Policy Alternative Center covers wide topical range

By Stephen Keith

Seemingly unrelated topics such as methods to alleviate drought conditions in the sub-Saharan Sahara, technology and organization of industry, and the college parking crisis all have come together as a result of the energy crisis.

The Center draws on all MIT departments for support and expertise. For instance, Professor William W. Seifert of the Department of Civil Engineering is in charge of a major project to study development plans for six drought-stricken countries in the sub-Saharan Africa.

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Sailors win 1st Wick regatta

The MIT women's varsity sailing team concluded their fall racing season in fine style as captain Shelley Bernstein '74, with Joan Pendleton '76 crewing, won the first sailing of the Emily L. Wick Trophy Lark Regatta.

The event was sailed on a cold, blustery Saturday at MIT, and four of the six schools entered dropped out before the competition was finished because of capsizes. The Tech crew won the only entry to conclude the day's racing without a single capsize.

Going into what was scheduled to be the last race of the day, MIT led Radcliffe by one point, but the race had to be resailed because neither boat finished properly. In the resail, Bernstein took the start and sailed conservatively to defeat the Radcliffe boat and win the trophy by two points.

The results of the regatta were: MIT 11, Radcliffe 13, Jackson 14, Mt. Holyoke 34, Northeastern 42, and Salem 50. Bernstein's record was 4-2-1-2-1-1.

The men's varsity placed fourth in an invitational at Harvard on Saturday. Paul Erb '76, with Barbara Belt '77 crewing, sailed in A-Division, placing second, while George Todd '76, with Nina Gelhain '77 as crew, raced in B. The results of the regatta, which was tightly contested all the way, were: Harvard 26, Rhode Island 77, Tufts 30, MIT 38, Northeastern 49, Coast Guard 66, Bowdoin 67, Maine Maritime 71, and Boston College 84.

The men's varsity squad has made a strong showing in the closing weeks of the season, and will try to extend its winning record tomorrow and Sunday when the sailors travel to the Atlantic Coast Championships (Fiske-Harriman-Sleigh Trophy). Last year the MIT team finished second in the event, which was sailed at New York Maritime.
The Carnegie Institute of Technology has received a $4.5 million grant from the National Science Foundation to underwrite a five-year project "to encourage and support reforms in undergraduate education." The project will be spent developing new models for undergraduate education, with the aim of trying different approaches and seeing which work best. The project will be evaluated at the end of the third year, leaving the last year for the final evaluation.

Carnegie fund study of educational reform

The National Science Foundation has awarded a $200,000 grant to the Carnegie Institute of Technology to support a five-year project "to encourage and support reforms in undergraduate education." The project will be spent developing new models for undergraduate education, with the aim of testing different approaches and seeing which work best. The project will be evaluated at the end of the third year, leaving the last year for the final evaluation.

MIT continuing to respond to the nationwide energy crisis and its own fuel oil for the coming winter.

MIT is continuing to respond to the nationwide energy crisis and its own fuel oil for the coming winter. The first three years of the project will be spent developing new models for undergraduate education, with the aim of trying different approaches and seeing which work best. The project will be evaluated at the end of the third year, leaving the last year for the final evaluation.

Policy Alternative Center covers wide topic range

By Stephen Keil

Surprisingly unlinked topics – as methods to alleviate age, poverty, debt, and other problems, future plans for energy search and development, redistrict plans, and public alternatives – have been studied under a new program at MIT's Center for Alternative Policies.

The center draws on all MIT programs for support and ideas. For instance, Professor James W. Spear of the Department of Economics is studying the impact of a major project to decrease energy consumption in eight countries in rural Africa, where the EPA is operating in cooperation with 60 other American entities, French groups active in Saharan Sahara, and other nations of the area in its study.

So far, the center has identified the basic problems that face the area, and has been faced with the challenge of developing plans that can be understood by undergraduate students.

Under grants from the Federal Energy Administration, the Center is investigating policies for support of energy research and development. Included in the study is a comparison of such technology in Europe with other highly developed countries.

Alternatives are up to the choice of the Center. One approach is to begin by identifying the available plans and their potential impact on the oil industry. Another alternative is to give the Center a direct and free hand in selecting the approach to be taken.

The Center is also working with the policy arm of the Federal Energy Administration in Washington to come up with land use policies that will help coordinate government policies of the different states.

Other programs under consideration include the development of electric cars and the use of solar energy. Other categories include energy research and development, such as those that might be practical in the future rather than those that are currently practical.

People involved with the proposal at the Center noted that the most critical step is to help coordinate government policies of the different states.

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Energy R&D money due

(First in a series)

(Ford Professor of Engineering and Director of MIT's Energy Lab was recently interviewed by Paul Schneider of The Tech. His wide ranging discussion of the energy issues facing the country, and the outlook for Energy R&D at MIT comprised the first article in a series by The Tech on the energy crisis - Editor)

Q: Why is there an energy shortage? A: In the short run, two reasons. The first, and the most immediate reason, is that it possibly causes rationing, and certain temporary shortages this year, is that one of our major sources of international oil supply, because of an international upset between the Arab world and Israel, has elected to use the economic marketplace for oil as a place to influence the political policies of the United States. In the short run, the cutoff of supplies from the Arab states and the cutoff of supplies of crude to Western Europe that is then refined and flows through as refined products to the United States is a significant reduction in our resources.

We import one third of our petroleum. Half of that, both directly and indirectly, was coming out of the Middle East, both as crude and as flow-through. So that is the present really tough crunch. If that were changed tomorrow, it would shift the character of the energy shortages back to another problem, but a very real one.

The other problem is one related to a major upset of the energy marketplace in the petroleum-gas field. It's caused partially by regulations, regulation of natural gas at the wellhead has been a contributor. Import quotas to the US were a contributor, so that one could not be sure of having adequate supplies of crude available from the Continental United States. Therefore refineries were not built. If you look at the growth of the refinery population of the US, you'll find that we have not built a refinery in the last five years, and in the last ten years has been very short. Refinery capacity has been built in Europe and the Caribbean.

The US finds that it cannot supply all of its refined products with domestic located refineries, and becomes vulnerable then to buying these on the world market.

Q: The Wall Street Journal says that the oil boycott is economic, not political. A: I don't think that's a valid argument. The developing nations, with very little population, Saudi Arabia is one, could take that position. However, if they have money coming in and can invest it, say in European banks, and get a rate of 7 per cent or greater, that money will double in ten years. Granted at the moment, they can get almost any price they want for their oil. Their short run return, by increasing the price, will give them a more rapid return on what is in the ground. But cutting off the supply doesn't help them. If they don't like 5, try 6. Basically, Western Europe and Japan have no choice. They are totally dependent. If the Arabs raise that

(Plaease turn to page 7)

NOTES

* The Electrical Engineering Department's IAP program opens to all students will be run this year differently than in the past. Two books based on the first and fourth floors of the new EE building will have daily selected books of the sessions offered. Each will be a sign-up sheet for students who have a definite interest in the activity to give the planners of each activity some idea of what to expect. Suggestions are encouraged and should be directed to either Professor Leslie EE IAP Coordinator, office, (38-260), or to the EE Ste-Far office, (38-476, X3446)


Michael Tilson Thomas conducts the 1973 - 1974 SPECTRUM CONCERTS

THURSDAYS at 8:30 pm

1. PROGRAM OF TRANSCRIPTIONS

November 29
ROSE TAYLOR contralto
CAGE HARRISON Suite for toy piano
MONTEVERDI - ORFF Lamento d'Arianna
SCHUMANN - RAVEL Carnaval (excerpt)
BRAHMS-SCHOENBERG Piano quartet in G minor op. 7
2. WHERE WE'RE AT
January 24 — soloist to be announced
BOULEZ Etudes
O. KNUSSEN Symphony no. 3
M. FELDMAN Cello and orchestra
S. REICH Music for mallet instruments
3. THREE CENTURIES OF DRAMA IN MUSIC
April 11
WENDY HILTON dancer
CATHY BERBERIAN mezzo-soprano
M. FELDMAN Cello and orchestra
BACH Suite no. 1
SCHUMANN WERE meloson with piano
C. F. E. BACH BERIO Recital

programs subject to change

Ticket prices for the Spectrum series: $5.50, $2.25
First Balcony: $12, $9
Second Balcony: $6
Single ticket prices: $7.50, $6.00, $4.50, $3.00
Tickets available at Symphony Hall (266-1492)

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PAGE 2 TUESDAY, NOVEMBER 20, 1973 THE TECH

LSC

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Slaughterhouse Five
7 & 9:30 - 10:25
Saturday, November 24
Frenzy
7 & 9:30 - 10:25

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542-3973
Police Blotter

11/7/73 - 2:00pm
Patrol car reports the observation of a "Memorial Drive Car Peeker" who was subsequently seen trying the doors at the Pierce House. Subject released after questioning (no prior record) and warned to stay off MIT property.

11/7/73 - 7:30am
Report of larceny of an allowance of cash found on a locked steel chest in the office of Building 34. Property was an outside contractor.

11/7/73 - 7:30am
Larceny of a ladies purse which was left on desk of an open room in McCormick Hall.

11/7/73 - 11:50am
Larceny of a coin operated parking meter on a "Memorial Drive Peeper." 10.00 and his watch. Occurred in the Kresge Parking Lot.

11/8/73 - 11:50am

11/9/73 - 1:35pm
Report of an armed robbery of a Harvard Bridge. Subject described a police beauty car as it passed over the bridge, then gunpoint was relieved of 300.00 and his watch. Occurred at the Pierce House.

11/9/73 - 11:50am
Larceny of a "Memorial Drive Peeper" who upon being discovered would take refuge in the basement of Walker Memorial. Sub-

11/9/73 - 1:35pm
Report of an armed robbery of a "Memorial Drive Car Peeker" who upon being discovered would take refuge in the basement of Walker Memorial. Sub-

11/10/73 - 1:35pm
Arrest for theft of money.

11/10/73 - 2:00pm
Larceny of a ladies purse which was left on desk of an open room in McCormick Hall.

11/10/73 - 4:00pm
Larceny of a ladies purse which was left on desk of an open room in McCormick Hall.

11/10/73 - 10:15am
Arrest for resisting the larceny of a ladies purse.

11/10/73 - 11:50am
Larceny of a coin operated parking meter on a "Memorial Drive Peeper." 10.00 and his watch. Occurred in the Kresge Parking Lot.

11/11/73 - 1:30pm

11/15/73 - 4:00pm
Larceny of a ladies purse which was left on desk of an open room in McCormick Hall.

11/15/73 - 1:20pm
Larceny of a coin operated parking meter on a "Memorial Drive Peeper." 10.00 and his watch. Occurred in the Kresge Parking Lot.

11/15/73 - 1:20pm
The Committee on Academic Performance has suggested possible calendar changes for second term of this year; both options they offer are inferior.

If their first suggestion — which essentially moves back the entire second term three days — is adopted, the burden falls mainly on poorer students. Any student on a demand-scheduled flight at the end of January who did not conserve oil continues to as much fuel as possible this year will the savings resulting from the steps announced on November 7 will lead to a petroleum shortage of

Energy shortages, due to great in-creased population and a correspon-dingly slow increase in energy supplies, has been forecast for some time, but there is still great uncertainty as to the full impact to be felt later in this decade. Cycles of production problems and then automobile gasoline were initiated largely by Mr. Nixon's inept application of price controls in the face of an emergency. Authority granted by the Economic Stabilization Act of 1971, under which the price of heating oil was set at a level which made it more profitable for re-finers to produce heating oil rather than for-
taining their stocks of crude oil. This led to a heating oil shortage in the 1972-73 heating season. When a similar phenomenon was per-ceived, refinery runs were shifted from production of heating oil to gasoline production. The price of heating oil was near the upper limit (17 percent is the maximum rate authorized by the President for heating oil).

In the short run, this course means that the embargo, imported 10 percent of its gasoline to Europe, partially refined, shipped to the US, transported cross-country by pipeline, and then shipped to homes, offices, and other commercial establishments will be reduced by approximately 15 percent. Further reductions in the energy con-sumption of the US are likely to be made.

The Atomic Energy Commission (AEC) is being required to reduce the licensing and constrution (time for ma-
taining essential safety and environmental protection measures within their authorized time limits. Several observations must be made regarding the design of the regulatory and administrative orders. First, if everyone in the country complied with the energy conservation measures measured above, the US would be able to reduce its total consumption of petroleum prod-
ucts by approximately 15 percent which is near the upper limit (17 percent is the estimated oil deficit) expected this heating season. However, if a number of incentives exist making it difficult to meet the goals of this program, the measures' long term effect might be to degrade environmental quality.

There is no doubt that the short term measures proposed, if faithfully followed by all Americans, will be effective in reducing the number of American, it will be difficult to reduce energy levels to the levels required. The short term measures proposed, if faithfully followed by all Americans, might successfully cope with the energy shortfall expected this heating season. However, if a number of incentives exist making it difficult to meet the goals of this program, the measures' long term effect might be to degrade environmental quality.

There is no doubt that the short term measures proposed, if faithfully followed by all Americans, might successfully cope with the energy shortfall expected this heating season. However, if a number of incentives exist making it difficult to meet the goals of this program, the measures' long term effect might be to degrade environmental quality.

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The 1973 WILLIAM L. ABRAMOWITZ LECTURE

INBAL DANCE THEATRE
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THURSDAY, NOV. 29, 1973 8:00 P.M.

The INBAL DANCE THEATRE is a world famous group of dancers and musicians, whose art responds with the story of Israel. This will be their only performance in the area, a benefit to help the elderly in the community, and a festival celebration for the MIT community as the annual Abramowitz Lecture. ALL the money raised from sale of tickets will go to CHELSA FIRE RELIEF FUND.

Admission: $1.00
Limited to 2 tickets per MIT ID

Tickets go on sale:
TCA OFFICE, W20-450 MONDAY, NOV. 19
BUILDING 10 LOBBY MONDAY, NOV. 26

SQA from Washington

(Continued from preceding page)

Project Independence (compared by Mr. Nixon to the War World II Manhattan Project), which produced the atomic bomb, and the Apollo Project, which placed Americans on the Moon) whose goal is national self-sufficiency by 1980. As if that were not enough new authority, Mr. Nixon also requested quick action on pending proposals which would:
1) Permit the competitive pricing of new natural gas. (This would increase produc-
ers' profits and consumers' costs.
2) Provide reasonable standards for the surface mining of coal (N.R. - the defi-
tion of "reasonable" differs depending on whether one is a coal producer or inhabitant of the coal producing region.)
3) Provide simplified procedures for the siting and approving of electric energy facilities,
4) Provide procedures for approving construction and operation of deepwater ports. (Procedures exist for approving the construction of electric power plants and deepwater ports; however the existing procedures plus or minus a different value on environmental and safety concerns than does Mr. Nixon and his advisors)
5) Create a Department of Energy and Natural Resources,

Thus, in the midst of a long-predicted energy shortage which was hastened by the Middle East War, a beleaguered Presi-
dent appealed to the nation for a grant of unprecedented powers.

There are those who would term the Nixon energy proposals an "environ mental Tinkoff Gulk." This writer prefers to observe that although there is undoubtedly due cause in this instance for potential action it is not obvious that such broad long-term authority should be conferred without substantial public debate and participation.

The National Petroleum Reserve Act existed to provide the Navy with fuel for its ships during a war in which petroleum supplies are unavailable. Already Singa-
pore has cut petroleum deliveries to the Philippines. Thus, the possibility exists that crucial defense industries will become dependent upon the Petroleum Reserves which will be un-
available in a national emergency. At such a time, critical defense industries may suffer.

There is no such thing as an AEC grant of a "temporary" operating license to a nuclear power plant operator for 18 months. Once the plant commences operations, industries, offices, and homes provided with electricity by the plant will become dependent on it. At the end of 18 months, if it were decided that the plant's license should not be extended or made permanent due to safety or environmental reasons, there would be over-
whelming economic pressures to allow the plant to continue generating power. Furthermore, people should have the opportunity to comment at an open hearing before anything as potentially dangerous as an atomic reactor is located in their vicinity.

Enormous powers are contained in the Defense Production Act and the Eco-

nomic Stabilization Act; serious con-
sideration should be given to the potential consequences of granting these Acts' powers, designed to cope with particularly different types of emergencies, to the President. In mind is that it was President Nixon's misadmonition of the Economic Stabilization Act in essence was at least partly responsible for the recent cyclical heating and fuel oil shortages.

Nixon's proposals are so broad that he could make it disappear along with the missing tapes, Congress still hears and breathes however feebly, Senator Henry Jackson D-Wash., chairman of the Com-
pair on Interior and Insular Affairs, and his staff, are cognizant of the fact that the measures proposed by the Presi-
dent would lead to a significant reduction of environmental safeguards, increased consumer costs, and financial windfalls for the oil, gas, coal, and electric utility industries. Accordingly, Jackson's committee will not act soon, if at all, on the Administration's proposed energy emergency
et.

However, events create a momentum of their own. Jackson and other Con-
gressmen think that they must do some-
thing, regardless of the merits of the action, and thus Jackson's National Energy Emergency Act of 1973 is being sped down the legislative trail. The Jack-
sion bill has lost not the lead of which is an apparent failure to understand the implications of some of the mandated measures. The bill, in its present incarn-
aton, appears to provide the President with those powers necessary and sufficient to managing the crisis and to deny the President excessive authority.

The Congress thinks that it must act to create the image of responding to the situation and meeting the President's challenges. At this writing it appears that while the Congress intends to keep their constituencies' factories open and supplied with fuel, it does not appear to be in the mood to grant Richard Nixon additional power to confer vast financial benefits on some of his campaign contributors. The Con-
gras will also look forward at the far-reaching, long-term abrogation of the environmental protection laws and regula-
tions.

It has been clear for some time that economic costs would indeed have to be met with the cleaning up of the environment: the House issue must be squarely faced. To what extent should our environment be degraded in order to meet our economies' energy requirements? Complex economic questions of the following type require answers and should have been long ago;
1) How much will an increase in the gasoline tax decrease demand for gasoline?
2) What is the monetary value of changes in the amenity and size particular matters suspended in the air?
3) What should fiscal and monetary policy be in the presence of crucial resource shortages? If fiscal and monetary policy is expansionist, wild inflation could ensue. If fiscal restraint and monetary policy are geared to prevent inflation as the resource-constrained section, slowdowns may occur in the non-resource-constrained sectors.

Some of these questions can be answered and should have been long ago, others can not be unversed quantita-
tively.

The Administration consciously chose not to seek answers to similar pressing problems of public policy when it polit-
icized the Energy Policy Office by select-
ing former Colorado Governor John Love as EPO Director. According to several independent observers, most of the EPO staff members, Love included, lack the experience and analytical skills requisite to designing and implementing a reason-
able national energy policy. EPO staffers are experts in the art of soothing polit-
icians and the press, or claim to be; they are much less successful in understanding the complexities of the nation's energy problems. It is unfortunate, but once again Richard Nixon has chosen to deal with the politics of a problem rather than with the problem itself.

In closing the energy address on a personal note, Mr. Nixon said: "As long as I am physically able, I am going to continue to work in or 18 hours a day for the cause of real peace abroad, and for the cause of real peace at home." More than one Nixon watcher opined that this curiously phrased statement provided an indication of Mr. Nixon's future course with respect to Watergate.

Impeachment, with or without convic-
tion, or resignation under pressure would be a disgraceful end to a historic American political career. However, a resignation under Nixon's orders for the good of the country - in the interest of being a healthy and vibrant nation - might be a more graceful exit possible. (SQA from Washington is a semi-regular feature of The Tech editorial page.)
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STUDENT OR FACULTY I.D. REQUIRED FOR ADMITTANCE
Energy situation looks dim

(Continued from page 2) price too high, they'll stimulate excessive drilling elsewhere in the world, and in the long run they will find that the market will come back to some acceptable price.

I think that the cutoff of oil to the US is not hurting them economically. They have adequate reserves on the oil they are selling to Western Europe. They can cut off the 20 per cent they are feeding through to us, raise the price 20 per cent, and make the same money, in the short run. They're clearly trying to influence us politically. Any other interpretation is simply not looking at the facts. They in fact, do not need our market.

The rest of the industrial world has a large enough thirst for oil that they can get all the revenues they want from them.

Q: In fact, do we need their oil? A: No, not in the long run.

Q: Will MIT have the same kind of leadership role in Energy as it had in radar during world war II? A: That, in fact, is why the Energy Lab was established. If you look at the structure of it, it was set up as a special lab under the Vice President for research, analagous to Draper or Lincoln. It was set up so it could have a large number of professional people that work with the faculty and students, so we can take on major projects and deliver.

We in fact anticipated the need for this kind of effort far before the President's speeches. Hopefully, we will have that kind of a program.

I firmly believe we would have had that kind of a program whether the present crisis, brought about by a cutoff of supplies from the Middle East, had occurred or not.

Q: Will the President's plan mean more MIT funding? A: Possibly. I believe that this level of funding would have come anywhere, because there is a need, irrespective of the present supply interruption.

Q: What is the current funding level? A: Through the energy lab at the moment, about $1 million, through MIT as whole, between $3-7 million. The latest numbers I have found for this year, depending on where you draw the line between energy and something else, around $5 million.

Q: Does the lab have credibility problems, looking like a Johnny-come-lately? A: If it works. In some areas, it is clearly looked on as a Johnny-come-lately. They will admit that it is necessary, but they will also ask why you didn't do it 20 years ago.

You can always say that. If our wants to be critical, one can always find something to be critical of. I would say that most of the people and people we talk to recognize that this kind of...

(Continued from page 1)

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A reflection in the mylar sheet, stretched across the lobby at the 3rd floor.

Weather
in the Building 7 Lobby

One of the terraria, with the rain clouds in the background.

Photos by Roger Goldstein
Vonnegut—not funny

By Michael McNamee

I remember reading, during my time as a hard-core science fiction fan, an interview with Kurt Vonnegut in which he stated something to the effect that the bad "started out as a sci-fi writer, but grew out of it." At that time, I was outraged — this guy owed his position in literature to sci-fi and here he was denouncing it. I've come to change my mind, however, as I've become less a sci-fi fan, and Vonnegut wrote his latest two books, Slaughterhouse-Five and Breakfast of Champions. Maybe it's just as well — no sci-fi and no Vonnegut — if he is no longer suited to both sci-fi and humor of context.

Vonnegut's humor is the humor of context, so it is very difficult to pull a few lines from the book to illustrate this man's wit. Suffice it to say that his writing is funny in Breakfast of Champions: although less funny than in his other books, he expresses and develops a concept of nerves as bad chemicals, thus touching base with his science-fiction roots, which is where most MIT students probably know him from, and the book is worth reading. But as noted before, only if you've read one of his others.

Breakfast of Champions

By Michael McNamee

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UPC is currently engaged in research in reducing automobile emissions. The best approach is a catalytic system. One method uses two catalysts in series: the first converts nitrogen oxides, carbon monoxide, and carbon dioxide to nitric oxide; the second, more efficiently, it must operate near stoichiometry (that is, feed gases must contain a nearly balanced mixture of oxidants and reductants). The method enables the use of more efficient engines and minimizes curtailment of fuel efficiency.

The second approach, which UOP has developed, is a "three-component control." A single catalyst removes three components: carbon monoxide, carbon dioxide, and nitric oxide. In order to do so efficiently, it must operate near stoichiometry. Nitrogen oxides by chemical reduction, while the second oxidizes nitrogen oxides to nitric oxide. Nitrogen oxides is then converted to nitrogen gas by the water-gas-shift reaction. The best approach is a catalytic system. One method uses two catalysts in series: the first converts nitrogen oxides, carbon monoxide, and carbon dioxide to nitric oxide; the second, more efficiently, it must operate near stoichiometry (that is, feed gases must contain a nearly balanced mixture of oxidants and reductants). The method enables the use of more efficient engines and minimizes curtailment of fuel efficiency.

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Energy Lab head predicts future growth

(Continued from page 7) integrated approach to the problem is necessary, and are happy that the Institute has taken the steps to do something about it. In the general sense, I think it is one of pleasure that the Institute is moving, and hope that it will do it well. With always those who disagree and therefore criticize; that’s life.

Q: What are the major energy research projects at MIT? A: Let me speak of the independent ones first. There is a major energy program going on in the nuclear engineering department; in fact that whole department is energy. The fusion program, handled through the Research Lab of Electronics, has had an interdisciplinary group doing plasma research for the last 20 years here. It is physically located in the National Magnet Laboratory. It is called the Alcator project, and there are a fair number of faculty involved.

The director of the National Magnet Lab is pushing the LAMP program. Laser Activated Magnet Pulsed Plasma, a fusion scheme. The plasma group, which has always focused through RLE, through physics, through EE, through some people in Aero and Astro, people from ME, nuclear people, materials people, has been a big group for a long time.

The nuclear and fusion programs are big, and you have a whole host of programs including nuclear safety, and fuel management there.

Around building 31, you have work on the internal combustion engine.

Q: Is there promise left in the internal combustion engine? A: Sure. Absolutely. Let me address that a little bit. That’s not my field, but I have been talking to these people. There are two ways to change the internal combustion engine to deal with the emission problem. One is to add stuff on at the end, the other is to look at the combustion end. Stratified charge engines, fuel injection systems, are looking at the input end. My colleagues here feel that is the sensible way to go. If you can in fact understand how you mix the fuels, how you inject them within the cylinder, whether you want the fuel-rich or fuel-lean mixture, and by so doing shift the emission characteristics - what’s formed in the combustion process, then you don’t have to clean it up when it comes out the end.

Q: Doesn’t that seem promising for some basic research? A: There is some excellent basic research. What you have to really find out are what are the kinetics of the reaction. Once you find out that, you can try shifting things a little bit to reduce the NO, you can make sure all the hydrocarbons are burned ...

Q: So the internal combustion engine is not dead? A: I would say it is not dead at all. As a matter of fact, I would argue that this is backed up by a report to the National Academy of Sciences on combustion engines, it’s backed up by some of the results that have come out of these Japanese engines, I think that the present fix, which was put into effect on a crash basis to meet a set of standards -- which I think we tried to push too fast -- was an add-on system. That one is almost certainly doomed to be a failure in the long-run, don’t ask me when. What’s going to come in is a modified front end to the IC engine which I think will do a super job.

That building 31 complex, there is also fuels research, and a turbine laboratory, now it is really gas turbines. You’ve got an enormous activity there that has been going on for years.

The people there are working with the Energy Lab in a cooperative way, and we have proposed to the Dean (of the School of Engineering) that building 31 be used as a focus for a fuels combustion and conversion laboratory. There is essentially no activity on this and we’re trying to increase significant on this activity ever. (This rest of this interview will be published in the issue of The Circle, November 27 - Ed 29.)

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LOBDELL - STUDENT CENTER
Books
(Continued from page 11)

- SF allowing him freedom from customary plotlines and situations (see Player Piano), and the humor lets him slip heretic ideas into your consciousness painlessly, even letting you enjoy the process. I wouldn't say that the humor ever overrode the message, but it was important as part of the style, it made sure you got the message. It was a subtle humor, situational, not overt.

In his last two books, and especially in Breakfast, Vonnegut has seemed to leave his past styles behind, and hasn't, in my opinion, found anything better. Breakfast of Champions is a confusing book: the perspective changes, it is broken by Vonnegut's little sketches and pocket definitions, and the pacing seems all wrong - the book takes forever to get to what is supposed to be the main action, when used-car salesman Dwayne Hoover goes bananas, killing and maiming several people. The reader is left wondering how this will all be worked out, when, before he realizes it, he's facing the blank endpiece, and Breakfast is over.

I wouldn't quibble over what might seem to be stylistic points if the message was still there, and it still came through. But Vonnegut doesn't seem to be saying anything beyond the few poking he takes at human society as his carnival rolls down the road. Perhaps Vonnegut simply is freeing his stock of characters in the "50th-birthday gift" to himself, but he left me wishing that they would have left quietly, without the fuss that is made in Breakfast of Champions.

One wonders if Breakfast was written for human readership - I often got the feeling that Vonnegut meant his book as a manual for Trafalgonians when they come to Earth after human society is all over. Whatever his intentions, I prefer to remember Vonnegut from the days when he was a science fiction writer, and, without belaboring the point, was trying to tell humans about themselves.