

# The Tech

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TUESDAY, JANUARY 9, 1973

FIVE CENTS



Ashdown Dining Hall closed, for what may have been the final time on Wednesday, December 20, 1972. Pictured above are members of the dining hall staff and a regular visitor, Loki. Loki belongs to Joan Friebley, editor of the IAP Guide. He will keep going, even after Ashdown is remodelled: the dining hall may not. According to Chancellor Paul Gray, the hall will continue to exist in some form, yet to be determined. Options for the hall's future are being considered by the Committee on Student Environment; a faculty resolution forestalls any final action until that committee makes its report.

Photo by Joshua

## Frosh class size to drop

By Paul Schindler

Next year's freshman class will be smaller than this year's, possibly by as much as 170 students.

The Tech learned of the impending cut from a variety of sources, including the Admissions Office, the Dean for Student Affairs' Office, and Vice-President for Administration and Personnel John Wynne. It is Wynne who will have to make a recommendation to the Academic Council, either today or one week from today.

When he was contacted last Friday, Wynne said there was no pressure for a quick decision on the size of the class of '77, and that he had not yet drafted a recommendation to the Council (Wynne makes the recommendation because financial aid and admissions both report to him). When asked if he would speculate on his recommendation, Wynne stated "I am not absolutely sure what it will be yet." He also noted that it would be inappropriate for Council members to read his proposal in the paper before they heard it in person.

The major constraint pushing class size down is the Institute's commitment to providing either campus housing or off-campus approved housing for all freshmen. Kenneth Browning, assistant dean for Student

Affairs, has gained some renown in administration circles for his accurate predictions of the housing situation. He predicted, in a widely distributed memo, that the maximum number of freshmen that could be admitted next year without causing crowding in the dorms would be 370.

The number is not without its qualifications. It allows a small margin of elbow room for the Dean's office to respond to crises in housing as they arrive, and it makes allowance for the MIT-Wellesley residence exchange and the Student-Faculty exchange, according to Browning.

Nor was it arrived at without careful consideration of alternative possibilities. The fraternities have all co-operated, to the extent of providing

estimates of what number of extra apartments they might be willing to rent. Consideration has been given to the possibility of using Random Hall as temporary housing, but the cost of subsidizing it would be inordinate, according to Vice-President Kenneth Wadleigh. There is obviously no option to build another dormitory in time for use by next fall, even if there was money for it, which there is not.

The problem stems from a simple mathematical fact of life: more people are staying in the dormitory system than ever before. 97% of last year's freshmen residents stayed this year; 85% of the sophomores stayed and so did 81% of the juniors. If anything like these numbers stay again, and

(Please turn to page 6)

## Campus Patrol launches Operation Identification

By engraving a social security number, driver's license number other identifying data on all metal, plastic and wood valuables, members of the MIT community can join Operation Identification, a nationwide effort to curb theft.

Lieutenant Richard Driscoll of the Campus Patrol explained that electric engravers are being loaned by the Patrol from their headquarters in the Armory; upon return of the engraver, the user will be given a decal with a policeman's badge which announces his participation in Operation Identification.

The decal, which Driscoll suggests be displayed "at all points of entry," states: "We have joined Operation Identification, all items of value on these premises have been marked for ready identification by law enforcement agencies."

Thieves are deterred by the program, Driscoll continued, because objects which have been indelibly marked cannot be easily fenced. In fact, he said, pawn brokers and fences refuse to handle marked items.

Operation Identification, he noted, has been very successful where it has been tried. Asked if any of the objects engraved during the MIT campaign had been stolen and then recovered because of Operation Identification, Driscoll said no, adding that as yet none of the items marked had been stolen.

Since November, when the Patrol first began loaning the electric engravers, some 340 items have been marked, Dormitory residents, fraternity residents, and off-campus students have all used the units.

## ABC films series at MIT

By Lee Giguere

The first installment of a special ABC six-part documentary series on science and technology produced in collaboration with MIT will be telecast in two weeks.

WCVB (Channel 5), ABC's Boston affiliate, will air the first program on January 22. According to their programming department, the station normally carries all ABC prime time programming.

The focus of the January 22 edition of "What About Tomorrow?" will be communication between man and machine. According to Professor of Electrical Engineering William Siebert, who served as a consultant for the program, the segment explores efforts to make machines, computers in particular, "more adaptable to the goals human beings have."

Focusing on MIT's Project MAC, the documentary first examines the work of Professor of Mathematics Seymour A. Papert using machines in a teaching environment. Siebert explained that Papert inverts the usual machine-student relationship by having his young students "teach" their machines tasks like operating a music generator or controlling the movements of a mechanical turtle.

Another MAC investigator, Mathematics Instructor Terry Winograd also appears in the program, according to Siebert. The focus of Winograd's research, he explained, is to engage computers in conversations about "non-trivial subjects."

The ABC crew also moved off-campus to film work at Bell Laboratories on building computers that can talk.

Siebert explained his own

role in the production by noting that originally a broad look at communication had been planned for the first show. His own work as a communications engineer and sensory researcher had been slated as part of the topic. He ended up as a consultant, however, when his areas of interest were written out of the program to keep the range of topics down to a manageable size.

According to ABC Executive Producer James Benjamin, the overall thrust of the series will be to examine "what sort of questions are being asked in fields where the public has concerns," Benjamin explained that "the kind of questions the layman asks are broad and foreclose answers." While not presenting solutions to modern problems, he continued, the series will "show the types of investigations which might suggest solutions."

Interviewed last month by The Tech, Benjamin emphasized that the series is not about MIT itself. While he felt that the Institute is "pre-eminent" in its field, he noted that the documentary crews would "talk to as many people in the fields they are examining as possible." For the series, he said, ABC would "never exclusively do things at or away from MIT."

The documentaries, Benjamin stated, will "not be definitive studies," but rather will "give an indication of the kind of work going on" in a field. Their theme, he said, is that "maybe not less but more science and technology will be needed to solve problems." "We are proceeding," he said, "from an interest in what people's concerns are." MIT's role "will be to

advise us. We decide what direction we want to take; then we come to our contacts at MIT and ask 'Do you think this is a valid approach?'"

The series, he said, will try to present current research in the words of the researchers themselves. Benjamin also outlined the topics of the five other programs in the series.

(Please turn to page 3)

## Alumni, students discuss jobs

By Paul St. Green

The MIT Club of Chicago sponsored a "Rap Session" between students and alumni over Christmas vacation. Despite rainy, cold weather, about 20 alumni and 10 students gathered at the Germania Club in Chicago to drink beer and coke.

A panel of five alumni led off the meeting with descriptions of what their companies were looking for in June graduates. The panel was Robert Wright ('50 XV, now a partner in the Chicago law firm of Price, Cushman, Keck and Mahin), Mark Baxter ('50 XV, a Vice President at the First National Bank of Chicago), Allan Roshkind ('37 XVI, Vice President of Research and Development at A.B. Dick Company, Chicago), Marshall Keig ('49 IX, then General Science, Executive Assistant, High Energy Physics, Argonne National Laboratory), and Jaques Hoffman ('66 II, Marketing Director and Owner of Intertech Development Company, Chicago).

Not everyone had a lot to say. Wright said that his law firm was not hiring at the present time. However, he stated that he believed engineering was good preparation for law.

Baxter then created the main discussion point of the evening when he stated that the sole goal of his bank was "make as much money as possible for its owners." He said that businesses are too inefficient if maximized profit is not a goal, and that it gives a good handle on decisions. The bank recruits 70 MBA and 40 Bachelor degree students from any field and sends all of them to the University of Chicago business school at its own expense. Baxter said that his bank likes to work in innovative fields; there's more money to be made (as well as more risks).

Roshkind of A.B. Dick said his firm is engaged in "Classic R&D." They hire M.E., E.E., and Chem. E. graduates in about equal numbers. His company expects its new employees to take about a year to develop into self-sufficient workers. Qualities they look for in students are guts, imagination, and "sparks flying." Roshkind remarked that they have averaged about a 50% "batting average" on their new people. His comment that "young people don't seem to want to start at the bottom," was backed up by every other alumnus at the meeting. Every-

one reminded the students that that was how they had started, and that was how new graduates should start.

Keig of Argonne told the group that his lab was non-profit, but it "sure would be nice to have a simple profit motive." Keig said that the lab hires Biology, Chemistry and Physics students; about 1/2 PhD's, and most of the rest Masters degrees. Aside from the specific attribute of self-motivation, they also need environmentalists, computer scientists, blacks, women, and other minority groups.

Finally, Hoffman described his own small, three man company, and said "Frankly, we can't afford MIT graduates." He noted that his own MIT education was helpful even though his job was not specialized, and he was enjoying doing many of the small tasks himself.

Next, the organizer of the meeting, Karen Arenson (XIV '70) introduced the panel of students. They were Paul Green ('73 VI-Computer Science), Mitch Szymanski ('74 II) and Mark Tanquary ('76, interested in engineering).

(Please turn to page 7)

# Faculty passes environment degree

By Paul Schindler

The Faculty, in their last meeting of 1972, voted approval of a post-graduate "Environmental Engineer" degree.

"The program," according to the proposal presented to the faculty, "is designed to prepare students for careers in government, industry, and private practice where technical decision-making is integrated with environmental planning and management functions."

The degree proposal topped a long agenda; some observers termed the December 20 conclave "the most important Faculty meeting of the year." Other business heard by the Faculty was a CEP report on the Discipline Committee "Opinion Document," the Report of the Committee on Outside Professional Activities, reports on the Special Laboratories and IAP, and a report on smoking at MIT. Only the Environmental Engineer pro-

posal, which passed without dissent, required Faculty action.

Dissent, however, was notably present during discussion of the CEP report on the "Opinion Document" prepared in the Discipline Committee last spring. Several rancorous exchanges between faculty members took place, but President Jerome Wiesner cut off discussion. (For further details, see full statement, page 3, and a portion of this story sub-titled "CEP report.")

## New environmental degree

The new degree was the first order of business at the meeting and was explained to the faculty by Professor of Civil Engineering Peter Eagleson, who had chaired the committee that designed the graduate degree program. Noting that many students are already putting together a similar program on their own, Eagleson defended the need for such a degree by stating that "visibil-

ity" is needed for MIT's work in this area, both for insiders who might not take the initiative currently needed to get such a degree, and for outsiders who cannot currently see how they can get an environmental degree at MIT.

The actual drafting of the degree program was apparently a laborious process; Eagleson pointed out, as did the copy handed out to the faculty, that this was the "seventh draft" of the proposal. He summed up by noting that the new program "meets a newly perceived need," and that "no current program meets the objectives of this program."

## CEP report

The Committee on Educational Policy (CEP) then made its report. This group is the senior faculty committee, and is normally chaired by Hartley Rogers, chairman of the Faculty. For purposes of discussing and

presenting this "statement by the CEP on a Committee on Discipline Matter," Rogers excused himself due to personal involvement in the controversy. Roy Kaplow, associate professor of Metallurgy chaired the group for discussions and delivered the report to the faculty.


Besides the reasons listed in the introduction to the statement (printed in full on page 3), the statement was also prompted by a number of inquiries addressed to Wiesner and Rogers by faculty members, Kaplow said.

The statement covers three basic questions: should the "opinion document" have been issued to the students involved? Should it have been given to the student press? Are current Discipline Committee procedures appropriate?

On the first question, the CEP decided that, in spite of substantial confusion surround-

(Please turn to page 5)

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# Chess

By Daniel Reinhardt

In the first few chess columns I discussed the relationships between time, space, and material, citing games in which each factor was pretty clear. It is now time to discuss the interrelationships as they usually appear — blurred, difficulty to separate.

Efim Geller has been one of the ten best chess players in the world for approximately two decades. Former Soviet champion and perennial world championship contender, Geller most recently occupied the spotlight as Spassky's second. He has a "pugilistic style, one that lies in the center of the chess spectrum between the smooth power of a Smyslov and the crescendoing tactics of a Tal."

The following game is one of Geller's early efforts, played in 1949 in the semifinals of the XVIII Soviet championship. White: Geller. Black: Vatnikov. 1 P-K4 P-QB4; 2 N-KB3 N-QB3; 3 P-Q4 PxP; 4 Nxp N-KB3; 5 N-QB3 P-Q3. This is the traditional way of handling the Sicilian Defense, an opening which is probably contested more frequently and hotly than any other. You have all been, I am sure, sophisticated enough to appreciate the back-and-forth, tug-of-war struggle of the first five moves. Each side has paid attention to material, development, and the center with each of its moves.

6 B-QB4 P-K3; 7 O-O B-K2; 8 B-K3 O-O; 9 B-N3 N-QR4; 10 P-B4 P-QN3. The past few moves have indicated the age of this game to those who keep up with current master practice. Geller's next move was an improvement on contemporary theory. 11 P-K5! N-K1.

The moves have seemed rather straightforward so far. But appearances are deceiving: Black's last move was virtually his only choice! For instance,

had he played 11...PxP the play might have proceeded with 12 PxP N-Q2; 13 RxP!! (check to see why this works). Be careful when playing the Sicilian Defense.

12 P-B5! This is how an aggressive player plays. Black's pieces are disorganized — they are all on the first rank or on the rim. White's pieces, on the other hand, especially the KB on the long diagonal, the KR on the "open" file, and the central knight, are exerting tremendous pressure on Black's center and king position. By advancing his pawns Beller hopes to increase the trends of Black disorganization and White initiative.

12...QPxP; 13 PaP! P-B3; 14 N-B5! White's tactics have worked. He has weakened the Black position by opening the KB's diagonal and lodging a pawn in Black's vitals. Direct threats may now bring the game to a rapid conclusion.

The first threat is 15 QxQ BxQ; 16 P-K7 discovered check, so Black defends with 14...NxB. But now 15 N-Q5!!, threatening 16 n/Q5xBch, winning the queen. So Black defends with 15...N-Q5, but 16 N/Q5xBch K-R1; 17 N-N6ch! ends all resistance. By vacating the K7 square with a check, Geller permits the devastating 18 P-K7. Black resigns.

A game like this one illustrates why it is so important to do well in the opening. When a position loses its internal harmony it is ripe for swift and unstoppable destruction.

# NOTES

\* The deadline for turning in second term registration material to the Registrar's Office, E19-335 is Friday, January 12, 1973. Material is available at the Registrar's Office.

\* The Association for Women Students will meet Monday January 15 at 4 pm in 3-310. The proposed UROP projects, and the speakers for the next several meetings will be the main topics of discussion. All students are welcome, as the AWS is anxious to hear the opinions of all students. Refreshments will be served.

\* New Technologies and the Artist: Student projects for public exhibition in October 1973. Meetings Jan. 9 at 2 pm (E53-220) and Jan. 11 at 2 pm (E21-2nd floor). x3-3371.

\* A new magazine is being formed, the first issue to appear early next term. It will contain literary works (fiction, poetry, criticism), non-fiction (political, social, cultural analyses, essays), photos, and graphics. Come to a meeting tonight (Tuesday) at 7:30 in room 407 of the Student Center if you are interested in working on the first issue. If you cannot make this meeting, call Larry or Steve at 492-5672.

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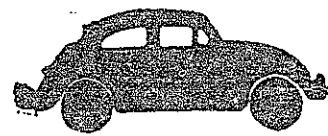
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# ABC scans science, MIT acts as advisor.

(Continued from page 1)

The city — "possibly the next frontier" according to Benjamin — is to be the topic of the second presentation. "Maybe science will provide the city dweller with the tools he needs to conquer the city," Benjamin said. While filming this segment, innovations "which indicate that it's not a dead-end situation" will be examined.

Louis Menand III, Assistant to the Provost, who is working with the producer-writer of the second segment, Richard McCutchen, last week told *The Tech* that McCutchen was "interested in the impact on people" of science and technology. For filming, "he sought out activities which deal with people and people's needs."

One of the topics of the program, according to Menand, is Saranac-New Castle Court, a housing rehabilitation project on Columbus Avenue in Boston. The aim of the project, Menand explained, is to "redesign and remodel a large apartment complex according to the needs of the tenants."

Other topics covered in the 22 minute documentary will be an Urban Systems Lab project working with elderly citizens in Cambridge to develop a transportation program for the elderly, and Professor of Management Jay Forrester's work on the city of Lowell.

Health care delivery will be the topic of the third segment. The interdisciplinary nature of this field, Benjamin explained, will be explored by ABC.

The fourth program will deal with the question of "facing the consequences of technology's impact." The fifth, Benjamin said, will turn to basic research,

"the seedbed for scientists of the future." Benjamin was unable to name any specific projects which would be telecast but asserted that the aim of the program will be to "display some of the enthusiasm" of research scientists. Finally, the last segment of the series will examine educational research.

MIT's agreement with ABC is to "provide advice and expertise in the planning and production of programs." Assistant to the Provost Joel Orien, who is serving as MIT's liaison man with ABC, explained some of the interaction between MIT and ABC that is involved in the collaboration. He and Provost Walter Rosenblith meet with Benjamin and the producer of a given segment to talk over the topic.

He added that he and Rosenblith "make suggestions of people" who might also be helpful. After the producer has prepared a "treatment" of the topic, he sends it back to MIT for suggestions, Orien continued. This ties in with the terms of the agreement which provide that the "general topic and content of each program will be discussed and decided upon cooperatively between ABC and MIT" with ABC retaining final control over what goes on the air.

While MIT is receiving no money or other special considerations for its assistance, the agreement with ABC does stipulate that all the sponsors for the series be 'corporate' or 'institutional' in nature. The agreement also provide that MIT has the right to review potential sponsors.

# Discomm actions reviewed

This statement was read aloud at the December 20, 1972 faculty meeting by Professor Kaplow. —Editor

Statement by the CEP on a Committee on Discipline Matter

This statement is in response to inquiries to the CEP from Professor Gyftopoulos, Chairman of the Committee on Discipline 1971-72 and from Professor Weizenbaum, a member of that committee. We believe that these inquiries raise several significant general questions about the judicial process as well as a specific procedural issue, and we believe that these questions and issues merit serious attention.

On October 12, Professor Hartley Rogers submitted to the CEP the set of documents and letters that were generated by the dispute last June in the Committee on Discipline over an opinion signed by six members of the committee. This material included correspondence occurring during the summer and fall, and a letter to the CEP from Professor Weizenbaum. Professor Gyftopoulos, Chairman of the Committee on Discipline, had submitted the questions in dispute to Professor Rogers, Chairman of the Faculty. Professor Rogers then brought the matter to the CEP for advice on disposition of the matter by the Faculty, which is the parent body from which Faculty Committees derive their responsibility.

As the CEP understands the matter, three issues are involved. The first is whether the Committee on Discipline should have issued to the students the opinion-document signed by the majority of those hearing the case (but not supported by the majority of the Committee). The second is whether the opinion-document should have been publicly released. The third set of issues involves the appropriateness of the judicial procedures currently used by the Committee on Discipline.

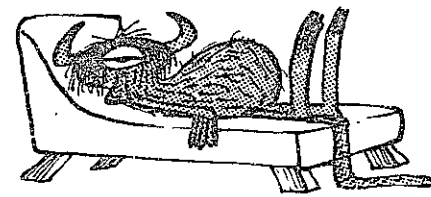
On the first question, the substance of the controversy is as follows: signers of the opinion-document argue that since the past practice of the Committee was that a simple majority of the members hearing the case decided it and wrote a letter to the student informing him of the decision, the Committee was obliged to send to the student the opinion-document that had been voted by the majority of members hearing the case. The Chairman of the Committee refused to send out this document on the grounds that the opinion-document exceeded the Committee's authority. (He did send letters, explaining the decisions in the cases, that were supported by the majority of the Committee and by a majority of the members hearing the cases. These letters are not in question.) This point raised the question of the scope of the Commit-

tee's jurisdiction, and Professor Gyftopoulos submitted the controversy to the Chairman of the Faculty for advice. The Chairman of the Faculty agreed that the substance of the opinion-document exceeded the bounds of the authority granted to the Committee on Discipline by the Faculty. The Chairman also noted that the opinion-document established principles which should rightfully be decided by the Faculty and that therefore the Committee should not issue the document. He pointed out that whether or not the Building 20 occupation was itself legitimate and whether or not the conduct of the administration during the occupation of Building 20 is to be judged by the Committee on Discipline (to consider only two matters decided by the opinion-document) are clearly questions which the Faculty has the right to determine, and that neither a given hearing panel of the Committee on Discipline nor even the entire Committee on Discipline should deliberate and decide these questions. The CEP agrees with the position taken by the Chairman of the Faculty and therefore advises that the opinion-document should not be issued as an official Committee document.

On the question of whether or not the opinion-document should be made public at all, the CEP notes that the opinion-document has been released to the campus press and so in the case before us, the issue of public expression is no longer rele-

vant. We do feel, however, that more fundamental issues have been raised by this case — for example, the way in which the views of individual members of the Committee should be presented to the community; whether the Committee should express opinions on political issues of the community, etc. These questions go beyond the case at hand and should be discussed in the content of a review of the judicial process.

Finally, the CEP believes that there are important questions still unresolved about how to ensure both fairness and individual consideration in the Institute disciplinary process. Some of the questions have been raised by the Searle committee on judicial process (appointed by the MIT Commission); others have been raised by last year's preliminary discussions in the CEP of the reform of the judicial procedures; yet others have come up in the context of the current controversy. These questions include, in particular, such matters as specificity of charges and the role of the Dean for Student Affairs in the judicial process. The conclusion of a review of the structure and procedures of the judicial system at MIT is a major item on the CEP agenda for the present year.



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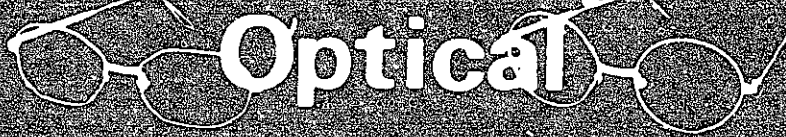
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Jan. 30, 5:15 Politics as Tragedy.

Respondents: Prof. Elting E. Morison, Humanities  
Prof. Hayward R. Alker, Political Science  
Miles Morgan, Philosophy and Political Science

# Letters to *The Tech*

## CEP Opinion

To the Editor:

I enclose herewith a letter from the CEP to me and my response to it. You should know that the CEP's letter was read to the Faculty at its meeting on December 20, 1972 and is therefore in the public domain.

The CEP's letter of transmittal erred, by the way, in asserting that I had any part in bringing this matter to the CEP's attention. To the contrary! I denied from the very beginning of this controversy that the CEP or any other Institute body had any jurisdiction over any prospective action of the Committee on Discipline except that only the President can act on the Committee's recommendation to expel a student. The charter of the Committee on Discipline clearly states that the Committee acts with power in all other matters. The CEP's correct response to Professor Gyftopoulos' request for its advice would, in my view, have been to refuse to intervene and thus now to allow Professor Gyftopoulos to evade his responsibility to obey the majority vote of the committee he chaired. This would, of course, have forced the release of the opinion-document as an official committee document. As it is, the CEP has undone the autonomy of the Committee on Discipline. I had no hand in initiating or legitimizing this obviously foreseeable and most unfortunate event.

I hope you will want to publish this letter, the CEP's letter to me, and my response to the CEP.

J. Weizenbaum.  
Prof., E.E.

Dear Professor Weizenbaum:

This letter is to inform you of the CEP opinion on the Discipline Committee matter which you and Professor Gyftopoulos brought to our attention. In our discussion of these questions, we have tried to identify and respond to those issues specific to this particular case and those which are of more general significance. The following statement has been entered in the records of the Committee on Educational Policy and will be read at the December 20 faculty meeting:

[The full text of the CEP's statement is reprinted in full on page 3 - Editor]

As the CEP continues its review of the Institute's judicial system, we hope that you will feel free to contribute any further opinions or observations that you may have.

Roy Kaplow  
Associate Chairman  
Committee on Educational  
Policy

To the Editor:

It seems ludicrous to spend emotional energy writing about the "advice" of the CEP with respect to recent proceedings of the Committee on Discipline when a great crime against humanity has just been committed in our name. Hanoi has been added to the list of cities whose very mention causes the flesh to crawl with the terrible knowledge of the horror of which ordinary men, that is to say we, are capable. I am thinking of Guernica, Lidice, Coventry, Hamburg, Dresden, Hiroshima and Nagasaki, and now Hanoi. But it is precisely in a time when human decency and honor is called into question on a global scale that the ordinary citizen must redouble his effort to nurture and protect what small islands of humane rationality still survive. Surely we cannot now give up the hope that the university, particularly our university, may be such an island and worth some effort to save.

Besides, it may be worth recalling that the event that entrained this controversy was a protest triggered by President Nixon's speech of May 8, 1972. He then promised to take "decisive military action to end the war." Now perhaps we begin to understand what he meant. He also said "Throughout the war in Vietnam, the United States has exercised a restraint unprecedented in the annals of war." Now he has made one thing perfectly clear: his definition of restraint.

The most far-reaching action of the CEP is to advise that "the substance of the opinion-document exceeded the bounds of the authority granted to the Committee on Discipline by the Faculty

(and) established principles which (sic) should rightfully be decided by the Faculty (and) that the opinion-document should (therefore) not be issued as an official committee document." This action robs the Committee on Discipline of the single property most essential to its function to administer justice, namely its autonomy. If the CEP's advice is to be taken, then every decision, and every opinion written to support such decision, must first be taken before the CEP to be tested against unwritten criteria of appropriateness before it can become the official decision or opinion of the Committee on Discipline. The CEP has thus constituted itself an automatic court of review, moreover a court many of whose members represent the Institute Administration which may well be, as in the present case, a party to the dispute this court has taken it upon itself to adjudicate. Such a procedure, it seems to me, fatally impairs the legitimacy of the entire judicial process.

The CEP side-stepped the issue of whether the opinion-document should be made public at all or not by asserting that that document's release to the campus press rendered this question "no longer relevant." The fact that the leaking of internal Institute Committee documents to the campus press is itself an act of questionable legality, to say the least, must be faced. Had the discipline held that those of us imposed on ourselves who were determined to pursue every legal channel to exhaustion in the matter of the ultimate release of the opinion document, the present "advice" of the CEP would have been tantamount to the suppression of that document. That discipline was finally nullified by an act of theft and a distribution of the goods acquired by that theft to the campus press. The CEP now claims this thievery to have discharged its responsibility to confront the logical consequence of its "advice," namely that a majority report of an Institute Committee may be properly suppressed because of its content! No wonder that, having used the fruits of a theft to assuage its own conscience, the CEP fails remarkably to condemn it.

The practical consequence of the CEP's action is to create a very strange, probably unique, judicial situation: members of the Committee on Discipline are constrained as to what they may say from the bench. Their words must first pass examination by the CEP which may censor or suppress them altogether. On

the other hand, members are apparently free to say anything at all about cases still in dispute, providing they speak as individuals. This is a complete reversal of the universal rule of judicial conduct which permits judges to speak with almost absolute freedom from the bench - although always at the risk of being judicially or legislatively reversed - but forbids them from ever speaking publically as individuals about cases they have heard.

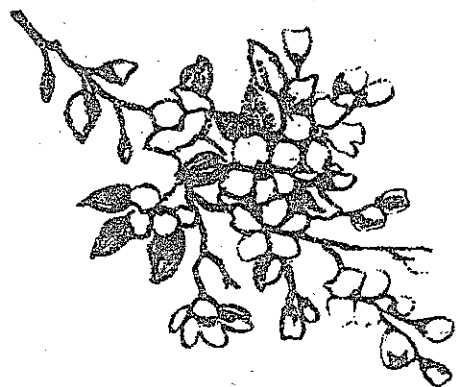
The procedure followed by the Committee on Discipline - but frustrated by its then chairman - in the case here in question is by contrast traditional. One member of the Committee wrote an opinion that in an open contest of ideas won the concurrence of a majority of those members entitled to vote. An absolute majority of the whole Committee then voted to release that opinion, together with a tally of votes for and against it, as an official Committee document. Dissenting members were repeatedly invited to write and similarly disseminate their opinions. Had this process been permitted to reach its logical terminus, the CEP and Faculty would have had ample opportunity to express their attitudes with respect to all proffered opinions. In particular, the Faculty could have legislatively nullified any precedent it felt the majority opinion established that was not to its liking.

Speaking as a member of the Faculty, I say that my colleagues should seriously consider the CEP's advice and then utterly reject it. Ideas and words that carry ideas are the very lifeblood of the university. None should ever be censored or suppressed. In particular no majority or even minority reports of any legally constituted Institute committee should ever be subjected to any test in order to be permitted to compete in the market place of ideas that presumably is the university. In that market place ideas are contested by other ideas, words by other words, not by the censor's pen.

I began this note by an allusion to the horror of mass-murder to which all of us have been a party in the past several days. It may be hard for some of my colleagues to see the connection between that event and the matter of issuing an official committee report. But there is a connection. The examples set for us by the Germans over Rotterdam and Coventry, and which we have learned to imitate so faithfully and even to enlarge upon, had in a sense their beginnings with the book burnings in Berlin in 1933.

The card below was received shortly after the election of the Board of Directors of Vol. 93. It was addressed to "The Staff and Readers of The Tech," officers of Thursday confirmed that they had sent it.

Our  
Sympathy



May this  
message convey  
the sympathy  
we feel so deeply  
for you  
at this time.

thursday

Among the words burned there were those of the German poet Heinrich Heine:

"Wherever they burn books, sooner or later they will burn human beings too." Now the smell of human flesh burning is again in our nostrils - as it has been so many times over the years. Our own failure of civil courage has resulted in the transformation of our republic into a sometimes criminal presidential dictatorship and left the people powerless and frustrated. We must, at the peril of our very country and perhaps of civilization itself, take beginning steps to relearn civil courage, to relearn to trust our own and each other's freedom. It is a grievously mistaken belief that civil courage finds exercise only in the context of world-shaking events. To the contrary, its most arduous exercise is often in those small contexts in which the fears it overcomes are those induced by petty concerns over career, over our relationships to those who appear to have power over us, and over that which may disturb the tranquility of our mundane existence. That is the connection!

Joseph Weizenbaum  
Professor, E.E.

## CORRECTION

In the December 15 issue of *The Tech*, in an article titled "Military research: our slice of the pie," it was incorrectly stated that "... the DOD is still the single most important sponsor of research on campus and surpasses its nearest competitors, NASA and NSF, by some \$64 million." The sentence should have read: "by some \$4 million."

Continuous News Service

# The Tech

Since 1881

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January 9, 1973

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# Faculty considers IAP, CEP, labs

(Continued from page 2)

ing the question of whether or not the committee had voted to issue the report, Rogers had been correct in deciding that it was beyond the authority of the Committee to issue such a document. Their conclusion: "the opinion document should not be issued as an official Committee document."

On the second question, the Committee decided that the publication of the documents made the issue of their release to the press moot in this case. The CEP went on to suggest that mechanisms for the release of a "minority" opinion to the public were in the legitimate purview of a review of the discipline process.

In response to the third question, the CEP believes that there are "important questions unresolved" concerning the whole MIT judicial process. The statement concludes by noting that a major review of structure and procedures of the judicial system is a major item on the CEP agenda.

(When asked, CEP Chairman Rogers declined to state whether such a process would involve students or faculty members not on the committee, or whether meetings might be public. "We haven't figured that out yet," he said, noting that the entire committee would have to decide in any case.)

A vigorous discussion of the report was launched by Associate Professor of History William Watson, who asked Kaplow if this report means that a committee chairman can overrule a majority of a committee on any decision; Kaplow said the report did not address itself to that question. Further discussion of the question by Watson and Professor Christopher Schaefer produced responses by current Discipline Committee chairman Professor Charles Myers and past chairman Professor Elias Gyftopoulos that a majority of the entire committee had *not* voted to release the document.

Kaplow explained that the CEP had been led to believe that the total effect of the votes taken in the committee had been confusing, and Gyftopoulos proceeded to read all of them, proving the point.

At this point, Wiesner stated that other places might be more appropriate for such a debate, and discussion was limited to several brief remarks: Professor Kenneth Hoffman suggested that CEP also consider autonomy of committees in its study; Kaplow noted that the current statement was only a direct response to direct questions; and Myers noted that the Discipline Committee had not had any trouble gaining unanimity on decisions this year.

Wiesner concluded with a brief remark, saying that the judicial process depends a great deal on "ill-defined" common law that works well under normal circumstances, but does not work well in the strained climate of political cases. He also expressed the hope that the CEP would consult with Professor Campbell Searle and the Searle Committee, which worked on judicial reform in connection with the Commission on MIT Education.

## Outside Activities

Thomas Hill, assistant dean of the Sloan School and last year's chairman of the Committee on Outside Professional Activities, read a report prepared during his tenure. Hill explained that it was ready last spring, but that he had not had a chance to present it until now.

Hill then proceeded to fill in the background of the committee for the assembled members of the faculty. He quoted from *Policies and Procedures of the Faculty*, which charges the committee to "keep informed" on problems and conflicts of interest which arise due to the constantly changing scope of outside professional interests maintained by the MIT faculty. Hill pointed out that in recent years the committee had not reported regularly, and had not really kept itself informed on the activities of Institute faculty.

In recent years, the committee has been "passive" according to Hill, deciding only "cases brought to it." This, he noted, kept the group informed on a "subset of problems, but did not give it an overall view." The group's "conscience" was affected, and a catch-up effort was begun.

A complete survey of the faculty by questionnaire was considered, Hill said, but was rejected because it would duplicate department procedures (department heads must keep themselves informed of the outside professional activities of their faculty, according to *Policies and Procedures*), and because it would require "a great deal of explanation to prevent its causing a disturbance."

Instead, the group selected the alternative of interviewing a sample of department heads which would provide more information at less cost. A sample of eight out of the 24 was selected, and each was subjected to a tightly structured interview. The eight departments were chosen to represent all five schools. The Sloan School of Management was represented by its only department, Management; the School of Architecture and Urban Planning was represented by the Architecture Department; the School of Humanities and Social Science by the Political Science Department; the School of Science by Chemistry and Nutrition; the School of Engineering by Civil, Electrical and Mechanical Engineering.

The Committee on Outside Professional Activities was specifically interested in four points: adequacy of current policy, problems in implementing it, the proper role of the committee, and what problems had been solved at the departmental level.

Hill characterized departmental reaction to current policy as "satisfaction," which manifested itself negatively in the remark "there is no way to improve it," and positively in the remark "it's flexible," which he supposed meant that it was "appropriately ambiguous." He stated that the current rule of one day per week of outside work was a "crude but useable guide," and that the committee always emphasized the spirit of the rule, which is designed to insure MIT adequate service from full-time faculty while allowing them a chance to remain up-to-date in professional terms.

Implementation did not pose any great problems in the departments surveyed, although the committee found a heavy reliance on *Policies and Procedures* without much discussion; the report commented that there is "perhaps too little effort at common understanding."

As a control mechanism, most departments were satisfied by and relied on a once per year report by all faculty on their professional activity.

Problems in the area of outside work are, for the most part, resolved without resort to the committee, according to the survey. Yet the faculty polled still see the committee as having some value: seven of the eight saw it as a court of last resort in case of a dispute; five saw it as a potential source of useful information to resolve dispute, and two saw it serving as a prod to department heads to perform their duty.

Two problems arose in discussions caused by the survey, Hill stated. The first was faculty sentiment against a request for information sent by the deans of Science and Engineering to their department heads; some saw this as an attempt to move decision power from the faculty to the administration. The other problem was the close relation between salary policy and outside professional activity which often causes friction.

Hill outlined areas in which the committee saw problems. Although no single department surveyed saw significant problems, the group found a large variation in mores around the Institute. He cited two examples: the use of MIT equipment or labs for professional work in such departments as Architecture, while the practice was strictly prohibited in many departments; and the use externally of software developed at MIT, an area in which he noted that there is no tradition and no policy.

Conflict of interest does not take any standard form when it is encountered at MIT. Most often, the committee found, conflict arises from association with a competing research organization. Rarely could a faculty member's decision benefit one group over the other, but research proposals could be made through another group which, without MIT's costs associated with education, could offer a lower overhead rate.

The Committee on Outside Professional Activities drew several conclusions: that most departments are getting cooperation, that they are aware of and are coping with problems, and that the situation is not out of control.

The new chairman noted that so far five interviews have been scheduled for this year, and that a file will now be kept of cases brought to the committee, so that a common law could be built up of past decisions.

In the discussion which followed the report, Alfred Keil, dean of the School of Engineering noted that he had made the request for information (mentioned earlier) solely for statistical purposes, and that he did not keep names associated with the material. Louis Smullen, head of the Electrical Engineering department, said that it was "news to me," and disturbing news, that any faculty member was allowed to use a lab in any way associated with outside work. Wiesner proposed that an investigation be carried out.

One faculty member questioned the wisdom of maintaining a central file of the outside work of all faculty members, but the current chairman of the committee laid the objection to rest by pointing out that the file would only contain cases about which there had been some question. Wiesner entered the discussion to point out that there had been times in the past when the administration could not yield to a request for a list of all faculty consulting relations because no such list existed; it has been decided that this list would not be made public even if it did exist.

Wiesner went on to note that he had taken part in a review of the question of outside professional activity two years ago, and that at that time there was a reaffirmation of the fact that this is a "matter of personal integrity" and that only "flagrant violations of the spirit" of the policy should be considered. Hours of debate had not settled the question of whether one day per week meant one in five or one in seven, Wiesner said, but this was not an important issue in his view.

Each faculty member is capable of deciding such things on his own, he concluded.

## Special labs

Due to the upcoming divestment of the Draper Laboratories, the Standing Committee on the Special Laboratories is now limiting itself to the Lincoln Labs.

An all day meeting with Lincoln Lab personnel on October 24, 1972 convinced the committee that research being carried out there is currently appropriate. The group was assured by the lab that they would be informed immediately if any "substantive change" were made in the nature of research going on there.

The full report on the activities of the Lincoln Lab may be obtained in 37-287 and 18-309.

## IAP report

In the absence of chairman Kent Hansen, Professor James Munkres reported on the decisions of the IAP Policy Committee with regard to continuing the three year Independent Activities Period experiment. The principle recommendation of the group was continuation of the current "4-1-4" academic calendar. (The full report of the committee appeared as a special supplement to *Tech Talk* and

may be obtained through the information office.)

According to Munkres, the Committee found that IAP had fulfilled its original goals: it has eliminated the January "lame duck" period (finals now come before Christmas), it has eased the administrative crunch between semesters, provided "leisurely" time for study and research, and has provided an opportunity for flexible learning and teaching. In addition, Munkres pointed out, it has provided for personal satisfaction with the time spent, as indicated by the original motion to change the name from Independent Study Period to Independent Activities Period.

Smullen rose after the report was finished, to state that his faculty, while enjoying it themselves and finding IAP useful for graduate students and seniors, questioned its usefulness for other undergraduates. He suggested moving the period to the end of second term, where it might allow longer summer jobs, and added that the figure of 10% for course offerings cancelled might be low. He concluded by noting that the use of Teaching Assistants during IAP was a sticky problem, and that in any case the faculty comment he had heard was of the nature: "It's going to be passed anyway." "This is not galloping enthusiasm," Smullen said.

Vice-President Kenneth Wadleigh responded to the TA question, noting that the problem may not be completely soluble.

Professor Robert Fano used committee statistics to bolster his argument when he said that he was "not satisfied with IAP," because he felt it was "not a good investment of resources for undergraduate students." He also noted that the committee report surprised him, as it did not seem to give much consideration to alternative calendars; this was part of its original charge.

Wadleigh and Wiesner both responded, noting that several calendars are under consideration, and that if any are concluded to offer academic or efficiency advantages, they will be brought before the faculty.

## Smoking

Professor David Wilson concluded the meeting with a few remarks about smoking at MIT. He said that ASH (Action on Smoking and Health) had become a focus for smoking complaints, and that they had petitioned Wiesner in younger and more foolish days, assuming he had the power to stop all smoking in public places. The group has since learned that the faculty has power over the classrooms. Wilson suggested that faculty members take note of the facts currently being discovered concerning the effect of smoke on non-smokers. Wiesner has set up a committee to help publicize these facts, Wilson said, and its results should soon be forthcoming. He expressed doubt that a total ban would ever be put into effect.

## THE WIZARD OF ID



THE WIZARD OF ID appears daily and Sunday in *The Boston Globe*

by Brant parker and Johnny hart

# Academic Council to set '77 class size

(Continued from page 1)

indications such as mid-year vacancies make this seem likely, then there will be 450 dormitory spaces available (with the previously noted margin allowed for the Dean's office). Combined with the 420 students who can be accommodated by the fraternities, commutation and Student House, this allows for a total class of 870.

Browning outlined several alternative courses, the first of which was reduction of the class size to 870. Another alternative would be conscious over-crowding of the dormitory system. This year, for example, the class size was 16 larger than expected, and more people than expected stayed in the dorms. As a result, there was overcrowding by some 60 people, which had a direct impact on 160 dormitory residents (those people sharing overcrowded rooms).

The overcrowding may have some effect on wear and tear of common facilities in overcrowded areas. It might also have an effect on the psychology of the students involved, although there have been no problems reported. Auxiliary housing, a final alternative, has been rejected as too expensive.

The ultimate solution, according to both Browning and Wadleigh, is another undergraduate dormitory as soon as possible. Normally, such a building takes about 18 months of planning and 18 months to build, assuming that the money is at hand. Even "fast-tracking," a process which involves parallel design and construction processes, takes a year at best (assuming no labor trouble), and still requires the key ingredient which MIT does not have at this time according to Browning: money.

The effects  
"The financial effects of a

drop on class size of this magnitude are within the noise of the system," according to Wadleigh, and his sentiments were echoed by Jack Frailey, Director of Student Financial Aid. "A difference of 100 students, for example, makes a difference of about \$100,000 in our budget," Frailey said, out of a total budget of \$6,000,000. "You're not talking about big money," he added, but you are talking about a decreased burden on the unrestricted funds of the central administration. Frailey's input to Wynne's decision process has taken many forms, among them the amount of MIT money it would take to support certain equity levels for various student body sizes (the equity level is the job-loan level).

Peter Richardson, director of admissions, also reports to Wynne; he told *The Tech* that an early decision would make his work easier, but that the result of the decision would not make

much difference. "Once they set the class size, we can come close to meeting it," Richardson said. He also noted that there is a margin of error, and that as many as 50 more or less students than the target number may actually come, a figure of about 5% of the total class.

The area of admissions includes what may be the most important yet least frequently mentioned factors in the class size decision: what effect will the smaller class size have on the numbers of women and blacks, and how will it look to the

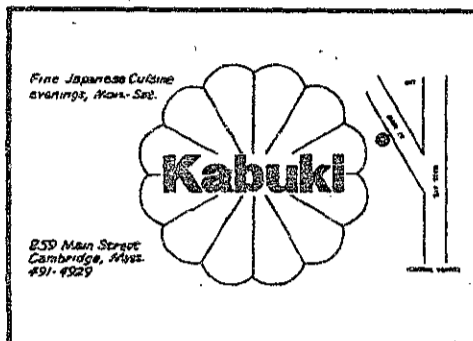
alumni and the public?

One administration official suggested that sex-blind admissions prevent much effect on the percentage of women, and that minorities will continue at their current numbers. Another confided to *The Tech* his concern that, "Now, with technology under attack, it might look very bad for MIT to lower its freshman class size. It might look like we were agreeing that technology is less important. And that would not be true."

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Christopher Kies, Louise Vosgerchian, Yasuo Watanabe, Newton Wayland, pianists  
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Lorna Cooke De Varon, conductor

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# Alumni, students discuss jobs

(Continued from page 1)

Green made a pitch for solving the "blame it on the computer" syndrome by using computers "as intelligently as is humanly possible." With proper design at the beginning, and much care for details, he noted, a lot of the aggravation can be taken out of computerization. "Human engineering is just as important in computers as, say, consumer products, and very few companies seem to realize it. The 'Action Lines' of newspapers are full of complaints from frustrated consumers who are the victims of billing mistakes. More concerned efforts could reduce the number of mistakes and make them easier to correct," he said.

Szymanski described the sort of company he was looking for: "a creative, enjoyable, interesting environment. I don't want impersonality. I want to be a good engineer first, and take on management later."

Tanquary echoed Szymanski's feelings. "I don't want a departmentalized job. I think we need personal interaction. And I think civic responsibility is more important to me than how much profit is made."

In the discussion that followed, several common themes were touched. A lot of time was spent discussing profit. Everyone agreed that a company needs profit to stay in business, and that therefore making profit must be a goal of a company. No one else besides Baxter admitted that profit was their only goal, but most alumni labeled it their most important. While some called having good relations with customers, employees, and the community goals (on the same

level as profit), others called them just strategies for maximizing profit. Responding to one of the students, and younger alumni, one alumnus said, "It's a mistake to assume that you can't be both socially useful and operate under the profit system. We now realize that it is good business to have people who are fulfilled in their jobs."

Next the students asked the alumni what their chances were for moving up from technical work to management. Are the rewards for being a super-engineer comparable to those in the rest of the company? Roshkind stated that his company had a "2-Pass" system, where the technical side could rise as high and as fast as the management side, so that could engineers would not suffer if they weren't qualified to go into management. Various managers (most of the managers present seemed to be) expressed the view that management was harder, with more aggravation, and therefore deserved the higher salaries. They said that researchers get other forms of recognition — from their papers and their peers. One alumnus expressed the view that a researcher's salary merely had to be "adequate."

Joe McCluskey, an MIT graduate and chief of the Environmental Affairs department at Commonwealth Edison, said that "the fun of being in business is dealing with people." He said that the mechanical problems are easily solved, but that the people problems are the toughest and the most fun. With a brief sigh of regret, he noted that he sometimes felt picked-on — by Zero Population Growth as the father of eight children, and

by environmentalists as a manager for the electric company. McCluskey got a good chuckle out of the group when he said that some problems were best solved by circumventing the established bureaucratic structure — he called it "adding lumps to the system."

One of the younger alumni ('70 or so) proposed that profits were not bad, per se, but that too much profit became greed. Hoffman commented that while society tended to deplore big profits by a big company, we all want to make big money on our own. However, no one could agree on what was too much. Baxter elaborated on the question of technical rewards versus management rewards: "No tech will ever be paid as much as a loan officer who makes a killing. Remember that the real money in this country goes to the entertainers."

The final major topic of discussion was IBM. Various alumni present who were familiar with the current anti-trust case believed that the weight of public opinion was against the company, and that even though they felt it would be a bad decision, it appeared to them that IBM would eventually be broken up. An interesting comment was made by one person; he felt IBM's marketing system was its best asset — it is so good, he said, that their equipment merely has to work.

One older alumnus ('30 or so) summed up the meeting pretty well when he said: "I think the problem with MIT is that it's getting as stodgy as Harvard... we used to have meetings like this much more often...."

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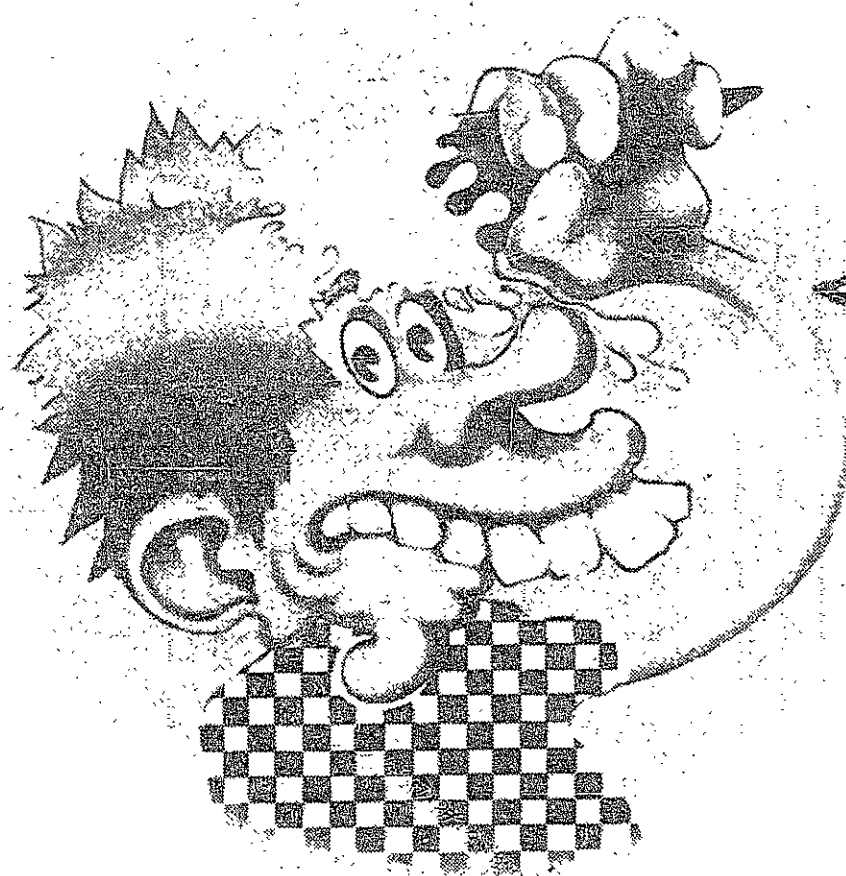
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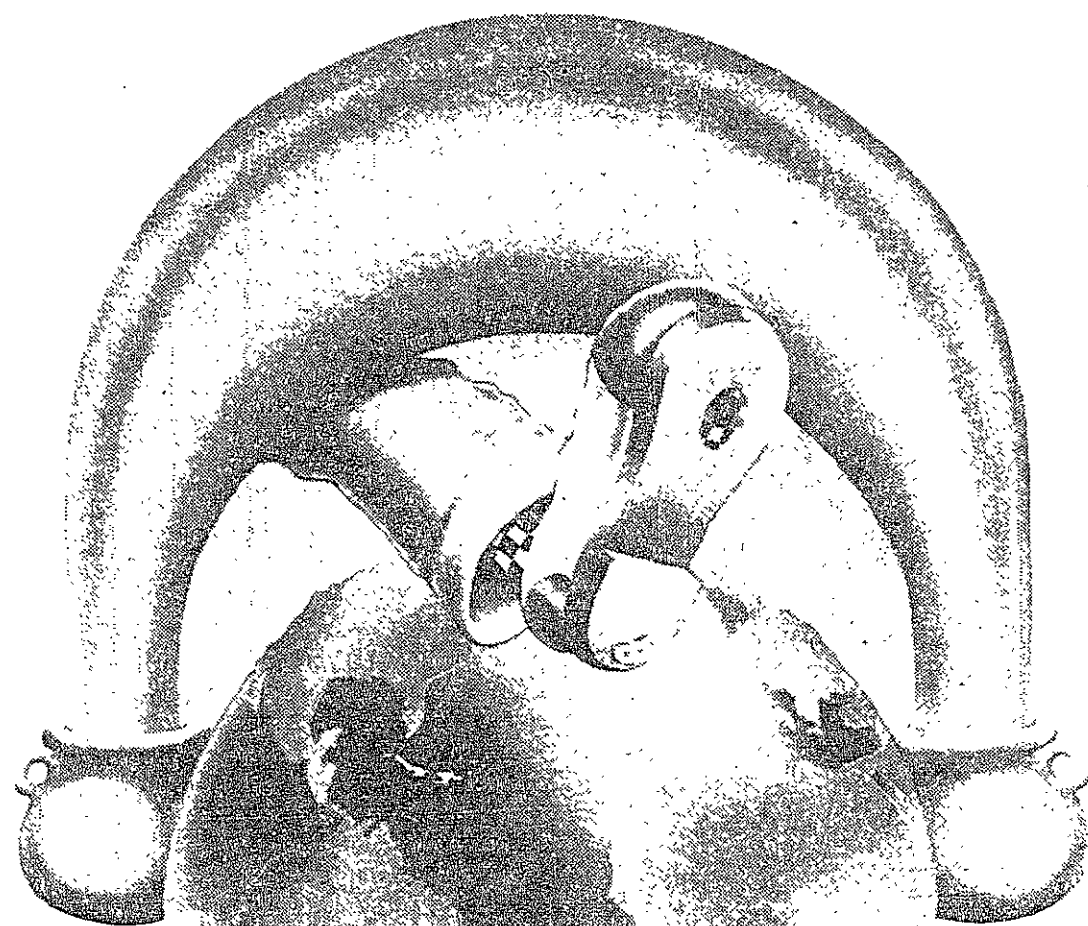
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# SPORTS

## Coach Farnham resigns

By Sandy Yulke

This will be the last year at MIT for Arthur (Art) E. Farnham, Jr., Head Coach of track and cross country. He has resigned and will leave MIT this June, after 16 years on the coaching staff. During his time here, Farnham has acquired many friends and admirers, and one cannot help getting the impression that he will be sorely missed.

Dave Wilson '73, President of the Athletic Association and co-captain of the track team said, "No matter how many good things you say about him, it won't be enough. It takes a special talent to coach people at MIT." His sentiments seem to be shared to just about everyone; Ross H. Smith, Director of Athletics, said that Coach Farnham is one of the most "conscientious and able coaches here at MIT" and that he is admired and respected by coaches throughout New England. This can clearly be seen by looking at some of Farnham's history.

He joined the staff in 1957, as assistant to the legendary MIT track coach, Oscar Hedlund, and succeeded him as head coach upon his retirement the following year. He then led the MIT track and cross country teams to prominence among the colleges of New England. The cross country team, under his guidance, was undefeated in 1967, and won the ICAAAA College Division Championship in 1968, and placed third in the NCAA National College Division Championships, to climax MIT's best season ever.

So far, during Farnham's tenure, the MIT indoor and outdoor track teams have posted 91 victories, as well as winning the Eastern Small College Championship in 1963 and 1968, and have set 22 all-time MIT varsity records. Farnham is also a past president of the New England Track Coaches' Association, and has served as secretary-treasurer of the Eastern Intercollegiate Athletic Association for the past six years. In addition, in 1964 he

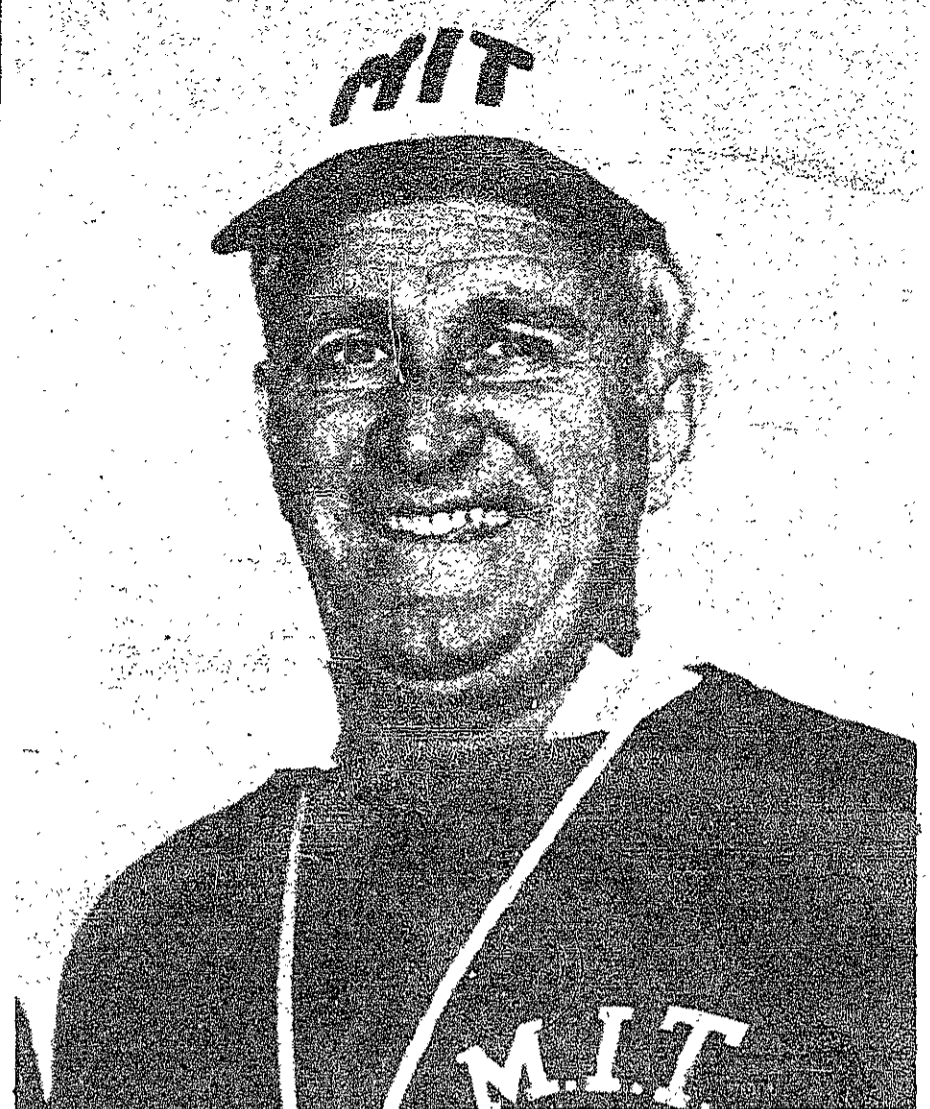
was selected by the US AAU and the State Department to coach a team of US track stars touring central and west Africa.

When interviewed, Farnham said that the decision to leave MIT had not been an easy one. He said that he had enjoyed his time here very much, and that he would miss a great deal the comradeship which he had found here. He added that he thought that MIT has the best attitude towards athletics of any college in the US, and that the teaching aspects of his job (all MIT coaches have teaching responsibilities in the Physical Education program - this is not true at the majority of schools) had been very fulfilling.

Farnham is leaving MIT to pursue a full-time commitment to a summer camp that he has been working at for over 20 years. Previously, he had only worked on the camp part-time during the school year, but he felt that that was a strain, and that his new occupation will provide him with a more leisure-

ly life. He also welcomes the opportunity to live on Cape Cod all year long, as he says that he has felt a great love for the Cape ever since he first was there 33 years ago.

After speaking with him, one cannot help but join all those who wish Coach Farnham the very best in all that he may do, and fondly bid him farewell.



**PUZZLE AND CONTEST**  
It appears to me we can get thrust from A SUPPLY OF ENERGY which rotates and shifts masses without ejecting mass and without a frictional reference to the earth. The first 5 people who point out a "SIGNIFICANT" force or forces other than the law for the conservation of momentum which will cause the device not to operate in this manner will receive \$100. I need simple answers because I am a layman.

When 2 identical eccentric masses (ems) are contra-revolved in a horizontal circle on an air bearing platform the platform goes back and forth with a sine wave motion (see solid line in Fig. 1) that lags the motion of the ems by 90 degrees (broken line). For circular motion the sine wave plot is made up of an infinite number of equal and opposite centrifugal and centripetal forces so the 3rd law is always satisfied. With just a little less friction the system would be isolated so forces outside the system in the deep dark far reaches of outer space would not have to be considered.

Equivalents to one of the ems are-- a one ounce unbalance on your car tire. An active mass such as a model car going around a circular track. A uniform rotating disc with a weight or the model car attached to the rim. The space opposite a pie shaped wedge removed from a uniform rotating disc. The center piston of 5 identical pistons in a rotating hollow donut shaped cylinder with room for 6 pistons. See Fig. 2. Mount the cylinders and all pistons marked 1, 2 & 3 rigidly to a frictionless platform. Simultaneously move all 4 & 5 numbered pistons 60 degrees to fill P2&P2. Note the center of mass is the same before & after this shift. This is easier to visualize if you place the cylinders over & under each other instead of side by side. The platform goes forward when the shift begins (a in Fig. 3), after the pistons revolve through 30 degrees forward motion of the platform stops (b). For the next 30 degrees the platform is pulled backwards (c). Now the pistons can go no further & in stopping the platform's motion ceases over its original position (d). If the system was at rest before the shift it will be at rest after the shift and exactly over its original position regardless of the internal forces required to shift. See Fig. 1a+1b.

Notes: Use 3, 5, 7, etc. masses. The sequence of center pistons is 3, 1, 4, 2, 5, 3, 1, etc., etc. To orbit moon pressurize your boat & install wings. CAUTION: Have you solved problems in circular motion where the size of the revolving mass entered the calculations? Can Newton's 2nd & 3rd law be combined into the law for the conservation of momentum for the Momentor described above? It does not violate Newton's basic 3 laws.

If the system had motion before the shift it will return to its original motion after the shift. Thus  $a + d = b$  equals 0 where a is accelerate, b is backward and d is decelerate.

To get acceleration install catches in the cylinders so the pistons can move forward but not backwards in the cylinders. Time the device, which I call a Momentor (combines the words motor & momentum), so that P2&P2 are "ALWAYS" empty at the same time. Whenever P2&P2 are empty 2 pistons in the back half of each cylinder are shifted to fill this empty space. You never want an empty space in the front half of the cylinder. There are countless ways of mechanizing the shifts 3 of which are--repelling electromagnets, hollow out the ends of each piston so when 2 pistons are joined the chamber can be filled with steam or chemical fuels, or controlled active masses such as model electric cars.

I call a Momentor a full wave centrifugal force rectifier as the back motion in Para. 2 is converted into an extra forward force. (An electronic full wave rectifier converts a plus & minus current into a current that flows in the same direction through the load.) It has much greater efficiency than a 4 cycle engine where each piston goes up & down twice for each power stroke while the shifts in a Momentor occur in the direction of motion. A car no longer requires a gear train or transmission with their attendant weight & friction losses. For reverse thrust shift when the positions OPPOSITE P2&P2 are empty. You can stop much faster using reverse thrust with no tire skid. This efficiency leads to a lessening of our pollution & energy crisis besides the improvement from faster safer stops.

Taking 0.636 (the average area of a sine wave compared to a square wave) from rectifier theory, thrust equals  $2 \times .636 \times m \times r$  where m is the weight of 1 piston. The .636 varies depending on how much time it takes to shift but it is important to realize the shifts occur where thrust falls off between the rectified halves of the sine wave. Ten, 10 lb. pistons whose center of mass is 6 inches from the center of the donut, revolving at 600 rpm produce 780 pounds of thrust & each piston pair separates 4 times per second. A 5000 lb. car (on a calm day) can eas-

ily maintain 50 mph (on a flat concrete road) with 170 lbs. of thrust. According to Galileo the 170 lbs. goes to making up only for impediments or friction losses of all kinds.

A 5 piston Momentor is very simple-- there are "ALWAYS" 3 pistons in the front 1/2 of the cylinder. For 80% of the time of each revolution all 5 identical pistons have the same speed & 3 must pull ahead more than 2 will pull back. For the remaining 20% of the time 2 pistons in the back 1/2 of each cylinder are shifted twice and the forces balance. Even simpler--if the shifts cancel is 3 more than 2??

Six concepts from elementary mechanics are so simple they are skimmed over so one does not appreciate the high efficiency of a Momentor. 1. Side forces & torques cancel on each other when you contra-revolve 2 identical masses. 2. In paragraph 3 & 4 the motion lags the force by 90 degrees. 3. Normally we speed up & stop in a straight line so these forces are equal & opposite but in Para. 4 we accelerate masses going backwards & decelerate them when they are going forward so the a & d forces are both in the desired direction (forward). 4. In Para. 5 not only is the center mass ALWAYS in the forward half of the circle but the motion of the platform is in phase with the force from the center mass. 5. Before the 2 shifted pistons in Para. 5 can give a back force they must be accelerated so they produce greater central forces than 3 identical pistons at a lower normal speed. 6. An unbalanced revolving system always produces accelerated motion as the platform in Para. 2 is either being stopped, speeded up or slowed down, the only question is, can we select the direction of these accelerated motions which have always balanced in the past?

This paper has been filed with the Patent Office under the Disclosure Document Program. If you can find no error, funds may be available from EPA, DOD, NASA, etc., to build working models. If you are not interested in this problem please inform someone in the physics department of your local university or college.

Send your entry to, or if you desire more details send a stamped self-addressed envelope, JW Ecklin, 5100 8th Rd. S. #508, Arlington, Va. 22204.

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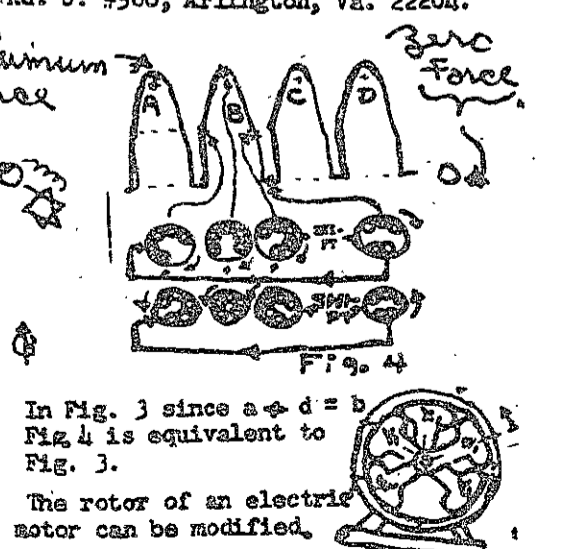
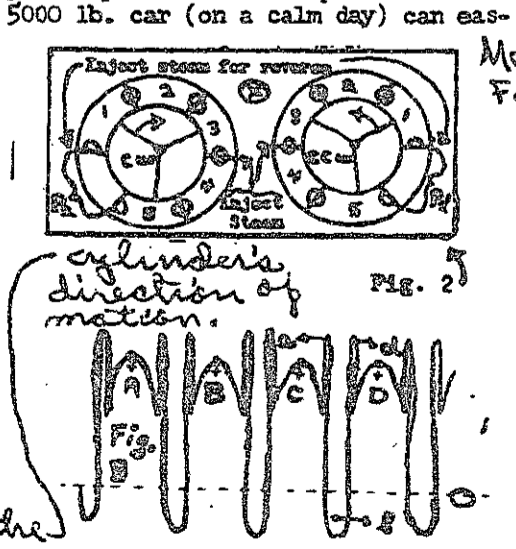
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Tuesday, January 9, 1973



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Fig. 2  
cylinders direction of motion.

Fig. 3  
In Fig. 3 since  $a + d = b$  Fig. 4 is equivalent to Fig. 3.  
The rotor of an electric motor can be modified.