BROOKHAVEN BULLETIN

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Current Status and Future Prospects Of Brookhaven Discussed by Director

On Thursday, April 11, Laboratory Director George H. Vineyard addressed a meeting of the senior scientific staff on the current status and future prospects of Brookhaven National Laboratory. The main text of Dr. Vineyard's remarks are presented here in order that all employees may be informed on this important subject.

" . . . It is my privilege to once again talk with you about the status of the Laboratory and our future prospects. The general shape and approximate size of the budget for next year is now fairly clear and some new developments, especially those related to energy, should be of interest to you.

When we met together last July, I talked a good deal about developments on the Washington scene that would have an impact on the Laboratory. I spoke about the proposal made by the administration that the AEC should be reorganized, and out of it would be created a new entity called the Energy Research and Development Administration (ERDA). The regulatory function of AEC would be put into a nuclear energy commission, a separate body. Atomic energy and other energy activities would be supplemented in ERDA through transfer to that agency of what is being done in the Department of Interior and in certain other agencies in the energy field.

It looked at that time as though ERDA might soon become a reality. If you've been reading the papers you know that hasn't happened. To the best of my information, after going through ups and downs the ERDA proposal is still alive and is once again looking more promising. I'm not here to predict it's going to come about soon, but the House of Representatives passed the ERDA bill sometime ago by an overwhelming majority. The bill then slowed down in the Senate and has been in the subcommittee of the Government Operation's Committee of the Senate for some time, with contention between that proposal and the rather different proposal sponsored by Senator Henry Jackson. On Tuesday, April 9, the ERDA bill was reported out of the subcommittee to the full committee, and it would appear as though the chances are once again considerably brighter that ERDA may pass this session of Congress. If that happens indeed there will be more responsibility placed on the AEC labs for working in the energy field.

Last June, at the request of the President, the Chairman of the AEC, Dr. Ray, prepared a ten-billion dollar, five-year budget for Energy Research and Development. The budget was accompanied by the recommendation that an additional billion dollars be spent over the five-year period on supporting research, both physical, biomedical and environmental. That proposal, which went to the administration December 1, has been substantially accepted and incorporated in the Presidential budget which was announced early this calendar year.

Since ERDA is not yet in existence, funds have been alloted in the budget to the various agencies that now have energy responsibilities, rather than being gathered together in this yet-to-be-created agency. Thus the AEC has some increased energy-related monies in the upcoming congressional budget. There is also a substantial amount proposed for the National Science Foundation, particularly for Solar and Geothermal work; the Department of the Interior for work in the area of coal and fossil fuels; NASA for Solar Energy; EPA for environmental work, and so forth. Not all of these agencies have yet decided how they will spend the budgeted funds. Some will be spent "in house"; some undoubtedly will be spent through other agencies; and this process is still being unraveled, so that much of our future even in the forthcoming fiscal year is not entirely clear.

As you know, everybody has been experiencing inflated costs. Brookhaven has been hit particularly hard by the greatly increased costs of both fuel oil for heating and cooling of buildings, and for electric power. We are unique in the national laboratories in this respect – this is one time that I wish we were not unique – but the other laboratories are situated in regions of relatively low cost power. We, in the Northeast, have been hit because all the oil in this region is imported oil and suffers the cost increases that followed the embargo of last fall.

The sudden impact on our budget would have scuttled some of our programs. In particular, we would have been required to shut down the AGS some six weeks early simply to save power, and we would have had very severe shortages in a number of other programs. We made a special appeal to the AEC on February first following the adding up of all this bad news. The total impact was a little more than a million dollars in the current fiscal year.

After that appeal wound its way through the machinery, we were gratified to learn that the AEC had indeed taken us quite seriously and did what in my experience is a totally unprecented thing – they secured the reprogramming of monies to bail us out. Not only did the AEC have to make internal decisions on scraping up this money, they had to go through the government for approval from the Office of Management and Budget, the Joint Committee on Atomic Energy, and from both the Senate and House Appropriations Committees.

I've been told that that process has cleared all the way through and that money is indeed going to be added to our financial

(Continued on page 2)

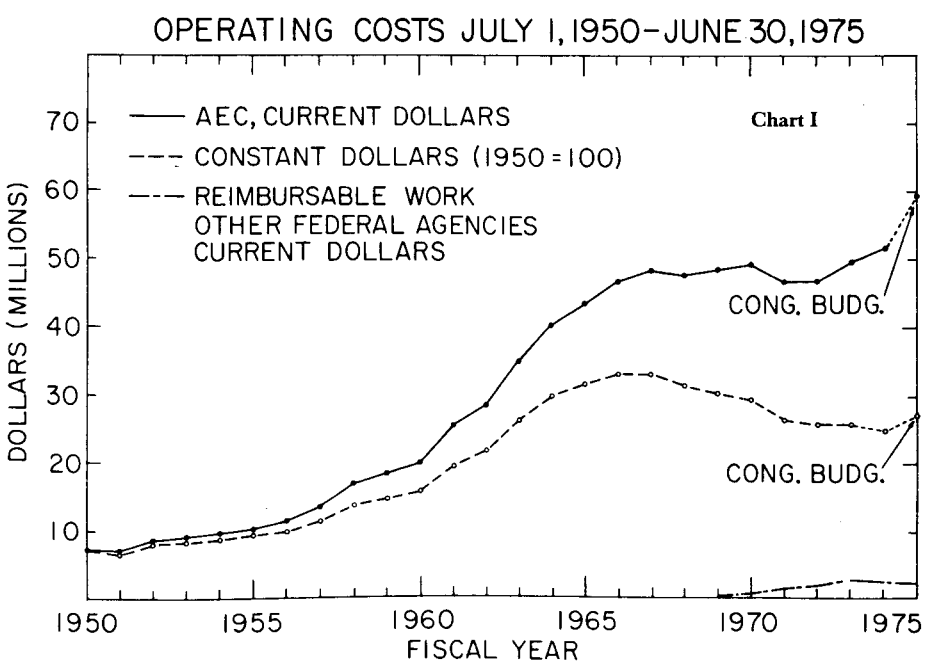
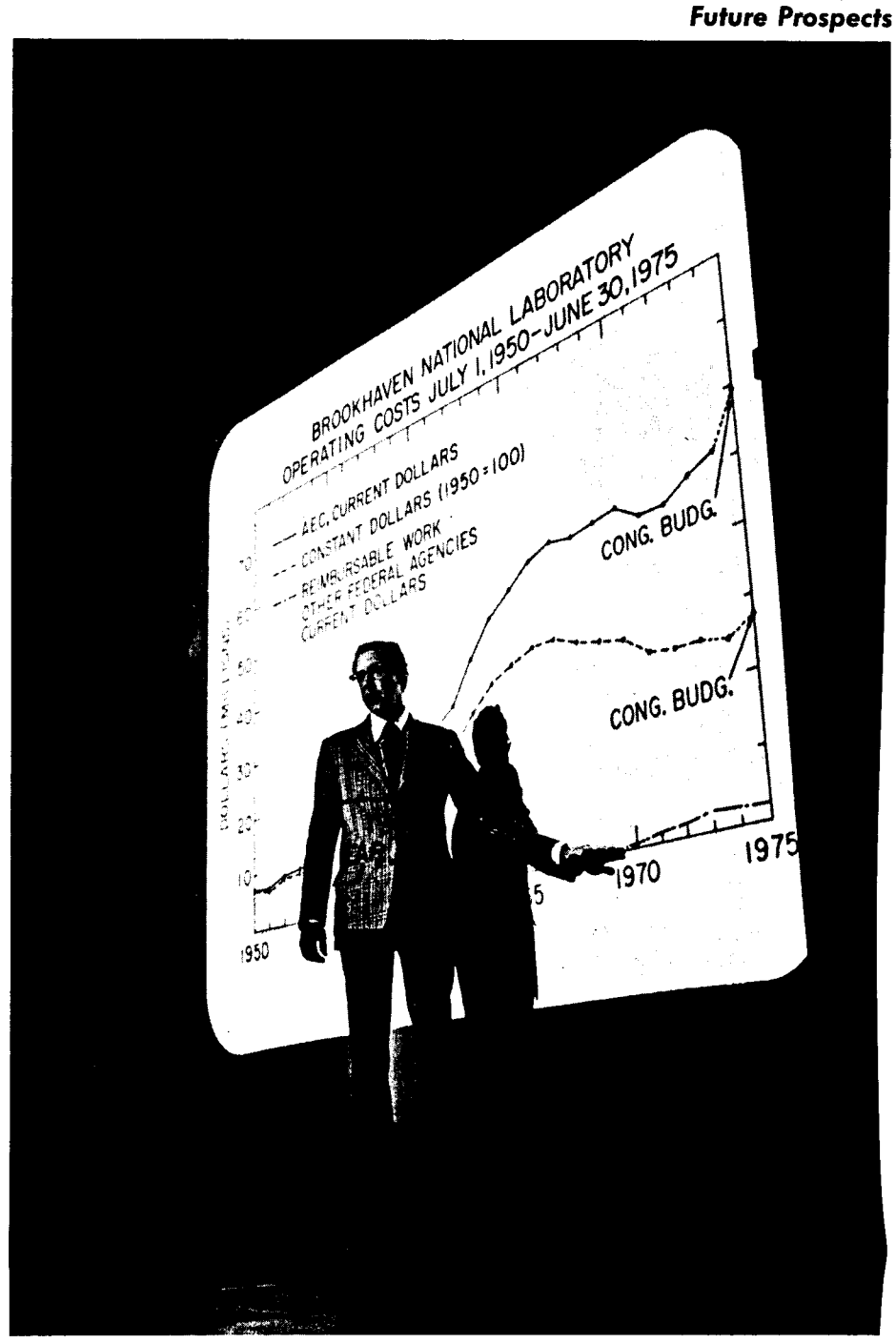


Chart I

Future Prospects



Laboratory Director George Vineyard explains budget figures to the senior scientific staff during a meeting in Berkner Hall on Thursday, April eleventh.

US/USSR Sign Pact

An agreement to cooperate on superconducting power transmission research, was signed on April 12 by the United States and the Soviet Union, in Washington, D.C.

The accord was reached after a week of meetings held by the US/USSR Committee for Technological Change in the Field of Superconducting Power Transmission. The committee is composed of eight US scientists and nine Soviet scientists. All the AEC national laboratories, along with industrial laboratories, the electric power industry and the superconducting material manufacturers are represented on the Committee. Jack Jensen, Accelerator, is BNL's representative. Steve Amoretty, Information Division, accompanied Jensen down to Washington, where he used his skill as an interpreter throughout the meetings.

The agreement was the highlight of the Soviet team's two-week visit to the United States. Prior to meeting with the US team in Washington, they visited various research facilities, including Brookhaven.

The joint committe was formed as a result of an agreement signed by President Nixon and Soviet Party Chief, Leonid I. Brezhnev, in May, 1972. The Committee is an offshoot of the Joint Committee on Energy Research and Development which is responsible for nine areas of energy research and development. Superconductivity is one of those areas.

The AEC's Division of Applied Technology (DAT) was called upon to select the members of the US superconductivity team. Dr. Brian Belanger, DAT, is the head of the US team.

Jensen, who was down in Washington from April 8-12, outlined the terms of the agreement signed by the two countries in Washington.

It was agreed that American scientists would participate in the design of the Mos-

(Continued on page 3)

Graduate Extension In Applied Math

SUNY at Stony Brook will continue its graduate extension program in Applied Mathematics and Statistics at Brookhaven this fall.

The courses to be offered are: *Methods in Applied Mathematics for Scientists and Engineers* and *Introduction to Probability and Stochastic Processes.*

To give information or administrative and course requirements, Dr. Daniel Dicker and Mrs. Esther Weitzman form SUNY, will be present at the Laboratory on Tuesday, April 23, at 2:00 p.m., Applied Mathematics Seminar Room, 61 Brookhaven Ave.

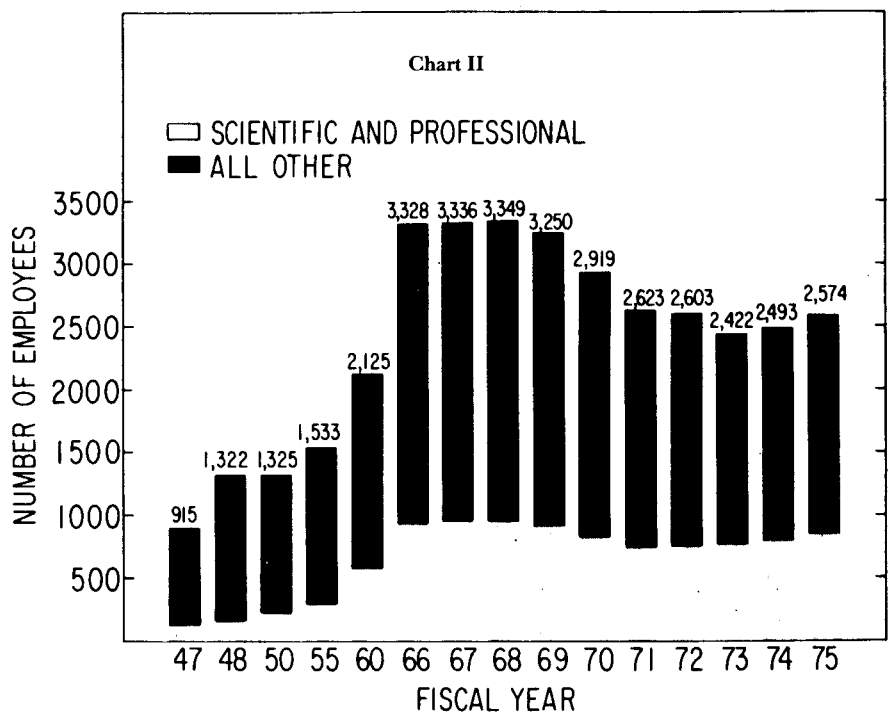
If you are interested, please attend.

Official & Special Events

Monday, April 22
Philadelphia College of Textiles and Science Tour
Tuesday, April 23
U.S. Military Academy Cadets Tour
Wednesday, April 24
Interagency Advanced Power Group Superconductivity Panel Meeting (April 24-25)

Monday, April 29
Physics/Accelerator Visiting Committee (April 29-May 1)
Thursday, May 2
Medical Department Visiting Committee (May 2-3)
Sunday, May 5
Cornell University Students Tour

Tuesday, May 7
Royal Military College Tour
DAS Visiting Committee (May 7-8)
Wednesday, May 8
Navy Meeting – Brookhaven Center
Friday, May 10
Fullbright Students Tour



Future Prospects (Continued)

plan in the very near future. This is a gratifying event which is clear proof of the concern the AEC has for the welfare of its laboratories. So that is in balance good news.

Next Year's Budget

Now I would like to turn to next year's budget. The Budget which went to the Congress about February 1 proposes funds for the AEC and in that is a proposed budget for Brookhaven, which I shall call our Congressional budget. Our Congressional budget next year is now fifty-nine and a fraction million dollars for operating expenses, about five million for capital, and about two and a half million for construction. That construction budget comprises two items – so-called General Plant Projects, which modifies buildings and structures, and so-called Accelerator and Reactor Additions and Modifications, which provides for improvements associated with our accelerators and reactors. Before giving you more details about that, let me give a little perspective.

Chart 1 shows the history of operating budgets over a considerable span of time for the Laboratory. The top curve is the actual annual dollar level of our operating budget. Starting in 1950 and ending with the Congressional budget for the next fiscal year. You see a large growth period in the Laboratory's history when we created a number of new experimental devices, particularly the AGS. Then we went through a leveling off, as you are all to well aware. In the coming fiscal year we are looking for an increase of a very substantial number of dollars.

To put another light on all of this, the dotted curves show the same information normalized for fiscal year 1950 dollars affected by a deflation factor (which is a conservative but fairly standardized estimate of the effect of inflation over this period). The so-called constant dollar budget shows the same rise, and then a very much more marked decline, followed by a rise to the Congressional budget for next year. This is a very modest rise, not a precipitous rise.

Down at the bottom of the chart is the actual funding each year for work at Brookhaven for other federal agencies, which is going along at a very modest level and has not shown any great increases yet.

The next chart shows the manpower associated with those budgets. The time scale is a little different here. It starts back in '47, giving the levels for five-year intervals, and then it becomes yearly beyond fiscal '66. At the end of the present fiscal year we expect to have approximately 2493 people in the total work force regular full-time employees. Projecting ahead to the Congressional budget shown on the previous chart, it looks like a buildup of approximately 80 employees will occur.

Operating Budget

The next table shows the breakdown of the Congressional budget into the various AEC categories. The first column is the fiscal year '74 budget, and the second column is the fiscal year '75 Congressional budget as we now know it.

The total from the Division of Physical Research increases by three million, but notice that the distribution among the various categories is not at all uniform. High energy has only a very, very small increase, considerably less than the cost of living. Nuclear sciences, essentially what used to be called nuclear physics, goes up but not by an enormous amount. Material sciences and molecular sciences go up rather strongly. These two increases mostly have to do with underlying research related to energy.

In the Division of Biomedical and Environmental Research, this year's budget of nine and one half million is slated to go to about eleven and a half; that divides down into the Medical Department's portion, the Biology portion, and then the other environmental studies, dosimetry, and instrumentation, which supports work in the Health Physics and Instrumentation Divisions and in the Department of Applied Science. Again, a good share of the increase is for environmentally-related work.

Then there is one other consolidating number – applied energy technology – which is support coming from the Division of Applied Technology. The first line is so-called General Energy Development. This is principally the superconducting transmission line development. That very big increase because at present about a million dollars comes from the National Science Foundation, whose support is phasing out, to be picked up by the AEC budget next year.

Chart III

	FY 1974 Current Budget	FY 1975 Budget Before Congress
High Energy Physics	$ 24,460	$ 24,600
Nuclear Science	5,155	5,463
Materials Sciences	3,853	4,777
Molecular Sciences	4,325	5,827
PHYSICAL RESEARCH - TOTAL	37,793	40,667
Medicine	4,824	5,494
Biology	3,250	3,800
Oth. Environ. Studies, Dosimetry, & Instru.	1,522	2,145
BIOMEDICAL AND ENVIRONMENTAL RESEARCH - TOTAL	9,596	11,439
General Energy Development	785	2,405
Isotopes Development Technology	100	100
APPLIED ENERGY TECHNOLOGY - TOTAL	885	2,505
CONTROLLED THERMONUCLEAR RESEARCH	400	790
NUCLEAR MATERIALS SECURITY	585	490
CIVILIAN REACTOR DEVELOPMENT	365	375
REGULATION	1,029	1,335
REACTOR SAFETY RESEARCH	320	500
WASTE MANAGEMENT	250	465
OPERATIONAL SAFETY	0	125
INFORMATION SERVICES	25	50
PLANNING AND ANALYSIS	330	500
LABORATORY TOTAL	$ 51,578	$ 59,241

Controlled thermonuclear research which this year is at the four-hundred-thousand level, is slated to about double. This comprises a number of projects in different departments. Nuclear materials security (the safeguard organization) is slated to go down a bit. Civilian reactor development, cross section support from the Reactor Development Division, is approximately level. Support from the regulatory part of AEC goes up rather substantially and reactor safety research increases. We now have three different programs in reactor safety, one having to do with water reactors, one having to do with fast reactors, and most recently, a new program having to do with gas cooled reactors.

Waste management, which is concerned with finding ways of safe disposal of radioactive wastes, is due for a substantial increase. The line labeled operational safety, which goes to 125 thousand from nothing, is a new program concerned with monitoring radioactivity in the soils of the Marshall Islands where the fallout incident occurred back in the early 50's and where we have been for many years monitoring the medical effects of that accident.

Information services supports the new Office of Technology Transfer. The last item on planning and analysis supports our analytical studies of energy systems; it is shown as increasing strongly. Overall the budget then adds up to 59 million.

Let me make two further remarks: First of all, these are only proposed amounts. They are not yet real and require Congressional action before becoming a reality. They could be trimmed in all that process. Secondly, this budget still is not the last word. Our experience has been that many programs materialize farther down the fiscal year. Some of the operating divisions of the AEC do not put all their funds in the original budgets. Also, other agencies may wish to ask AEC laboratories to do more energy-related work. So I think that the chances are strong that the total budget will go up rather than down, but exactly how much one doesn't know.

CAPITAL EQUIPMENT BUDGETS
Chart IV

	FY 1974 Current Budget	FY 1975 Budget Before Congress
High Energy Physics	$ 1,699	$ 2,500
Nuclear Science	408	530
Materials Sciences	172	285
Molecular Sciences	145	320
Other Capital Equipment	210	260
PHYSICAL RESEARCH	2,634	3,895
BIOMEDICAL AND ENVIRONMENTAL RESEARCH	755	800
General Energy Technology	36	190
Isotopes Development Technology	0	0
APPLIED ENERGY TECHNOLOGY	36	190
CONTROLLED THERMONUCLEAR RESEARCH	0	50
NUCLEAR MATERIALS SECURITY	30	10
REGULATION	8	5
WASTE MANAGEMENT	30	20
LABORATORY TOTAL	$ 3,493	$ 4,970

Capital Budget

The final chart shows the capital budgets (again '74 and '75 Congressional). This year's capital budget adds up to about three and one half million, and next year's Congressional adds up to almost five million, a rather gratifying increase. But one must recognize that recent capital budgets have been very lean and there are still many demands to be filled.

I am very pleased to be able to make the statement that according to our planning, we are not faced with any layoffs this year. We will have to tighten our belts substantially in two programs – the high energy program and the nuclear physics program, because both of them got less than a cost of living increase. Personnel in high energy will shrink quite substantially, but we see our way clear to taking that shrinkage by attrition and not renewing some expiring term appointments, and, in a few cases, by some transfers to other programs in the Laboratory which are growing.

This brings me to the energy situation. Through the *Brookhaven Bulletin* and through the series of laboratory colloquia on energy that we have sponsored, you have been given a pretty good picture of various subjects of interest in the field and of developments at the Laboratory. John Blewett has written two articles in the *Brookhaven Bulletin* in recent months and has fostered the writing of two others. Let me just run down the list now of particular, energy-related activities here.

Energy Research

First of all, there is the undergirding research in physics, chemistry and biomedical areas, which I will not mention in detail, but which is substantial. Then there is work on hydrogen technologies, mainly in the Department of Applied Science, with some underpinning from the Department of Chemistry. There is growing work in controlled thermonuclear reaction involving the Departments of Physics, Applied Science, and Accelerator heavily. The program which might be called application of superconductivity, the biggest part of which is the superconducting transmission line program, is going very well, and also extends to other potential uses of superconductors.

There is the expanding area of reactor safety, now underway in the Department of Applied Science, involving analytical studies and computer studies of reactors. This is very much a growing area. Individuals with the required expertise are in demand all over the country and very hard to find, but we have begun to build up to a satisfactory level.

Then there are the analytical studies of energy systems, and the associated studies of biomedical and environmental effects of energy production, sometimes called biomedical assessment. There are some miscellaneous projects germinating, for example, in the Chemistry Department on the use of lasers for isotope separation. On a small scale, a very interesting idea is being explored in an attempt to use a rather complex series of chemical reactions for photolytic dissociation of water to produce hydrogen inexpensively.

There are a number of environmental programs, most prominent of which, perhaps is the newly-forming program in coastal oceanography which will involve the Department of Applied Science and the Department of Biology. The Department of Biology is right now conducting a search for the right person to be the head of that part of the program. The south shore of Long Island affords us an ideal test bed for this line of work, and this could easily become a multimillion dollar program in a fairly short period of time.

There is also the series of programs in meteorology and atmospheric chemistry in the Department of Applied Science; and a very interesting though modest program on upland recharge as a means of conservative disposal of sewage.

John Blewett, Ken Green, and Gerry Cottingham have been working on the possibility – I am not yet to say it is a probability – but the possibility that means could be found of using solar energy both to do some R&D and at the same time supplement the Lab's power supply for heating and cooling some of our buildings.

Isabelle

A major development in another area is the decision we have made, and which we expect to have ratified by AUI fairly shortly, to submit to the AEC this year a formal proposal for construction of the intersecting storage accelerator, ISABELLE. This would be an enormous project with great potential. Funding for fiscal 76, i.e. the fiscal year following the next one, would be sought. This is a project costing about one hundred twenty-five million dollars in 1974 dollars.

Superconducting rings would be constructed north and a bit east of the AGS which would be fed by protons from the AGS at 30 GeV. The protons would be accelerated in these rings to an energy of 200 GeV and caused to collide head-on in a

number of intersection points between the two rings. The center of mass energy thus becomes 400 GeV and the machine would be effectively the most energetic accelerator in the world by quite a large margin. We have been working extremely hard getting the engineering details of this design perfected. We have it in a state which we think is sufficiently firm for a proposal. We are now busy with the second and more difficult stage of persuading the AEC and others that this indeed is the program that they want most to support. We have a good deal of encouragement but we certainly have nothing final as yet. If it should come about, it will be a most important and major development for the future of the Laboratory.

Also, while I am at it, let me mention that we intend to propose two other construction projects to the AEC for fiscal 1976 – one to increase the power of the HFBR so as to increase the neutron flux by 50%. The other is to obtain a variable-energy cyclotron for the nuclear medicine program in which effective and relatively safe radioactive materials can be used for diagnostic investigations for producing medically interesting nuclei.

I am also happy to announce that the AEC has provided us with a new computer to be installed sometime this fall. A CDC 7600, it will significantly magnify the computing power of our central facility.

We had proposed another project, which would have been of considerable value, a fourth stage of acceleration for the Tandem Van de Graaffs. That, unfortunately, has been rejected, and although it could come alive later, it is not a possibility now.

The Future

Looking into the crystal ball we see two other things which should be mentioned. One is a study of intense neutron sources – one of these would be for Radiation Damage Studies in connection with controlled thermonuclear research, and the other possible intense neutron source would be for beams, for studies of solids and for chemical and biological purposes. Julius Hastings is heading a small committee looking into that area.

A second program is the study of a possible synchrotron source of electromagnetic radiation. A committee headed jointly by Morris Perlman and Dick Watson has been studying means by which ultraviolet light, soft and hard x-rays, could be produced at unprecedented intensities by an electron synchrotron. Neither of these is yet in the stage of a concrete proposal but they are very much in the stage of head scratching and thinking ahead.

Altogether then it seems to me that our position is one of guarded optimism. Many things are looking up in spite of continued difficulties. It is still a time of change. The balance between applied and basic work at Brookhaven seems to be shifting a bit but, in view of our decision on the ISABELLE proposal, which would be for basic science, no one can say that we are moving over entirely to applied work. On the other hand, lots of applied projects are still in view, and I am sure the total amount of applied work at the Laboratory will increase – which I think is perfectly healthy. In view of the uncertain treatment in the Congress of reorganization proposals and even the final disposition of the fiscal year 1975 budget in the energy area, it is too early to know for sure what our entire picture is, but, again, I am optimistic."

Happy Easter

The Easter Bunny got confused and hid balloons instead of eggs at the Lab. Ernest Hartman, HP&S, found this balloon south of the ecology forest, while on a routine check of environmental stations on site. He was surprised to find the name of a church in Cranbury, New Jersey, stamped on the tag attached to it, while the reverse of the tag simply said "'Alleluia' the Lord has risen."

Technology Transfer Now Ready To Move

Room 113 of the Administration building has been resurrected after almost a year of silence. It houses the newly-created Office of Technology Transfer which got off to a start Monday morning with the arrival of its director, William L. Graves.

The Office was established by Laboratory Director George Vineyard, at the re-

William L. Graves

quest of the AEC, to promote the practical application of technological developments at Brookhaven, in industry and government.

Graves views the Office as a two-way conduit between the scientists and engineers at the Lab and outside public and private technology consumers. But, he says, the Office relies heavily on the cooperation of the Laboratory staff.

This is not his first contact with the field of Technology Transfer or the Lab site. He was involved in a similar program, sponsored by the Federal Government, known as the State Technical Services Program. He headed their Long Island regional office located at the State University of New York at Stony Brook.

He was introduced to the Lab site in 1943 when he enlisted in the Army and was sent to Camp Upton for processing. But he remembers his second encounter with the site with more enthusiasm.

In 1948, while working for his B.S. in Chemical Engineering at Cornell University, he spent a summer at BNL calculating the air flow rates in the graphite reactor. Now fate has brought him back for a third time. "I hope it's better than the first time and as pleasant as the last," he says. Besides his background in Chemical Engineering, he also holds a degree in Chemistry from the University of Delaware.

Graves is a native Long Islander. He grew up in Garden City but has been living in Bellport for the last seven years. He and his wife Joan have five children.

IBEW Meets April 25

Local 2230 IBEW will hold its regular monthly meeting on April 25, 1974 at 8 p.m. in the K of C Hall, Railroad Avenue, 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 President's report.

Swimming Pool Re-Opens

Say a hopeful "goodbye" to the energy crisis and be our guest at the swimming pool on re-opening day, Wednesday, May 1. On that day, between the hours of 5:00 and 9:30 p.m., no admission fees will be charged. Employees and their families will have the opportunity to have a free swim and also see the good looking paint job as well as other improvements made in the pool area by the BNL Plant Engineering Division.

Starting on Thursday, May 2nd, the normal pool schedule* will be resumed.

Monday through Friday
12:00 – 1:30 p.m. employees only
5:00 – 9:30 p.m. employees/families/guests

Saturday and Sunday
1:00 – 6:00 p.m. employees/families/guests

Daily Admissions
50¢ ea. employees/family members
75¢ ea. guests (5 per family)

Season Passes (summer season extends from May through September)
$10 employee
$20 family

*summer time schedule will begin July 8

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Arrivals & Departures

Arrivals

William Graves ..... Director's Office
Richard K.McMullan ..... Chemistry
Gail I. Thompson ..... Applied Science

Departures

Melvin D. Epp ..... Biology
George J. Henik ..... Accelerator

In Memorian

Betty Dibble who had been employed in the Medical Department since 7-19-66, died 4-13-74.

Hospitality News

The next regular monthly coffee will be held on Tuesday, May 7, from 10:00 a.m. until noon, in apartment 10C. Mrs. Girija Chikkappa plans to talk to us about some customs in India, her home country.

Everyone is welcome. Bring your children.

CREF Unit Values

1973			
January	$50.36	February	$47.11
March	46.44	April	43.69
May	42.06	June	41.40
July	44.80	August	44.06
September	46.63	October	47.06
November	41.30	December	42.61
1974			
January	$40.75	February	40.83
	March	**$39.32**	

Slo-Break Basketball

Dick Ruffing

Play in the two basketball leagues mounted to exciting conclusions. In the first half the Circuits with a tall and good-shooting team won the lower league rather easily. They were aided by the strong rebounding of John Schmidt and Dick Squires, the fine shooting of Schmidt, and the consistent ball control of Frank Haibon.

The upper league champion for the first half was decided by a make-up game between the Tandems and the Knacks. The Tandems were able to overcome an 8-point deficit in the final 4 minutes, as the Knacks were down to 3 players via fouls, to squeak out a 46-45 win. The timely scoring of Fletcher Johnson (15 points) led the Tandems as they also benefited by balanced scoring from Roy Evans (9), Ed Taylor (8), Bob Rowley (7), and Leroy Jones (6). The Knacks kept the game close with the fine shooting of Bob Casey (18) and Ed Gill (17) plus the rebounding of Dennis Nordstrom.

In the second half the Circuits took the lead early in the lower league and were able to withstand a challenge by Physics and clinched the second half and the over-all championship with a 41-37 victory over Applied Math led by sharp-shooting Les Lawrence.

Once again the upper league, supplying all the excitement of the NCAA, went down to the final game of the season. Medical, after becoming the first team to beat the defending champion Tandems in 2 years, held a one-game lead over the Tandems and appeared to have sewn up the second half when they ran up against the Knacks. Without their penetrating guard Ted Murray, Medical was handed their worst defeat of the season 44-27 as the Knacks, led by Nordstrom (15), Casey (11), and Gill (10), literally shot Medical's zone to pieces. The following week the Knacks (without their all-star forward Ed Gill), once again playing the part of the spoilers, managed to send their game with the Tandems into double overtime before succumbing 40-36. The Tandems were led in scoring by Evans (11) and Rowley (10), the Knacks by Nordstrom (16) and Casey (8).

In the playoff game to determine the second half winner in the upper league, Medical jumped into an 11-point lead in the 2nd half only to go down by 6 with 4 minutes left. Then the unstoppable Terry Hatcher (22 points) of Medical went to work with some long-range bombing and with assistance from Dave Kenney (15), Mack Thomas, Gary Larson, and Theo Gray led Medical to a 49-46 victory. The Tandem scoring was led by James (17), Evans (13), and Taylor (9).

The championship game found both teams playing excellent defense with the hot shooting of Evans and Rowley whittling it down to 2 points as Taylor tied up Kenney for a jump ball at the Tandems foul line with 2 seconds remaining. On the jump Hatcher intercepted the ball meant for James as the clock ran out crowning Medical the new champs, 47-45. Medical scoring: Hatcher (15), Murray (8), Kenney (8), Gray (7), Thomas (7), and Larson (2). Tandems scoring: James (12), Evans (9), Rowley (9), Taylor (6), Johnson (6), and Garrison (3).

The league would like to congratulate the new champs and express its thanks to all of the participants for their loyalty through a cold and often uncomfortable season. The awards dinner will be held April 25 at the Recreation Hall immediately after work.

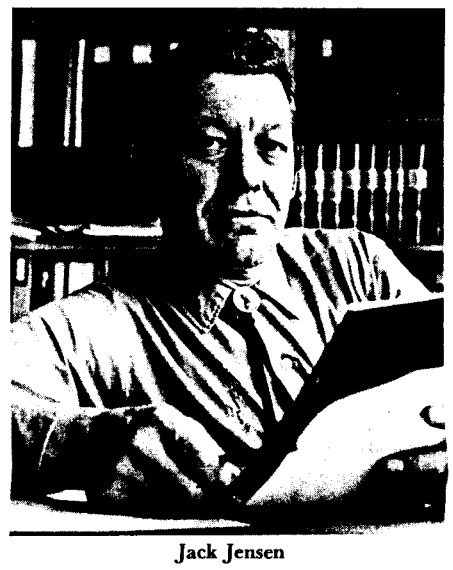
US/USSR (continued)

energo Research Center, a superconducting power transmission facility being constructed in the environs of Moscow. They will also take part in research conducted there and have full access to test programs and results. The US has agreed to lend the USSR a cryogenic refrigerator for use at the Mosenergo Center, to be delivered by the end of 1975.

By 1977, the US will receive a single phase superconducting cable from the Soviet Union, to be tested at a site in the United States. Russian scientists will have full access to the tests and results. All papers arising from these cooperative programs will be published jointly.

Within the next four years there will be an exchange of scientists between the two countries. The Soviet scientists will work at various research facilities throughout the US such as Brookhaven, the National Bureau of Standards and Oak Ridge National Laboratory. At the same time, US scientists will work at the Mosenergo test site and the Krzhizhanovsky Power Engineering Institute in the Soviet Union.

Jensen and a representative from the Union Carbide Corporation will go to the USSR for two weeks in June to participate in laboratory work on a three phase cable. Two Russian scientists will come to the US in September to discuss the specifications of the cryogenic refrigerator the US will loan the Soviet Union.



Jack Jensen

The meeting in Washington was the second one for the joint committee. They assembled for the first time in Moscow last October. While the US team was there, they were given a tour of research facilities in Moscow and Leningrad.

In October, 1974, the US team will go to Russia again for a third meeting with the joint committee. At that time the Committee will discuss the long-term exchange of Soviet and US scientists.

Bowling News

Grace Fales

Green League

200's for the night were rolled by G. Walker 224, W. Kollmer 209/213/588, R. Jones 212, D. Stelmaschuk 209, G. Speidell 204, and R. Meier 201.

Red League

Paced by R. Larsen's 216/205/603 scratch series and assisted by J. Scesny's 201/203, the Neutrons increased their 1st place lead to 23 points, with only 3 bowling nights remaining for the second half season. The high honors for the night go to R. Nelson for his 232/206/633 scratch series. Other highs were E. Fales 225, and V. Bilms 211. (Guess who won the booby prize for the Charlie Browns this week - Yep! Old "Twinkle Toes" did it again!).

Black and Blue League

As we approach the end of the third third, the Vultures and the Pinsplitters are tied for 1st with the Maybe's and MJR's close behind. High games: Dick Murgatroyd 204, Alma Tomesch 202/503 scratch/695 gross series, Marge Nekerman 192/177, Ellie Murgatroyd 188/179, and Pat Lebitski 162.

Pink League

Well - Helen Caisey did it again. This time bowling 204. That makes a grand total "so far" of four 200 games. High games for the night: Renie Rosati 189, Audrey Bangel 180, Betty Jellett 179, Carole Kerr 173, Jean Hamilton 170, Grace Fales 167, Kay Hunt 167, Marge Stoeckel 165, Doris Pion 163 and Ellie Murgatroyd 162.

Cafeteria Menu

Week Ending April 26, 1974

Monday, April 22	
Cream of Celery Soup	
Pork Chow Mein & 1 Veg.	1.00
Beef Liver & 1 Veg.	1.00
Tuesday, April 23	
Scotch Broth	
Braised Meatballs on Noodles	.95
Sauerbraten & Potato Pancake	1.20
Wednesday, April 24	
Turkey Noodle Soup	
Southern Fried Chicken & 1 Veg.	1.00
Broiled Filet & 1 Veg.	1.05
Thursday, April 25	
Split Pea Soup	
Shepard Pie	1.10
Bratwurst w/Mashed Potatoes	1.00
Build Your Own Hero Sandwich (Tax incl.)	1.25
Friday, April 26	
Fish Chowder	
Stuffed Flounder & 1 Veg.	1.05
Braised Short Rib & 1 Veg.	1.15

Classified Advertisements

Placement Notices

Each week, the BROOKHAVEN BULLETIN lists personnel placement requisitions currently being processed. The purpose of these listings is, first, to give notice of all non-scientific staff positions being filled and, second, to give employees an opportunity to request consideration for themselves or others whom they wish to recommend to BNL. In filling vacancies, the Laboratory's objective is to give first consideration to present employees, as follows: employees within the immediate group having the vacancy, employees within the department or division, employees within the Laboratory as a whole.

For further information regarding a placement notice, please contact Supervisor, Personnel Placement and Development, extension 2879 or 2882.

CHEMICAL ENGINEERS - Department of Applied Science. Positions require minimum B.S.ChE. or equivalent and the following:

CE-1 - Requires good analytical skills and background or interest in process design and analysis as found in chemical, petrochemical, or energy industries.

CE-2 - Requires research experience in combustion phenomena.

CE-3 - Requires heat transfer experience in nuclear power coolant systems and fluid mechanics.

MECHANICAL ENGINEERS - Mechanical Engineering Division. Positions require minimum B.S.M.E. or equivalent and the following:

ME-1 - Requires project engineering experience drawn from power, chemical, or architectural engineering industries.

ME-2 - Requires analytical capability in stress analysis, preferably finite element techniques.

ME-3 - Automotive Engineer - with experience in advanced engine cycles, analysis, design, and test.

COMPUTER SCIENCE ANALYSTS - Department of Applied Science. Positions require a minimum B.S. or equivalent in physical sciences or engineering and the following:

CSA-1 - Involves design of energy-related engineering systems and use of large computer codes. Engineering or operations research background desired.

CSA-2 - Involves systems analysis and data base programming. Interest and experience in operations research and/or scientific numeric data bases desirable.

CSA-3 - Involves responsibility for maintenance of an existing computerized scientific data base operation.

Autos & Auto Supplies

ROOF RACK - Peugeot 404 wagon bolt-on type. $20. Rick, Ext. 3072.

TIRE ON RIM - For Dodge pow wgn, Mohawk Chief (military tread), 6 ply, 9.00x16, good cond. $15. 744-9699.

73 BUICK CENTURY 350 - 7500 mi, fully equipped, plenty of extras, excel, immac cond, good mileage, must sacrifice. Diane, Ext. 3617, 924-6524.

HOOKER HEADERS - For '65-70 396-427 full size Chevy, $40; headers for '66 Chevy Nova sm block, $40; Holley cast iron intake manifold w/heads (w/o springs) for 396, $25. Claire, Ext. 2346, 281-8306 after 5:30.

WEIAND ALUM INTAKE - W/new 4 bbl carb, for '64 Plymouth & Dodge, $50; posi rear for '64 Dodge. Claire, Ext. 2346, 281-8306 after 5:30.

66 IMPALA - 4 dr, auto, ps, 283 cu in eng 1 yr old. 265-2231 after 7:30 pm.

2 FIRESTONE PHOENIX RADIAL TIRES - W/rims, 165 HR 13, like new. $35. 924-3170.

EASY-LIFT AXEL TRAILER HITCH - W/anti-sway bars. $50. Ext. 3255, 744-8680.

66 IMPERIAL - 2 dr, fully equipped, new tires. $475. 924-6972.

69 CHEVY 9 PSGR WAGON - Kingswood. $700. 924-6972.

72 SUZUKI - 90 cc, low mileage, street or trail, $265. Frank, Ext. 4095.

67 OLDS 442 - Hurst 4 on floor, 2 dr, green, good for 2nd car. $450. 286-3377 after 6.

67 CHEVY STATION WAGON - Sm V8, auto trans. $300. 589-4874 after 6 & weekends.

67 OLDS DELMONT 88 - 4 dr, r/h, auto trans, ps/pb, orig owner, 85,000 mi, very good gas mileage & family car. $500 firm. Fred, Ext. 4028, 289-8796.

2 AMER MOTORS RIMS - 14". $6/pr. Bill, Ext. 3354.

3 RADIAL TIRES - Good tread, 155 SR 12, $15 takes all 3; 4-12" wheels for sm Triumph, free. John, 475-0126 after 5.

1-6.95x14 USED TIRE - Fair cond. $3. Bill, Ext. 3354.

TIRES - 2 ea 7.75x14 for $8; 1-7.35x14 on rim, $5; 1-8.78x14 Goodyear polyglas, $10; rims for Rambler, 14"-5 hole, $5. Richie, Ext. 4254, 734-7342.

67 CHEVELLE - 6 cyl, auto, 2 dr, needs carb work, as 2nd car good transp. $250. Rich, Ext. 2495, 928-4527.

65 BUICK ELECTRA 225 - Air cond, new batt, water pump, muff, etc. $250. Terry, 666-8339.

74 VW FORMULA V - Am/fm mono-stereo radio, radial tires. $2900. 698-6347.

68 VW BUG - Good cond, avail end of June, gets 31 + mpg. Asking $650. A.C. Nunes, Ext. 3370.

63 BUICK LE SABRE - New brakes & front end, rebuilt eng, good tires, best offer. 924-4749 eves.

70 FORD MAVERICK - 2 dr sedan, auto trans, 6 cyl, good cond. C. Parente, Ext. 3192.

REAR SHOCK ABSORBERS - Heavy duty Sears, for 67-69 Chrysler, used 2 mos. $6/pr. Torre, Ext. 4243, 281-5050 after 6.

Boats & Marine Supplies

18' FIBERGLASS LARSEN 1967 - W/1973 Evinrude 65 hp, like new, trailer needs work, all access. Compl, $1800. G. Sabine, Ext. 2879, JU8-5586.

15' RUNABOUT - Plywood or oak frame 1963, 20 hp Mercury motor, in water. $250. H. Jewett, Ext. 2502, 878-2126.

20' COBIA - Fiberglass runabout, 75 hp Johnson, Cox trailer, fully equipped, very good cond, elec start, controls. Irene, 589-6468 after 5.

SCORPION SAILBOAT - Similar sunfish, like new. $350. 286-0798.

12' ROWBOAT - Cedar planked, cond like new. $50. M. Greene, Ext. 4484.

MARINE ENG - Chrysler 225 hp compl, ready to run. $250. Ext. 4032, 751-1660.

FLYING JUNIOR - 13' fiberglass sailboat, main & jib by Ratsey, spinnaker by Hard, trailer, moving-make offer. 744-8623.

Miscellaneous

BICYCLE - Boy's 24" Schwinn. $15. Torre, Ext. 4243, 281-5050 after 6.

BC-454 AIRCRAFT SHORT WAVE RCVR - 3-6 MC, w/ AC pwr supply. $10. Torre, Ext. 4243, 281-5050 after 6.

23" RCA B/W TV - Good cond. $30. Fujii, Ext. 3761, Ext. 3027 after 6.

TOUR-A-BED - W/4 sheets, $5; racing car w/pedal, $6; baby walker, $3; hamper, $1. Fujii, Ext. 3027.

MOHAWK RUG - Sculptured nylon, very good cond, 10'9"x12', cocoa. $35. 941-4328.

CASSETTE TAPE RECORDER - Norelco AC/DC, mike, excel cond. $25. 941-4328.

HEAD & FOOT BOARD - Walnut, good cond, plus frame. $20. R. Dee, Ext. 2333.

ANTIQUE CHINA CLOSET - George, Ext. 4460/4453.

GIRL'S SPIDER BIKE - Good cond. $20. Ext. 3254.

SINGER SEWING MACHINE - Golden Touch & Sew, style 630/model 351. Cost $464.95, asking $200. D. Keating, Ext. 3710, 751-7299.

GE AIR COND - 10,500 BTU, excel, 10 temp settings, Fashionaire design. Betty, 589-0461 after 5.

CASSETTE TAPE PLAYER & RECORDER - Hardly used, $45; 11 tapes, $3 ea; baby cradle, perf cond, $20. 399-0307.

SINGER SEWING MACHINE - App 15 yrs old, elec, mahog cabinet, excel cond. $45. 286-8831.

CRAFTSMAN 18" ELEC MOWER - Excel cond. $35. B. Doering, Ext. 4474.

SUBSCRIPTION SERIES - Met Opera, 5 Mon & 1 Tues night, 2 tickets ea performance, 12 tickets total, family circle. $72. S.A. Dunwoody, Ext. 3653.

40" BOTTLED GAS STOVE - W/clock, light, window door, clean, good cond. $25. Eunice, Ext. 3341.

6V AM RADIO FOR VW - W/spkr, $15; FM converter, brand new, add FM to your car radio, $29. Eunice, Ext. 3341.

MAGNAVOX - B/W TV CONSOLE - Record player, am/fm stereo. $85. Rudi, Ext. 4393.

KUSTOM 150 AMP - W/2-12" spkrs, 1 yr old, $250; Saint George amp, 75w w/tremolo & reverb, $75; Fender bass guitar, $175. Ray, 878-2486.

WILL TRADE - Current model Heath GD-48 metal locater for Unimat lathe. J. Hallock, Ext. 4223, 878-0222.

BICYCLE - Boy's 5 spd Sears & Roebuck, good cond. $20. A. Kriesberg, Ext. 4822.

MOVIE PROJECTOR FLOOD LIGHTS - 4 on mounting, compl w/carrying case, $10. Torre, Ext. 4243, 281-5050 after 6.

STEERING WHEEL - Drum assembly, cable & pulley kit for outboard boat, new-still in cartons. $25 compl. Torre, Ext. 4243, 281-5050 after 6.

GE IRON - $2; GE hair dryer, $2; elec can opener, $2. Mrs. Litt, Ext. 3180.

LAWN EDGER & TRIMER - Black & Decker deluxe, ½ hp, 115 v. $20. H. Jewett, Ext. 2502, 878-2126.

30" JACOBSEN REEL LAWN MOWER - Runs excel, blades sharp, needs seat to make it a rider. Richie, Ext. 4254, 734-7342.

ORGANIC FERTILIZERS - Compl line of nature's natural plant foods, rock phosphate, greensand, seaweed meal, etc, Troy-bilt rototilling. 286-1369.

PUMP - ¾ hp, 2 stage, Sears Jet. $35. AN5-0950.

GIRL'S HI-RISE BIKE - 3 spd, excel cond. $50. Adams, 744-5448.

2 JALOUSIE WINDOWS - 27"x54", $10; screened-in porch, made from s/s doors, 14½'x8½', $50. Neal, Ext. 3050.

LG NATIONAL CASH REGISTER - Elec, 2 money drawers, old, excel cond. $75. 727-4233.

LAWN MOWER - Sears self propelled 22" w/catcher, guarantee good to 5/15/74. Total cost over $150, sell $75 firm. Ext. 2470.

COMMEMORATIVE SPOONS - 9, from Worlds Fair 1939 NY, all different, collector's item, reasonable. Irene, 589-6468 after 5.

BELL & HOWELL - One-nine 8 mm movie camera w/ access, excel cond. $50 or make offer. Irene, 589-6468 after 5.

OLDER FRIGIDAIRE REFRIG - Fine working cond, not frost-free; man's gray wool top coat, zip-in lining, excel. 286-0376.

SLACKS - 30W-30L, $3; jackets 12-20, $4-5; 1 pr slacks 29W-29L; birdseye maple bureau w/mirror, antique, $35. Angela, 744-5871.

PR ROYAL BALLET TICKETS - Dress Circle, Sun eve May 12 at Met Opera House, Swan Lake. $19. Ext. 3788, 286-3679.

HAND LAWNMOWER - $10. 286-0798.

TRICYCLE PARTS - Front wheels, handle bars, gift. Ext. 3402.

TENNIS RACQUET - New Wilson J. Kramer autograph wood w/nylon strings, med wt, 4⅝ grip, used once. $25. Bob, 744-5096 after 6.

TENNIS RACQUET - Wilson T-2000 steel, good cond, med wt, 4⅝ grip, w/nylon strings & cover. $20. Bob, 744-5096 after 6.

BEDRM SET - Modern, full bed, 58" dresser, chest of drawers, 2 night tables, very good cond. 732-5266 after 6.

REFRIG - 12 cu ft, 1 dr, GE, avocado, used 2 yrs, very good cond. $85. 928-4527.

SWING SET - 6-legged, 2 swings, 1 chinning bar, 1 dbl swing, good cond. $10. A. Kreisberg, Ext. 4822.

1973 PENNCREST (PENNEY'S) AIR COND - 18,000 BTU, has auto rotating vent, used 2 mos. EM3-8919, EM3-6121 after 6.

KODAK FOLDING CAMERA - Good cond, $10; very old typewriter, $25. M. Greene, Ext. 4484.

KITTEN - Orange & white, male, born last week, ready end of May, free, may be seen any time. Nauman, Ext. 3381, 286-3764.

STEREO PHONOGRAPH - Symphonic, $25; male Siamese cat, approx 2 yrs. A.C. Nunes, Ext. 3370, 286-2362.

ASSTD ALUM S/S - Antique wood shutters. Ext. 3623, 286-0428.

LADIES' 10-SPD BIKE - Excel cond, center-lift brakes. Pam, 286-0428.

WET SUIT - Custom made Central Divers, w/Artic hood, gloves & boots, fits 5'7" to 5'9", approx 180 lbs. 289-0524 after 5.

GE STEREO AM/FM RADIO - W/Garrard turntable, miniature table console, Early Am wood cabinet, excel cond. Asking $100. Linda, 924-6437.

1 SET 3 OLD ORIG MOVIE CHAIRS - New upholstery. $50. Saxon, Ext. 3435.

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

CALVERTON/RIVERHEAD - New townhouse, 3 bedrms, 1½ baths, air cond, all appl. $289/mo + elec. 488-2497.

Wanted

TRICYCLE - For 2 yr old boy. Fuji, Ext. 3027.

MOTHER'S HELPER JOB FOR SUMMER - Bright & reliable girl, 17 yrs, experienced babysitter, will consider live in. 589-0461 after 4.

LEAD GUITAR FOR ROCK GROUP - Ray, 878-2486.

GERBILS - 6-8 wks old, 2 of same sex, hopefully free. 286-2272.

HOMES - 4 kittens, 6 wks old, 2 blk, 1 white/gray, 1 white/blk. LT9-7863 after 3.

VOLT-OHM METER - Transistor tester, capacitor checker. Frank, Ext. 4438/4375.

DAAF AUTOMOBILE - Any cond. Joe, 363-6673.

TO RENT - 2 bedrm apt or house, furn, for approx 6 mos. Agrawal, Ext. 3073.

PIANO - Sm upright. Saxon, Ext. 3436.

TELEPHONES - Very old. Saxon, Ext. 3435.

6 DIN RM CHAIRS - Chippendale or pine desk, any natural-finish pine or cherry country furn. 286-1915 weekends.

HAMMOCK STAND - In reasonable cond. Ken, Ext. 2495.

ERECTOR SET - For young boy. Ken, Ext. 2495.

RENTAL - 3 + bedrms for 2/3 mos, starting July. Bellport vicinity. Bill, Ext. 3326, 286-0497.

Carpools

ADDITIONAL DRIVERS WANTED - For carpool in Miller Place area. Susan, Ext. 3462.

THIRD DRIVER WANTED FOR POOL - 8:30-5, S. Ocean Ave, Patchogue. Roger, Ext. 3578, 289-7391.

Lost & Found

LOST - 1 blk leather glove, ladies', in vicinity of Physics 510 & Tandem. Please call Ext. 3912 if found.

LOST - 1 bicycle seat, from chained cycle at rear of Bldg 815. Will "Finder" please return - immunity guaranteed. Ext. 4514.

LOST - Navy blue track suit jacket, w/white stripes. Please return to Chris, Ext. 2441.

Services

TYPING - Term papers, manuscripts, etc., Claire, Ext. 2346, 281-8306 after 5:30.

GARDEN PLOWING & ROTOTILLING - Free estimates. Ken, 289-8212 eves.

TREE REMOVAL & CHAIN SAW WORK - Experienced, free estimates. Ken, 289-8212 eves.

FISHERMEN - Do you want your catch deliciously smoked? 744-0411 after 5:30.

SPRING WEEKEND IN RI OR VT - 2 bedrms, elec heat, all conveniences, photos on request, still at '72 rate. 281-8296 after 6.

Classified Ad Policy

Deadline is 12 noon Monday for publication Friday of the same week.

1. The Brookhaven Bulletin's classified section may be used only by active and retired Laboratory employees.
2. All items for sale or rent must be the advertiser's property.
3. Ads for material acquired for resale in association with a full or part-time business cannot be accepted.
4. Firearms offered for sale or trade may not be brought on site.
5. Ads not carried because of space restrictions will be held for publication in the next issue.
6. Ads are run only once and must be resubmitted if they are to be repeated.
7. Ads should be restricted to 20 words or less and typed or printed on the form provided, and must bear the employees signature.

☐ For Sale: Auto & Auto Supplies
☐ For Sale: Boats & Marine Supplies
☐ For Sale: Miscellaneous
☐ Wanted
☐ Carpools
☐ Lost & Found
☐ Services

Check ☒ the heading applying to your ad. Print or type your ad in 20 words or less.

Ads concerning property for sale or rent cannot be accepted on this form. Special Real Estate Ad forms are available at the Office of the Brookhaven Bulletin, Room 111, 40 Brookhaven Avenue.

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(Name & Phone No. To Call)

Employee's Signature..... Life No. ..... Ext. .....

Send to: Brookhaven Bulletin, Building 460, 40 Brookhaven Avenue (Ext. 2345).