

Corporation approves link to Whitehead

By ROBERT M. BYERS
Staff Writer

The MIT Corporation gave approval Friday, Dec. 4, to an agreement by which the newly formed Whitehead Institute for Biomedical Research would become affiliated with MIT.

Under the affiliation, certain research scientists will hold joint appointments on the MIT faculty and the Whitehead research staff. In addition, MIT will receive a \$7.5 million gift from the Whitehead Charitable Foundation established by philanthropist and industrialist Edwin C. Whitehead of Greenwich, Conn. MIT will use the gift as an invested endowment fund and employ income from it to support teaching and research within academic departments where joint professors are affiliated—to begin with, primarily in the Department of Biology—and, if needed, to defray costs associated with the affiliation.

Up to 13 Whitehead scientists are expected to receive appointments as assistant, associate or full professors at MIT during the first eight years of affiliation. The appointments will be made according to usual MIT faculty selection processes, with the full costs associated with these appointments to be paid by the Whitehead Institute. These scientists will do their research at the Whitehead Institute, but will have full responsibilities for undergraduate and graduate teaching, as well as committee service, at MIT.

The addition of these professors to the MIT Biology faculty is expected to permit an increase in the number of graduate students enrolled in the Department of Biology over the next eight years.

The agreement provides that MIT will designate candidates for three of the 14 members of the Whitehead board of directors. The agreement also provides that the director of the Whitehead Institute will always be a tenured member of the MIT faculty and that this

appointment will be approved by MIT. The director will also be a member of the board of directors.

The affiliation was proposed by Dr. David Baltimore, director-designate of the Whitehead Institute and one of those who will hold joint appointments. Dr. Baltimore is American Cancer Society Professor of Microbiology at MIT and co-recipient of the 1975 Nobel Prize in Physiology or Medicine for his work in molecular genetics. Quality and effectiveness of research at the emerging Whitehead Institute, he said, would be improved if a way could be found to involve scientists there in teaching. Intermingling of teaching and research, in which each reinforces the other, he said, is a characteristic that has traditionally made American science strong.

Announcement of the action by the MIT Corporation at its regular quarterly meeting in Cambridge Friday was made by Howard W. Johnson, chairman of the Corporation. Mr. Johnson said the Corporation's executive committee had endorsed the affiliation earlier as had the Corporation's Department of Biology Visiting Committee chaired by Corporation member David R. Clare, president of Johnson & Johnson, Inc., New Brunswick, N.J., and a 1945 graduate of MIT.

The formal affiliation was recommended to the Corporation by President Paul E. Gray and Provost Francis E. Low.

The MIT faculty at its monthly meeting November 18 also endorsed the affiliation by a vote estimated at five-to-one or more. Some 350 of MIT's 1,000 faculty members attended that meeting which culminated several months of faculty discussion and debate.

In announcing their decision to recommend the affiliation, President Gray and Provost Low told the faculty that lengthy discussions of the proposal over the past several months

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Midnight concert

The MIT Chamber Players will give their eighth annual midnight concert Friday, Dec. 11, in the Rogers Lobby (Building 7).

Marcus Thompson, director of the Chamber Players will conduct the full chamber orchestra. Alumnus Stephen Umans will be clarinet soloist.

The concert will begin with the performance of Handel's Overture to the Royal Fireworks Music, followed by Mozart's Clarinet Concerto with Mr. Umans as soloist. It will close with Mozart's Symphony No. 41 ("The Jupiter").

The midnight concert is sponsored by the Music Section of the MIT Department of Humanities and is open to the public free of charge. Members of the audience should bring cushions or blankets for seating in the Lobby.

Tech Talk hiatus

Tech Talk will not be published December 23. A special issue on December 30 will contain only the timetable for the first week of January's Independent Activities Period.

The Institute Calendar in next week's paper (December 16) will cover the period from December 16 through January 10, exclusive of IAP listings.

Those organizations and activities that have standing listings in Institute Notices or the Institute Calendar and plan to meet during IAP must call Eileen Kenney, x3-3270, by noon Thursday, Dec. 31, for their listings to be included in Tech Talk of January 6, 1982. All standing listings will be removed until such a new insertion is received.

Writing report

A report from the Committee on Educational Policy recommending a writing proficiency requirement is included on pages 7 and 8 of today's paper.

Center 'crowns' athletic program

By KEN CERINO
Director of Sports Information

"This building is dedicated to the generations of MIT—past, present, and future—who meet intellectual and physical challenge with equal verve and who espouse the ancient ideal of a sound mind in a sound body."

—Athletics Center inscription

MIT officially dedicated its new \$9-million Athletics Center Friday "with a sense of accomplishment, a renewal of commitment, and a strong feeling of joy and celebration," according to MIT athletic director Royce N. Flippin, Jr.

Howard W. Johnson, Chairman of the MIT Corporation, presided over the ceremonies which took place on the ice hockey rink located on the first floor of the new facility.

Present were MIT President Paul E. Gray; Irene du Pont, Jr., Life Member Corporation

and chairman, Corporation Visiting Committee for Athletics; Clint W. Murchison, Jr. '44, chairman, MIT Athletics Center National Sponsoring Committee; Francis E. Low, MIT Provost, and Royce N. Flippin, Jr., MIT Director of Athletics.

Also, Jane Betts, MIT Assistant Director of Athletics; Thomas J. Allen, Jr., Professor of Organizational Psychology and Management, Sloan School of Management, and Chairman, Athletic Board; Ross H. (Jim) Smith, Former MIT Director of Athletics; graduate students Harvey G. Stenger (intramural and club sports) and Mary L. Bowden (women's athletics); Jeffrey C. Lukas '82, Track Co-Captain and Varsity Club President; Patrick A. Robertson '83, MIT Athletic Association President, and Gordon V. Kelly, Associate Professor of Physical Education and Head Coach of Indoor and Outdoor Track.

"The years of planning and working to make possible this facility have added to its

importance for the MIT community," said Mr. Johnson.

Mr. Johnson noted that a century earlier the special spirit which has been part of MIT from the start, was captured by F. Gelette Burgess, MIT Class of 1887, when he wrote his now famous verse, "Not the quarry, but the chase, Not the laurel, but the race..."

Those speaking at the dedication represented the various athletic constituencies of the MIT community and all noted the versatility of the new building.

"Athletics represent first and foremost an educational program of extraordinary variety and range," said Dr. Gray. "Beyond its role in the academic program, the Athletic Department is an almost unequalled community resource. We are, as individuals and as an organization, stronger and more resilient because of our athletic program which is

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Cutting the ribbon for the dedication of the Athletics Center are, from left, Jane Betts, Harvey Stenger, Mary Bowden, President Paul E. Gray, Chairman Howard W. Johnson, Ross H. (Jim) Smith, Royce N. Flippin, Jr., Patrick A. Robertson and Provost Francis E. Low. In the back are Thomas J. Allen, Jr., and Jeffrey C. Lukas.

—Photo by Calvin Campbell



When the most common form of frozen precipitation arranges its flakes of starlike crystals and matted ice needles over the familiar outlines of the MIT campus, snow acquires a quality not conveyed in its meteorological definition. Hailed or cursed with equal fervor, it is capable of gladdening the heart or burdening the soul. The Physical Plant people moved quite a bit of it in the last few days, reclaiming in the process this path along Building 3. Laurence W. Pickard, manager of grounds, had 50 people working on snow removal. MIT plowing crews helped out hard-pressed Cambridge workers by opening several city streets near the campus. "For the first storm of the season, I think our people came through with flying colors," Mr. Pickard said.

—Photo by Calvin Campbell

Two named in Whitaker College

The appointments of Dr. Robert Rosenberg as professor and Dr. Monty Krieger as assistant professor in the Whitaker College of Health Sciences, Technology and Management have been announced by Dr. Irving M. London, director of the College.

Dr. Rosenberg, a specialist in hematology, holds a concurrent appointment as professor of medicine at the Harvard Medical School. Dr. Krieger, whose main research interest is in molecular genetics, joined the faculty earlier this year. Both men also hold joint appointments in the MIT Department of Biology.

As head of the Thrombosis and Hemostasis Division of the Sidney Farber Cancer Institute, Dr. Rosenberg directed research on Hypercoagulability and the Heparin-Antithrombin Mechanism, a project which will be continued at MIT. Among the aims of this project are investigation of the anticoagulant action of heparin, its interaction with antithrombin and hemostatic system enzymes, and its role in protecting the vessel wall against thrombosis and atherosclerosis.

Dr. Rosenberg holds an MD degree from George Washington University Medical School, and a PhD in Biophysics from MIT. He was the recipient of the 1978 Dameshek Prize for Outstanding Contributions to Hematology from the American Society of Hematology. He is a member of the American Society for Clinical Investigation and the American Association of Physicians. Dr. Rosenberg has published extensively in the hematology field.

Dr. Krieger is presently pursuing several



Dr. Rosenberg

Dr. Krieger

research projects involving the genetics of receptor-mediated endocytosis, which focus on the mechanisms by which cells extract both information and nutrients from their environment. Findings in this area will provide insight into how cholesterol and peptide hormones are processed in the body, and will help in building a foundation for developing improved methods of diagnosis and treatment of heart disease.

Dr. Krieger holds a BS degree in chemistry from Tulane University, and a PhD in chemistry from the California Institute of Technology. Most recently, he has worked as a research fellow in Internal Medicine and Molecular Genetics at the University of Texas Southwestern Medical School. Among his numerous academic and professional honors are the Danforth Foundation and Woodrow Wilson Fellowships, and the 1977 Herbert Newby McCoy Award from Caltech for outstanding contributions to the science of chemistry.

Brass concert to span centuries

The MIT Brass Ensemble's Christmas Concert at 3 pm, Sunday, Dec. 13, in Kresge Auditorium, will span four centuries in music, beginning with 16th Century Christmas music and ending with original compositions by rock musician Mark Thor, which the Brass Ensemble will play with the Mark Thor Rock Band and Ingrid Gutberg, Institute Organist.

The concert is sponsored by the Music Section of the MIT Department of Humanities and will be open to the public free of charge. Gordon Hallberg, director of the Brass Ensemble, will conduct the program.

The first five selections, *Angelus Domini Descendit* by Hans Leo Hassler, *Hodie Christus Natus Est* by Giovanni Pierluigi de Palestrina, *Angelus ad Pastores Ait* by Hans Leo Hassler and *Beata es, Virgo Maria* and *Canzona A 12* both by Giovanni Gabrieli, might be considered a Venetian antiphonal Christmas festival from the latter 16th Century.

Next, four smaller independent groups within the MIT Brass Ensemble will perform five and six part brass music. The first, *Pastorale*, is from the Christmas Concerto Grosso, Op. 6, No. 8, by Arcangelo Corelli, edited by Robert King. The Corelli will be followed by modern and inventive settings of traditional

carols—*Jingle Bells* and *Deck the Halls* arranged by Fred Teuber, *Joy to the World* and *Good King Wenceslaus* arranged by David Baldwin, and *Good King Wenceslaus, It Came Upon a Midnight Clear* and *Jingle Bells* arranged by Tommy Pederson for five trombones.

Modern arrangements for full brass ensemble will complete the first half of the program—*Carols Three* by Luigi Zaninelli, composer in residence at the University of Mississippi; two Christmas hymns scored by Sammy Nestico, former chief arranger for the Marine Band; and *Festival of Carols Op. 78*, by David Uber, an arrangement of seven Christmas carols.

In the second half of the program, Boston composer-singer Mark Thor will perform six original songs which he has arranged for the MIT Brass Ensemble, four-piece rock band, and keyboards. This unusual combination is the first such program ever offered in New England. Song styles range from hard edged rock to that classically influenced. Other featured performers will be Bill Clarke, guitar; Brad Hallen, bass guitar, and Chuck Myra, drums.



Cutting the cake marking the official opening at 500 Memorial Drive last week were, from left, Professor Borivoje Mikic, faculty resident; Howard W. Johnson, chairman of the MIT Corporation; Daniel N. Perich '82, house president; President Paul E. Gray and Dean for Student Affairs Shirley M. McBay.

—Photo by Calvin Campbell

New residence hall is opened

MIT President Paul E. Gray told 220 guests at a luncheon marking the opening of a new \$10 million residence at 500 Memorial Drive last week that the project completes "for the moment" MIT's 30-year program to build high quality campus housing for undergraduates and that MIT must now turn to critical housing needs of graduate students.

The official opening formed the program for a luncheon held in the 500 Memorial Drive dining facility—and hosted by the MIT Corporation on the occasion of its regular quarterly meeting.

Howard W. Johnson, chairman of the MIT Corporation, presided at the luncheon.

President Gray described campus houses as part of "the sixth school at MIT"—programs and activities which augment the five schools that form MIT's academic structure.

"The residence extends the atmosphere of learning beyond the classroom and the library and the laboratory," he said. "It provides a sense of continuity and a wholeness to the experience that is MIT. The period of concentrated learning is a brief experience for most of us—and the residence system helps to give it the depth and the lasting value it must have to sustain us for a lifetime."

The new five-story concrete and red brick residence will provide housing for 350 students. This means MIT now has campus houses to accommodate 60 per cent of its undergraduates. Another 30 per cent live in

fraternity houses. For the first time, with the occupancy of 500 Memorial Drive at the start of this academic year, MIT was able to offer campus housing for all undergraduates who sought it.

President Gray said that next to financial aid, graduate student housing is MIT's most pressing problem in attracting high quality graduate students. Half of the Institute's graduate students want to live on campus, but MIT has space for only 30 per cent of them, he said.

"We can and must begin to flesh out the dream of becoming a residential university, now that we have become a residential college," he said.

Dean for Student Affairs Shirley M. McBay said that when former president James R. Killian, Jr., was inaugurated in 1949, he described campus living as an important learning environment. The newest house, she said, will likely be the last addition to MIT's undergraduate system for some time to come, provided demands and policies remain essentially unchanged.

Daniel N. Perich, a senior from Pittsburgh, Pa., and first student president of 500 Memorial Drive, said residents of the house, including 90 upperclass students who volunteered to be among the first to live there, are enthusiastic about the facilities and are making swift progress toward making their "house a home."

New houses named for Fisk, Thorn

Two of the six houses that make up MIT's New West Campus Houses were officially named last week for two long-time members of the MIT Corporation—Dr. George W. Thorn and the late Dr. James B. Fisk.

The MIT Corporation formally bestowed the names at its regular quarterly meeting last Friday. Howard W. Johnson, chairman of the Corporation, announced the new names at the Corporation luncheon marking the opening of 500 Memorial Drive, later that day.

The Corporation designated the residence at 471 Memorial Drive to be Fisk House. Dr. Fisk, former president of Bell Telephone Laboratories and a member of the Class of 1931, joined the MIT Corporation in 1959 and

served for 25 years, 19 years as a member of the executive committee. He died earlier this year.

The residence at 476 Memorial Drive was designated Thorn House in honor of Dr. Thorn, emeritus physician-in-chief at Peter Bent Brigham Hospital and emeritus Hersey Professor of Theory and Practice of Physic at the Harvard Medical School. He joined the MIT Corporation in 1965, served as a member of the executive committee for 12 years, and presently is Life Member Emeritus.

The other four houses—Ballard House at 472 Memorial Drive, Lawrence House at 473 Memorial Drive, Coolidge House at 474 Memorial Drive and Desmond House at 475 Memorial Drive—were named earlier.

Photography historian coming

Dr. Estelle Jussim, professor of film and visual communications at the Simmons College Graduate School of Library and Information Science, and a noted theorist and historian of photography, will be a visiting lecturer at MIT's Creative Photography Laboratory for the spring term.

Dr. Jussim is the author of several award winning books including *Visual Communication and the Graphic Arts*, an investigation of 19th century photographic technologies and their impact on perceptions of truth and reality, and *Slave to Beauty*, a biography of the pictorialist master, F. Holland Day. A new book, *Frederic Remington, the Camera and the Old West*, is forthcoming.

She is also author of many articles published in both the popular and scholarly press, and has lectured at art centers, museums and universities in the United States and abroad.

At MIT, Dr. Jussim will teach a course called "The Context of Photography: Major Issues in Communication, Technology, Aesthetics."

"Major genres of photography will be explored in their historical perspectives," said Dr. Jussim. "My basic objectives will be to encourage the development of the intellectual skills required for independent research and the acquisition of the vocabulary of critical discourse." The lectures from the course will

also be published in book form.

For information or registration, call Starr Ockenga, director of the Creative Photography Laboratory, x3-4424.

Zamir group to sing

MIT Hillel will sponsor a performance of Handel's oratorio *Saul*, by the Zamir Chorale of Boston at 7:30pm, Sunday, Dec. 13, in Kresge Auditorium.

Tickets, at \$5.50 and 8.50 will be on sale at the door, or may be ordered by calling 566-3812.

Soloists will be J. Scott Brumit in the title role of *Saul*, Janice del Sesto as his daughter Michal, Scott Leland as David, the shepherd, and William Walton as *Saul's* son Jonathan.

Saul is based on the Books of Samuel. Integrating chorus, orchestra and soloists, *Saul* chronicles the rising conflict between King *Saul* and the shepherd boy David.

The concert will be the first major performance of the Zamir Chorale's 13th season. A relative newcomer among Boston's musical groups, the Chorale has received much praise from the community including an award from Boston's Association for the Performing Arts.



The broad themes that define the scope of the MIT Program in Science, Technology and Society were the topics of a symposium in Kresge's Little Theatre Dec. 3 and 4 that marked the move of the STS program to its permanent home in Building E51 (70 Memorial Drive). At top, Provost Francis E. Low, left, welcomes the symposium participants as a panel prepares to discuss one of the major themes, "Science, Technology and Everyman's Life." Standing is James R. Killian, Jr., former MIT president and chairman of the Corporation, who chaired the session. The panelists, from the left, are John M. Ziman, FRS, professor of physics at the University of Bristol, England; Robert A. Charpie, president of the Cabot Corporation; Don K. Price, Dean and Weatherhead Professor at Harvard University's Kennedy School of Government; and Lewis H. Spence, receiver-administrator for the Boston Housing Authority. Below, Thomas S. Kuhn, MIT professor of philosophy and the history of science, is the

speaker. Seated, from the left, are Carl Kayser, David W. Skinner Professor of Political Economy and director of the STS program; Nathan Rosenberg, Farleigh S. Dickinson, Jr., Professor of Public Policy at Stanford University; Victor F. Weisskopf, Institute Professor Emeritus and professor emeritus of physics at MIT; and Charles F. Sable, Ford International Assistant Professor of Social Science at MIT. The symposium was concluded by another panel that addressed the topic, "Science, Technology and the Larger Culture." The participants were Leo Marx, William F. Kenan Professor of American Cultural History at MIT, chairman; P. Reyner Banham, professor of history of art at the University of California at Santa Cruz; Sherry R. Turkle, associate professor of sociology at MIT; Elting E. Morison, Elizabeth and James Killian Class of 1926 Professor Emeritus at MIT; and Michael Crozier, Director of the Center for Research in the Sociology of Organizations in Paris.



Whitehead Institute

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had strengthened the affiliation because of the questions raised.

"As the relationship between the Whitehead Institute and MIT develops, we will continue to be attentive to the concerns which have been raised over these last several months," they said.

The Corporation also expressed appreciation to the faculty for their contributions to the discussion and decision on the affiliation question. A resolution passed by the full meeting read:

"The MIT Corporation deeply appreciates the comments and debate provided by the faculty of MIT on the question of the affiliation between MIT and the Whitehead Institute for Biomedical Research, which were of great assistance in its deliberations, and acknowledges the concerns voiced by members of this faculty."

Speaking of the Corporation decision, Mr. Johnson said that it represents an innovative step in the support of basic science in this country. Mr. Johnson, a former MIT president, said he was confident the affiliation of the Whitehead Institute with MIT will be carried out in a manner which will benefit greatly the rapidly evolving field of developmental biology.

MIT has already designated the three who will represent the university on the Whitehead board. They are former President Jerome B. Wiesner, Dean Abraham J. Siegel of the MIT Sloan School of Management, and Dr. W. Gerald Austen, chief of surgical services at Massachusetts General Hospital. Dr. Austen, a 1951 graduate of MIT, and Dr. Wiesner, are members of the M.I.T. Corporation.

Mr. Whitehead, founder of the Technicon Corp., now a part of Revlon, Inc., is not himself a member of the Whitehead board of directors. The present eight members include the chairman, Dr. John Sawhill, former president of New York University; Mr. Whitehead's two sons, John Whitehead, an executive with Technicon, and Peter, an architect, and Mr. Whitehead's daughter, Susan Whitehead, a law student; Dr. Herman Sokol, presi-

dent of Bristol-Myers Co., Inc., and a former Technicon director; Dr. Leonard Skeggs, professor of biochemistry at Case Western Reserve University and the inventor of the Technicon Auto Analyzer; Dr. Lewis Thomas, chancellor of the Memorial Sloan-Kettering Cancer Center; and Dr. Baltimore.

There will be three additional positions on the Whitehead board to be chosen with the concurrence of both MIT and the Whitehead Institute. Dr. Donald S. Frederickson, former director of the National Institutes of Health, and Bernard J. O'Keefe, chairman of EG&G, Inc., Wellesley, Mass., have accepted invitations to be appointed to two of these positions.

Mr. Whitehead formed the nonprofit Whitehead Institute for Biomedical Research to pursue independent basic research in developmental biology. His financial resources, he said, had been derived through the development of medical technology and he felt an obligation to use his resources to contribute to basic scientific knowledge.

Mr. Whitehead has agreed to provide the Whitehead Institute with a \$20 million research facility located near MIT and additional funds to equip the building, which will have 130,000 square feet of laboratory and office space.

Mr. Whitehead also has established a \$60 million trust fund which will provide \$5 million annually to the Whitehead Institute for operating expenses and for an endowment fund.

Finally, Mr. Whitehead has provided that upon his death he will bequeath to the Whitehead Institute an endowment of \$100 million, less payments yet to be made from the trust fund.

Dr. Baltimore has begun to assemble an administrative staff for the Whitehead Institute. In addition, two present members of the MIT biology faculty—Dr. Robert Weinberg and Dr. Harvey Lodish—have agreed to join the Whitehead Institute research staff. Under terms of the affiliation with MIT, they will retain their MIT faculty appointments.

manner. Willingness to become sufficiently familiar with various facets of the department is vital, as this individual will be called upon to answer the questions of callers and visitors. B1510

Secretary-Receptionist, Nutrition & Food Science, to provide office support for the Administrative Assistant in Headquarters office. Will also perform general secretarial duties for two lecturers, while serving as receptionist and back-up secretary for Department Head. Responsibilities include covering departmental phone and handling publication of weekly departmental newsletter. Candidates should have excellent typing skills. Well developed communication skills are crucial, as this individual will be interacting with a variety of persons on a daily basis. The capacity to work in a hectic setting, with frequent interruptions important. Basic bookkeeping skills preferred. B1508

Administrative Secretary, Chemistry, to provide secretarial support for one faculty member. Will take and transcribe shorthand dictation; type grant proposals and technical manuscripts; arrange appointments, meetings and travel; as well as monitor research accounts. Four to five years of direct or related experience as well as excellent typing skills are needed. Work will involve some technical typing. College background and word processing experience desirable. B1505

Sr. Keypunch Operator, Comptroller's Accounting Office, to take responsibility for data entry of all accounting systems input, including payroll. Will maintain batch balances and verify all data. This individual will be trained to create and make use of magnetic tapes for computer processing. One to three years experience on Data-Entry systems essential. Experience on Infocore helpful. B1503

Sr. Secretary, Food Service, to perform general secretarial work. Will screen telephone calls and visitors; type correspondence, menus, catering reservations, budgets, meeting notes; obtain prices from purveyors; prepare forms for unit use; schedule appointments; arrange travel; distribute mail; respond to standard inquiries by mail; compose nonroutine letters from dictation; maintain files. Requires excellent general office skills and 3 years direct or related experience. This position involves much student contact. B1283

Library Support Staff

Library Assistant III, (20 hrs/wk), Libraries, to process reserve book lists. Will record receipt of lists; check library's holdings; annotate lists with book order information; request reprints or pull volumes from shelves of divisional libraries for photocopying by the Microreproduction Laboratory; file shelf list cards; assist at the bookchecking desk; and perform various other clerical duties as assigned. Requires high school graduation or the equivalent, along with a year's directly related experience. Good interpersonal skills are important, as this individual will be dealing regularly with library users. Typing skills desirable. B1485

Technical Support Staff

Sr. Secretary, Nutrition & Food Science, to type and proofread reports, manuscripts, examinations, and laboratory manuals from rough drafts. Will answer telephones and provide reception; read and distribute mail; answer routine correspondence; set up filing system; schedule meetings; arrange travel; photocopy; monitor research accounts; operate word processor, and provide liaison between research labs at Children's Hospital and MIT. Applicants must have completed high school and have 2 to 3 years office experience, or an equivalent combination of education and experience. Excellent typing skills necessary. B1507

Sr. Secretary, Haystack Observatory, to provide secretarial and administrative support

for Observatory group. Will type technical reports, grant proposals, journal articles, material from rough draft and dictaphone, as well as general correspondence. In addition will arrange travel; organize and maintain files; schedule meetings; screen phone calls; and perform other related tasks as assigned. Two to three years related experience necessary, or an equivalent combination of education and experience. Excellent typing skills are needed also, for work on both word processor and electric typewriter. Good proofreading skills and a command of English grammar are essential. This individual will be expected to organize effectively under minimal supervision, while maintaining attention to accuracy of detail. Experience in word processing helpful. B1490

Sr. Secretary, Sea Grant College Program, to compose and respond to routine correspondence. Will also answer or redirect inquiries regarding activities and operation of Marine Industry Advisory Services; assist in organizing agenda for meetings; handle mailings, attendance records and luncheon arrangements for those meetings; maintain files on interaction with Collegium members; maintain invoice and payment records of Collegium members; provide reception; as well as assist with other areas of program as needed. Applicants should have high school graduation or the equivalent, along with 2 to 3 years office experience. Typing skills are vital, as well as the ability to set priorities and carry on activities with some independence. Interest in ocean and marine related subjects desirable. Experience with word-processing plus knowledge of MIT preferred. B1488

Sr. Secretary, Resource Development, to provide secretarial support for the Associate and Assistant Directors. Will type letters, memos, backup material for solicitation visits, schedules and visit reports on the word processor and typewriter. Will also handle telephone calls for the Assistant Director; maintain files for the Associate Director; process incoming and outgoing mail; arrange travel; handle appointment calendars; and assist with other miscellaneous tasks, such as photocopying, as required. Excellent typing is needed, along with a strong sense of organization and a pleasant telephone manner. The capacity to work in a busy setting, handling more than one project simultaneously, and meeting occasional deadlines, is essential. It is also important for this individual to be able to work with minimal supervision. Word processing experience preferred. NON-SMOKING OFFICE. B1409.

Office Assistant

Sr. Office Assistant, to support accounting and billing functions in the Business Office of the Medical Dept. Will prepare bills and journal vouchers; investigate billing questions; monitor charges; process error lists on computer terminal; compile monthly revenue statements; process data and statistics from Off-Hours Clinic; assist in preparation of expense analyses; order supplies; and perform other related tasks as required. This individual will be called upon to interact with support staff members in other areas of department. Requires high school graduation or the equivalent, along with 2 to 3 years related experience. Proficiency in working with numbers; bookkeeping and accounting background vital, as well as skill in using calculator and computer terminal. Knowledge of medical terminology and third party billing helpful. NON-SMOKING OFFICE. B1506

Sr. Office Assistant, Comptroller's Accounting Office, to resolve stop-payment problems; record stopped payments, then follow-up with banks to have checks re-issued; research invoices which cannot be matched to purchase orders; post invoices; as well as work on vendor related problems. Candidates must have 2.5 years related experience, or an equivalent combination of education and experience. The capacity to work independently

in dealing with banks as well as MIT Audit Office vital. B1501

Office Assistant, Credit Union, to type withdrawal checks and general correspondence; explain credit union regulations to current and prospective members; issue receipts for cash or checks; take withdrawal requests; issue share and loan checks; as well as handle telephone requests. Applicants should have good typing skills plus a facility for working with figures. Since this individual will be called upon to answer inquiries and interact with a variety of persons on a daily basis, good interpersonal skills and a pleasant telephone manner are essential. Familiarity with adding machines helpful. B1504

Office Assistant, Comptroller's Accounting Office, to type vouchers; charge and credit various projects for work done; file; perform research; and handle miscellaneous other clerical duties as assigned. Applicants should have good typing skills and a knowledge of bookkeeping. B1502

Service Staff

Laboratory Assistant, (25 hrs/wk), Clinical Research Center, to perform routine jobs of skilled and semi-skilled nature, such as keeping apparatus in good condition and performing laboratory tests and analyses. This individual will receive, prepare, process and monitor urine and fecal collections for Center's Specimens Lab (specimen data is subsequently recorded into computer bank). Candidate will also prepare reagents needed by the Specimens Lab. Position involves some weekend work. Requires high school graduation, as well as the capacity to work with minimal supervision. Attention to detail is vital. A year's experience in a laboratory setting preferred. H574

Cook's Helper, Food Service, to prepare foods, under supervision, for all meal periods. Will provide general assistance to the kitchen staff; maintain a clean and sanitary work area; and perform other related duties as assigned. Applicants must have command of the English language. A solid understanding of the fundamentals of grill, saute, roast and steam food preparation is needed, as well as experience in preparing large quantities of food. H573

Painter, Physical Plant, with a minimum of 5 years experience in all phases of painting trade, needed to perform same, including interior and exterior work, mixing and preparation of paint materials, and matching colors. Requires a thorough knowledge of the various materials, tools, equipment and rigging used in the trade. Applicants should have Painter Rigger's and rigging used in the trade, as well as a Painter Rigger's license. The ability to work effectively on staging and ladders is vital. H577

Machinist B, Nuclear Reactor Laboratory, to work from blueprints, specifications, verbal instructions, or sketches, setting up and operating commonly used machine tools. Will work in reactor machine shop in experimental machine and reactor components fabrications with supervision. This work involves handling of and exposure to radioactive materials, and, therefore, strict adherence to appropriate radiation protection procedures must be observed. Applicants must demonstrate high familiarity and skill with all commonly used machine tools, and have a minimum of 3 years applicable experience. This opening is for the second shift, 4 to 12 p.m. H503

The following positions were still available at Tech Talk deadline. Complete descriptions of all available positions are posted in the Personnel Office (E19-239), and at locations listed at the beginning of Positions Available section.

ADMINISTRATIVE AND ACADEMIC STAFF:
A172, Computer Systems Manager, Whitaker College of Health Sciences
A171, Production Manager, Design Services
A170, Sr. Applications Programmer, Administrative Information Services

Seminar on speech

"How do we Speak?" That's what Institute Professor Morris Halle of the Department of Linguistics and Philosophy will explore in a seminar—the second in the series of Getting to Know the Institute—Wednesday, Dec. 16, noon-1:30pm in Rm 9-150.

Questions to be addressed include, What are the gymnastics we go through to create acoustical signals called speech? Which gymnastics produce what sounds? and, Why do we think the sounds we produce are words?

Professor Halle is a world-renowned scholar whose research is focused on the search for invariant elements and rules underlying the sound patterns of human languages and the principles of their organization.

All seminars are open to everyone in the community without advance registration.

Getting to know the Institute is sponsored jointly by the Provost's Office and the Personnel Office as a means of acquainting the community with work being conducted in departments, laboratories and centers. Information is presented in nonscientific language on the research and educational pursuits of MIT.

Security storage

For students worried about leaving valuable items such as stereos, cameras, and TV sets in their rooms over Christmas vacation and IAP, the Campus Police are once again offering secure storage.

Anyone wishing to store such items may take them to Campus Police headquarters on the second floor of du Pont Gymnasium, 9am-5pm Monday-Friday. Property should be contained in sealed boxes or cases and clearly marked with the owner's name, term address and expected date of return.

Those who store items must pick them up by Monday, February 1.

Center

(continued from page 1)

crowned by this magnificent Center." Lukas noted the success of both the hockey and track teams in their first season of competition in the new facility. "The hockey team skated to a 13-4 record while the track team ran to an 8-2 mark, losing only once at home. "I'm very thankful that during my career I have seen that MIT has a sincere concern for the quality of its sports programs. This new facility is an example of this active interest," Lukas added.

"The varsity athlete is just one benefactor of the new facility," said Coach Kelly. "The largest group to enjoy this building will be the casual or recreational user—skaters, joggers, tennis and basketball players. This building is in motion daily from opening to closing as MIT continues to meet the needs of its entire community."

Flippin spoke of tradition, inspiration to excel, vision and courage, and perseverance during his remarks. "Our challenge is to build upon this tradition, to provide a richer life for students on the MIT campus, for those in the MIT community," he said.

Flippin also noted the accomplishments of the late Ben Martin, long-time hockey coach, "who endured the icy cold and biting winds of the outdoor ice rink to keep hockey alive and well for future generations."

According to Flippin, future objectives for the Department of Athletics include programs for the aging, infirm, handicapped, and MIT employees with limited time for exercise; the addition of squash and racquetball courts, and a research center for health fitness technology.

Near the end of the dedication, Mr. Johnson presented former MIT athletic director Ross H. (Jim) Smith with a silver bowl on behalf of the MIT Corporation for his efforts in making the new facility a reality.

Beethoven's b'day

Pianist John Buttrick, associate professor of music, will present a program of four Beethoven sonatas at 8pm on the composer's birthday (Wednesday, Dec. 16) in Kresge Auditorium.

Mr. Buttrick will play the Sonata #4 in E flat Major, Sonata #22 in F Major, Op. 54; Sonata #23 in F minor, Op. 57, and Sonata #28 in A Major, Op. 101.

C060, Head Librarian of Serials Cataloging
C048, Archival/Manuscript Specialist, Libraries
A165, Data Base Manager, Alumni Association
A164, Purchasing Agent, Purchasing and Stores
A163, Program Manager for Management Information System, Physical Plant
A158, Systems Programmer, Information Processing Services
A135, Applications Programmer, Information Processing Services Operation
A134, Systems Analyst II, Administrative Computing Services
C041, Postdoctoral Associate, Plasma Fusion Center
A087, Systems Analyst II, Administrative Computing Services
A084, Administrative Staff, Area Coordinator/Systems Analyst, Administrative Computing Services
A082, Administrative Staff, Systems Analyst, Information Processing Services
A004, Administrative Staff, Sr. Systems Programmer, Information Processing Services Operation

RESEARCH STAFF:

R650, Research Associate, Center for Computational Research
R520, Electrical Engineer, Plasma Fusion Center
R643, Technical Assistant, Center for Cancer Research
R642, Research Scientist, Research Lab. of Electronics
R639, Sponsored Research Staff—Engineer, Health Sciences & Technology
R628, Programming Manager, Mechanical Engineering
R520, Electrical Engineer, Plasma Fusion Center
R618, Magnet Design Engineer, National Magnet Laboratory
R605, Programmer/Analyst, Plasma Fusion Center
R593, Research Associate, Earth & Planetary Sciences
R588, Research Associate, Earth & Planetary Sciences
R579, Economist/Policy Analyst, Energy Laboratory
R581, Engineer, Ocean Engineering
R575, Sr. Magnet Design Engineer, National Magnet Laboratory
R566, Research Scientist, Experimental, Plasma Fusion Center
R563, Research Scientist, Center for Space Research
R558, Research Scientist, Artificial Intelligence Laboratory
R557, Research Specialist, Artificial Intelligence Laboratory
R556, Research Specialist, Artificial Intelligence Laboratory
R555, Research Specialist, Artificial Intelligence Laboratory
R541, Electronics Engineer, Haystack Observatory
R539, Research Associate, Earth & Planetary Sciences
R520, Electrical Engineer, Plasma Fusion Center
R518, Research Staff, Mechanical Engineering
R512, Control Systems/Diagnostics Engineer, Plasma Fusion Center
R511, Power Electronics Engineer, Plasma Fusion Center
R504, Sponsored Research Staff, Laboratory for Nuclear Science
R500, Research Scientist-Computational/Theoretical, Plasma Fusion Center
R485, Research Engineer, Plasma Fusion Center
R475, Assistant Director, Aeronautics & Engineering
R455, Theoretical/Computational Research Scientist, Plasma Fusion Center
R442, Principal Research Scientist, Mechanical
R434, Systems Programmer, Lab. for Computer Science
R429, Systems Programmer/Analyst, Plasma Fusion Center
R422, Research Scientist-Experimental, Plasma Fusion Center
R409, Theorist/Designer, Plasma Fusion Center
R401, Staff Scientist, National Magnet Lab.
R397, Biomedical Engineer, Dept. of Mechanical Engineering
R396, Research Associate, Aeronautics &

Astronautics
R387, Sponsored Research Staff, Group Leader, Plasma Fusion Center
R384, Plasma Physics Experimentalist, Plasma Fusion Center
R284, Research Associate, Materials Processing Center
R241, Technical Associate, Biology
R222, Programmer/Analyst, Mechanical Engineering
R137, Research Associate, Materials Science & Engineering
R093, Research Associate, Sloan School of Management
R069, Design Engineer—Superconducting Magnets, Plasma Fusion Center
R039, Sponsored Research Staff, Mechanical Engineering
R006, Research Scientist—Experimental, Plasma Fusion Center

EXEMPT

E088, Registered Nurse, Clinical Research Center

SECRETARY/STAFF ASSISTANT

B1482, Administrative Secretary, Division of Comparative Medicine
B1480, Sr. Secretary, Aeronautics & Astronautics
B1474, Sr. Secretary, Center for Cancer Research
B1277, Sr. Secretary, Political Science
B1464, Administrative Secretary, Treasurer's Office
B1471, Sr. Secretary, Admissions Office
B1468, Sr. Secretary, Sloan School of Management
B1453, Sr. Staff Assistant, Libraries
B1452, Sr. Secretary, Nuclear Engineering
B1372, Sr. Secretary, Provost's Office
B1409, Sr. Secretary, Resource Development
B1312, Sr. Secretary, Sloan School of Management
B1431, Sr. Secretary, Office of Secretary of the Institute
B1367, Sr. Secretary, Center for Theoretical Physics
B1409, Sr. Secretary, Resource Development
B1372, Sr. Secretary, Provost's Office
B1367, Sr. Secretary, Center for Theoretical Physics
B1317, Sr. Secretary, Provost's Office
B1313, Sr. Secretary, Humanities
B1306, Sr. Secretary, Industrial Liaison Program
B1303, Sr. Staff Assistant, Center for Policy Alternatives
B1292, Sr. Secretary—Technical, Mathematics

TECHNICAL SUPPORT STAFF

B1440, Computer Operator, Haystack Observatory
B1248, Account Representative, Information Processing Services Operation

OFFICE ASSISTANT

B1484, Sr. Office Assistant, Architecture Machine Group
B1469, Administrative Assistant, Mechanical Engineering
B1467, Office Assistant, Graphic Arts Service
B1461, Office Assistant, Bursar's Office
B1137, Editorial Assistant/Production Assistant, Center for Advanced Engineering Study

SERVICE STAFF

H566, Technician B, Nutrition & Food Science
H548, Machinist A, Chemistry
H549, Technician B (Electro-Mechanical), Electrical Engineering & Computer Science
H554, Electronic Technician A, Energy Laboratory
H550, Technician B (Electro-Mechanical), Research Laboratory of Electronics
H559, H560, Patrolman/Patrolwoman, Campus Patrol
H498, Metal Worker, Physical Plant
H480, Technician A (Mechanical), Laboratory for Nuclear Science
H466, Carpenter, Physical Plant
H465, Heat & Vent Mechanic, Physical Plant
H423, HVAC Designer/Draftperson, Physical Plant
H411, Technician A (Radiation Protection), Environmental Medical Services
H278, Technician A (Electronic), Aeronautics & Astronautics

CEP Recommends Undergraduate Writing Requirement

The following report from the Committee on Educational Policy recommends a writing proficiency requirement for MIT undergraduates, and outlines the Committee's current thinking on the substance and implementation of such a requirement. The report is the result of extensive deliberation within the CEP on a proposal submitted by its Subcommittee on Writing Proficiency. Subcommittee members were Professors Michael J. Driscoll and Kenneth R. Manning (chairman). It is part of the CEP's review of the undergraduate program at MIT that was initiated last year—see Tech Talk, March 4, 1981.

In releasing the report, Professor Felix Villars, Chairman of the Faculty and Chairman of the CEP, expresses gratitude for the Subcommittee's efforts, which included many hours of discussion with students and members of the faculty and administration. A major reason for publishing the report at this time is to invite further comment from members of the MIT community. Professor Villars hopes that the report presented below will be broadly discussed in the near future, and urges students and faculty to communicate their views to him or other CEP members, before the end of IAP if possible. In this regard, he reports that a committee of faculty members from the Department of Humanities has recently been appointed by Professor Peter H. Smith to discuss the proposals. Professor Villars hopes to get responses from other departments as well.

In supporting the general principles underlying the proposed Writing Requirement, the CEP recognizes that, once the general structure of the requirement has been agreed upon, many of the implementation details must be developed by the Provost's Office working with the academic departments and a faculty committee.

Professor Villars will give a brief overview at the December Faculty Meeting. A detailed proposal for a Writing Requirement will be presented at the February Faculty Meeting for deliberation. Action on specific motions is expected at the March or April Meeting.

Summary

Over the past two years, the Committee on Educational Policy has been examining the undergraduate curriculum at the Institute. As part of this review, a working group was set up in the fall of 1980 to look into the issue of undergraduate writing competence. The group began its task early in 1981. It conducted interviews with well over 100 members of the faculty and administration; disseminated a questionnaire to the faculty; met with students in a variety of settings; put up a wall poster to gather views from the student body at large; and throughout the spring discussed the issue with the CEP.

It was found that a substantial number of MIT students do not achieve a level of writing proficiency adequate for either their course work at MIT or their professional careers later on; that the curriculum as a whole does not reflect the importance of this skill; and that the Institute would benefit all around from proper attention to the problem.

The CEP therefore recommends an Institute Writing Requirement—one drawn in the light of student needs, faculty concerns, and Institute resources. A variety of support activities and services, some of which already exist or are in advanced stages of planning, is also suggested. The CEP further recommends that a specific office reporting to the Provost, headed by a member of the faculty and guided by a Standing Faculty Committee on the Writing Requirement, be set up with Institute-wide responsibilities to implement, facilitate, and monitor the requirement, as well as to coordinate the support activities and services.

Writing Requirement for Undergraduates at MIT

There is widespread agreement among faculty and students that there should be an Institute Writing Requirement. The primary objectives are: first, to ensure minimum standards of writing proficiency for all our undergraduates, with special emphasis on writing in students' professional fields; and second, to see that clear, effective writing is valued and fostered throughout the curriculum as an important part of an MIT education.

The requirement is intended to have undergraduates demonstrate achievement at specified levels of competence in expository writing. The requirement should identify students who need help and point them in appropriate directions for assistance. Students have many ways at MIT to acquire the writing skills they need. They are to pursue these options either as a result of appropriate counseling or through their own initiative. Beyond that, the success of the requirement depends heavily on the acceptance of a broadly shared, curriculum-wide responsibility to emphasize the importance of writing in all subject areas and to provide opportunities for students to write. It is essential that faculty members feel comfortable asking students to write more as well as commenting on the quality of expression, particularly in the context of students' professional studies. The requirement would also communicate clearly to high schools that writing ability is important for success at MIT and that prospective students should prepare themselves well in this area. Over the longer term, this message may help to reduce the problem.

The basic features of the requirement are **early evaluation, a variety of modes of completing the requirement, and curriculum-wide involvement.** It is to be satisfied in two stages, broadly characterized as follows:

First Stage:

Students complete this part of the requirement by the end of their first year at MIT. Its purpose is the early evaluation of each student's writing ability, both to assure a level of writing proficiency adequate for an entering MIT student, and to provide information for guiding students, particularly those whose writing is not satisfactory, toward appropriate supportive resources.

Second Stage:

This part of the requirement is designed to engage upperclass students in writing in a professional context, at a later stage in their undergraduate careers, and over an extended period. It is

intended to extend beyond the writing experiences provided by the Humanities, Arts, and Social Sciences Requirement. Students satisfy this part of the requirement any time after one year at MIT, but generally not later than the end of the junior year.

The following options for satisfying the two stages of the requirement are proposed as a starting point compatible with the current situation at MIT, including resource availability:

Options for Satisfying the First Stage:

- achieving, prior to entry, a specified score on the College Board Advanced Placement Examination in English or the College Board English Achievement Examination (with essay);
- achieving a specified score in an essay examination offered a few times from R/O week through IAP;
- receiving a specified grade, or the equivalent performance if ungraded, in an expository writing subject (for eligible students, expository writing subjects treating English as a second language would fall into this category);
- submitting a five-page paper of expository prose written for any MIT subject and judged satisfactory by the professor of the subject and by faculty evaluators for the requirement.

Students are expected to attempt at least one of these options early in the freshman year; if the student's attempt is not successful, he or she will be counseled to appropriate follow-up assistance. A student who does not successfully satisfy one of the above options by the end of the freshman year must complete a mutually agreed upon plan worked out with the director of the office administering the requirement (for example, taking a specific expository writing subject).

Options for Satisfying the Second Stage:

- receiving a specified grade for the quality of writing in a subject (or subjects) within the general area of the student's professional studies and having a significant expository writing component;
- submitting a ten-page paper of expository prose from any MIT subject, or UROP activity, within the general area of the student's professional studies and judged satisfactory by the professor or supervisor and by faculty evaluators for the requirement.

The details of design and implementation in the writing proficiency requirement proposed above are fluid and expected to evolve with time. We do not know, for example, how students will use the various options provided, nor can we precisely predict the degree to which each of the options will be effective in meeting the objectives. It is, however, not necessary, or even desirable, to fix the details of the requirement at this point; rather, we need to establish a reasonable starting point. The knowledge gained by implementing this requirement—given its flexibility to test and monitor various approaches—will give a better picture of writing needs and feasible solutions than currently exists. Subsequent review and evaluation will afford ample opportunities to adjust the requirement. These ongoing questions of implementation will be handled by the Provost's Office and the administrative office for the requirement, working with the academic departments and programs, in conjunction with the faculty committee overseeing the requirement.

Support Activities and Services

To encourage students to develop skills in expository and other kinds of writing, the Institute, with the advice and support of the Committee on the Writing Requirement, should consider a variety of resources and activities, some of which already exist or are in the advanced stages of planning. These would continue to evolve as needs are identified and might include:

- a resource center, along the lines of a current proposal of the Writing Program, to provide consultation with writing advisors, self-paced and graded material, reference material (including manuals and style guides), computer-aided instruction, and editing services;
- cooperative arrangements between instructors in technical subjects (especially laboratory and design) and those in writing—as currently set up between the School of Engineering and the Writing Program—and additional ventures based on this model, as a means to satisfy the second stage of the requirement;
- additional mini-courses, seminars, and IAP workshops to stimulate awareness of language and its uses, and incentives for students to participate in a variety of extracurricular writing activities;
- forums and other means of feedback from MIT alumni and outside professionals to convey to students the importance of writing in the various disciplines;
- efforts to encourage departments to have students start senior theses at the beginning of the year, in order to permit sufficient time for revision;
- a brochure describing the resources available to students and advisors;
- consideration of parallel efforts to develop skills in oral communication.

Administration and Faculty Oversight of the Requirement

An administrative office reporting to the Provost would have day-to-day operational responsibility for implementing and monitoring the requirement. The director of the office would be a faculty member, from any of the academic departments, appointed by the Provost, and would be assisted by appropriate staff. In addition to administering certain aspects of the

requirement and supporting the Committee on the Writing Requirement in fulfilling its various responsibilities (defined below), the office would have administrative responsibilities for:

- coordinating various activities and services through which students and faculty can obtain assistance.
- keeping records on how and when each student satisfies the two stages of the requirement, and notifying the students and the Registrar accordingly.
- notifying the advisors of students who have not satisfied a stage of the requirement by the prescribed time, so that students can receive appropriate counseling to complete the requirement in a timely and beneficial manner.

The Writing Requirement would be overseen by a Standing Faculty Committee on the Writing Requirement. The Committee would review all issues of educational policy concerning the requirement, oversee its implementation, and promote new services and programs (for example, cooperative subjects, writing seminars and workshops within departmental programs, etc.). The Committee would assess the various support activities and services currently at MIT (for their possible involvement within the requirement), and decide how to pursue implementation of the services recommended in the proposal.

The Committee would include six members elected from the faculty at large, a faculty member appointed from the Committee on Educational Policy, two undergraduate members, and, ex officio, the director. The membership would include at least one, and no more than two, faculty members from each School. Faculty members would serve three-year, staggered terms. Each year the Chairman of the Faculty would appoint the chairman from among the members of the Committee. Participation on the Committee would be recognized as a major service contribution to the Institute community.

The major, continuing responsibilities of the Committee, as a policy and oversight group, would be to:

- act with power on implementing the Writing Requirement, on making minor changes in the design of the requirement, and on responding to student petitions with respect to the requirement.
- establish a plan for periodic evaluation of the requirement and its various options, and recommend to the CEP any major changes in the requirement deemed appropriate.
- specify standards and criteria for the various ways of satisfying the two stages of the requirement (for example, develop the general criteria for judging the five- and ten-page papers; develop the criteria for designating MIT subjects that will fulfill the first and second stages, designate the lists of particular subjects, and specify the minimum performance levels required to satisfy the requirement through these subjects).
- maintain close contact with all academic departments, the Office of the Dean for Student Affairs, the Admissions Office, and UROP about ongoing implementation and evaluation of the requirement.
- report periodically to the CEP and to the faculty, as appropriate.

A board of evaluators would be needed to read the five- and ten-page papers submitted to satisfy the requirement. The board would be composed of the Committee, though not the student members, and additional members appointed by the Provost, to be adjusted to meet the work load. The members of the Committee on the Writing Requirement would participate to a limited extent in these evaluations to obtain first-hand knowledge of the issues and process. Participation on the board would be recognized as a major service contribution to the Institute community. The board of evaluators would determine minimally acceptable standards of proficiency (in accordance with guidelines set by the Committee) and discuss some of the papers as a group to assure reasonably uniform application of the criteria.

The Committee on the Writing Requirement would be established in the spring term of 1982. The initial task of the Committee, working with the Provost's Office, would be to set up the administrative office. The director and the Committee would work out the detailed procedures and criteria necessary for implementing the requirement.

The Discussion in the following section is taken from the Working Group's report.

Discussion

Over the last decade, many educators throughout the country have expressed concern over the decline in the writing ability of undergraduates. This concern has increased in the last two years. Students have joined teachers and administrators in urging recognition, evaluation, and solution of the problem. In the spring and summer of 1981, several major articles appeared in the *New York Times*, the *Boston Globe*, and the *New Yorker*, highlighting the concerns and describing the corrective steps devised by certain universities. MIT has also explored the issue.

The Review Process

In the fall of 1980, the Committee on Educational Policy (CEP) took on the task of curriculum review in response to a charge by President Gray in his inaugural address. The question of writing proficiency for MIT undergraduates emerged in this context. A working group was appointed by the CEP to explore the issue and report its findings and recommendations. We set about the task by holding small group discussions with faculty members and administrators and students. Out of these discussions, we devised a questionnaire to be distributed to the faculty and some administrators (see Appendix A); we also put up a wall poster in Lobby 7 to gather student response (see Appendix B). [The appendices are not included here; they can be obtained from the CEP office, Room 4-237, extension 3-1701.] Our group continued to hold discussions with groups throughout the Institute, visited several classes, and attended faculty and student committee meetings. The questionnaire produced significant

(continued on next page)

and widespread response. Well over 40% of the faculty returned the forms; also, 25% of those who completed the questionnaire offered comments and suggestions, many of them lengthy, detailed, provocative, and sometimes amusing. We wish to thank those who so willingly shared their thoughts in group discussions, questionnaires, and other forums. A special word of thanks goes to Daniel McDonough for helping us sift through the questionnaires.

Concerns about Writing at MIT

At MIT there is a very real concern about the writing competence of undergraduates. Faculty, administrators, and students all express dissatisfaction with the quality of undergraduate writing. Perhaps the word dissatisfaction is not strong enough. Many feel that students are severely handicapped by their limited writing experiences and skills. It is a tense, emotional issue—one on which people express opinions an octave higher than on most other issues of educational policy. Our working group sought to get behind the dissatisfaction, examine the causes, and explore ways to meet the demand for change.

Over and over again our group heard faculty and administrators and students assert the need for "effective training in expository prose . . . the purposeful language of description, analysis, and argument." Some MIT students, it is generally recognized, are competent writers, but "many students need . . . basics, sentence construction, meaning of words, etc." Faculty members lament "poor spelling and the total disregard for the basic elements in writing . . . capitalization, punctuation, structure of a sentence, etc."; almost all feel that there should be a requirement placing "emphasis on writing, criticism, and re-writing." The faculty responses to our questionnaire suggest that over 50% of the students lack writing competence and cannot work efficiently in their subjects at MIT. Even more disturbing, the responses suggest that about 50% of the students lack competence on leaving MIT and therefore are not maximally equipped to meet the larger demands of employment and career. The Student Committee on Educational Policy surveyed the undergraduate population in the spring of 1981 and found that over 50% of the respondents wanted an Institute requirement for writing competence—one that focused on the basic elements of exposition (a similar survey was conducted by them in 1978 with similar results).

Current Efforts to Strengthen Students' Writing Proficiency

As we examined the problem, our understanding was refined and deepened. Very early the group decided to look more closely at the question of a writing proficiency requirement, that is, setting a minimum level of competence for all students at the Institute. We pursued the issue further and found that no formal requirement at the Institute has basic writing proficiency as a primary goal. A number of ways have, however, been provided for some students to strengthen their writing skills. The Humanities, Arts, and Social Sciences (HASS) distribution requirement and the Writing Program have served well in this respect.

The HASS requirement, instituted in 1974, is divided into three parts: distribution, concentration, and elective subjects. The distribution component has focused on writing with the aim of developing in undergraduates "skill in communication, both oral and written." The faculty and student response to the requirement has been mixed. Modifications have emerged in response to specific criticisms of previous criteria governing these subjects, and more generally, to growing dissatisfaction with the level of writing competence among undergraduates. These include 25 or more pages of writing (15 in a foreign language), several exercises spread over the term, as well as opportunities to rewrite papers. The HASS requirement, we must stress, was never set up to insure writing proficiency in MIT undergraduates. Few of the subjects teach expository writing per se; the main purpose has always been to strengthen the skills of students who have already attained a level of competence in writing. Our hope is that this requirement will be strengthened, continue to exist as a separate one, and further its goal of enhancing the writing skills of undergraduates. We are certain that the requirement can contribute to a more comprehensive Institute-wide writing proficiency requirement without compromising any of its present goals. We believe that a proficiency requirement will in fact bolster the distribution requirement.

The Writing Program represents another attempt to improve the general quality of writing at the Institute. The Program was set up in July 1974 "to demonstrate a range of approaches . . . for integrating written communications more effectively into the undergraduate education offered at MIT"; it underwent a review in 1975-76 (see *Report of the Committee to Evaluate the Pilot Writing Program*, 17 June 1976, Professor Nathan Sivin, chairman). The charge of the Program has never been one of developing or carrying out a proficiency requirement for the Institute. The curriculum offers instead a rich range of subjects in expository, technical, and science writing and in various literary genres—poetry, fiction, and essay. There is a substantial enrollment of approximately 400 students in a total of about 25 subjects each semester.

Writing in the Context of Students' Professional Programs

The issue of a proficiency requirement remained before our group. Probing further, we saw that writing problems are most acute in the professional context of students. There is a widespread feeling on the part of the faculty and students alike that there needs to be more emphasis on writing in the context of the professional disciplines. One professor of engineering goes so far as to say that "the best way to teach writing is as an integral part of regular subject work." This approach would help students with theses and laboratory reports; and by extension, it would prepare them for the demands of employment in particular fields. The Institute, it seems to us, has a unique opportunity to tie writing more closely to the professional disciplines. This is especially appropriate, since MIT has always prepared its students to meet the most stringent professional demands and sends a large portion of them into competitive fields. In that sense the Institute is different from many universities, and MIT students are different from students elsewhere. The MIT student, on graduation, immediately takes on important jobs, interacts on many levels in the world of industry, and engages in meaningful projects in science, engineering, and management. Education involves higher stakes for students at MIT than at most liberal arts colleges.

In the last few years, demands on engineers and other professionals for broader public communication have increased. High on the list of new demands is writing competence. Staffs in industry and government are being constantly

called on to provide environmental impact statements, affirmative action reports, and occupational health and safety guidelines. Students have become aware of this through job interviews, recent alumni, and professors. At all levels within educational institutions, attention has begun to focus on the writing of students. This, in part at least, is a response to intense pressure from industry and the professional world in general for competence in this area. As money gets tighter, for instance, more rigid standards are placed on funding research proposals—that is, how they are conceived and articulated. The successful professional in almost any field needs to know how to put together a persuasive and well-written document.

There could be no better time than now for MIT to address the issue and no better context in which to address it than that of professional preparation of students. In the past the Institute has offered writing instruction from the standpoint of the professional. There has been a subject, with several sections, on technical writing. Also, for at least four years, cooperative arrangements have been developing between the Writing Program and the departments in the School of Engineering. Members of the Writing Program join the classes of engineering subjects to help students with the writing of papers and project reports. Typically, subjects in the engineering fields are designed so that a faculty member from the Writing Program gives one to three presentations and evaluates the literary quality of one or two sets of papers. At present the Writing Program contributes in varying degrees to every undergraduate department within the School of Engineering. The thrust is for writing instruction to become a fundamental feature of technical education. Our group would like to see this model grow at a natural rate to include departments in other Schools as well. Such a cooperative program, with a broad base, would contribute in a meaningful way to the proposed proficiency requirement, especially the second stage.

Our aim is for every department to stress the importance of writing. The extent to which a particular department can do this depends, we realize, on the nature of the subject and on the available facilities. But we need to make every possible effort to create a community in which students value good writing, feel comfortable about spending time and exerting effort to produce it. On the whole, the faculty asserts that writing is closely connected with thinking; yet many faculty members do not evaluate the quality of expression of their students' work. Faculty members in all fields need to be assured that comments on and evaluation of students' writing are appropriate, indeed desirable.

Many faculty members feel the "need to continue to make a big effort with writing in subject matter courses . . . as part of some curriculum." The call is for "more writing in current courses." Essays and other written assignments in the various subjects could afford students the opportunity they need to practice and improve their skills. Certain difficult writing problems, namely conceptualization and organization, can be most effectively treated by a professor within the context of a subject. Only if the various departments encourage such opportunities will students receive constructive criticism, begin to write more, rewrite, and thereby improve. "Departmental emphasis is important," in the words of one professor, "both for continuing experiences and to demonstrate the seriousness of MIT's interest."

The Diversity of Approach in a Writing Requirement

The issue of writing competence at MIT is a complex one. Some students lack the basic mechanics, including spelling and proper sentence structure; others have mastered the advanced problems of organization, rhetoric, and style. In other words, put the other way around, some students come to MIT with relatively high competence in writing; others come with hardly any at all. Students and faculty alike point to this diversity as a possible major problem in devising a requirement. Also, with their quick and highly motivated minds, MIT students are diverse in their preferred modes of learning. A separate writing class might be good for some; writing instruction in the context of a technical subject good for others; hard, independent work through a particular resource—a UROP project perhaps—might be the choice of still others. Given the diversity of the student body in writing ability and in learning preference, and given the scattered resources that now exist, a proficiency requirement would work most effectively if it were based on a range of options. The faculty favors a requirement that has a variety of means to upgrade the level of writing among students at the Institute.

The point about diversity is particularly relevant as regards students for whom English is a second language. Often these students experience severe problems with their writing. An Institute-wide requirement would have to provide facilities to help meet their needs which, in substance though not necessarily in degree, are different from those of the native speaker. The Foreign Languages and Literatures Section of the Humanities Department has devised and offered subjects on English as a second language. At present there are approximately six subjects offered throughout the year with enrollments of 10 to 15 students in each. Registration is not, however, carefully monitored. Few advisors know the subjects exist; fewer know them critically and in detail. As a result, students who would benefit are not systematically recommended into them. The faculty teaching the subjects believes that a mandatory evaluation should be conducted in the first year; students who need special attention could then be identified and registered for appropriate subjects. The subjects treating English as a second language have the potential to enhance the writing proficiency of a significant portion of the student body. They would be a valuable resource in a writing proficiency requirement.

Importance of Early Evaluation

Whatever is to be done to improve writing ability should be done early. Students could then perform at a higher level in their course work and benefit over a longer period of time from the resources of the Institute. A proficiency requirement therefore should carry provisions for early evaluation. One way is by means of the pre-admission tests of the College Board, specifically the Advanced Placement Test in English and the English Achievement Test (with essay). At present about 15% of the entering class take the Advanced Placement Test in English and receive 4 or 5; about 30% of the first-year class sit for the English Achievement Test (with essay). Using these tests as early evaluators would serve three ends. First, prospective students would realize that MIT places a high priority on the quality of writing of its undergraduates. The Admissions Office believes that this is a good message to send to high schools across the country, that it would reinforce the conditions which attract the best qualified students to the Institute and encourage those who are admitted to arrive better prepared. Secondly, students who show competence in writing through the pre-admission test would be relieved of concern about the first phase of the requirement. And thirdly, a smaller portion of the cost of the requirement would fall on the Institute.

It is to be expected, of course, that there will be students who either do not take the prescribed pre-admission tests or do not receive a high enough score to satisfy the first phase of the

requirement. An in-house examination would provide a mechanism to evaluate their writing abilities. Those who achieve a satisfactory level would move on to the second phase. Those who do not would be provided with an assessment of their problem and advised on how best to go about satisfying the first phase. For some, an expository writing subject might be the solution; for others, departmental subjects with special attention to writing; for still others, a seminar during IAP. There are students who, rather than take an examination, may prefer to satisfy the first phase through early submission of a paper or by taking an expository writing subject. Whatever the case, students must have attempted one of the options by the end of freshman year, so that they may proceed with the second phase or receive special attention if they experience difficulty with the first.

Continuing Development of Writing Ability

A proficiency requirement, to have lasting effect, must not be a one-shot ordeal and should never be perceived as such. Writing improves through practice and experience, over a period of time. The Institute should make "continuous demand" on writing skills. Good writing and clear thinking, after all, grow side by side. In the words of one faculty member, "[writing] is a slow process connected much more . . . with the whole of education than with 'writing courses.'" A writing proficiency requirement must bring with it the notion of process whereby students are inspired to try and improve their skills throughout their years at MIT, throughout their careers, throughout their lives. The second phase of the requirement, with its relation to professional aims and its demand for a more sustained period of application or a longer paper with higher evaluation criteria, gives a sense of this process.

Support Activities and Services

The writing proficiency requirement stands alone. Still, there are other activities, not necessarily related, that would promote the success of the proposal. There is no better time than now for the Institute to assess its current resources and determine future directions. In the course of our talks with faculty and students throughout the Institute, the group has gathered valuable insights and suggestions. From these, we recommend that a number of support services be put in place.

Many faculty members and students have expressed the need for a writing resource center. Such a center should be equipped with reference books, self-paced materials and computers for text editing, and should provide opportunity for independent study and tutorials. Students should have ready access to professional instruction that would help them make up deficiencies at their own pace and provide the kind of in-depth assistance not available in an ordinary classroom setting. A resource center could help faculty in the various disciplines deal more effectively with the writing problems of their students. Other employees could also use the facility; a survey of more than 500 MIT staff members found that assistance in writing skills was the top priority for them, followed by instruction in computer methods and word processing. The Writing Program has been developing a proposal for a resource center somewhat along these lines. We recommend that the Institute support and extend this proposal.

Our group urges support on the departmental level. Departments must stress the importance of effective expository writing. Whenever appropriate, term papers should be assigned and essay questions used on examinations. Attention should be given to style and expression in the grading of these assignments. Manuals of style should become part of every department's bookshelf, and students should be encouraged to consult them. Efforts should be made to use the bachelor's thesis as an opportunity to strengthen expository skills. Workshops focused on thesis writing—encouraging students to start earlier, plan, outline, write, rewrite, and so on—would be an invaluable resource. The IAP should be used to offer workshops in writing, perhaps with special emphasis on the particular concerns of individual departments. Faculty from the departments might team up with faculty from the Writing Program to arrange such workshops. This would allow students to strengthen their writing in a more relaxed, informal atmosphere, without the need to worry about grades.

Administering the Writing Requirement

The success of the requirement depends on how it is carried out, and effective implementation requires a staff committed to its goals. The requirement affects all students and calls on resources from all parts of MIT. It is a big job, one that will need the full support of the Institute. We recommend an administrative design that can maintain and build on the Institute-wide character of the requirement. A separate office responsible to the Provost should be created to promote and monitor the program. An oversight committee composed of faculty throughout the Institute should be appointed to set up the office. This committee and the Provost's office would appoint a tenured member of the faculty as director. The director and the committee would work out the details concerning procedure and criteria, and devise a plan to institute the requirement.

The financial cost of the proposed requirement is expected to be relatively low because we are attempting to mobilize and utilize current resources without putting undue strain on any one area of the Institute community, on any one resource. No mass of new subjects will be created; nor will additional staff members be hired to teach traditional subjects on composition. If special subjects are needed for students with severe problems, sections in existing subjects on expository writing will be set up for the purpose. We believe that Institute-wide attention to the writing problem of undergraduates will enhance the quality of their education. MIT has before it a way to proceed that is both inexpensive and appropriate to the community's particular needs. Just because the writing problem is a general one, its solution need not be uniform.

Our group recommends that the proposed proficiency requirement be instituted. It leads, in part, in a direction pointed to by the *Sivin Report*, though the group that compiled the report, having no charge to do so, did not pursue the issue of a requirement and felt unprepared to make any such recommendation. This proposal, as outlined, would harness Institute resources; it would monitor student achievement without increasing subject load or pace; it would strengthen the ongoing efforts in writing at the Institute. The requirement allows for mutual aid and cooperation between various programs and departments, and in so doing could provide a beneficial solution to the writing problems of many students.

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