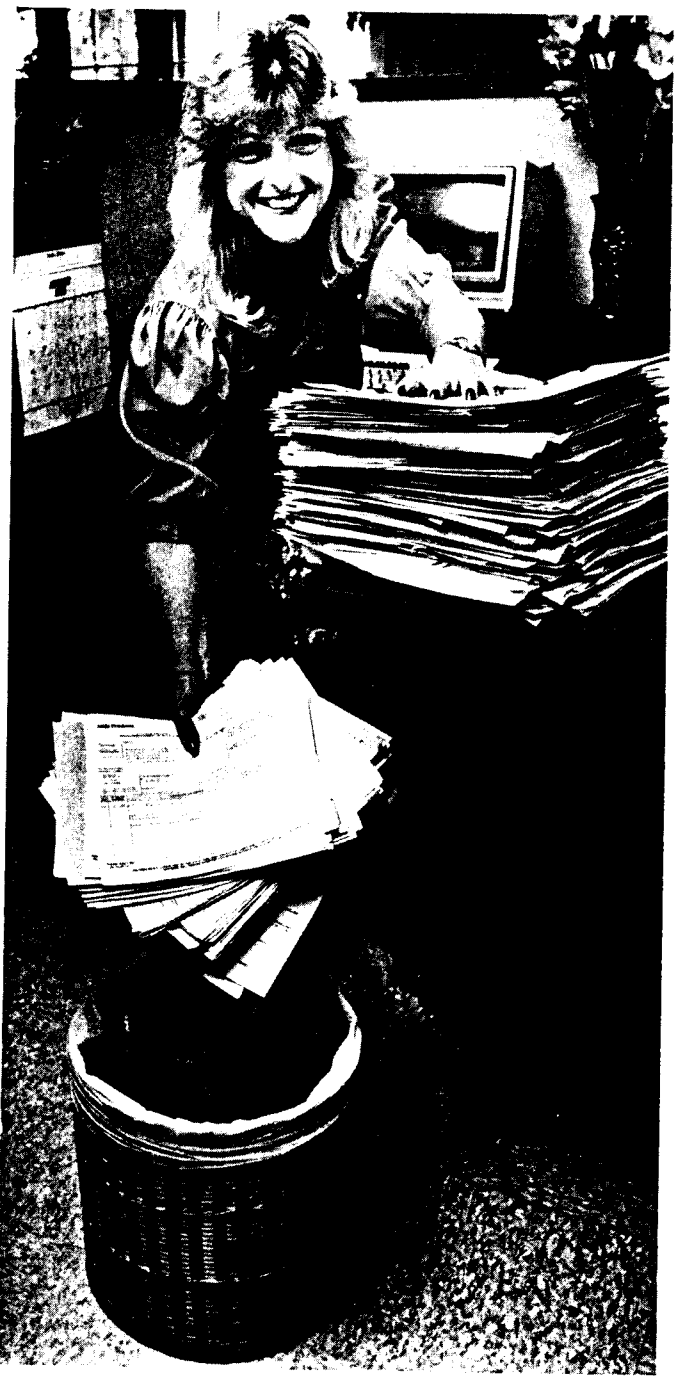
The Patient Care Evaluation Committee (PCEC) is primarily responsible for monitoring research conducted in the Medical Department to assure that it is done in accordance with HSRC approval. If the PCEC finds anything amiss in terms of approved research experimentation, it notifies the HSRC, which investigates and addresses the situation accordingly.

A Question of Discretion

Peter Rathvon Jr., former chairman of the HSRC and current AUI Corporate Secretary, recalled a case that came up before the HSRC during the late 1960s when he was committee chairman. Rathvon noted that some BNL programs involve irradiating patients with neutrons, for instance, osteoporosis studies where whole body counts are taken to determine the amount of calcium in a patient. So when Claire Shellabarger, acting chairman of the Medical Department, (who was a senior scientist and the assistant chairman at the time) declared that he had managed to induce tumors in mice by bombarding them with neutrons, the HSRC immediately put a hold on all protocols involving irradiating humans with neutrons while the Committee looked into Shellabarger's findings. After intensive research on the subject, the Committee learned through Shellabarger that this was an unusually tumor-sensitive strain of mice that would develop tumors under conditions where other mice would remain unaffected. Because the mice were hypersensitive with respect to tumor generation, the HSRC decided that Shellabarger's findings did not bear directly on human beings and that this was a case from which no lessons concerning human experimentation should be drawn. Rathvon explained that "here was an instance where first we put a hold on all protocols until we looked further into it to determine the exact risk we were asking the patients to undergo. Upon analyzing the situation, we were convinced by our experts that the patients who were being irradiated by neutrons were not being asked to take an unduly great risk of cancer, and that the original assessments were proper. And so the studies were allowed to continue."

Although this certainly is not the only case that demonstrated the importance of IRB (Institutional Review Board) committees like the HSRC, it does serve to highlight the value of an independent body that can intervene in the scientific decision making process. As Rathvon points out, "The average doctor owes a duty to his patient to do what's best for the patient, but a research doctor is trying to carry on a protocol to determine some result, and that may or may not be the best thing for the patient." IRBs, claimed Rathvon, are set up to "ensure that the doctor, in his

(Continued on page 3)



Alex Reben

Thanks to the IPAP computer system, Senior Fiscal Assistant Melanie Covitz of Accounts Payable is saying good-bye to a lot of paperwork. She and seven other Accounts Payable staffers process their simple invoices for payment using IPAP and will perform all their work on the computer in the not too distant future.

Final Third of IPAP Installed

When the Accounts Payable section of the Fiscal Division switched to using the computer to pay for what the Laboratory buys, the third and final part of the IPAP computer system started to be put in place. Fiscal's transition from using paper purchase orders, receiving reports and suppliers' invoices, to using the computer began in February and was operational on April 22. On that date, Accounts Payable joined the Division of Contracts & Procurement (DCP) and the Receiving section of Supply & Materiel Division (SMD) in using a Management Information Systems Division computer and custom software that integrates and automates BNL's buying process.

The IPAP system reduces time and paperwork for ordering, purchasing, receiving and now paying for items. It uses a Hewlett Packard eight-megabyte minicomputer and software specified by a committee from DCP, SMD, Fiscal and representatives from user departments and divisions. Telecommunications equipment connects terminals in DCP, Receiving and Accounts Payable to the Hewlett Packard 3000 series 68 computer. As well, BNL's departments and other divisions have terminals hooked to the computer so they may enter their purchase requisitions directly. At any time during the workday, about 60 users are on the system. The information in the system is updated instantaneously, so all users can look up the status of an order.

When an item is needed, a purchase requisition is filled out and approved by department or division administration. The information from the purchase requisition is typed into an IPAP terminal and electronically transmitted to DCP. Information about price, vendor and delivery date is keyed into the computer once the purchase is made, and a purchase order for the vendor is printed. The receipt of the item is logged into the computer by Receiving. The item is inspected and compared to the purchase order specifications found in the computer, and that information is also put into the computer, which generates a delivery ticket.

In Accounts Payable, the completed IPAP system will compare the on-line purchase order, receiving data and supplier's invoice, by computer, to generate the proper payment for the item if all the documents match. Fiscal Officer Bernard McAlary estimates that 50% of the vouchers processed by Accounts Payable are now done on the computer. All payment authorizations, including payments for contracts and travel, are to be performed by IPAP in the near future.

To join IPAP, MIS supplied Accounts Payable with ten Hewlett Packard terminals, telecommunications hook-ups for each and two dot matrix printers. The fifteen new programs to integrate Accounts Payable into the system were written by MIS Programmer Mary Ann Maggio, Systems/Data Processing Analyst Martha Peng and Systems/Data Processing Analyst Michael Seidman of MIS. Senior Systems Analyst Edward Gallagher assisted with the design and implementation of the software. The four also taught Accounts Payable employees how to use the system.

"Our staff has been very receptive to the change from the beginning because IPAP eliminates a lot of tedious work," reports McAlary. "By

(Continued on page 3)

Inquiring Minds in the Summer Time

Summer students are an integral part of the yearly BNL cycle. They may come from near or far, but they all come to learn about science. Many of them work in areas of basic experimental research, while others are engaged in theoretical studies involving abstract analysis. Still other summer students concern themselves with questions of science policy or with methods of public management.

The current director of BNL, Nicholas Samios, was a physics summer student in 1952. That was the very first year of the summer student program, and this year marks its 33rd anniversary. This summer's 63 student participants were chosen from a total applicant pool of 456 candidates. Twice as many college juniors as seniors were accepted, and of the total, 40 are male and 23 are female.

For the most part, the students live on site, in dorms that provide comfortable single rooms with full maid service, common kitchens and bathrooms at a cost to the student of $192 per month. Students receive a weekly stipend of $175 and are fully reimbursed for their round-trip travel expenses.

For eleven weeks, from June 3 to August 16, the summer students have the opportunity to participate in lively social activities and in engaging intellectual pursuits. On the one hand, the Affirmative Action Office helps structure their social life by scheduling events such as roller-skating parties, disco-mixers and outdoor barbecues. And on the other hand, the scientists assist them in carrying out research projects of mutual interest.

This year, 14 different departments have employed summer students who have primarily received their undergraduate training in the hard sciences such as chemistry, biology, or physics. A small number of students with more liberal arts backgrounds in areas such as economics, political science and communications have also been selected.

Peter Horton

Summer students in seminar/lecture series discuss agenda for their final presentations. Seated from left are Howard Sporn, Mary Alleman, Dave Gerdes, Steve Albert, and Michael Masterson. Standing are Alexander Laszlo and John Rogers.

As the summer began and everyone settled down and got to know each other, many students were interested in finding out about Lab research other than their own. They hit upon the idea of having a weekly student seminar/lecture series. The series had its origin last summer when four physics students decided to meet once a week in a dorm room to discuss what they were doing at work. This year, Mike Crescimanno, a Princeton University graduate in physics, decided to try to organize the forum a bit more formally. His friend and Physics Department workfellow, Dave Gerdes from Carleton College, agreed to give the first talk on the subject of "Binary Pulsars" and their relation to theories of gravitational waves and other issues of general relativity.

Since that lecture on June 18, there have been five other student presentations, and two more are planned for next week (the last week of the program). The second lecture in the series was given by Howard Sporn, a physics graduate of the Polytechnic Institute of New York and a veteran of last year's summer student program. His talk was on "Quantum Logic" and the relation of the logical connectives "and" and "or" to problems that arise from advances in quantum physics. Alexander Laszlo, a political science graduate of Haverford College, presented a paper that dealt with "The Ethical Implications of the Social Impact of Genetic Screening for Employment," in which he examined areas of concern that may arise from the application of genetic screening techniques to employment processes in industry. And John Rogers, a biochemistry major at the University of Iowa, presented a lecture on "Oncogenes and Cancer" that addressed the relation of viruses to cancer and the mechanisms of cancer generation.

This week there was a combined lecture and tour of the NSLS by Steve Albert, a physics major at Haverford College. And Gerdes gave another lecture on "Modeling Relativistic Stars" in which he discussed the theoretical possibility of the existence of quark stars. Still to come is a talk on "Chaos," the study of disorder in deterministic systems, to be given this Tuesday by Michael Masterson, a physics major at Michigan State University. The day after that Mary Alleman, a Louisiana State University microbiology graduate, will deliver the last presentation of this series, on "Metastasis: How Tumors Migrate."

The lectures are attended by some 20 to 25 students who listen attentively to issues often far outside their fields of concentration. Presentations usually last about one hour, after which the lecturer fields questions or opens the floor to discussion. Informal discussion can, and often does, continue throughout the week.

When Crescimanno left Brookhaven near the end of July, he handed direction of the series over to Gerdes, who feels that the whole project is a great success. "It has turned out much better than I expected," he says. "People have been very willing to come to the lectures and it has been far easier than I had expected to get volunteers for presentations."

Sheldon Lin, a pre-med student at Penn State University, believes that the open-mindedness exhibited by the students "is a reflection of our modern information age." He feels that "everyone is involved in so many things nowadays that some are actually beginning to take an interest in subjects outside their narrow world of specialization. I think that open-mindedness won't change even as we ourselves get older and become more specialized."

Others share Lin's optimism about awareness and concern as the emerging attitudes in society. A student of genetic engineering and biology, Lizabeth Deutsch of Cedar Crest College remarked that "it is better to be a generalist than it is to be a specialist in science," and spoke highly of attempts in education to create a general level of scientific proficiency among students.

Considering these attitudes, Glenn Price, who is in charge of the summer student program as head of the Office of Academic Relations, says that he has noticed a change in the character of the student body since the first summer student program with which he was involved in 1970. "I think the students, in general, are more serious-minded than they were, say, 10 or 15 years ago," says Price. "Now they are more concerned about actual research and what they can do. Fifteen years ago they used to dwell on problems of transportation or accommodation and other such fringe benefits."

That this year's summer students generated and participated in their own colloquium for the exchange of ideas points to their awareness of the fact that they are entering a world where they need much more than specialized knowledge. Their interest in each other's work attests to their concern for issues that span the breadth of science. Bob Corey, a physics graduate of the University of Missouri at St. Louis, seems to have aptly captured the general sentiment of the summer student when he exclaimed, "I'm learning so much here — it's unbelievable."

— Alexander Laszlo

For Students

Every year, BNL hosts a variety of educational opportunities for students. The following list illustrates the diversity of this summer's programs.

BOCES II Summer Science Internship

Gifted high school students are recommended by the Board of Cooperative Educational Services, region II (BOCES II), to work with BNL scientists. Students broaden their knowledge of and experience in science. 13 students appointed this summer. No stipend.

Environmental Sciences Honors Workshop

Originated in 1985. Offers one week program of tours and demonstrations in environmental sciences. For talented high school students from New York State. 25 students this summer. Provides travel expenses, subsistence and lodging.

GEM Program

For college junior or senior minority students in engineering who plan on continuing their studies in graduate school. Funding supplied by the Affirmative Action Office. 3 students appointed.

Health Physics Training Program

Provides qualified graduate students with a thorough understanding of the practical aspects of health physics. 10-week program. 10-20 students appointed each summer. Stipend provided.

Individual Appointments

BNL research departments offer individual, temporary appointments as Research Assistant and Technical Collaborator, according to pragmatic needs and the availability of students. Stipends and salaries vary. (No statistics available).

MIT Internships

Undergraduate students from MIT work one or two summers and for 6 months after graduation with the Department of Nuclear Energy to gain experience in the practice of nuclear engineering towards a Masters degree. 1 student appointed. Funding provided by DNE.

MIT Practice School in Chemical Engineering

8-week appointments for MIT graduate students in chemical engineering to give them work experience in solving engineering problems. Projects are suggested by staff members of BNL's Department of Applied Science. 12 students each summer. Stipend provided.

NSLS/HFBR Faculty-Student Support

Provides opportunity for faculty-student teams to conduct research at NSLS and HFBR. About twenty teams (2 or 3 persons per team) participate each year for periods of up to 1 month. Provides travel expenses, per diem and lodging.

Research Apprenticeship Program

4-week appointment for minority students from high schools in Suffolk County. Includes lectures, tours, demonstrations and some experimental projects. 30 students appointed. Stipend provided.

Southampton College Coop/Intern Program

Undergraduates from Southampton College are given appointments as Technical Collaborators to assist BNL scientists and to gain practical experience in scientific research. Appointments during academic year and during the summer. About 15 students each year. Stipends vary.

Summer Student Program

11-week appointments for college juniors and seniors, to assist BNL scientists. About 500 applicants each year. 60-70 students appointed. Provides stipend.

Youth on Campus

Designed to train and assist high school students to prepare for the world of work. Supported by Personnel Division funds. 24 students this summer.

Contract Ratified

A two-year contract with Associated Universities, Inc., effective August 1, 1985, was ratified by the membership of I.B.E.W. Local 2230 by a vote of 205-89. The vote was taken on August 5. The contract provides for a 5% wage increase in each of the two years.

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Arrivals & Departures

Arrivals

Peter J. Esposito ..... Personnel
Henry S. Diaz ..... Physics
Matthew DePasquale ..... AGS
Edward A. Jastrzembski ..... Physics

Departures

This list includes all employees who have terminated from the Laboratory, including retirees:

William J. Gallagher ..... Plant Eng.
Andreas E. Gocksch ..... Physics
Joan K. Goetschius ..... DNE
James H. Klein ..... DNE
Vanessa M. Samuels ..... Dir. Ofc.

WIS Meeting

Harriet Martin, senior librarian of the Technical Information Division, will speak at the next luncheon meeting of Brookhaven Women in Science. She will address "Information Services: From the Universal to the Particular" at noon on Thursday, August 15, in Room A, Berkner Hall. All are welcome, and summer students are particularly invited. Bring your own lunch.

Medical Research

(Cont'd)

enthusiasm for his research, isn't asking an undue risk from the patient."

Current Quandaries

A case that is currently proving rather difficult for the HSRC to grapple with concerns a proposal for a "Neutron Capture Facility for Malignant Glyomas." Neutron capture therapy originated in the middle of this century with the idea of injecting a boron substance into the brain, which would localize in the glyoma [a malignant brain tumor], and then bombarding it with neutrons in the hope that this would cause it to kill the cancer cells. Researchers sought to wipe out an inoperable tumor through the use of this therapy. However, the treatment was not very successful, and it was eventually discontinued.

Recently, a proposal to continue the work at Brookhaven has come up for consideration by the HSRC. The experimental procedure for the new neutron capture therapy would require the cutting back of a piece of the scalp to expose the tumor-afflicted brain and bombarding it with neutrons. As Goldman points out, this type of medical procedure can only be classified as major surgery — not the type of thing that Brookhaven is typically accustomed to. Such a proposal represents the greatest type of challenge to the HSRC. Goldman considers it to be "a very significant protocol for the HSRC to wrestle with."

For the moment, the neutron capture therapy proposal has received approval for preliminary work involving tests on the uptake of various compounds by human glyomas. No part of the experiment involving neutron bombardment has yet been approved, and the entire project will still have to wait to be considered by the HSRC for a final decision before any actual therapy can be considered.

Common Goals

Institutional review boards such as the HSRC at Brookhaven are providing case-by-case evaluation of proposals for scientific research involving medical experimentation with human subjects. "We don't try to dictate to the researchers how they should conduct their research," says Goldman. "As long as they fully inform the potential participants in their proposed experiments as to the risks involved, and as long as we are satisfied that some benefit can come from the research, then we will work with the researcher to allow him to accomplish his goals in accordance with specified regulations."

— Alexander Laszlo

Science Quiz

Do You Have a Fine 14th- or 20th-Century Mind?

(Continued)

25. The speed of sound in air under standard conditions is most nearly **a)** 10 feet per second **b)** 1,000 feet per second **c)** 10,000 feet per second **d)** 186,000 miles per second.

26. Acceleration **a)** is the change in velocity **b)** is the rate of change of velocity **c)** always increases **d)** is the force on an object.

27. Newton's three laws relate to **a)** electricity **b)** atomic physics **c)** heat **d)** motion.

28. There is no conservation of **a)** angular momentum **b)** momentum **c)** force **d)** charge.

29. A hologram is **a)** a rapid means of communication **b)** a slide that can be used to produce three-dimensional images **c)** an atom smasher **d)** a future mode of transportation.

30. The "Red Planet" is **a)** Saturn **b)** Venus **c)** Sputnik **d)** Mars.

31. The ancient Greek scientist one associates with an atomic theory is **a)** Archimedes **b)** Pythagoras **c)** Eureka **d)** Democritus.

32. A half-life is **a)** a molecule that cannot be classed as definitely organic or definitely inorganic **b)** half the average life expectancy of a group of people **c)** the time for half a given amount of radioactive material to decay **d)** the radiation dose that will be lethal to half the subjects in an experiment.

33. Give the proper order of the names Archimedes, Copernicus, Einstein and Galileo so that they correspond to the order of these statements:
— Was the first to view the moons of Jupiter through a telescope.
— Showed the equivalence of mass and energy.
— Stated that a floating body displaces a volume of water the weight of which equals the weight of the body.
— Stated that the sun, rather than the Earth, is at the center of the solar system.
a) Archimedes, Einstein, Galileo, Copernicus
b) Copernicus, Archimedes, Galileo, Einstein
c) Copernicus, Archimedes, Galileo, Einstein
d) Galileo, Einstein, Archimedes, Copernicus.

34. A topic not likely to arise in SALT talks is **a)** NaCl **b)** ICBM **c)** MIRV **d)** U-235.

(Answers next week.)

From 21 ASTOUNDING SCIENCE QUIZZES! by Grace M. Spruch and Larry Spruch. Copyright © 1982 by the authors. Reprinted by permission of Harper & Row, Publishers, Inc.

—BERA News—

Picnic Reminder

The Afro-American Culture Club will hold its Fifth Annual Picnic on Saturday, August 17, from noon to 6 p.m. at the recreation area next to ball field No. 5. Rain date is August 18. Tickets, $4 for adults and $2 for children under 12, must be purchased in advance. Music, food, refreshments and games will be provided.

Be sure and get your money in before August 15 to Renee Flack, Ext. 3316; Robert Mosley, Ext. 2358; Fred Nesbitt, Ext. 4001; Bruce Penn, Ext. 7213; or Cosmore Sylvester, Ext. 2253.

Singles Club

There are still some seats available for the trip to Toppersfield, on Friday, September 27. The evening includes transportation to a 1910 mansion in the Catskills, cocktails, hors d'oeuvres, dinner and a murder mystery to solve — all for $55. Sponsored by the BNL Singles Club. All are welcome. A $25 deposit is due immediately. Call Doris Terry, Ext. 2228 for reservations.

Rec Facilities Closed

We regret to announce that the entire recreation facilities complex (pool, gym, locker and shower rooms) will again be closed to all activities on Wednesday, August 14, between 6:00 a.m. and 4:30 p.m. During this period, workmen will be insulating the building transformers.

IPAP

(Cont'd)

learning to use a computerized system, staff members have upgraded their skills, and their reaction to using it has been positive."

Prior to IPAP, handwritten vouchers were sent from Accounts Payable to MIS, where the information was keypunched so checks could be issued.

IPAP enhancements for Accounts Payable include a full accrual system and the ability to schedule payments by their due dates.

Contracts & Procurement Manager Joseph Haeg estimates that IPAP has reduced the cost of processing the 28,000 orders per year by $25 each, the time it takes for a purchase requisition to go to a buyer from four days to less than 24 hours and the paperwork in his department by 50%. In the future, DCP will telecommunicate biomedical purchases directly to vendors as an extension of IPAP.

Supply & Materiel Manager Michael Guacci estimates that 75% of Receiving's paperwork has been eliminated. The next changes in IPAP to benefit SMD include computerizing the return of incorrect and damaged goods, the 18 different catalogs of supplies regularly stocked and the accounting of goods in satellite stock rooms.

In addition to continually upgrading IPAP, MIS will maintain the system's software.

— Marsha Belford

Cast Call

"Nobody comes near the dining room any more." Thus broods one of the characters in "The Dining Room" — an imaginative and affectionate look at the American upper middle class. Cast call for this comedy is on Tuesday, August 13, and Wednesday, August 14, at 7:30 p.m. in Berkner Hall. If you have an interest in theatre, please join us next week. Other than cast, backstage crews are always in demand.

For information, call director Angela Castellano at 928-7375, or Joe Skelly, Ext. 7743.

Softball

Standings as of August 2

	Won	Lost
League I		
Blue Jays	8	1
Cool 'N Gang	4	4
Moles	4	4
Phoubars **	4	4
Ravens **	3	4
Six Pax	4	5
Scram	2	7

**Protested game of 6/25 not included in standings

League II		
AMD	8	2
Titans	7	3
Dirty Sox	7	3
Magnuts	7	3
Lights Out	5	5
Faze II	5	5
Medical	1	9
Random Errors	0	10
League III		
Survivors	7	1
Farm Team	6	2
TNT	5	3
No Names	3	6
Nads	0	9
League IV		
Mole-Esters	9	2
Septembers	7	4
Who Cares	7	4
Kidz-R-Us	5	5
Turkeys	4	7
Farm Busters	0	10
League V		
Mudville Sluggers	8	2
Foul-Ups	8	2
Simply Awesome	5	5
Space Kadets	4	5
No Feedback	4	7
Underalls	1	9

Games Week of July 29

League I
Scram 5 - Blue Jays 4
Moles 22 - Phoubars 13
League II
Faze II 13 - Medical 7
Dirty Sox 21 - Lights Out 4
League III
TNT 15 - Nads 6
Make up game from June 24:
Farm Team 4 - No Names 2
League IV
Kidz-R-Us 10 - Who Cares 3
Mole-Esters 13 - Septembers 6
Turkeys 8 - Farmbusters 4
League V
No Feedback 11 - Underalls 8
Mudville Sluggers 17 - Space Kadets 9
Foul-Ups 11 - Simply Awesome 10

Get Ready to Go Back to School

You have one week left in which to register for the Suffolk County Community College courses to be given on site this fall. Classes start the first week of September and continue for approximately 14 weeks. Check the course list below and register at Personnel before August 16. For information, call Pat Knisely, Ext. 7631.

Course	Cr.	Day	Hours	Start Date
CM11 - Introduction to Computing	3	M/W	5:15-7:05	9/9/85
AC11 - Principles of Accounting I	4	T/Th	5:15-7:05	9/5/85
BA29 - Supervision: Concepts and Practices	3	Th	5:15-8:15	9/5/85
BD57 - Marketing	3	W	5:15-8:15	9/11/85
BL71 - Business Law I	3	T	5:15-8:15	9/10/85

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. In keeping with the Affirmative Action plan, selection decisions are made without regard to age, race, color, religion, national origin, sex, handicap or veteran status.

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.

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 Employment Manager, Ext. 2882.

LABORATORY RECRUITMENT - Opportunities for Laboratory employees.

2297. HELPER A - (Temporary to 10/31/85). Central Shops Division

OPEN RECRUITMENT - Opportunities for Laboratory employees and outside applicants.

2298. TECHNICAL POSITION - Requires an AAS degree in electronic technology or equivalent experience. Will be responsible for assembling and testing prototypes for beam diagnostic, closed orbit feedback, and other systems used in accelerators. Hands-on experience with RF and low frequency analog circuits required. National Synchrotron Light Source Department. Reposting of Job #2191.

2299. PROGRAMMER/ANALYST - Requires a bachelor's degree in computer science or related discipline. Minimum of two years experience programming in a structural language and a thorough knowledge of FORTRAN is required. Familiarity with either VAX/VMS or PDP11/RSX is also required. Experience with graphics or other device control applications is desirable. Physics Department.

2300. PROGRAMMER/ANALYST - Requires a bachelor's degree in computer science, physics or related field. Knowledge of two or more languages needed: FORTRAN, Pascal, C, and VAX-11 MACRO. Experience on VAX/VMS systems and/or real-time systems is highly desirable. Will participate in off line code development and management, graphics and data base management. Physics Department.

2301. MEDICAL ASSOCIATE - Requires a B.S. or equivalent experience in tissue culture skills, aseptic technique, use of hemocytometer, Coulter counter, mathematics and statistical analysis. Will be responsible for the maintenance of cell culture lab, all cell lines, ordering supplies and equipment and *in vitro* experiments. Duties also include recording and plotting experimental data, use of analytical balance and centrifugation. Will use automatic digital colony counter and handle small animals. One year appointment. Medical Department.

Autos & Auto Supplies

84 HONDA ATV 200S - with Bell helmet, excel. cond., $1,100. 878-6640.

82 KAWASAKI KZ440 - blue, 1,600 mi., needs battery, belt drive, mint, $750. 924-3476 after 6 p.m.

73 OLDS CUTLASS - take whole or parts, good trans. and 350 motor. Scott, Ext. 2669 or 473-5965.

MAG WHEELS - (4), with 195HR70 tires, four lug mounting, $200. 399-2379.

80 SUZUKI GS1000G - excel. cond., must sell, $1,500, firm. Dan, 277-1284.

81 TRUCK CAP - fiberglass, 8' bed, $125. Ext. 4312.

71 GREMLIN - 129k mi., needs timing chain and brake work, best offer. Janet, Ext. 2345 or 929-8152.

TIRES - (4) radials, Grand AM, GT 195/70R13, hardly used, $110; GT steering wheel, $25. Jon, 744-7242.

31 MODEL A FORD - Deluxe Rumbleseat Coupe, recent rebuilt eng. and clutch, 2-tone green/black, excellently restored. Marion, Ext. 2903 or 281-5667.

68 MUSTANG - good cond., needs some work, $900. Cameron, 736-1837 after 5 p.m.

82 VW JETTA - diesel, high mi., excel. cond., best offer over $2,500. 718-224-5730 eves.

81 200SX - 5 spd., am/fm cassette, 79k mi., reliable transp., orig. owner. Cosmore, Ext. 2253 or 491-3523 after 6 p.m.

69 CHEROKEE POP-UP - sleeps 6, ref., stove, sink, elec. hookup, $1,200. Joan, Ext. 5241 or 924-0450.

71 PLYMOUTH VALIANT - (6) good tires, 4 dr., runs but needs work, make offer. 929-8443.

73 VW BUG - (2) new tires, runs perfectly, 72k mi., orig. owner, $950. 878-8113.

75 FORD TORINO - rebuilt trans., new tires, good cond., $1,000. Ext. 3986.

82 SUZUKI GS850G - bought new in 1984, low mi., mint cond., must sell. 265-0673.

72 VALIANT - runs but needs work, 145k mi., $175. 928-7154.

78 CAMARO - 305-V8, 72k mi., am/fm cassette, dark green, good cond., best offer. Ext. 4100 or 924-0585.

71 CHEVY IMPALA - high mi., good eng., $250. 821-1799.

TRUCK TIRES - (4) 12x16.5, mounted on 16.5x9.75 white spoke rims, $300. Walt, Ext. 4028.

TIRES - (2) General 205/75R15 radials, good cond., $10 each. Mike, 289-3283 eves.

80 RENAULT LE CAR - 47k mi., very good cond., $1,600. Jerry, Ext. 5506 or 732-4701.

77 MUSTANG GHIA - a/c, 4 spd., am/fm stereo tape, very good mech. and body, snows. Ext. 7699 or 821-1435.

72 TRAILER - sleeps six, good cond., dual axle, $2,000. Ext. 2964.

80 DATSUN - 63k mi., 5 spd., excel., $2,400. Bud, Ext. 3083 or 878-1915 or 281-7073 eves.

72 YAMAHA MOTORCYCLE - 250CC, $175; 1975 Corvette, $4,500. Roy, Ext. 4664 or (212) 691-4396.

76 AMC HORNET - 4 dr., 6 cyl., p/s, p/b, am/fm stereo cassette, good cond., $850. 475-5591 after 5:30 p.m.

TIRES - (2) 75R14 steel belted, (1) mtd. on rim, (1) needs inner tube, $20 for both. Victor, Ext. 2395.

80 VW RABBIT CUSTOM - 72k mi., am/fm cassette, new tires, battery, roof rack, excel., $2,400. Ext. 2676.

80 CHEVY CITATION - 41k mi., new tires, 4 dr., a/c, a/t, hatchback, $2,750. Terry, 473-8426.

70 DODGE VAN - 318, a/t, $600; Crager rims, (3) w/good rubber, (1) w/blowout, $50, or best offer. Ray, Ext. 3536 or 289-7615.

80 SUZUKI 1100L - mint cond., with (2) helmets, $1,200 or best offer. Ext. 4216 or 475-0330.

73 PONTIAC - 2 dr., high mi., set-up for trailer, runs well, $550. Bob, 588-1464.

63 CADILLAC CONVERTIBLE - partially restored, rebuilt eng., trans. etc., best offer. 281-7510.

72 OLDSMOBILE TORONADO - 2 dr. sedan; front wheel dr., p/s, p/b, excel. second car, $950. Ext. 3818 or 286-9725 after 6 p.m.

77 CAMARO LT - 3 spd., p/s, am/fm cassette, spoiler, new paint, tires, $3,000. Steve, Ext. 5163 or 475-6964.

74 BLAZER 4x4 - new front brakes and shocks, air shocks in back, $2,000; 82 Suzuki RM125, many new parts, mint cond., helmet, $725. Paul, 289-8253 after 5 p.m.

77 EL CAMINO - V8, p/s, p/b, a/c, rally wheels, clean, $2,750. 289-6519 after 6 p.m.

73 MGB - good body, eng. excel., many new parts, $2,000. Donna, Ext. 3932 or 286-3538.

81 CAMARO BERLINETTA - 4 spd., T-tops, a/c, p/s, p/b, am/fm stereo, excel. cond., $5,900. 924-7049.

75 DATSUN B-210 - turbo, iron duke, 4 cyl., $850. Ext. 4689 or 744-7073.

72 DODGE DART - a/t, a/c, am/fm stereo, good cond., $595. Sandy, Ext. 3369 or 286-1022.

80 CHEVETTE - 4 spd., manual, 2 dr., excel. cond. Ext. 4345 or 744-7642.

79 PACER WAGON - tan, a/c, p/w, am/fm stereo, high mi., good cond., $850. Otto, Ext. 4248.

74 PLYMOUTH SATELLITE - sedan, 6 cyl., clean, good cond., $750. 475-8971 after 6 p.m.

78 CHEVY PICKUP - 6 cyl., cap, p/s, p/b, a/t, very good cond., $3,000. Rick, Ext. 2396 or 472-1275.

64 FAIRLANE 500 - Sports Coupe, V8, a/t, buckets, reliable, $550. Tom, Ext. 4664 or 282-4877.

74 TOYOTA CELICA - rebuilt brakes, new muffler, many new parts. Mike, Ext. 4100.

71 VW BUG - whole or parts, best offer. Ext. 3670 or 744-1760 eves.

74 MUSTANG - a/t, p/s, 4 cyl., $800. 654-0924.

70 NOVA - a/t, p/s, runs well, new parts, good engine & trans., $550. Walt, Ext. 2907 or 698-0576.

77 GRAND PRIX - all power, orig. owner, must sell, best offer over $500. Carol, 698-8510.

82 CHRYSLER LEBARON - p/s, p/b, stereo, equalizer, excel. cond., must see, $4,500. John R., Ext. 3397 or 732-2702.

83 PLYMOUTH TURISMO - 35 mpg, 2.2 eng., 5 spd., mint cond., $4,600. Ext. 7643 or 654-2617.

80 BUICK CENTURY WAGON - V6, a/t, a/c, p/s, p/b, am/fm cassette, 56k mi., excel. cond., $5,000. Chyng, Ext. 4391/4396 or 751-8224 after 6 p.m.

79 YAMAHA 650 - Special, 10k mi., new tires, battery, excel. cond., $1,000. Ext. 2223 or 929-6421.

61 CJ5 BUICK - V6, new top, exhaust system, rebuilt trans. and transfer case, $1,500. Bill, 399-6168 or 282-4434.

79 DATSUN 210 WAGON - 5 spd., a/c, 63k mi., no rust, new clutch, radials, am/fm stereo, excel., $2,500. 286-9257.

75 MUSTANG - V6, a/c, p/s, p/b, new paint, am/fm Ghia II cassette, $1,500. 924-6883 after 5 p.m.

REPLACEMENT RUNNING BOARDS - for VW, new, $20 set; repair manual, $6. Frank, Ext. 2022.

72 DATSUN 240Z - complete, good cond. but engine needs work, $1,110. 694-6470 weekdays or 281-1564 weekends.

76 VW RABBIT - 4 spd., good cond., $800. Ext. 2537.

76 STARFIRE - $1,300. Ext. 2543.

78 OLDS 88 - a/c, p/s, p/b, a/t, new tires, battery, excel. cond., $2,800. 981-5696.

74 BMW 2002 - maroon, good mech. cond., $2,600 firm. John, 589-3631.

83 DATSUN 200SX - 5 spd., full power, am/fm cassette, $6,995. Ext. 7716 or 728-0334.

73 VW BEETLE - 4 spd., handyman's special, still runs, needs work. 281-8458 eves., weekends.

63 CHEVY BELAIR - 90k mi., 3 spd., 2 dr., good cond., needs work but still runs, $400. Mark, 286-4150 or John, 286-1348.

76 OLDSMOBILE - 4 dr., a/c, p/s, low mi., asking $1,500. Kevin, 563-1189.

Boats & Marine Supplies

16' DORY DILLY TRAILER - plywood, 20 HP Mercury, extras, water ready, $750. Stewart, 273-6993.

16' FIBERGLASS BOAT - 1971, 50 HP Johnson with trailer, $1,000. Ext. 4846 or 363-6940 after 5 p.m.

ALDEN SINGLE SCULL - with Charles River Oarmaster, $650. Ext. 4112.

24' CHRYSLER - 115 HP Evinrude, power trim & tilt, cabin sleeps 2, new rug, $1,500. Jim, Ext. 7772.

SUNFISH - excel. cond., $1,100 w/trailer, or $800 w/out trailer. Arnie, Ext. 4944 or 821-0388.

MERCURY O.B. MOTOR - 1983, 115 HP w/controls, low hrs., $3,200 firm. 589-4363 after 6 p.m.

19' FIBERGLASS BOAT - tri-hull, needs motor, $800; 21' Stormking-Sharpee, $500. Harry Sr., 368-8681.

SEA SNARK SAILBOAT - ready to sail, car topper, $258. 744-6967.

14' PLYWOOD ROWBOAT - heavy construction, sound, needs paint, transom cut 15" motor, $225. Ext. 2177 or 298-4985.

16' TRI-HULL - 1972 MFG, full canvas, 1979 Merc., 50 HP motor, elec. start, 1983 Cox galvanized trailer, extras, $2,800. 281-8458, eves./weekends.

JOHNSON - 6 HP motor, $100. 281-8683.

GALVANIZED BOAT TRAILER - for 17' boat, power winch, new tires, rims, $300. 475-4196.

Miscellaneous

LAWN MOWER - Jacobsen, battery start, self-propelled, rear bagger, used one season, $400. Ext. 3965.

SAW - Black & Decker, 7-1/4" circular, $15. Bob, Ext. 4551.

WICKER PEACOCK CHAIRS - natural color, brand new, still in plastic, $25 each. Pattie, 473-7862 after 5 p.m.

GE DISHWASHER - and wall oven, good working cond., low price. 751-8762.

ELECTRIC TYPEWRITER - w/stand, $75; (2) foam camping pads, $10 each; (1) single, $5; Scotts hand mower, $30. Bruce, 924-4097.

IBM TYPEWRITER - large carriage, good working order, asking $275. 924-0421.

BEDROOM SET - Bassett, dk. pine, Colonial, full/queen headboard, dresser, mirror w/shelves, chest-on-chest, (2) night stands, excel., $800. Karen, Ext. 4262.

WEDDING DRESS - size 7, $10; elec. blanket, double, $10; duplicating machine, $5; 3-piece sectional, gold, $25; "bike-bug" eng., $20; bowling ball w/case, $10. 281-7844.

WOOD/COAL STOVE - Parlor, good buy if you can use it. 281-8683.

MULUCCAN COCKATOO - w/brass cage, $1,100; Goffins Cockatoo, w/brass cage, $600. 924-3008.

COLONIAL LIVING ROOM - sofa, loveseat, chair, end tables, coffee table, like new, moving, must sell, $600 neg. Linda, Ext. 2439.

SEXTANT - professional, Tamaya, full-sized, brass w/light, in traditional hardwood box w/access., $300. Ext. 2482.

WOOD FRAMES - 16x20; plastic display frames, 11x14, 16x20, $5 and $8; Telextender for Pentax, $8. Susan, Ext. 4267.

GOWNS - (2) for proms or wedding party members, (1) maize, (1) peach, both sizes 8-10, $25 each. Walt, Ext. 2907 or 698-0576.

CYCLONE FENCE GATE - 4' high by 3' wide, $20. Dan, Ext. 4677 or 698-7322.

CAMERA - Yashica Electro, 35 GSN, rangefinder, F1.7 lens, good cond., $30. Ext. 4153 or 732-5829.

SCHWINN BICYCLE - girl's, yellow, 5 spd., excel. cond., $60. 751-3551.

CANNING JARS - glass top, quarts. Ext. 2950.

ATARI - 8 tapes, joy sticks, case for tapes, $75 neg; wood clarinet, old but good for beginner, $95. Joey, 929-8321.

BUMPER POOL TABLE - commercial type, no coin mechanism, $75. 751-1562.

18' POOL - aluminum, round, complete, $225. Walt, Ext. 4028.

CANNING JARS - 4 doz., $12; high chair, $7; hand push lawnmower, $10; lawnspreader, $10; old dresser w/mirror, $40. 878-6637.

JACK LA LANNE LIFETIME MEMBERSHIP - only 6 payments left, approx. $600. 475-5591 after 5:30 p.m.

END TABLE - oval, antique, $50; humidifier, $10; brass sconces, $25; fruitwood dinette table, (4) chairs, formica top/leaf, $125; 3-wheel adult bike, $75. Judy, 758-9496.

FREEZER - Sears, 22 cu. ft., chest type, excel. cond., $125. 286-0682.

MOBILE KITCHEN UNIT - oven counter, range, refrig., sink, copper color, $500. Ext. 5168 or 588-0677 eves.

PORTABLE ELECTRIC TYPEWRITER - Smith Corona, hardly used, good for college student, $100; (8) film cartridge ribbons, $20. Marsha, Ext. 3327.

ANTIQUE GLASS BOTTLES - assort. sizes and kinds; dining room table and (4) chairs, contemporary, $50. Dan, Ext. 4677 or 698-7322.

REFRIGERATOR/FREEZER - Whirlpool, 18 cu. ft., $75. Jim, Ext. 7772.

EVERETT PIANO - excel. cond., $1,500; Colonial hide-a-bed, $250; brown recliner, $40; typewriter w/scientific keyboard, $25, all excel. cond. Ext. 4425 or 751-6781.

CHESS GAME - voice sensory, elec. model VSC w/instructions. Sal, Ext. 2460.

BABY TUB - Gerry, $4; small kettle grill, good cond., $10. Ext. 4877.

FORD TRACTOR 3400 - 3 cyl., diesel, 8-spd., 3-point hitch, $3,500; Rogers & Slingerland drums, blue sparkle, $1,200. 363-6417 after 6 p.m.

EXECUTIVE SWIVEL CHAIR - $75; bathroom formica vanity, $100; lamps, $50 pair; am/fm stereo console radio, $50. Ext. 7686 or 878-0897.

KODAK DISC 4000 CAMERA - w/carrying case, almost new, $35. Sharon, Ext. 3995.

INFLATABLE RAFT - 5 man, coast guard approved, used once, $50. 758-6892 eves.

PORTABLE COMPUTER - Osborne, (2) DD disk drives, Wordstar, Dbase II, Supercalc, Basic, CPM, Pers Pearl software, (3) DZ diskettes, manuals, $700. John, Ext. 3292 or 286-1348.

EXERCISE GYM - universal type, Marcy Mach 1, excel. cond., $1,500. John, Ext. 3292 or 475-4370.

CAR SEAT - $35; stroller, $35; cassette recorder, $20; humidifier, $5. Ext. 7547 or 3135 eves.

MUSIC STAND - $5. Ext. 2543.

POOL TABLE - Ebonite regulation, 3/4" slate top, plus accessories. 878-1731 eves.

MOLDING - 2-5/8" Sprung, white, 190 ft., $40 or 25¢/ft.; window shades, white vinyl, $3 ea.; polyester fabric, 60" wide, 2-3 ft. lengths, $2 yd. Pat, Ext. 2452.

COUCH - (4) cushion seat, 90" long, good cond., $100. 475-4394.

WATER PUMP - shallow well, 1/2 HP motor, $25. Frank, Ext. 2022.

FREEZER - Delmonico, white, upright, good cond., holds 225 lbs., $50; GE refrig., 2 dr., white, good cond., $50. Ext. 7678.

GE TELEVISION - 15", black & white, 4 years old, $25; infant seat, Century, $7; nursery scale, $5, all excel. cond. 924-8722.

CAMERA - Polaroid Sprit 600 Land, new, $15. Dick, Ext. 2911.

SCHWINN BICYCLE - built for 2, 2 spd., $150. Ext. 3888.

DIAMOND RING - specially hand-crafted, 14 kt. gold w/3-diamonds, $400. Mark, 744-3298.

GE AIR CONDITIONER - small, 4000 BTU/hr., 800 watt, 110 volts. Raul, Ext. 4331 or 924-1421.

POOL - alum., 15'x30', incl. through wall skimmer, filter, motor/pump, vacuum & hoses, chemicals, etc., needs liner, $350. Walt, Ext. 2907 or 698-0576.

PING PONG TABLE - $20; canning kettle w/rack and 20 mason jars, $8; epoxy skis, (long), $25; elect. knife, $3.50. Corliss, Ext. 4438 or 472-1585.

COCKATIEL - female, nice bird, $35. Whitey, Ext. 2913 or Ramona, 928-3088.

MOVING - scuba tank, regulator; men's med. wetsuit; GE heavy duty elec. dryer, like new. Bob, Ext. 3145.

MOVING - rugs, misc. furn.; tools. 744-9832.

MOVING - furniture, rugs; appliances; plants; many items; must see. T.K. Ext. 4345 or 744-7642.

Free

DOG - 2 yrs. old, Shepherd mix, very loveable, loves outdoors, can't keep, moving into apt. 981-5993 after 6 p.m.

Car Pools

MATTITUCK - driver needed to round out carpool. Ext. 3992 or 298-4172.

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 Rent

SMITHTOWN - 8 rm. high ranch, 3 bdrms., 2 baths, w/d hookup, deck, carpeted, Smithtown school dist., $1,200 month, avail. immed. 473-6950 or (212) 593-1900, Ext. 250.

BELLPORT VILLAGE - 3 bdrm. ranch, Sept. 2-25, no children, no pets. Ext. 5271.

MASTIC - spacious 1 bdrm. apt., full bath, kitchen, dishwasher, d/r, lots of closets, private ent., nice neighborhood, walk to beach, marina, $575 month, incl. heat, avail. Sept. 1. Jim, 281-2849.

SHOREHAM - Colonial, 4 bdrms., 2-1/2 baths, 2 dr. garage, pool, excel. school dist., 12 min. from Lab., early Sept., $1,000 month, plus util., furn. (optional), sale (optional). Ext. 4345 or 744-7642 after 5:30 p.m.

HILTON HEAD, SC - 2 bdrm. condo., tennis, golf, pool, beach, $400 week, after Sept. 15, $350 week. 585-9149.

BELLPORT VILLAGE SOUTH - near bay and stores, fully furn., modern house, incl. all appliances and piano, 3 bdrms., 2-1/2 baths, avail. until Jan. 1 or longer, no smokers or pets, rent neg. to resp. tenant. 286-0379.

NORTH SHIRLEY - 4-1/2 rooms, 1-1/2 miles from Lab, mature working couple, no pets, pvt. ent., $600 month, util. incl., plus sec., Sept. 1 occup. 924-5276.

CORAM - Strathmore East, 3 bdrm. ranch, study, 2 baths, patio, fenced pvt. yard, gas heat, (5) appliances, $850 month, plus util, avail. Aug. 10, dep. and refs., principals only. 928-7154.

For Sale

MANORVILLE - English Tudor, 5 yrs. new, 10 rooms, 4 bdrms., 2-1/2 baths, wooded acre, f/p, p/r, f/r, d/r, l/r, 2 car gar., full deck w/pool, $171,500. Ext. 4934 or 878-0984.

GLEN OAKS (QUEENS) - Garden Co-op apt., brick, lower level, 1 bdrm., $65,000. Dan, (718) 347-0237 eves.

CORAM - Strathmore East, W Section, 10 room ranch, 4 bdrms., 3 full baths, m/d, f/p, nicely landscaped, quiet, move-in cond. 928-8071.

KINGS PARK - ranch, 3 bdrms., d/r, 1-1/2 baths, full bsmt., pool, country kitchen, 1/3 acre, fenced, $139,900. 269-2974.

MIDDLE ISLAND - cedar Colonial, 3 bdrms., excel. cond., 4 wooded acres w/private pond, must be seen. Gary, 928-5875 after 6 p.m.

SHOREHAM - 3 bdrm. ranch, p/r, attached util. room., patio, 1 acre, 13 yrs. old, cul-de-sac, bordered by woods, taxes $1,300, SWR school dist., $138,500. Ext. 7786 or 744-7796.

LAKE GEORGE - 4.5 acres, have video tape of property, $6,000. Ext. 7578.

Wanted

LIONEL TRAINS - and accessories. Bruce, 924-4097.

PEOPLE - interested in forming a yoga group, all levels. Carol, Ext. 2907 or 698-8510.

TRAILER - approx. 4'x8'. Nancy, Ext. 3260.

69 CHEVELLE SS - complete car, or excel. body, rot free, top dollar paid. Joey, 929-8321.

HOUSE TO SIT - going away on vac. or business, I will stay with your house. Ext. 3671 or 736-2131 eves.

HOUSEMATE - to share 4 bdrm. house, in nice Setauket neighborhood, $250 month, plus util., avail. immed., grad. student okay. Ext. 3170.

WOMAN'S TENNIS RACKET - aluminum graphite, reasonable. Elizabeth, Ext. 3419.

HOUSE TO SIT - respon., previous homeowner, references, any period 9/31-5/31/86; pick-up truck/camper, prefer w/over cab section, any cond. considered, reasonable. Bob, Ext. 3145.

HOUSE TO RENT - 2 bdrms., max. one year, near Lab., unfurn. Jay, 736-6243 after 7 p.m.

HOUSE TO SIT - exper., respon., caring, free any duration, Aug. 16-Sept. 15. J. Allentuck, Ext. 2412.

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