

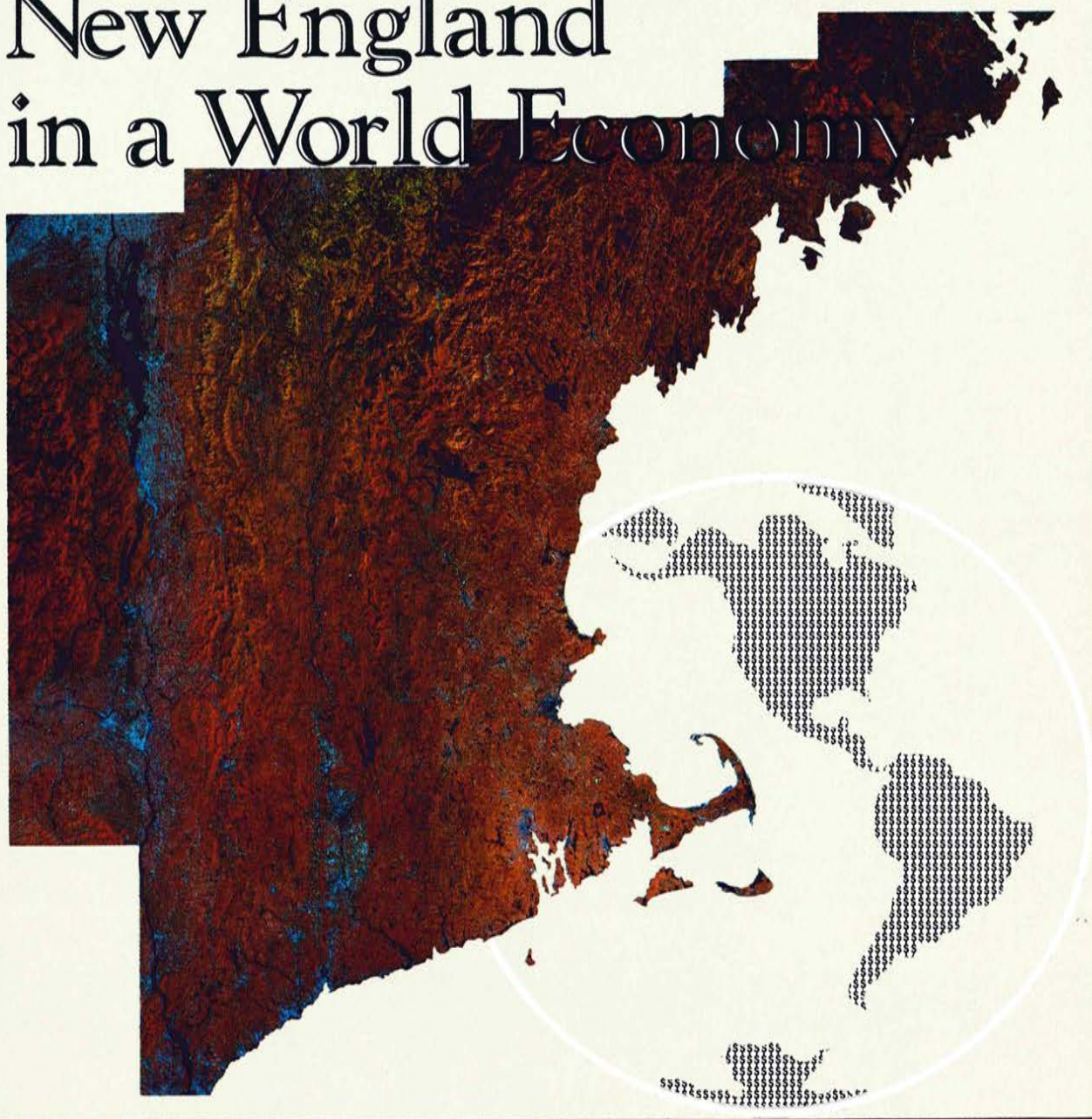
# CONNECTION

NEW ENGLAND'S JOURNAL OF HIGHER EDUCATION

VOLUME I, NUMBER 4

WINTER/SPRING 1987

## New England in a World Economy



**A Disarming Curriculum  
State Universities Neglected**

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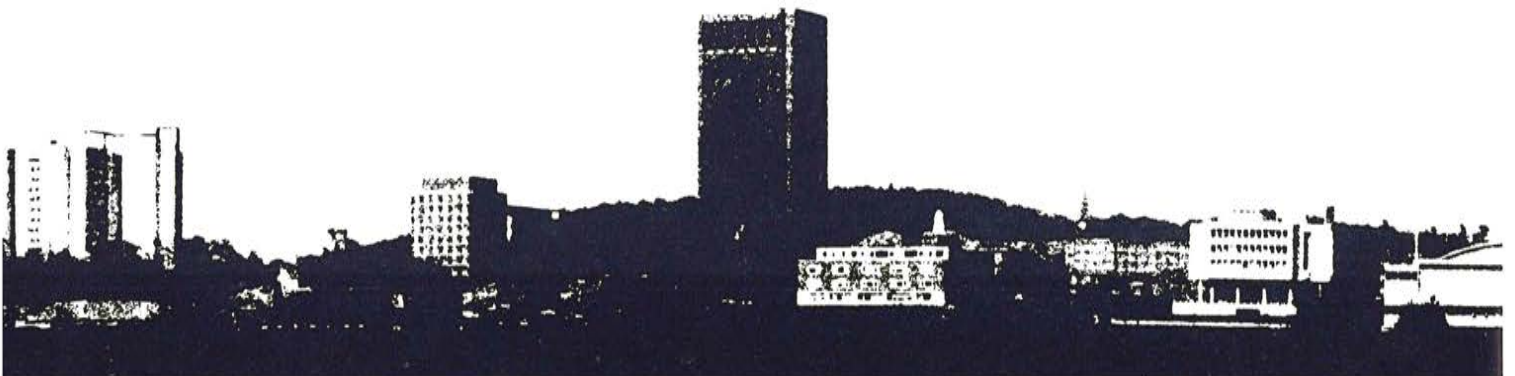
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# CONNECTION

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WINTER/SPRING 1987

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# EDITOR'S MEMO

## NEW ENGLAND BOARD OF HIGHER EDUCATION

TO: Connection Readers

The theme of this issue is New England's growing involvement in a world economy and the pivotal role higher education is playing in that development.

The slice of the world that is New England appears vividly on our cover. The four-color image shows all of the six-state region except northern Maine. It is a mosaic of 11 photographs taken in the late summer and fall by LANDSAT spacecraft. Healthy vegetation is yellow and orange, as in the Green Mountains of Vermont. Croplands, which have been harvested in this image, are light blue. Urban areas appear gray. Forests where the leaves have fallen, as in New Hampshire and Maine, appear in shades of brown. The only snow is on Mt. Washington in north-central New Hampshire. This striking mosaic was created at the Digital Image Analysis Laboratory of the University of Massachusetts, Amherst.

Our cover story, by Sven Groennings, provides a preliminary view of some of the factors involved in a new NEBHE undertaking, an intensive study of what New England colleges and universities are doing to help the region compete internationally.

From Washington, Mike Bennett reports about some related national efforts on competitiveness, and the role a few New Englanders are playing in such endeavors.

Other articles of note include:

- o Former Yale President A. Bartlett Giamatti is distressed by what he perceives to be New England's failure to support adequately its six public land grant universities. Shortcomings in graduate programs at those institutions, he suggests, will prevent the region from reaching its economic development potential.

- o Tufts University President Jean Mayer proposes the development of curricula on arms control and disarmament that can be taught at universities around the world.

- o NEBHE President Jack Hoy decries Reagan administration efforts to curtail student aid programs that for a quarter century have helped the poor, the disadvantaged and minorities attend college.

This issue of Connection offers a lot of nourishment.

  
John Chaffee  
Editor

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# New England in a World Economy

**The six-state region is increasingly involved in international trade, and higher education is playing a pivotal role.**

SVEN GROENNINGS

New England has:

- \$15 billion in export-related manufacturing activity;
- a foreign-trade deficit: imports exceed exports by at least \$5 billion;
- 1,500 foreign firms with combined assets of \$5.5 billion;
- 200,000 jobs in manufacturing for export and 300,000 more in related activities;
- a third of its trade within multinational corporations;
- hundreds of millions of dollars in international banking and insurance;
- 2.8 million acres owned by foreigners;
- \$500 million in annual income from foreign visitors and \$300 million from foreign students;
- and while a Japanese bank guarantees the city of Boston's credit,
- 10 percent of the region's electric power is scheduled to flow from Quebec.

The internationalization of New England's

economy is accelerating. Exports have increased fourfold in the last 20 years. Nearly all New England's products and services have become subject to foreign competition: The market for the products of Ontario, Canada, in New England, for example, has increased 25 percent in each of the last six years.

The process of internationalization is pervasive and has systemic consequences. It affects transportation and advertising services, corporate structure, state revenues, consumer choices, and hundreds of communities — even Maine's Passamaquoddy Tribe, which will use Finnish technology to manufacture prefabricated housing.

New England is the most export-intensive region of the United States. Exports as a percentage of total sales are twice the national average. While Massachusetts leads the region in total value, Connecticut leads the nation in exports per capita. In terms of percentage of foreign-affiliate

Sven Groennings, a former State Department planning officer, is staff director of NEBHE's new study of higher education in a world economy.



University of Rhode Island student reviews studies options.

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## *The more the economy moves into high-tech, the more international it becomes.*

jobs in total civilian employment, Maine is third in the United States, while New Hampshire and Vermont are tied for fifth.

The region's international development is linked to change in what is being produced. Increasingly, New England is shifting toward activities that are knowledge-intensive, producing innovative technological goods in international competition and providing sophisticated professional services internationally. New England is a world leader in its high-tech fields, which are particularly successful in foreign sales. These fields attract overseas capital which, in turn, contributes to continued regional development.

Indeed, the more the economy moves into high tech, the more international it becomes. Since other countries, because of their educational advancement, have also gained the capacity to produce advanced technological goods, we face sharp competition. Our own competitiveness depends upon research of the highest quality, leading to innovation.

New England's competitive edge in research is heavily based on the capacity of its institutions of higher education. At least in part, these colleges and universities also have the functions of preparing people for international business activity, increasing the skills of a knowledge-based work force and ensuring citizen understanding of our changing global situation.

Historically, higher education has adapted and contributed to changes in society, the economy, technology and national needs. At issue now is how the internationalization of the economy and development of higher education's capabilities and functions can be advanced most constructively in an era of international competitiveness, and best related to expanding multinational corporate development within the region.

Competitiveness is not only a matter of productivity and product development, but also requires knowing the competition and the way it works, foreign contexts for doing business, one's potential customers, how to communicate cross-culturally and how to manage an international enterprise. The overall competitiveness of the Ameri-

can economy will require the preparation of more people in more firms to participate in export-related activities.

The educational function must go well beyond preparing specialists. Citizen education becomes increasingly important as internationalization creates new vulnerabilities as well as new opportunities and prosperity.

Vulnerabilities tend to become political as well as economic in their effects, especially when the employment and standard of living of our citizens is at stake. As the national trade deficit for 1986 was approximately \$170 billion, the issue of international competitiveness is certain to be a centerpiece of the 1988 political campaigns. New England leaders will have strong constituency reasons for wanting to be influential in shaping policy; some form of civic education is going to occur. We do tend to find economic, governmental and educational issues closely connected, especially now: If we are to meet increased economic competition from abroad, our major institutional sectors will need to find ways to be mutually supportive.

New England is a distinctive region, compact and with shared traditions going back to settlement, town meetings, the founding of the country and the first industrial revolution. It has strong regional communications in business, politics, education and the media, with the *Boston Globe* selling 120,000 papers outside Massachusetts every Sunday, for example.

Most importantly, it has a record of leadership in three fields that now need to be considered within one framework: foreign affairs; the information revolution, which is based on high technology; and educational innovation. In its current economic development, New England is possibly a window on the nation's future. It may be able to make connections helpful not only to New England, but also to the nation at large.

In this broad context, the New England Board of Higher Education is undertaking a project on the internationalization of the New England economy and its implications for higher education. The project has four purposes:



- to present a reasonably accurate calibration and understanding of the nature of economic change;
- to examine the linkage between competitiveness in the global economy and the functions of higher education, especially from a corporate perspective;
- to gain an overview of patterns of planning and change along the international dimension at approximately 40 academic institutions;
- and to identify future issues the international network of higher education in New England might constructively address, including collaboration.

NEBHE staff have encountered a quick understanding of the project's significance in the corporate community, along with encouragement to function as a catalyst. We have had discussions with 40 of the region's colleges and universities, and encountered a lively and supportive interest at every academic institution contacted.

A consequence of economic internationalization is the current ferment in international education. The field's rationale, conceptual development and momentum are, in good part, moving away from a strongly national focus into regional contexts such as New England. This is where much of the action will be, with good reason.

Most of our universities were not very cosmopolitan until after World War II, although it is their function to examine the universe. They "went international" as the United States became a world power, as faculties focused on world problems, and as literally millions of foreign students came to our campuses. An expansion of American higher education enrollment from two million to 12 million over the last 40 years made it possible to expand the curriculum and greatly increase international offerings.

Federal policy was catalytic and fundamentally important in these developments. The World War II G.I. Bill triggered the enrollment growth. The



Former West German Chancellor Helmut Schmidt chats with Yale University students following a 1985 lecture in New Haven.

Fulbright Act used the proceeds from sales of military equipment left overseas to initiate a program for academic exchange; as of 1986, the Fulbright Program had enabled more than 60,000 Americans and more than twice as many foreigners to study and teach in countries other than their own.

Soon afterwards the government began technical and developmental assistance programs that have involved more than 100 universities and many thousands of faculty members in work abroad. These programs built international expertise and relationships, but usually not programs of international studies. Yet New England has gained international knowledge through its thousands of Fulbright and Peace Corps alumni.

One of America's great needs after the war, stemming from both the creation of numerous new countries and the beginning of global political competition was foreign affairs expertise. The response was combined area study and foreign language programs. Major foundations joined the federal government in supporting the development of the needed capabilities across the country.

Beginning in 1958, through Title VI of the National Defense Education Act and, since 1980, through Title VI of the Higher Education Act, the federal government has helped provide support for as many as 100 campus-based centers, most of which have focused on area studies.

Graduate-level resource centers were funded in African studies at Boston University and at Yale; East Asian studies at Harvard and Yale; Latin

## *International education is undergoing a paradigm shift in three directions.*

American studies at Yale and at the University of Connecticut, the latter subsequently shifting to undergraduate designation; Middle Eastern studies at Harvard; more general international studies at the Fletcher School of Law and Diplomacy and at the University of Connecticut; and the country's one federally designated undergraduate Canadian studies program has been shared by the University of Vermont, the University of Maine and the State University of New York at Plattsburg.

While the federal government contributed much less wherewithal than the universities, it provided special status and often a margin of excellence as well as the drawing power for additional funding. Nationally, more than 20,000 graduate students have won support under the federal Foreign Language and Area Studies Scholarship Program, many of them to study at the New England institutions mentioned. They constitute a significant core of U.S. international expertise.

The driving rationale for these developments was not the internationalization of the economy but national security; indeed the words "national security" appear in the original Title VI legislation. By the 1980s, however, the globalization of the economy was well underway. The international dimension of American life became vivid in all parts of the country, becoming an immediate and everyday reality more because of economic change than because of issues of national security. Local stores increasingly marketed foreign goods. Doing American business meant doing business with the rest of the world. New technologies brought other countries into the living room and the stock market. One professional field after another developed an international dimension, from architecture to public health.

We learned a number of marketing lessons: The name of the car Nova, in Spanish, comes out "no va," meaning "it doesn't go." The Japanese were quoted as replying, when asked in what language they did their business, "the language of my customer."

Reflection on changed circumstances led to the

conclusion that we needed new learning. Congress understood that the area studies programs it had promoted had been shaped before the era of global competition and that their social science and humanities faculties, however positively significant in other regards, lacked connections to the new international imperative.

At the initiative of Sen. Robert Stafford of Vermont and Sen. Jacob Javits of New York, and with the quick approval of Sen. Claiborne Pell of Rhode Island, Congress in 1980 added Part B for international business to Title VI, hoping in part that the juxtaposition of foreign language and area studies programs would spark renewed creativity. It was at this point in legislative history that corporate and local economic interests joined the national security and academic interests in supporting legislation for international education. However, the lack of connection between area studies programs and business programs continues.

Currently, international education is undergoing a paradigm shift along three fundamental directions:

- First, its rationale is moving beyond the predominant emphasis on national security toward a vigorous emphasis on economic change and international competitiveness, with increasing focus on the business curriculum.
- Second, it is edging away from heavy Washington dominance toward additional urban centers whose focus is more heavily economic, such as Boston and Seattle, Philadelphia and Atlanta, Portland and Hartford, that is, toward nationwide local interest alongside nation-state national interest.
- Third, it is moving beyond the production of experts, whose supply obviously will continue to be essential to national foreign policy capabilities, and toward general education for informed citizenship and all the professions.

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In contrast, the Fulbright Program focuses on knowledge. Area studies programs create it and technical assistance programs have provided it to other countries. These programs function primarily at the doctoral and professional levels.

The globalization of the American economy is moving educational concern beyond specialized professional levels into public interest domains. Attention is shifting from graduate education to undergraduate education, and internationalization has become important not only at institutions educating for international expertise but at higher education institutions generally.

In New England there is new international activity at each of the 40 colleges and universities we have contacted to date. There is a refreshing openness to creativity and a search for models that will help bring about appropriate change.

The renewed push for international education has several sources. One is a series of consciousness-raising and mutually reinforcing reports: from the Association of American Colleges, the National Endowment for the Humanities, the National Institute of Education and the American Association of State Colleges and Universities, whose concern is the quality and relevance of undergraduate education; from the Business-Higher Education Forum, whose focus is largely international competitiveness issues such as tax and trade policy, support for research, worker retraining and overcoming illiteracy; and a few that focus on the development of international education broadly, most notably the report of President Carter's National Commission on Foreign Language and International Studies.

The perspective of these reports is national, and their objectives are general: The emphasis is on change from the outside in and from the top down. In colleges and universities, however, intellectual reality is grounded in the academic disciplines. It is through them that knowledge is gained, and they are the building blocks of the curriculum. Basic changes do not occur until the disciplines are ready to implement them. One of our New England findings is a profound, if

*continued on page 59*

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# W

ashington has a new buzzword: **competitiveness**. One of the few things a lame-duck Republican president and Democratic congress agree on these days is the need to help America compete more effectively in an international economy.

An impressive array of 24 business, academic and labor leaders have joined together in a new Council on Competitiveness, determined to make the word and the concept it represents a central issue in the national debate of the late 1980s and early 1990s.

Unfortunately, the word is difficult to define, and could share the fate of its sister issue, productivity, which spawned a somewhat similar council in the 1970s, remembered now only by an Advertising Council commercial with ex-prime-time Washington commentator, Howard K. Smith, shown on very late, late TV. No one has drawn a Laffer curve explaining "competitiveness" in a way that members of Congress and the media can understand — or pretend to.

However, Paul E. Grey, president of the Massachusetts Institute of Technology and vice chairman of the new competitiveness council, has a definition he is sure more than meets that test:

"We want to help Americans maintain a decent standard of living," he says, "and they can't if our economic decline continues at the same rate as it has over the past 20 years."

"There's nothing esoteric about it," said Alan H. Magazine, executive director of the council. "It's as basic as the fact that families with two wage earners are having a hard time maintaining the same living standards their parents had with only one job between them."

Many Americans disagree with the notion of one of President Reagan's heroes and predecessors, Ver-

## WASHINGTON & BEYOND



# A New Buzzword: Competitiveness

MICHAEL J. BENNETT

mont-born and Massachusetts-bred Calvin Coolidge, who maintained that "the business of America is business." But it would be a foolish politician indeed who ignored one indicator that Grey and Magazine are right in believing people are afraid America isn't very good at business these days, and respect businessmen who compete successfully.

That indicator is the fact that readers no longer make best sellers out of savage satires of shrewd, opportunistic second-generation immigrant businessmen, such as the one portrayed in *What Makes Sammy Run* back when America was on top of the economic heap. Instead, American college students as well as people who rarely read books have made a self-aggrandizing autobiography of a shrewd, opportunistic second-generation immigrant businessman, immodestly entitled *Iacocca*, the biggest best seller in history other than the Bible. Businessmen may not make literary heroes these days, but successful businessmen certainly make popular ones, even potential presidential candidates.

"We want to, we intend to influence Congress, even the next presidential election," said Grey, who met with Vice President George Bush and House Speaker Jim Wright the day the council's formation was announced.

"The council has the staying

power — and the clout — to make an impact on competitiveness," John A. Young, chairman of the Hewlett-Packard Corporation, insists. And unlike the productivity council, which came into being as a small federal agency, the privately supported Council on Competitiveness has impressive support.

Some of the most powerful organizations in the country are represented, ranging from the AFL-CIO to the National Association of Manufacturers. Among the council's 24 directors are the chief executive officers of IBM, Eastman Kodak, TRW, Pfizer, the American Stock Exchange, B.F. Goodrich, AT&T Bell Laboratories and Honeywell. The United Auto Workers and United Steel Workers are also represented, along with five university presidents, three from New England: Matina Horner of Radcliffe, Joseph Duffey, chancellor of the University of Massachusetts at Amherst, and Grey. The other two universities are Carnegie-Mellon and Northwestern.

In an article written soon after formation of the council was announced, Peter Behr, business columnist of the *Washington Post*, observed:

"'Restoring American Competitiveness' has a fair chance of becoming one of the prime political slogans for the new Congress and the 1988 presidential campaign.

"Democrats having regained control of Congress for the first time in six years, want a positive economic platform to displace the party's big-spending, protectionist image. . . .

"The administration's dilemma is what to call a new initiative on this front, since that would seem to admit that the country is having trouble competing — an admission

Michael J. Bennett is Washington Editor of *Connection*.

that would hand the Democrats an issue."

"But Vice President Bush, in search of his own platform for 1988, is already speech-making about a competitiveness gap."

One obvious way of trying to build support for greater competitive efforts is to appeal, as Behr suggests, "to the strong public impulse to buy American to protect jobs." But, as he also notes, that is counterbalanced "by perhaps a stronger demand among consumers for the best quality and value in what they buy, whether imported or not."

Bush and other presidential hopefuls may very well get some intellectual and public relations ammunition from an MIT Commission on Industrial Productivity that was created simultaneously

although independently of the Commission on Competitiveness. The 15-member interdisciplinary group includes computer scientists, electrical engineers, economists, materials experts, management specialists, a chemist, a biologist and a political scientist.

Although the issues of competitiveness and productivity may be sisters or twins, they are "not synonymous," as MIT's President Grey is quick to point out. Productivity is essentially a concern for efficiency; competitiveness ranges over many issues, from foreign trade and economic policies, to improved education for working and living in an increasingly interdependent world, to attitudes of workers and managers.

Without productivity, people lose jobs; without competitiveness, com-

munities and the country lose entire industries.

Government can only create a climate for competitiveness, according to the report last year of the Business-Higher Education Forum of the American Council on Education, a forerunner of the Council on Competitiveness. New Englanders who participated in the 18 months' work that went into preparing the forum's report included President Horner of Radcliffe, Chancellor Duffey of UMass-Amherst and U.S. Reps. James Jeffords of Vermont, Nancy Johnson of Connecticut and Claudine Schneider of Rhode Island. Former Rep. John McKernan, now the governor of Maine, also participated.

The Business-Higher Education Forum not only endorsed a "competitive impact statement for pro-

## How Well Do Our Universities Educate Their Students, And How Could They Do Better?

In this calmly argued and persuasive book, Derek Bok considers the record of America's higher education system and calls for a new reform effort to meet the demands of a changing world order.

More and more, Bok predicts, the U.S. will have to live by its wits. We will prosper or decline in proportion to our ability to develop new ideas, to work with new technology, to create new products, and to imagine new ways of solving problems. "Of all our national assets," he writes, "a trained intelligence and a capacity for innovation and discovery seem destined to be the most important."

HIGHER  
LEARNING

DEREK BOK



Colleges and universities will have to be the chief source of such training and talent. But the process of learning is still imperfectly understood, and curriculum revamping alone will not do the job. Bok recommends a number of steps by which each institution can move toward the goal of giving its students the best preparation for life in this increasingly complex world.

Derek Bok is President of Harvard University.

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posed federal laws, taxes or regulations, which are likely to affect American competitiveness;" it proposed 15 other specific actions the federal government could take. Some examples:

- Get on with long-term — and long overdue — brick and mortar rebuilding of higher education's research and development infrastructure.
- Expand joint technology-development ventures among business, academia and government.
- Increase funding for translation and abstraction of foreign science and technology information.
- Develop a comprehensive retraining program through "In-

dividual Training Accounts" as a form of insurance.

- Modernize the federal employment service by upgrading and automating its labor-market information system.
- Encourage and finance university and college education in foreign languages and cultures.
- Develop a trade policy based on the principle of reciprocal access to foreign markets, particularly Japan's.
- Protect U.S. intellectual property — copyrights, licenses, patents and trademarks — from illegal copying, theft and counterfeiting, a modern form of piracy that amounts to \$20 bil-

lion a year.

- Hold congressional hearings to establish mechanisms through which the federal government can focus continually on competitiveness. Among the organizational possibilities cited: appointment of a national competitiveness advisor in the White House; making competitiveness the responsibility of the national security advisor; and creating a new Department of Commerce and Trade.

Many of these proposals found their way into the president's mid-February legislative package on competitiveness, which is designed, he said, to make America by the year 2000 "still at the top of the charts, the front of the pack, the head of the class." □

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# Neglecting Our Own

**New England's six state universities are being shortchanged, and this will affect the region's ability to compete in a world economy.**

A. BARTLETT GIAMATTI

Education is New England's most enduring industry. From the old New England of farming and fishing and logging and, of course, preaching, to the New England of 19th and 20th century manufacturing and now to the New England of today, which likes to think of itself as renewed through defense-related industries, research information businesses and high technology, the region is still preaching to America on how to manage itself. New England produces education, public and private, large and small, at all levels and expects to act as educator to the nation: to instruct it, to scold it and to set its standards. And so, this very small region with only 5.3 percent of the U.S. population revels in itself as the nation's educational pacesetter, the source of a wonderful diversity of institutions that serve various needs.

At the same time, we ought to know New England projects an immense amount of smugness — a smugness which is so ingrained at this point that we scarcely realize it, and that in itself is very dangerous.

In these six states there are 264 colleges and universities with 720,000 students now enrolled. That's about 10 percent of the nation's colleges and universities. Only Connecticut has about the same number of public as private or independent institutions. Otherwise New England reflects the country and indeed probably provided the model for the country in that the number of educational institutions that are independent or private outnumber those that are public by two to one. In those 264 colleges, 83.5 percent of the students are undergraduates and 16.5 percent are graduate students, and that is where nobody should be smug. Underneath all the undergraduate ivy is a worm, a flaw. But there is no flaw or blemish in the big picture. New England education is powerful, thinks of itself as powerful and will remind anybody who hasn't heard that of the facts.

The region's higher education institutions in 1984 consumed, according to the National Science Foundation, about 10 percent of all federal awards in research and development. It's an astonishing statistic that tells you about the

strength of the doctoral-granting institutions in this country. Out of \$8.32 billion given for R&D by the federal government in 1984, \$830 million went to New England. If you were to add to those doctoral degree-granting institutions, non-profits like hospitals as well as corporations that do research, then in 1984 you would find that New England received 11 percent of all federal R&D money given to corporations, 12 percent of all R&D given to colleges and universities and non-profit affiliates; 12 percent of NASA's R&D; 12 percent of the Department of Transportation; 15 percent of the National Science Foundation; 15.5 percent of National Institutes for Health and no less than 40 percent of the Department of Defense's R&D obligations and awards. A billion dollars in 1985 came to New England because of the presence of these educational and educationally related research entities.



A. Bartlett Giamatti, former president of Yale University, is now president of the National Baseball League. This article is adapted from his keynote address at the New England Council's annual conference last November.

## *This is high-tech heaven, and education is at the core . . . but a lot of this is built on shale*

Not only is New England an enormous consumer of education, but it is also a great producer. In 1982, which is the last year for which figures are available, New England "employed," if you will, more than 7 percent of the nation's medical residents and specialists. Eight percent of all the PhDs produced in America were employed in New England; that includes 10 percent of the PhDs in the humanities, 10.1 percent in engineering sciences, 11 percent of all PhDs in the physical sciences: chemistry, mathematics, physics, astronomy. New England employed 8.5 percent of all law graduates and 9.5 percent of all the MBAs produced in the United States. An enormous amount of educational product is produced and consumed, shared and taken back. It's an extraordinary record, particularly at the professional level and at the research and development level. The result is tremendous synergism and a tremendous impact on the region's economy.

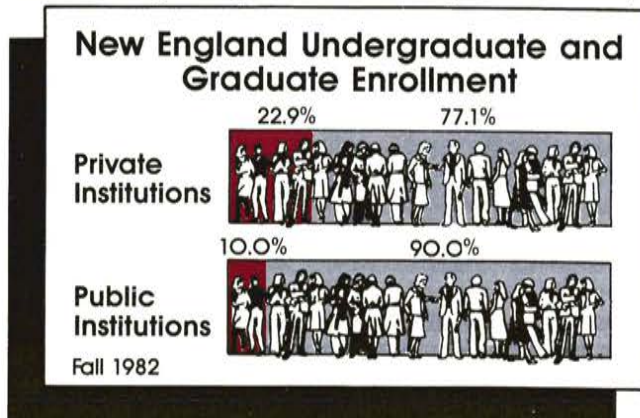
In fiscal year 1984, for instance, \$6.4 billion in direct expenditures in New England were attributable to the presence of higher education. That figure is conservatively projected to grow at 10 percent a year. The New England Board of Higher Education estimates, and I believe the projection is conservative, that in 1987 total direct expenditures by New England higher education in the region will be \$8.5 billion. If you agree with estimates that the indirect economic impact is a multiplier of 2.5, you discover that in fiscal year 1987 \$21 billion will directly or indirectly flow into or have an impact upon the New England economy

because of higher education. Remarkable. Billions of dollars, jobs and productivity. This is high-tech heaven, it is said, and education is at the core.

To say all this and to number all these glories is to affirm the role of education in New England. It is to underscore the role education has had in the economic life of New England, not to mention the political, cultural or artistic life. It is also to embrace the great smugness because a lot of this is built on shale, in my humble opinion. Why? Because there is no regional planning in New England, there is no planning for science policy, no planning for manpower policy. There is no strategy for long-term affirmation of the interconnected role of education, service and high-tech needs and professional research and development. I have never heard a New England governor talk about it for his or her state, much less for this region that loves to define itself as a concept and state of mind as well as a geographic expression.

There is no planning for remembering the minority population in New England. Black and Hispanic Americans in this six-state area are a very small part of the national minority population. Only 1.8 percent of the nation's black Americans and only 2 percent of the Hispanic population live in New England. And yet, almost 30 percent of Boston's residents are minorities. Blacks and Hispanics account for 54 percent of Hartford's population. In New Haven 76 percent of the public school system is black and Hispanic. Will the overwhelmingly white middle class of New England forget these children, forget those cities? It can't. But I don't hear anybody talking about it very much. Do you really think that these minority children are the only ones who will have no role in a high-tech management consultant economy? They are not the only ones; there are a lot of other young people out there who also will not have a role. One does not hear of educational planning extending down to elementary and secondary schools as if they were part of a whole system or culture.

How many of the 264 colleges and universities in New England, of which we are always so proud,

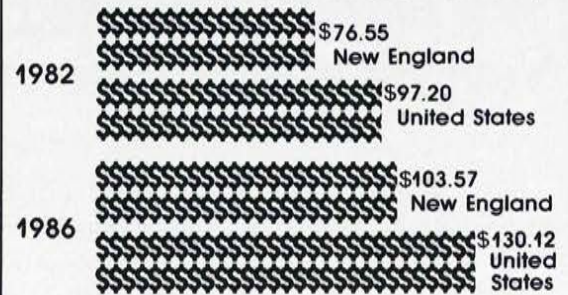


have ever lifted a finger for urban public education or rural public education? Some businesses, not very many, not as many as should, have adopted a school, but I only know of a handful of New England's 264 educational institutions that has ever thought to reach out and assist the local public schools in whatever way made sense to colleagues in the elementary and secondary system. Are we really so far ahead of the country or have we just become overspecialized sooner, dependent now on the fragile integrated circuit as we once were on the loom? Is our sense of being so far ahead in financial expertise and management science and venture capital and risk management so strong a foundation on which to build? Of course not. The national economy is always cyclical as is the national political economy and nothing, including the rivers and the forests, lasts forever.

Why do I presume to question our cornerstone certainties? Look at the micro data.

- In 1980, 35.9 percent of New Englanders 25 years of age and older had graduated from high school. This was slightly higher than the national average (34.6) but *lower* than the Middle Atlantic region (36.5), the East North Central region (38.6) and the West North Central region (38.5), the Midwest, and it was only on a par with the Mountain West region (35.7). New England was higher, of course, than the four regions which fell below the national average: Pacific West (32.9) and the three southern regions, Atlantic South (31.0), East South Central (31.2) and West South Central (30.4).
- In 1980, 15.4 percent of New Englanders 25 and older had had from one to three years of college; we were slightly behind the rest of the nation (15.7), but we were way behind the Mountain West (20.7) and we lagged behind the Pacific West (22.0) — California, Oregon and Washington — by almost 7 percent.
- New England almost leads the nation in terms of college graduates. Of New Englanders 25

### Education Appropriations Per Capita



years old and older in 1980, those who had graduated from college comprised 19.2 percent. The national average was 16.2. In the Pacific West, however, college graduates accounted for 19.4 percent of a bigger population. And that 19.2 percent in New England includes all those PhDs, MBAs and JDs who came to work here. They weren't New Englanders, they were simply in New England.

Is New England education reaching New England youth? Is education in the region and its economy so interdependent, keeping New England youth in New England? I wonder.

How well do we educate in New England? Not better than California by any measure that means anything and not better than the Midwest by any measure that is statistically significant. Between 1980 and 1984, to look at a different slice, the number of high school graduates in the six New England states dropped 9.1 percent, from 161,600 to 146,700. Every New England state experienced a drop. This drop doesn't necessarily mark a failure of education; they are not all dropping out. It marks a decline in the high-school age population and therefore indicates a decline in the number of potential college students. This drop, which has been going on since the late 1970s, has not yet reached its nadir. The steepest drops will occur between 1988 and 1992. We will continue, therefore, to lose high school students in New England. Where is the college-age population for those wonderful 264 colleges and universities going to come from?

Will it come from out of state? Is there a plan for this? Will it come from the region in greater numbers? Is there a plan in any state to keep its students there? Will the declining number of high-school graduates be better prepared to enter the high-tech and service world? Is there a plan to make that smaller number better prepared?

## *New England dollars are not being reinvested in New England universities*

If not, what is going to happen to them? Do they move away? If they move away, what happens to the infrastructure of our vaunted New England recovery without them? What happens to that most traditional New England industry, education, without a market, without people?

Does anyone, individually or collectively, locally or regionally have a plan? Industry worries about it. Do corporate strategizers strategize about this? Has any governor really thought about this for his or her state? Does any local government official really worry about the future, of what is going to happen to the jobs and the education because they go so much together, as we keep telling ourselves?

There is no reason, not with travel costs, not with the next rise in interest rates and not with all the local excellencies in educational institutions that exist in this country, for a bright, able, motivated young man or woman of high-school age in Michigan or Illinois or Pennsylvania or Texas or Arizona or Florida or California, even to think of coming to the Northeast and to New England, even to think of going to very fine and very, very expensive private colleges and universities or to good but underfunded and starved public universities. We are not going to produce more potential college students in New England. We in New England will produce fewer. We will not be competitive for out-of-staters, and as education suffers in New England so will the economy. You can't believe all the glorious 1987 statistics without understanding that every sword is two-edged. Am I an alarmist? Let me share with you two last bits of data that surprised and saddened me.

Look at state appropriations for higher education, operating expenses, the money that the six states grant through the legislative process to the six state systems of higher education for operating the state universities. You will find that in 1982 the New England average per capita for running public higher education was \$76.55 and the national appropriation figured exactly the same way per capita was \$97.20. In 1986 New England's appropriation per capita was \$103.57;

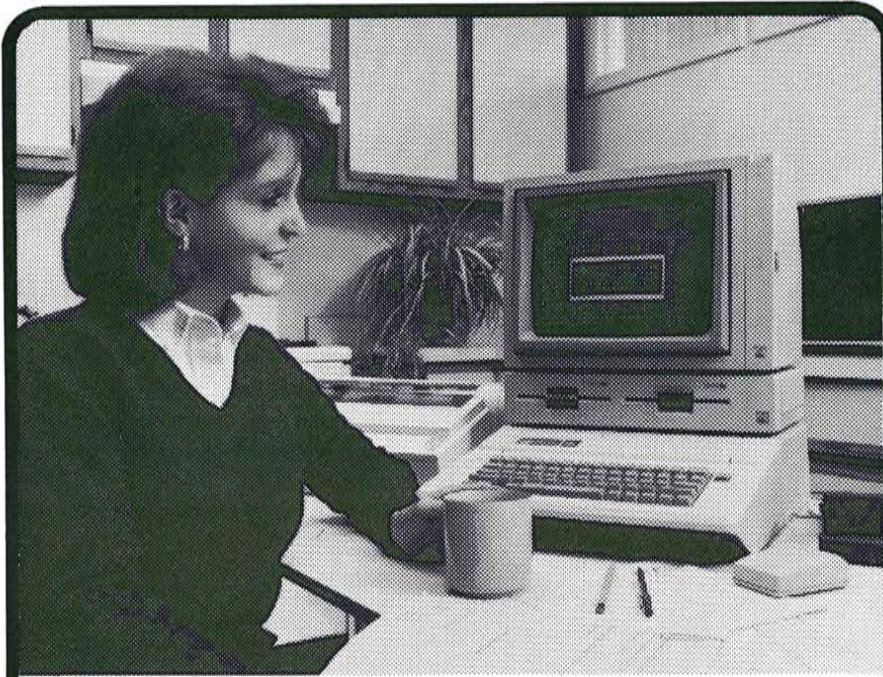
the U.S. appropriation, \$130.12. That is a long and complicated way of saying that New England is shamefully, negligently, and appallingly ignoring its public system of higher education in all six states. It's an old scandal and it's going on right now. It means New England is shortsighted and smug.

The six states are not reinvesting New Englander's dollars in New England's oldest and most glorious industry, which is education. They are not investing New England tax dollars in the area that is viewed as so essential to the general economic and cultural well-being of the region. No wonder we won't get out-of-state students from Michigan, Georgia or California. Our state universities are not as competitive as any other state system construed regionally because for years and years those six state institutions have been starved financially. They have been abused politically. And they have been treated as institutions of second-class citizens when they are here in New England to serve and preserve the citizenry. Please don't tell me that because of our extraordinary array of private institutions that we don't need to nourish the public ones. That's an argument I've heard all my life and it's based on something worse than smugness, and it's false. New England's best private universities are nationally oriented, not New England oriented. They may be right or wrong in that but it's a fact and it's not going to change.

A second fact is that the New England economy is not in any sense a vital concern of most private colleges or universities, neither the very good nor the very mediocre. The New England economy cannot pursue its recovery in a high-tech service mode and assume the very expensive private institutions will either be able to continue to attract brains and money into New England or retain them here without an equally strong complementary public system, particularly at the professional and research level.

And it is here that some simple figures should give great pause to anyone concerned about the interdependence of the New England economy

*continued on page 52*



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## Sea Grant Contributes to Marine Economy

SUSAN WATSON MOLINE

**R**emember Jason Jr., the underwater robot boring into the depths of the North Atlantic, probing the crevices of the Titanic? Perhaps you know the research that gave birth to Jason was done in New England, at the Massachusetts Institute of Technology. What may surprise you is that Dana Yoerger's work on Jason was only part of a national program called Sea Grant, which links institutions researching the sea with individuals who make their living off it. That partnership between academia, industry and, often, community, contributes significantly to the marine economy in the United States and around the world. As Sea Grant pioneers, several New England institutions make a special impact.

Sea Grant was established in 1966 by the federal government "to accelerate national development of marine resources, including their conservation, proper management and maximum social and economic utilization." Thirty-one institutions participate nationwide, including,

in New England, MIT, the University of Rhode Island, Woods Hole Oceanographic Institution, the University of Maine, University of New Hampshire and University of Connecticut. Both undergraduate and graduate students participate in many Sea Grant projects.

Until Sea Grant, there had been little coordinated effort in the United States to take full advantage of the oceans — for food, for livelihood, for transportation and for recreation. It wasn't until 1972 that the marine sector of the U.S. economy was even measured. In that year, the National Income Ac-

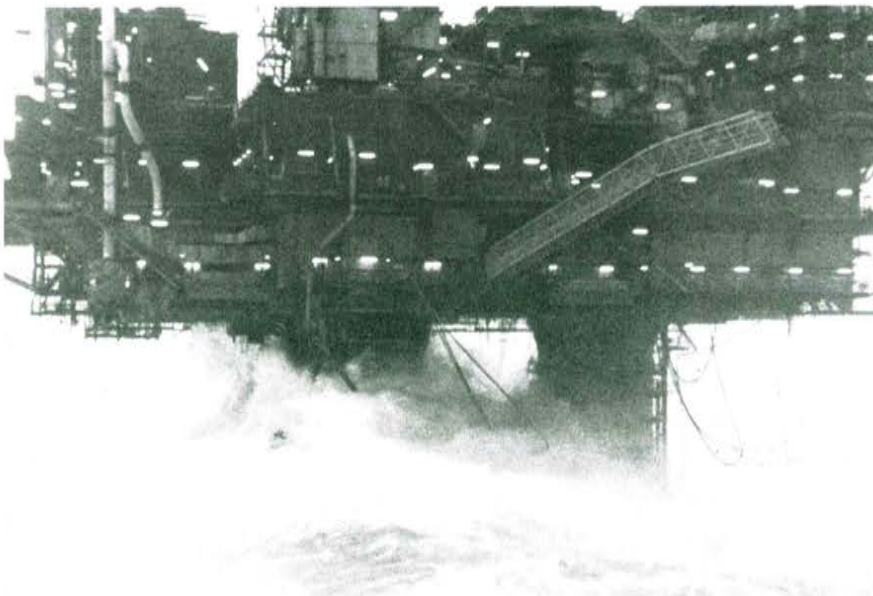
counting System computed total revenues from the sea at \$30.6 billion, comparable to that of agriculture. Included was income from commercial fishing, marine mining, marine construction, manufacturing, marine transportation and communications, marine-related retail trade, marine investment (financing, insurance and real estate), marine service and public administration.

In 1978, the most recent reporting year, Sea Grant estimated the marine economy at \$58 billion, with employment in marine industries at \$1,400,000. Exactly how much Sea Grant, and its five New England programs, contributes to an even larger marine economy today can only be guessed. There are a few indicators however.

A 1981 task force found that Sea Grant, nationally, was generating \$230 million each year in revenues and savings for the marine economy. Only a partial analysis, the task force report presented only a small portion of total Sea Grant activity. Only 57 projects were selected as examples of Sea Grant programs nationwide. In addition, manpower development activities such as management seminars were not assigned monetary value.

However incomplete, the 1981 report indicates the magnitude of Sea Grant's contribution to the U.S. economy. Much of that \$230 million came from New England Sea Grant programs. For example:

In marine construction, New England Sea Grant projects helped make offshore construction and waste disposal systems safer and more efficient. One project saved \$29- to \$54 million in channel modification or construction costs



Sea Grant research has helped improve offshore drilling platforms.

Susan Watson Moline is a free-lance writer who lives in Brookline, Mass.

in Massachusetts by developing mathematical models to predict and assess the impact of transporting and disposing of materials in semienclosed bodies of water. Another project developed a buoy to measure and to track waves, data important to the design and



construction of durable offshore structures. Adopted in a small business product line, the new buoy is expected to achieve annual sales of \$1 million.

In fish harvesting, New England Sea Grant projects have increased the efficiency of commercial shellfish, groundfish, and midwater fisheries. Midwater fishing gear was developed to help the Rhode Island fishing fleet make the transition to harvesting deep-water species. The new gear increased the annual gross for the herring export catch by \$1.25 million. Sea Grant also developed a remote-release hook-up block, making side trawler operations safer. With the new block, one Massachusetts fisherman increased his annual earnings by \$3,000. In addition, the U.S. Coast Guard adapted the block for lifeboat handling, and expects it to save \$3.5 million over 15 years.

In aquaculture, New England Sea Grant projects have provided new commercial opportunities by developing the science, technology and economic potential of marine species. Sea Grant research helped launch a new shellfish aquaculture industry in Maine. In its first year, the industry reported sales of more than \$1 million. Sea Grant also helped reduce mortality in smoltification of salmonids at the Dworshak National Fish Hatchery in Rhode Island from 35,000 to 300 a day by demonstrating the role of ammonia in the transport of oxy-



gen in fish. The result: \$250,000 in annual savings.

In marine-related real estate, New England Sea Grant projects have developed new technologies for shoreline stabilization, flood control and sewage treatment. An EPA-approved electron irradiation process for pasteurizing sewage sludge in Massachusetts was a Sea Grant development. In constructing the first facility based on this process, the Miami-Dade Water and Sewage Authority in Florida projects the system will result in annual savings of \$400,000.

In marine transportation, New England Sea Grant projects have helped increase the efficiency and safety of the U.S. shipping fleet and the competitiveness of U.S. boat manufacturers in the foreign market. In addition, a prototype "talking" buoy that reports ocean currents to ships moored offshore has been developed. Projected annual sales for the buoy: nearly \$600,000.

In marine service, New England



URI Sea Grant graduate student extracting blood from a salmon.

Sea Grant projects have worked to reduce wave damage to marinas and to find an economically feasible alternative to breakwater construction for small marinas.

Since each Sea Grant institution is required to match every two federal dollars with one from private



sources, Sea Grant research tends to be practical, immediately applicable to industry. Oil companies, for example, support Sea Grant research to improve offshore drilling platforms.

"Sea Grant differs from the Land Grant program of the last century in several significant ways," notes Norman Doelling, executive officer of MIT's Sea Grant Program. "Institutions must apply directly to Washington for funding for each Sea Grant project, while Land Grant institutions receive federal funds, calculated by formula, through the states. The Sea Grant procedure requires that each project be evaluated on its own merit.

"That requires us to set priorities," he continues, "for our own programs, for our region and for the nation. Program directors meet to do that, and to develop specific areas of expertise. For example, at MIT, a great deal of our Sea Grant work is in engineering and high technology. In fact," Doelling observes, "MIT receives about half of all Sea Grant funding for engineering projects nationwide."

Doelling cites two examples of how MIT Sea Grant research affects the economy. First, the safe and economic design of offshore oil structures helps oil companies reduce the risk of injury or death to their employees. That helps them keep oil prices down in the domestic market and competitive in the foreign market. New design also



helps regulatory agencies as they set safety standards and evaluate compliance in offshore structures.

The second example is in the improvement of fishing gear, a research area Doelling says is probably Sea Grant's most beneficial to the New England economy. Nets are tested in tow tanks, with fishermen joining engineers to observe the effect of various speeds and designs on their shape and usefulness. Their goal is not necessarily the largest catch, but rather, a selective catch. For example, in order to catch shrimp, a net must hold the shrimp but allow large fish to swim through it.

"We want to achieve maximum sustainable yield," Doelling explains. "In other words, we want the highest yield we can get without depleting the source."

Other MIT Sea Grant research activities include tracing Boston Harbor sewage flow and assessing the health benefits of fish oil.

According to Scott Nixon, director of the Sea Grant Program at the University of Rhode Island, URI puts more emphasis on basic research, on shelf waters and estuaries, for example, than many

## Sea Grant Depository at URI

A wealth of information on the oceans and America's Great Lakes and coastal zones is stored at URI's National Sea Grant Depository (NSGD). Established in 1970, NSGD provides access to all publications generated by the National Sea Grant Program.

The publications cover such subjects as aquaculture, mineral resources, law and socioeconomics, fisheries, biomedical, ocean engineering, coastal-zone management, marine education, marine recreation and applied oceanography.

The depository includes technical reports, journal reprints, newsletters, marine advisory reports, manuals, guides, directories, bibliographies, annual reports, conference proceedings and maps, charts and atlases produced by sea grant-funded researchers. "Sea Grant Abstract," published by the NSGD on a quarterly basis, lists new acquisitions.

Literature searches can be conducted on any marine-related topic with more than 24,000 citations included in a computer database. Telephone, mail and interlibrary loan requests are also handled.

For further information, contact National Sea Grant Depository, Pell Library Building, University of Rhode Island/Bay Campus, Narragansett, R.I. 02882; Phone: (401) 792-6114.

other Sea Grant programs.

"It used to be that we all wanted to explore the ocean for what we might get out of it," he says, "things like energy, drugs, minerals, food, new places to live. Now

we're more concerned with what we might put into it — sewage, nuclear waste, industrial waste. We have to find ways to deal with those real issues, and at the same time, preserve the natural sea environment."

URI, one of the original Sea Grant institutions, is currently looking into the development of new seafood products, analyzing pollution levels of the upper Narragansett Bay and conducting a multidisciplinary study of Rhode Island's coastal ponds.

At the Woods Hole Oceanographic Institution, current Sea Grant research activities include:

- Marine resources — "red tide" poisoning in New England, stabilization of the bay scallop population, dispersion and impact of PCB pollutants in the Buzzards Bay area, sediment transport on Cape Cod and in-shore waters and determination of optimum yields for selected marine algae.
- Marine policy issues — develop-

## Sea Grant Funding (Fiscal year 1986)

Institution	Federal Sea Grant \$	% of N.E. Total	Matching Non-Federal \$
URI	\$1,528,000	26	\$ 759,010
MIT	1,807,000	30	1,319,820
Woods Hole	717,900	12	617,675
UConn.	475,000	8	323,836
UMaine & UNH	1,460,800	24	601,040
<b>Total</b>	<b>\$5,988,700<sup>1</sup></b>		<b>\$3,621,381</b>
<b>National Total</b>	<b>\$36,018,521<sup>2</sup></b>		<b>\$26,363,165</b>

<sup>1</sup>Total for New England Sea Grant College Programs of \$5,988,700 is 17 percent of national Sea Grant appropriation total of \$36,018,521.

<sup>2</sup>Total does not include approximately \$3 million funded to 40 additional Sea Grant projects by other parts of the federal government. New England institutions received some of this money (exact figures not available).

Source: National Sea Grant College Program Office, Washington, DC

# Sea Grant Advisors Link Research to Public Service

The National Sea Grant Advisory Service, a network of some 350 people across the country, makes sure that Sea Grant research results are made available to those who need them.

Through workshops, seminars, publications, radio, television, demonstrations and person-to-person contacts, the advisory service helps to improve the productivity of marine resources and the quality of life for the people who enjoy them, are affected by them or who depend on them for a living.

The advisory service concept pervades the Sea Grant program. It fulfills two of the three functions of Sea Grant — education and public service or extension (the third being research) — as mandated by the legislation that established the program. Sea Grant-supported research frequently leads directly to advisory service projects that seek to put research results into the hands of those who can use them. And sea grant research has sometimes been undertaken in direct response to needs identified by the advisory service.

The advisory service varies from program to program in terms of size, organization, administration and focus. The Massachusetts Marine Liaison Service, for example, matches MIT research expertise with the needs of local marine businesses. The MIT Marine Industry Collegium brings together local, national and international marine businesses.

The URI Sea Grant Marine Advisory Service offers courses in marine diesels, welding, corrosion on wood and fiberglass boats, computers in marine businesses, and trawl net repair and construction. The Vessel Safety and Engineering Advisory Bureau at URI, supported by Sea

Grant, addresses four problem areas: vessel stability; vessel seaworthiness; vessel efficiency; and education for fishermen in vessel safety, including an annual training seminar for New England fishermen.

The Sea Grant Marine Advisory Program in Maine and New Hampshire supports such projects as survival workshops and videotapes teaching boaters, fishermen and emergency medical technicians how to deal with the dangers of hypothermia; aquaculture programs to help towns and organizations revitalize their clamflats; workshops to help property owners deal with coastal erosion problems; and marine education program curriculum guides and teacher training. A new member of the MAP, the Marine Law Institute in Portland, Maine (jointly sponsored by the University of Maine School of Law and the Center for Research and Advanced Study at the University of Southern Maine) provides education and legal analysis to policymakers, lawyers and marine-resource users. The Institute publishes *Territorial Sea*, a quarterly examining developments in the management of interjurisdictional fishery resources. For more information, contact Marine Law Institute, 246 Deering Ave., Portland, Maine 04102; Phone: (207) 780-4474.

Activities at the Marine Assistance Service at Woods Hole Oceanographic Institution have included, for example, a forum for local decision-makers on coastal issues of Cape Cod and the islands.

The New England advisory programs comprise one of five regional networks whose efforts produce results that are of regional as well as national importance.

— Wendy Deans

ment of marine resources and opportunities in Columbia, Ecuador and Brazil.

Together, UNH and the University of Maine are focusing their Sea Grant activities on:

- Fisheries management, including lobster resources.
- Fisheries development — marketing, harvesting, processing and aquaculture.
- Changes in the coastal environment — construction, energy development, marine pollution, access and retreating shorelines.
- Industrial and commercial development — marine transportation and port development, biotechnology, marine recreation and tourism.

At the University of Connecticut, Sea Grant research includes:

- Revitalization of shellfish populations — life spans of hard- and soft-shell clams.
- Sea resources — possible use of seaweed as a source of chemicals for the food industry.
- Coastal planning.
- Modification of fishing gear.

“Sea Grant is remarkable,” Nixon of URI observes. “It’s quite flexible, cutting across traditional college boundaries. It encourages a multidisciplinary approach, linking professionals from engineering with those in nutrition, for example. A real mandate from the people, Sea Grant allows us in academia to take an idea, add to it a little venture capital from industry and develop it into an exciting marine resource for all of us.”

The national Office of Sea Grant is in the U.S. Department of Commerce’s National Oceanic and Atmospheric Administration. □

# Maritime Academies Train for Sea Careers

**A**lthough they don't receive direct Sea Grant funding, the Massachusetts Maritime Academy in Buzzards Bay and Maine Maritime Academy in Castine also participate in Sea Grant programs. Through Sea Grant, the two institutions offer practical instruction to civilians who make their livelihood from the sea.

The primary way in which the maritime academies contribute to the economy, however, is through highly specialized training of men and women for careers at sea. They help replenish the labor needs of the U.S. merchant marine, which operates commercial vessels on both deep sea and coastal duty, and also of marine-related industry.

"Special learning opportunities funded by Sea Grant and the commonwealth have grown tremendously at Massachusetts Maritime," says David L. Kan, professor of basic sciences and coordinator of Sea Grant activities there. "What began 10 years ago as a second concentration in our fisheries curriculum has attracted about 2,000 individuals to courses and another 6,000 to weekend and one-day workshops."

Massachusetts Maritime offers 38 part-time courses in areas such as navigational engineering, CPR, coastal and radar navigation, personal computers in the marine industry, bottom trawl, lobstering, and small-boat fishing. In addition, Massachusetts Maritime provides fishing seminars on both boat and surf fishing.

The oldest continuously operating maritime academy in the country, founded in 1891, Massachusetts Maritime offers bachelor's degree programs in marine transportation and marine engineering, and programs leading to marine-related career opportunities both on and offshore. Courses include nautical astronomy, radar observer certification, naval architecture

and thermodynamics. Fall 1986 enrollment at Massachusetts Maritime stood at 670.

In fiscal year 1986, Massachusetts Maritime's total budget of \$8.5 million included \$8.4 from the state and \$100,000 from the federal government to train cadets for ship duty.

"Generally, we and the other maritime academies are meeting the need for these specially trained men and women," says Lt. Leroy W. Thompson, chief public affairs officer at Massachusetts Maritime. "Our cadets are career-minded. They know what they want to do. Our curriculum is intentionally very narrow." More than 93 percent of Massachusetts Maritime's graduates garner starting salaries of more than \$25,000.

There are four U.S. maritime academies outside New England: California Maritime Academy, Vallejo; State University of New York Maritime College, Bronx; Texas A&M University Maritime College, Galveston; and U.S. Merchant Marine Academy, King's Point, N.Y.

Massachusetts Maritime's four-year program includes three sea terms, each lasting two months, which give cadets an opportunity to learn by doing. As Thompson explains: "In Sea Term, about 450 cadets join 100 officers on our training vessels. They experience the practical application of the principles they've learned on shore."

Aboard the training vessels "Patriot State," "Ranger," and "Cape Cod," cadets perform navigation, piloting, communications, and marine engineering. Recent cruises have led to ports in Barbados, Curacao, Trinidad, Greece, Italy, Spain, the Canary Islands, England, Ireland, the Netherlands and Germany.

Maine Maritime Academy also has a significant impact on the sea



Maritime Academy student

economy, says Lt. Cmdr. John Staples, chief public affairs officer there. More than 98 percent of its graduates go into maritime careers, most at sea but others on shore in such fields as surveying, naval architecture and shipbuilding. Others enter nonmaritime fields, putting their engineering studies to work for the aeronautical and paper industries, for example.

Only in its second year, Maine Maritime's innovative program leading to a master of science degree in maritime management is attracting worldwide attention. "Where advanced maritime education is concerned, there was a vacuum that existed throughout the world," says Wallace S. Reed, the program's director. Established in 1985, the Maine Maritime program fills that void.

The program's modular schedule allows students to continue their maritime careers while earning master's degrees. The three-and-one-half-week modules run from May to November; students may select modules over one, two or more years compatible with their work schedules. Foreign students have come from the People's Republic of China, India, Norway, Canada, Panama and Hong Kong. This year, Reed says, there have been more than 375 inquiries about the program from students in 46 countries.

Working with the Sea Grant Advisory Board at the University of Maine in Orono, Maine Maritime offers civilians part-time courses such as survival at sea, radar certification, and small boat handling. "Operation Sea Speci-

men," a Sea Grant-sponsored project to introduce live specimens into Maine schools, is in its third year at Maine Maritime.

Maine Maritime Academy's total budget of \$8.5 million in fiscal year 1986 included \$4 million from the state, \$250,000 from the federal government for maintenance and repairs to the 500-foot training ship "State of Maine," \$1.8 million from tuition and \$134,000 from government grants and contracts.

"Interest in seafaring requires a special outlook," Staples says. "Now we're seeing nontraditional students — veterans in their 20s and 30s, and women. The women who come are very successful. In fact, the first woman to earn a master's license in the U.S. merchant marine was our first woman

student."

Undergraduate enrollment at Maine Maritime in the fall of 1986 was 489. Midshipmen, including women, work toward bachelor's degrees in any of five majors: nautical science, marine transportation and management, marine engineering, marine engineering operations, and marine engineering technology. Minors include 10 fields ranging from the humanities to nuclear engineering. Following classwork, midshipmen are at sea two months a year on the training vessel. The exception is sophomore year, in which they spend two months aboard commercial vessels instead.

Offering specialized training for managers of the 10,000 marinas in the U.S., Maine Maritime also offers a two-year associate degree

program in yacht operations and boatyard management.

While he admits that the U.S. merchant marine handles only 4 percent of worldwide shipping today, state Rep. Nathaniel J. Crowley of Maine's legislative committee on marine resources feels that any attempt to merge the Massachusetts and Maine maritime academies, as has been proposed, would be "a tremendous mistake.

"It's true that there isn't the call for the merchant marine that used to exist," he says, "and we need to do something about that. Maine has 3,500 miles of shoreline and I'm very supportive of the Maine Maritime Academy. It's a big ocean out there, and we should be doing all we can to use it." □

— Susan Watson Moline

## Coast Guard Trains Leaders

The rigorous training of maritime leaders on whom lives and property often depend is the U.S. Coast Guard Academy's primary contribution to the economy of New England and the nation.

According to Lt. Paul A. Freusse, chief public affairs officer of the New London, Conn., institution, the saving of lives and property, as well as the interception of contraband, are probably the most visible of Coast Guard activities. But there are other ways in which the academy stimulates the economy.

Federal funds for academic programs and faculty salaries, for example, flow into the New London area. In addition, all cadets are on full federal scholarship; in return, graduates must serve a minimum of five years in the Coast Guard.

The academy, which serves the entire nation, offers seven majors: applied science; electrical, civil and marine engineering; government; management; and mathematical and computer sciences. Coast Guard cadets train on a sailing vessel, the "Eagle," and on cutters. During the cruises, they gain a practical understanding of seamanship, gunnery, navigation, and communication.

"The Coast Guard Academy is said to be one of the 10 most selective schools in the country,"



View from Eagle under sail

Freusse says. "About 7,000 men and women apply for a class of 260. The number admitted boils down to the needs of the service. There are now 43,000 people in the Coast Guard, including active military and civilians. We decide how many new cadets we can accept based on that." In the fall of 1986, enrollment at the academy totalled 752.

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## REGIONAL SPOTLIGHT



# W

here water power once turned the wheels of industry, the power of knowledge is now the driving force. Where factory workers toiled to the beat of the looms, the finest minds in the country embark on ventures in the forefront of technology. An unheralded, once-in-a-century window of opportunity has arisen in a quiet corner of New England: the Merrimack River Valley.

Just as the river reflects the old red brick mills along its banks, the present economic state of the Merrimack Valley reflects its past. Looking back at that past, the need to avoid its mistakes becomes clear. Nearly a score of higher education institutions lying on either side of the Merrimack River may hold the key to preserving the valley's newfound prosperity, lending support to the economy and pioneering the initiative to strengthen international ties. These colleges and universities, large and small, are committed to maintaining the promising economy and quality of life of a region rediscovering its potential as a world leader.

Located in a historic area stretching from Concord, N.H. to Haverhill, Mass. (see map), Merrimack Valley higher education institutions serve approximately 50,000 students. They are, in Massachusetts: Bradford College and Northern Essex Community College in Haverhill; Merrimack College, North Andover; the University of Lowell, Lowell; and the Wang Institute of Graduate Studies, Tyngsboro. In New Hampshire, they are: New Hampshire Vocational Technical College-Manchester, the University of New Hampshire at Manchester, Hesser College, New Hampshire College, Notre Dame College and Saint Anselm College, all in Manchester; Magdalen College, Bedford; White Pines College, Chester; New Hampshire Vocation-

# A New Driving Force in Merrimack Valley

ELLIN ANDERSON

al-Technical College-Nashua, Daniel Webster College and Rivier College, Nashua; and New Hampshire Technical Institute and the Franklin Pierce Law Center, Concord.

Three of the valley's cities, Lowell and Lawrence, Mass., and Nashua, N.H., were ranked among the top 10 fastest-growing local economies in the nation between 1980 and 1985, according to a 1986 study by New York's Marine Midland Bank. Over the period cited, employment grew 47.9 percent in Lawrence, 38.5 percent in Lowell, and 35.5 percent in Nashua. Like most of the valley's cities, these former obsolete mill towns have been revived by high-tech industry.

fundamentalism is experiencing a revival. There is an influx of immigrants with little formal education. Government is striving to limit the federal bureaucracy. A president with Western roots has been re-elected on a platform of reducing the national debt, increasing defense and decreasing government spending.

The year was 1833. The conditions are true again today — as they haven't been since the early years of the industrial revolution.

Today, two centers of economic development lead the nation in the

# I

magine a time of heady economic and social turbulence. A technological revolution is sweeping the Merrimack Valley area and the country. Old industries are dying; new ones are springing up. The national economy is in turmoil. Familiar social institutions — family, church and schools — are being transformed. The number of young people is shrinking. The population of the United States is moving west and south. Religious

Ellin Anderson is associate editor of *Connection*.



information and technological revolution. One is California's Silicon Valley; the other is Massachusetts' Route 128, which has mushroomed and developed as far north as Haverhill and southern New Hampshire. Home to Bradford College, which opened its doors in 1803 as one of New England's earliest coeducational liberal arts academies, Haverhill has come a long way in the past decade. Formerly a city whose prosperity rested largely on shoe manufacturing, Haverhill went into a downspin when the United States lost its grip on that industry. But in recent years Haverhill has been on the move in terms of population growth, increasing wealth, new industry and construction.

As Bradford College President Arthur Levine relates, during the last industrial revolution people from all over the world came to see the Merrimack Valley, particularly Lowell, whose water-powered textile mills led the nation in advanced technology. "Writers wrote about the United States during the 1820s and 1830s the way they're writing about Japan now. This area was an international leader in the last revolution, and we have that opportunity once again," Levine says.

To help do its part in keeping the valley on course, Bradford has founded the Merrimack Valley

Leadership Forum, which brings together political, economic and professional leaders on a regular basis to consider future issues. An internship program has been designed using local employers, creating opportunities for them to work with Bradford students and convince them to stay in the valley.

A new curriculum has been introduced: the Bradford Plan for Practical Liberal Arts Education, which uses the liberal arts in non-traditional ways to prepare students for careers in a technological and information society. About 30 nationalities are represented in Bradford's student body of 360, and a course in global perspectives is now a requirement.

"The Merrimack Valley is a test case for the rest of the nation," Levine says. "They'll either learn from our successes or our mistakes, and our successes will be far more useful in terms of cooperation between a region and its colleges and universities. We can be a pathblazer."

John R. Dimitry, president of Haverhill's Northern Essex Community College, or "NECCO," as it is known locally, describes the current economic picture with optimism. "Unemployment is practically nonexistent, and the job market appears to be very bright," he says. "Certainly, an enormous amount of money is being invested

in what investors think is long-term prosperity and economic development."

In the early 1980s, Dimitry established the Center for Business and Industry at NECCO, which provides special programs, courses, workshops, conferences and even associate-degree programs tailored to the needs of local industry. As an example, Dimitry cites the printed-circuitboard industry. "There's an unusual concentration of this industry in the Merrimack Valley, the only other place like it being Silicon Valley. We met with the firms and eventually came up with an associate-degree program designed exclusively for that particular industry," he says.

NECCO has also designed special courses and programs for AT&T, the valley's biggest employer. "Right now we've got at least 600 of their employees in programs specially designed for them. We're doing just about all their in-staff training of electronic testing technicians," Dimitry notes.

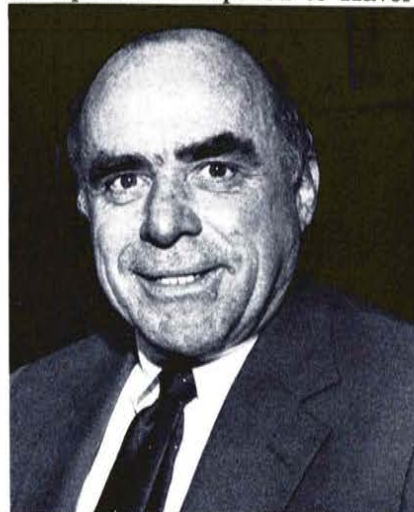
At NECCO, plans are under way for a new campus in nearby Lawrence. The Massachusetts Board of Regents has recommended an initial appropriation of \$11 million to purchase or build a facility that will allow NECCO to consolidate its Lawrence extension, now housed in five rented buildings. "Lawrence is depressed compared to Haver-



Dimitry of Northern Essex



Deegan of Merrimack



Hogan of Lowell



hill, Lowell and Newburyport. It's a city that has generally been underserved in terms of postsecondary education," Dimitry says. "Clearly, the regents are recommending this money because they are convinced that the only way Lawrence will survive is by increasing its educational level and competency."

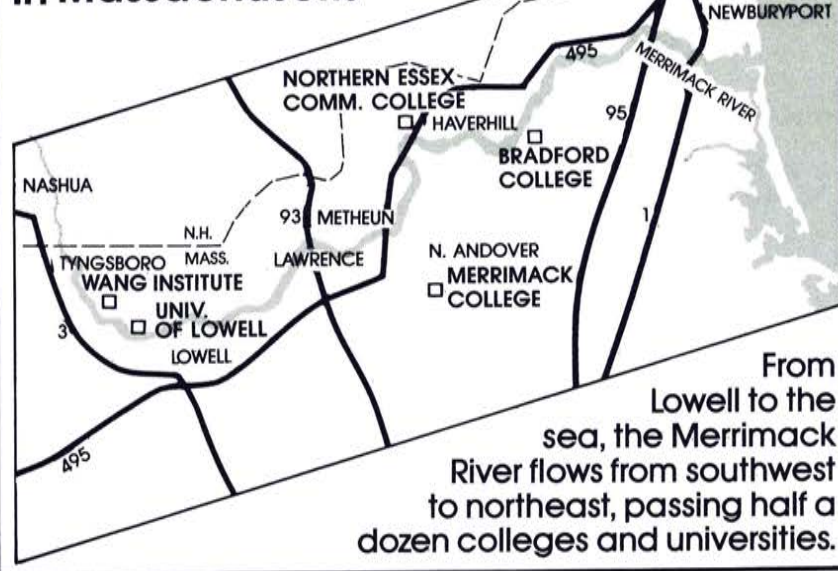
In Dimitry's opinion, the most useful effort the college is currently making to serve Lawrence's large Hispanic population is intensive instruction in English as a second language and prevocational skills. "If they're interested in industry, computers or banking, we'll give them a special vocabulary that will allow them to survive in a particular occupational cluster. We've got hundreds of people who have signed up who can't even get into the program," Dimitry says.

The need for this type of program is strong, Bradford President Levine agrees. "The valley needs educated manpower. We've begun providing programs for Lawrence through a consortium of area colleges — the University of Lowell, Merrimack College, NECCO and Bradford — called the Lawrence Project. We're trying to convert the labor base into employable people, and working hard in the high schools to keep students enrolled."

NECCO is an active member of the College Consortium for International Studies. Through CCIS, NECCO tries to foster an intercultural and international approach to courses currently taught, and to encourage an anthropological interest in other cultures. "Perhaps the slowest thing to move is getting people to change the content of their courses and programs, but we've had some success in that area," Dimitry says. Not only economic survival but the long-term survival of the earth, Dimitry believes, may depend upon international involvement.

Earlier this winter, in response to the needs of area industry, NECCO presented a free workshop on exporting, designed to provide local

## Merrimack River Valley in Massachusetts



companies with an informal exchange of information on the developing or expanding of export business. According to Sandy Roberts of NECCO's Center for Business and Industry, the workshop gave participants access to international trade information the U.S. Department of Commerce and the American Export Association provide to companies in larger cities.

Merrimack College in North Andover has ties to all large Merrimack Valley firms and many small ones through its co-op program, which Merrimack's president, the Rev. John E. Deegan, calls "business-college collaboratives."

The strong relationships Merrimack retains with firms such as AT&T, Digital Equipment Corp., Wang and Raytheon include upgrading the education of the firms' administrators and engineers. Merrimack is also working closely with the Lawrence public school system to promote literacy and try to identify potential college students, particularly among minorities.

While, as Deegan admits, his institution is "new to the international involvement issue," an international business major is being

developed by Merrimack's business division. This program, which would include a semester abroad, will probably be in place by the fall of 1988.

"Our business faculty realized that if students are to compete in the marketplace, they must be aware of the international dimension," Deegan says. "The planned major is a natural outgrowth of the turn business is taking in this country." Deegan points out that many companies are undertaking international joint ventures, especially with the Japanese. Merrimack students currently have the opportunity to travel abroad in relation to other areas of study.

Lowell's spectacular comeback has been extensively documented. Unemployment in the once-thriving mill town stood at 12.6 percent in 1975 (well above the national average), had dropped to 4.7 percent in 1984 (well below the national average), and as of December 1986 was less than 3 percent. A 10-year period, 1974 - 1984, saw a net increase of 27,000 jobs.

The University of Lowell was created from the 1975 merger of Lowell State College, whose roots were in teacher preparation, and the

Lowell Technological Institute, which exported knowledge of Lowell's former industrial mainstay, textiles, around the globe. Lowell President William T. Hogan has watched his institution develop into the 15,000-student higher education giant he intends to make

"the second public university in the commonwealth."

According to Hogan, his university's mission is to assist the region in economic development, supporting in turn artistic, cultural, recreational and intellectual pursuits. Hogan's vision for Lowell is found-



## Lawrence Lures Emerson

Picture this: On 85 acres of land near a scenic stretch of the Merrimack River lies the new campus of a distinguished New England college. Adjacent to the campus is a park with docks and boat ramps, picnic tables and trails for jogging and hiking. The river is blue and tranquil; the trees have taken on the hues of autumn.

Hopefully, in the fall of 1991 this idyllic scene will be a reality. After a long search for a site, which included failure to find an alternative facility in Boston and flat rejection by the town of Bedford, Emerson College, now located in Boston's Back Bay, will move to Lawrence. The 107-year-old college is the nation's only four-year institution exclusively oriented to communications and the performing arts.

Over the protests of four private owners, the city of Lawrence will acquire by eminent domain a 122-acre riverside land package, consisting of the 85-acre, \$80-million planned campus and a new 37-acre state park. The Benevolent and Protective Order of Elks, the Cyr Trust, Brooks Properties and Ryder Truck are fighting the eminent domain action in court.

In January, Lawrence's City Council approved an urban renewal plan that includes Emerson's campus, the new state park, and the restoration

of an existing city park. Financing for the plan was approved in early February. The estimated cost of the entire Emerson College-Riverfront Park-Riley Park Urban Renewal Project, which will cover a total of 150 acres, is \$120 million.

Lawrence provides an ideal setting for Emerson for several reasons. Located at the junction of Interstate Highways 495 and 93, the site is accessible to much of New England — Boston and the Merrimack Valley in particular. The park will provide an added amenity for city residents.

"The site presents a fantastic opportunity to restore what is really unused land and turn it into a beautiful campus setting and recreational area beside the river. The opportunity to go in and build 100 percent new construction was very attractive," says William Harrold, Emerson's director of public relations. "One of our goals is to become a communications university. The new facilities are an important step in this direction."

Compared to other Massachusetts cities, Lawrence has been underserved in terms of higher education opportunities. It is the only major city in the commonwealth that does not have a college or university (except for the Lawrence extension of Northern Essex Community College). Says Harrold, "If you look at com-

parable-sized cities, Worcester has eight or nine institutions, Springfield has four, and Lawrence stands alone as lacking in that regard."

Three independent economic studies have been conducted over the past year, all of which confirm the belief of both Emerson College and the Lawrence business and political community that relocating Emerson in Lawrence would be mutually beneficial. "In a community such as Lawrence, which is striving for economic rebirth, Emerson will have a fantastic economic effect in terms of stimulating further development," says Emerson President Allen Koenig.

Supporters believe that the addition of Emerson to the Lawrence scene will trigger a renaissance on the order of Lowell's. "It will give Lawrence an opportunity to show a new kind of economic redevelopment plan based primarily on education. It will be a model for the nation," said U.S. Rep. Chester Atkins, D-Mass, at a recent news conference. Massachusetts Attorney General James Shannon and state Sen. Patricia McGovern, D-Lawrence, both Lawrence natives, and Lawrence Mayor Kevin Sullivan also backed the move. In spite of dissenting opinions, the city and its new college maintain that their actions are legal and that any ensuing tax increase will be minimal — and well worth it.

— Ellin Anderson

## Wang Institute Merges With Boston University

The Merrimack Valley's growing higher education community will receive a boost later this year when the Wang Institute in Tyngsboro merges with Boston University.

Founded by An Wang in 1979, the Wang Institute, a graduate institute in software engineering, was developed "to establish software engineering as a viable academic discipline," according to Paul Guzzi, Wang Laboratories senior vice president. The institute will continue to operate from its Tyngsboro campus, retaining its identity as the Wang Institute of Boston University. As a Boston University 200-acre satellite campus, it will serve educational needs throughout the Merrimack Valley and southern New Hampshire.

The merger will broaden the scope of the institute's original academic mission. While the institute plans to phase out its master's degree program in software engineering, it will add continuing education courses in computer science, business administration and engineering — a response to the demands of the region's growing information processing industry.

In announcing the merger, Guzzi said, "The decision to merge with Boston University represents a natural step in the institute's evolution. In reviewing the institute's future expansion, the trustees concluded that its long-term academic objectives would be best achieved through consolidation with another institution."

— E.A.

ed on enhancing the region's ability to compete in the world marketplace: "International competitiveness is what we've structured our whole scheme around," he says.

To achieve this, a three-phase strategy was developed in 1981. The first phase consisted of strengthening the university's undergraduate programs. The second was developing carefully targeted graduate programs with a direct impact on the professional manpower needs of the region's economic base.

The third phase involved integrating the graduate and undergraduate experiences at Lowell, bringing together faculty, students and practicing professionals "so as to lift the horizons of the students, making them aware of the competitive nature of the economy they face," Hogan says. He sees this endeavor as an attempt to deal with what the Japanese have accomplished by integrating their undergraduate and graduate education with industrial manpower development, "and to do that in a way that's acceptable to our culture."

Another initiative is the Center for Productivity Enhancement, designed to help the region's industry reposition itself in the face of constant change. Participating students work on actual problems supplied by industry, produce solutions, and gain in the process an appreciation of marketplace competitiveness.

Last November the Massachusetts Board of Regents recommended capital improvements totaling

\$180,400,000 for the university, to be used over seven years for the acquisition of a mill complex, the renovation of 60 percent of the university's North Campus, renovations on the South Campus, the creation of a campus center and deferred maintenance. According to Thomas Costello, corporate liaison for the university, "this amounts to recognition of the university's mission. We received more money from this package than any other school except for UMass-Amherst."

According to Costello, today's global economy is fundamentally different from the regional and national economies of the past; the United States no longer dominates industry as it once did and so cannot control the markets. "Part of the American industrial difficulty has come from approaching problems in a departmentalized rather than a holistic way," Costello says. "What goes on in virtually any part of the world has an impact on the United States."

With an eye towards developing the human capital that will foster international competitiveness, the university places special emphasis on teacher education and school reform. "We have to worry about the quality of human talent, since we have no natural resources — we live strictly by our wits," President Hogan says. "And it is simply too late to wait until a young person gets into college." The university has created a Center for Field Studies and Services, in associa-

tion with its College of Education, "to help local schools systems see themselves as they are, and to look for ways to improve them," Hogan says.

While it is a magnet for tourists, Lowell National Historical Park also has a strong educational function. Typifying this is a feature of the park, the Paul Tsongas Center, which will be located in the renovated Boote Mill at the river's edge. "It will be a place where kids can come and learn history in a new and exciting way, in conjunction with the exhibits in the park, and a place for regenerating teaching concepts," says Cassandra Walter, park superintendent. The University of Lowell's Center for Field Studies and Services will be partner in running the center, which is named for Tsongas because of the former senator's advocacy of education, Walter says. "Tsongas was one of the first to convince Lowell that it had a past worth preserving and an exciting future," she adds.

The Merrimack Valley's higher education institutions want to make that kind of future possible for their communities. "We have a window of about 20 years," says Bradford College President Levine, "and if we don't take advantage of it and think very, very hard about where it is we want the Merrimack Valley to go, it'll pass us by. So, we must try to galvanize people to begin concrete planning for use of the moment. Because we're not going to have this chance again." □

Part I of II; In our next issue the Institutions of New Hampshire's Merrimack Valley.

## Merrimack Harvest in Dukakis Plan

**A** rich harvest of benefits for Merrimack Valley higher education institutions in Massachusetts is contained in Gov. Michael S. Dukakis's \$1 billion construction plan for the commonwealth's public colleges and universities. The capital investment program, labeled "Building Educational Opportunity for the 21st Century," was announced Feb. 26.

If the governor's plan is enacted, the University of Lowell, Northern Essex Community College and Middlesex Community College will receive millions of dollars for new buildings and renovations in fiscal year 1988 and beyond, further strengthening a higher education community that is beginning to receive some well-deserved recognition. Plans include a new urban campus for Middlesex Community College, to be located in a renovated Lowell mill it will share with the University of Lowell.

"If Massachusetts is to maintain its position of national economic leadership, then we must provide quality higher education," Dukakis said in announcing the initiative. "Investing in our public colleges and universities, making them world-class research and teaching institutions, giving our young people the opportunity to achieve all that they are capable of is the best investment we can make in our future," he said.

Targeted for the University of Lowell in fiscal year 1988 is \$39 million for the acquisition, study and design of the mill campus (with Middlesex Community College); \$2.5 million for the design and construction of a North Campus power plant; \$2.4 million for the design and construction of Tully Forum, a campus support site; and \$1.5 million for the expansion of the North Campus library. Further funding, for 1989 through 1994, will be proposed in subsequent capital outlay budgets.

The governor said the university is "seriously deficient in academic, research and student service space." Enrollment has nearly doubled during the past 10 years, making Lowell the largest public engineering university in Massachusetts.

In fiscal year 1988, Northern Essex Community College will receive an initial outlay of \$1.1 million for construction of a new Lawrence campus, if the Legislature approves the Dukakis plan. The new campus will centralize and replace Lawrence

facilities that currently are leased. At the Haverhill campus, \$1.8 million will be used for major renovations of student service and academic areas. "The governor's proposal follows the regents' earlier recommendations almost to the penny," says NECCO President John Dimitry.

For its new campuses at Bedford and Lowell, Middlesex Community College is slated to receive \$33 million. Middlesex, which is currently spread over three campuses near Routes 3 and 128 in Burlington and Bedford, offers certificate and associate degree programs in technical and paraprofessional areas.

Dukakis said important Massachusetts industries, such as electronics, biotechnology, finance and health care depend on a strong system of higher education. "Education plays a major role in making our older, more traditional industries more competitive," he continued. The governor's Centers of Excellence programs — biotechnology, photovoltaics, polymer sciences, marine sciences and microelectronics — complement campus research efforts by seeking to encourage innovative partnerships between the entrepreneurial and academic communities. Four of the five centers are located on or near a public university. A sixth center is proposed for applied technology to help make traditional products in new, more competitive ways.

The building plan calls for completion of a polymer science facility for the Center of Excellence at the University of Massachusetts at Amherst and a new coastal zone laboratory that will anchor the marine sciences Center of Excellence at Southeastern Massachusetts University.

The construction plan also includes:

- \$323 million for universities to expand research and promote graduate education;
- \$178 million for state colleges to renew their facilities and complete the transition from teachers' colleges to comprehensive four-year institutions;
- \$199 million for community colleges to provide for a diverse student population; and
- \$170 million to continue to maintain institutions and to correct long-deferred maintenance problems. □

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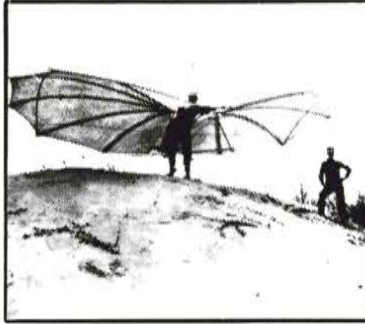
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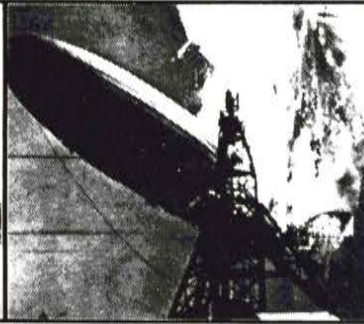
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# Planning Global Studies on Arms Control

JEAN MAYER

Last December, I attended a small meeting in Tokyo hosted by President Shigeyoshi Matsumae of Tokai University, an opponent of World War II in Japan. The other participants were Russian and Chinese university presidents. We had come together to explore the possibility of cooperation among universities of various countries to develop educational initiatives in the area of arms control. Our conclusion was that such a venture is indeed possible, that the exploration will be continued in a subsequent meeting of Pacific-area universities this summer in Tokyo and that a full international conference will take place in 1988, at Tufts' European Center campus in Talloires, France.

In my opinion, a global educational effort is absolutely crucial. However divided the nations of East and West, North and South may be in their views on many world problems, they are in general agreement that they do not wish to be incinerated by a nuclear conflict. Neither Russia nor the United States can continue to spend \$1 billion a day on arms, and there is an urgent need to re-order the world's economic priorities.

There is, however, little chance of reaching an acceptable arms control agreement without the worldwide support of an informed public. In the United States public approval is clearly necessary if only for the ratification of any agreement. Though less visible in the Soviet Union, public opinion also exists there and needs to be informed if substantial segments of the power structure are going to feel secure with reduced armaments levels. On both sides of the Iron Curtain, the public must understand what constitutes balanced, verifiable, progressive arms control and disarmament, how arms control fits in with national security and how verifiability works. To the vast majority of the public, the subject appears far too complex to comprehend. Occasionally, long, well-researched articles appear in *The New York Times*, and even in *Pravda*, but few people in either country read them. So what we have instead



Tufts University President Jean Mayer, center, discusses plans for a worldwide arms control curriculum during a news conference.

are exaggerated hopes and fears.

To my mind, the fear generated by knowledge of the medical and environmental horrors of nuclear war, no matter how vividly they are described, will not, in the end, prevent nuclear war, let alone war itself. After World War I, there was a similar feeling about chemical warfare. Chemical weapons were not used in World War II, but only because conditions were not right. The Germans had large stocks of mustard gas ready to lay down as cover for the Channel invasion of England if the Luftwaffe had been able to gain control of the air. Chemical warfare was used in Yemen in the 1960s, and has been used by the Iraqis against the Iranians in the 1980s.

It can be argued that fear of nuclear war due

Jean Mayer, president of Tufts University, is chairman of NEBHE.

*It is unlikely  
that an agreement  
at Reykjavik  
would have  
been ratified  
by the  
U.S. Senate*

to MAD (Mutually Assured Destruction) has prevented the eruption of a large-scale war. Diplomatic relations between the United States and the Soviet Union take place on at least two levels. At a conscious level, the two countries engage in maneuvers and threats and have a collection of allies, NATO and the Warsaw Pact nations. But deep down, there is a second "subconscious" level on which we engage with the Soviet Union. It has never been made explicit but, in a sense, may be the real basis of our foreign policy. This is the level on which we are agreed that neither of us is going to let our disagreements escalate into nuclear war. Thus far, at least, we have been able to keep things under control, but there is no guarantee that such an implicit agreement will prevent miscalculations or accidents.

Even if we accept the widespread concept of mutual deterrence, intermediary steps to more complete disarmament are possible. I think all reasonable people agree that MAD could be achieved at greatly reduced levels. This would minimize the risk of accidents and decrease international military expenditures.

The first phase has to be a reduction in nuclear arms, and the procedure must be monitored by an informed public, especially in the United States and the Soviet Union; otherwise it is left to those Russian and American arms control specialists who are either conducting snail's-pace negotiations in Geneva or engaging in the kind of ill-prepared negotiations we had in Reykjavik: a flight of fancy in a haunted house. Even if an agreement had been reached in Iceland, it probably would not have been accepted by our European allies, who had been most inadequately briefed and whose concept of deterrence, because they are on the front lines in Europe, is very different from our own. For that matter, it is unlikely that an agreement at Reykjavik would have been ratified by the U.S. Senate.

We need to dispel our exaggerated hopes and fears by creating among the peoples of the world, most especially among Russians and Americans, a greater understanding of the steps that must be taken. We cannot have an acceptable balance of deterrence by cutting down only on nuclear arms. Conventional arms have to be included in

an agreement: The Warsaw Pact forces are, at least in theory, stronger on the ground than NATO forces.

How do we demystify the subject and create an informed public?

- First, we need a set of agreed-upon, understandable definitions of those technical terms used by the theologians of arms control that help to make the subject so mysterious to the lay person. It is worth remembering that immediately after Reykjavik, the British prime minister and French president held a news conference in which they explained that the European definition of long-, short-, and medium-range weapons is very different from the American. We do not yet have a vocabulary in common with our allies, let alone with our opponents!
- Second, we need understandable descriptions of the physics of various weapons systems, so that lay people can assess their capabilities and limitations and see how balanced reductions might be achieved.
- Third, we need better explication of and more research in methods of verification of deployment and testing, both on-site and by satellite. Agreement on this issue cannot be based on mutual trust; therefore, dependable verification is essential. For the same reason, nuclear powers will probably want to maintain some core of strategic nuclear weapons, both against the possibility of limited, undetectable cheating and to guard against proliferation in small, less responsible or "terrorist"



*We can devise  
a common vocabulary,  
develop a basis  
for common curricula.*

nations.

This is where universities come in: It is our business to teach. We can devise a common vocabulary, develop a basis for common curricula, (although obviously not an identical international curriculum), engage in joint research and establish faculty and student exchanges. University presidents can keep themselves informed in order to be most supportive of international security and arms control efforts. I am gratified to report that the presidents and scholars at a number of New England universities have been particularly supportive of my initial efforts to put together an

inventory of courses that are now being taught.

When we have a common body of knowledge and *language*, when the educated citizen in Boston or Augusta has an understanding in common with that of the the educated citizen in Moscow or Tokyo of the options, risks and rewards of various courses of action, then agreements are possible. We should not minimize the impact of ignorance or the power of informed opinion. It is the particular responsibility of universities to give their students the basis of facts on which to form their own opinions. □



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"We're very proud of you," the women say to her. The men also are proud of this tall woman whose bearing suggests European nobility, although they express it differently: "Way to go, Maddy. Keep it up," they say.

She is Madeleine May Kunin, governor of Vermont, and they share something special with her; they attended the University of Massachusetts with her back in the mid-1950s when she was Madeleine May.

At that time, they remember, she was quiet, even shy, but already mature for her years. She was also Jewish, an immigrant from Nazi-dominated Europe, while her more outgoing classmates were, for the most part, second-generation Americans of Irish or Italian extraction with names like Sweeney, Burke or Marcucci.

"There was a group of us," she recalled in a recent interview, "who were first-generation college students . . . we were part of a new wave, but there was a whole bunch of other people who were left behind."

Today, 30 years later, as the first woman and only the third Democrat to serve as Vermont's chief executive, she is working to reduce the number of those "left behind," those who might be denied the kind of educational opportunities that were available to her.

"I would not have gone to college if I hadn't had a state university," she said. "I got a scholarship from the local merchants' association in Pittsfield, and it paid my tuition — \$100. The rest I got by waitressing in the summer. In those days that's how you went to college . . . tuition was low and you could work your way through."

## Vermont's Education Governor

JOHN CHAFFEE

But times have changed, she admits. "Today tuition is much higher and it's almost impossible for students, even if they work all the time, to pay their own tuition."

Madeleine May Kunin feels very strongly about education and educational opportunities. Although she inherited a record state budget deficit when she took over the governor's office in 1985, and so was forced to hold the line on spending, she made one budgetary exception: education. During her first two-year term, she succeeded in eliminating the deficit while at the same time convincing the state Legislature to increase state aid to education by 25 percent.

Earlier this year, after being sworn in for a second term, she devoted her entire inaugural address to a single subject: education.

Vermont, she said, needs to resolve some educational finance inequities so that the quality of education a child receives does not depend on where in the state he or she lives. In dedicating her second term to a crusade against educational disparities, Gov. Kunin emphasized that providing all Vermont citizens with equal and adequate educational opportunities would benefit not only individuals but society as a whole.

"It is the quality of our education system that will determine our economic productivity into the next century," she insists.

Vermont will not attract new business and compete successfully in a world economy "unless we can tell an employer we've got a highly trained and well-educated work force for you," she asserts.

The business community, however, doesn't always understand or appreciate the value of supporting endeavors that don't have an immediate pay-off. "I think business still, very often, thinks in very short terms, of special-interest goals like

tax breaks or deregulation," the governor observes sadly. "In fact," she adds, "those things have much less of an impact than some of the long-term investments like education and a sound environmental policy."

She notes that New England's recent economic resurgence has been due in large part to a concentration of highly educated people, most of whom attend or are employed by New England colleges or universities.

"Nobody saw it during the energy crisis," she recalls, "but the investments that people made generations ago in establishing these institutions of higher education turned out to be our salvation."

Gov. Kunin believes the linkage between higher education and a positive economic climate works on four levels simultaneously:

- The first and most obvious is creating "a productive, skilled labor force."

- Then there's the research and development level "where you actually have individuals who are sowing the seeds for new products and new manufacturing enterprises, and that's very important."

- "It also works on another level, allowing existing employees to go back and further their education. You have to have access to the

John Chaffee is editor of *Connection*.

engineering courses, computer courses and liberal arts courses to sustain the existing labor force."

● Finally, she notes, "A university or college obviously adds a lot to the cultural and social environment of a community and the state."

Gov. Kunin is proud of Vermont's colleges and universities. "I see the value of higher education as being one of Vermont's very strong points," she says. "We have a great number of institutions of higher education, both public and private, and they are well dispersed around the state, and that gives a lot of people access to educational opportunities they otherwise wouldn't have."

After Madeleine May graduated from the University of Massachusetts in 1956, she accepted a scholarship to the Columbia Graduate School of Journalism, where she earned a master's degree. She then joined the Burlington (Vt.) *Free Press* as a general assignment reporter, became a television news writer, married Dr. Arthur Kunin, a research professor at the Univer-



sity of Vermont medical school, and had four children — a girl and three boys.

Stimulated by the women's movement, she became active in local politics and in 1972 was elected to the state House of Representatives. She was re-elected twice before being elected lieutenant governor in 1978. Despite the opposition of a popular Republican governor, Kunin was re-elected lieutenant governor in 1980.

Two years later she made her first bid for the state's top political office. She lost a heartbreaking campaign to the incumbent, who

had at first announced his intention to retire.

In 1984, however, she ran again for governor, and this time she won. Later this year she will become leader of the New England Governors' Conference.

Back in Amherst during the "apathetic fifties," long before the women's movement, could any of her UMass classmates have anticipated Madeleine May's achievements? Do any of them recollect anything that could have been a precursor?

One of them recalled an incident that revealed Madeleine's character. "The president of the university had banned distribution of the student literary magazine because it included a four-letter word," her former classmate said. "The staff of the magazine met and most of us agreed there was little we could do. But Maddy wanted to fight the decision. I'll never forget that. She was the only one of us who hadn't been born in this country, and yet, in her quiet, insistent way, she was the most outspoken in defending our First Amendment rights." □

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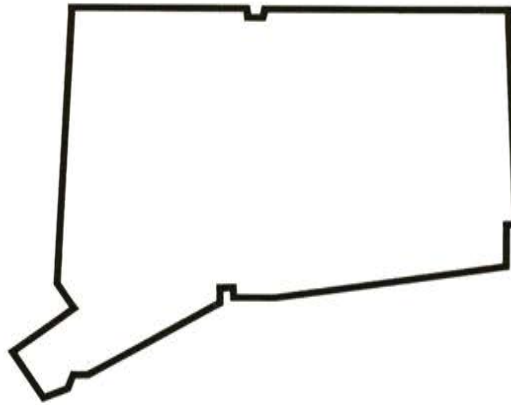
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Though relatively new, the Tufts School of Veterinary Medicine has studied other leading veterinary schools and has combined the best elements of these programs with the innovation necessary to create both a strongly academic and progressive program and a practical learning experience. And it has begun to engage in the serious public and professional dialectic which concerns animal issues today: animal welfare, ethical considerations, and the cultural role of animals in urban and rural environments.

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# A Slim Chance for South Africa

WILLIAM T. O'HARA

South Africa has institutionalized the separation of races for so long that it is difficult to find common bonds that will heal and unite. Hope hangs by a tenuous thread. In a nation where consensus seems virtually impossible, there are encouraging slivers of faith that education can help bring some degree of unity to a post-apartheid South Africa. No one expects miracles, but in a land where hope for peace and rationality diminishes daily, one is inclined to grasp at the slimmest chance.

In this despairing environment five open universities, Cape Town, Natal, Rhodes, Western Cape, and Witwatersrand, offer a beacon of promise shared with few other South African institutions. Beset by convoluted historical, political, social, racial and fiscal pressures, they struggle to maintain stability and independence. Despite the presence of government forces on their campuses and the arrest of students and faculty, the courage and defiance of the open universities in the face of apartheid policies has resulted in unprecedented progress towards confronting an unyielding and repressive system. The tenacity of those in charge of these institutions must be admired and supported.

Although the student financial aid program established by the New England Board of Higher Education in early 1986 is modest, its commitment represents an extraordinary gesture of support to these institutions whose members feel misjudged, alienated, isolated and ignored. Help from the academic community outside South Africa, in any form, provides an immense boost to the confidence and morale of administrators, faculty and students alike,

and gives them the means to press for change. The fact that colleagues in other countries empathize with their plight and respond with commitment fortifies them as they face the unremitting pressures and dangers of a divided society.

NEBHE's plan to involve New England institutions in a financial aid program to help black students attend South African open universities has proven a bold and creative initiative. Its decision to send a delegation last summer to assess the program's impact and effectiveness after one semester's experience was timely. In no other way could the human dimension of the program be understood. Campus visits to the five open universities enabled vivid and frank exchanges with university administrators, faculty and students that proved invaluable. The study group's collective experience provides NEBHE with a tremendous resource to help guide the program's development and to suggest other ways to assist the universities and their students.

At the time the nine-member NEBHE delegation visited the five South African universities, 42 black students had been awarded three-year scholarships worth \$2,800 per year that had been contributed by 31 New England colleges and universities participating in the program.

Higher education is in the center of South Africa's political and social crisis. An impressive number of blacks visualize education as vital to their struggle for equality. They are inclined to disown the principle of "liberation before education" advanced



Margaret Touborg of Radcliffe College chats with a NEBHE scholar at Rhodes University.

William T. O'Hara, president of Bryant College is NEBHE treasurer.

As of February, 30 New England colleges and universities, private foundations, and academic institutions outside the region supported 50 South African student scholarships.

Recent additions for second year of program:

Bentley College	Princeton University
Hope College, Pennsylvania	Regis College
Marsh McLennan Foundation	Sherman Fairchild Foundation
	Smith College
	University of Pittsburgh

The Connecticut community colleges together contributed one scholarship. They are:

Asnuntuck Community College	Mohegan Community College
Greater Hartford Community College	Northwestern Connecticut Community College
Housatonic Community College	Norwalk Community College
Manchester Community College	Quinebaug Valley Community College
Mattatuck Community College	South Central Community College
Middlesex Community College	Tunxis Community College

by those who see revolution as an only hope. The open universities have relinquished the traditional university position of political neutrality and have clearly repudiated apartheid and tyrannical governmental policies.

Since 1959, when the National Party imposed apartheid on higher education, the open university community has stood firm in opposition. Over the years, the government through a series of permit and quota policies has attempted to bar or impede black enrollment in the universities. These efforts have been fruitless; the universities have rejected them. Black students today represent approximately 17 percent of current university enrollment. This figure exceeds the 11 percent level in 1959, when the Extension of University Education Act was enacted. We met several leading educators who indicated an intention to increase black enrollments in the universities to 50 percent within the next five years. Under current conditions this goal seems excessively optimistic.

In the face of failed government tactics to stymie university initiatives to admit blacks, other means are being implemented. Tightening the purse strings is one of them. The universities, which receive about 80 percent of their support from the government, are faced with a 17 percent budget reduction next year. The University of Cape Town, for example, will operate at a 10 mil-

lion Rand deficit in 1987, and her sister institutions are confronted with equally drastic shortfalls.

An endless list of other obstacles stands in the way of the open universities as they attempt to accommodate additional black students. Among these are insufficient funds to provide academic support for the students. Dormitory accommodations are also lacking. Black students, as a result, are forced to live in the townships. Some must take as many as four buses to reach campus each day. Restrictions also make it impossible to find acceptable housing for black faculty, and they, too, must commute from the townships. For many students, financial assistance is inadequate. Books, supplies and other essential basics are beyond their means. The necessity to rely solely on library books for class preparation, poor transportation systems and meager financial resources place additional burdens on already overtaxed students.

The five open universities struggle with these shortcomings, and no immediate solutions arise. The lack of adequate academic support programs is especially acute. Many students emerging from inferior school systems are poorly prepared for university work. Academic support is critical to their university adjustment and progress. Not only is intellectual development hindered by such conditions, but also cultural and political pressures from segments of both the white and black communities inhibit their personal development and sometimes threaten their physical safety.

A true university experience involves more than classrooms and learning. Associations and interactions are equally important. For the black student in South Africa these opportunities are limited. The struggle to survive academically allows little time for anything else. Overcoming poor preparation, surviving economically and adapting to a white university environment, while confronted with pressures from other blacks to reject the system, represent seemingly insuperable obstacles. Yet large numbers of these young men and women persevere.

The seeming hopelessness of this situation begs the question, "Should the NEBHE South African



### Scholarship Program continue?"

The visiting team unequivocally and unanimously endorsed the program and recommended its continuation. We believe, however, that scholarships should be allocated only for undergraduate students. Although there is obvious need for assistance to graduate students, all but one of us believe more effective assistance to graduate students can be made by establishing study opportunities in the United States. At the present time the consensus of faculty, administrators and students at the universities is that the greater need remains at the undergraduate level.

In addition to supporting continuation of the program, the delegation offered NEBHE a number of recommendations, including:

- Extension of financial support for a fourth year when necessary. Thus, each participating New England institution should consider a four-rather than a three-year commitment.
- South African universities should be allowed to make awards according to the academic and financial circumstances of each student; some students may require more than three years to complete their degree, others may not require full scholarship assistance.

### NEBHE Delegation to South Africa, Summer 1986

William T. O'Hara President Bryant College	Margaret B. Touborg Executive Assistant to the President Radcliffe College
John Spencer Professor of History Middlebury College	Thomas A. Smith Vice President and Chief Administrative Officer Trinity College, Hartford
Jeffrey D. Ganz Tufts Class of 1988 President Tufts Community Union Senate	Rebecca S. Flewelling Assistant to the President Tufts University
Ronald S. Goldman Associate Dean College of Communications Boston University	Vanessa Alleyne Assistant to the President Wellesley College Edgar Beckham Dean of the College Wesleyan University

- In awarding NEBHE grants the universities should consider assistance for ancillary student expenses such as daily transportation, books and incidental expenses.
- Black faculty members and/or administrators should serve on university committees awarding NEBHE scholarships.
- NEBHE should consider expanding its outreach by allocating a portion of its funds to academic support programs that offer tutorial and personal assistance to students who come to the universities from disadvantaged sectors of the school system.

These and other recommendations were approved by the New England Board of Higher Education at its semiannual meeting last November.

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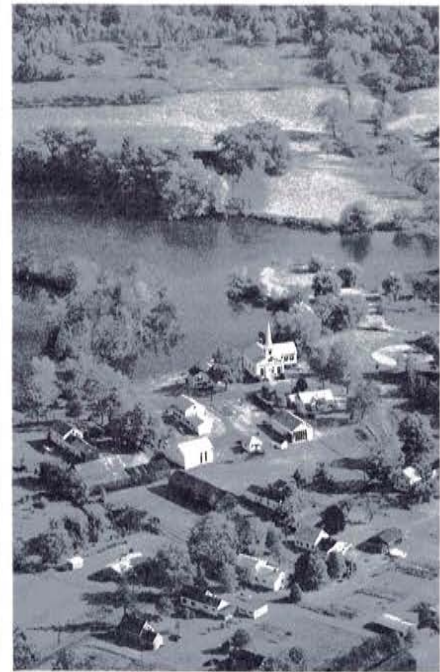
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# BIOTECHNOLOGY



## MIT's Medical Involvement

JOANN MOODY

**M**any people are surprised to learn that the Massachusetts Institute of Technology is extensively involved with a network of 12 teaching hospitals and three university medical schools (Harvard, Boston University and Tufts) in the Boston area.

The collaboration of MIT engineers and researchers with medical faculty and clinicians enriches both the Institute and the academic medical community, and produces many of the ideas that drive the emerging biotechnology and health-related companies clustered in and about Boston. Because of MIT's close relationship with Boston's medical community, the New England Board of Higher Education's newly formed Commission on Academic Health Centers and the Economy of New England will include MIT in its study.

The Harvard-MIT Division of Health Sciences and Technology now enrolls more than 100 degree candidates who pursue an MD, a PhD in medical engineering and medical physics, or a combined MD-PhD. The Division was created as the result of a 1970 compromise between MIT, which had considered building a medical school, and Harvard Medical School, which had considered establishing an engineering and technology department. Degree candidates work on a variety of research programs, most often involving teaching hospitals and other MIT academic departments. Many Division faculty hold joint appointments at neighboring hospitals.

The Project in Thrombosis and Atherosclerosis is another multi-institutional effort. Researchers from Harvard, MIT, the Dana-Farber Cancer Institute, Beth Israel, New England Deaconess and Brigham and Women's Hospitals participate in the project.

In addition to several other col-

laborative research projects and extensive consulting by faculty with various medical institutions, there are schools or centers at MIT that form a part of the academic medical community in their own right.

Established in 1973, the MIT Center for Cancer Research probes the biological aspects of cancer and mutations in viruses. This year, the center has 13 professors, 68 post-doctoral scientists and 32 graduate students in training.

MIT's Clinical Research Center is a fully equipped, 12-bed hospital that provides medical care for bed-ridden patients as well as for 1,500 outpatients annually. Among the illnesses under study at the center are Alzheimer's disease, obesity, and depression. The center's director, Dr. Richard Wurtman, is a specialist on nutrition and its influence on brain activity. Wurtman is a member of the NEBHE study commission.

At its December meeting, the commission heard from Edwin C. Whitehead, founder of the Whitehead Institute for Biomedical Research, which is affiliated with MIT. Dr. David Baltimore, a Nobel Prize-winning scientist, currently directs the institute, which began operation in 1984.

Whitehead explained that the institute is a nonprofit basic research and teaching institution primarily focused on biological development at the molecular level. Whitehead

donated \$135 million, the proceeds from the sale of his medical instrumentation company to Revlon, Inc., for startup of the institute and construction of a seven-story building on the MIT campus. Researchers at the institute, which has a scientific staff of 188, must secure outside funding to underwrite their laboratory projects. Faculty-level institute appointees hold joint faculty positions at MIT.

With the presence of these and several other medical divisions, it is not surprising that nearly one-third of all research performed on the MIT campus is health-related. In fiscal year 1986, MIT's total research budget was \$550 million, of which \$294 million was spent on defense-related research at Lincoln Laboratories in Lexington and \$256 million on various projects on the MIT campus. Industry support totalled approximately \$38 million, including \$3 million from foreign firms, or approximately 15 percent of the campus research total. Health-related research is funded by the National Institutes of Health, the National Science Foundation, other foundations, by such major chemical and pharmaceutical companies as W.R. Grace and Co., DuPont, and Monsanto and by biotech firms such as Biogen.

**A**long with the considerable expertise and money aimed directly at solving health-related problems, serendipity produces happy results at MIT due mainly to the interdisciplinary character of the research performed by faculty and postdoctoral, graduate and undergraduate students.

NEBHE commission members have discussed this characteristic with several faculty and admin-

JoAnn Moody is NEBHE's assistant vice-president.

istrative staff members. Unlike many campuses locked into turf-protecting, isolated departments, MIT specializes in cross-disciplinary cooperation and dialogue. First, there are more than 60 interdepartmental laboratories and centers at MIT, whose activities range from the study of energy and manufacturing to artificial intelligence and industrial scaleup of genetically altered cells.

Second, the expectation is that faculty and students from different disciplines will talk and argue with one another. Only from such animated conversations can analogical thinking and cross-fertilizing insights emerge. Several national study groups have recently urged other campuses to nurture such interdisciplinary collaboration, in order to heighten American innovation and competitiveness in world markets. MIT stands as the model to be emulated.

The interdisciplinary approach at MIT has especially benefited medical care. Medical and electronics experts are currently working to improve hearing aids, and, in the process, are deriving insights for use in constructing computers that can understand and respond to speech. For more than a decade, a professor of polymer science and engineering has worked with a teaching hospital clinician to develop a novel artificial skin for use with burn victims. The new material is actually a special composite of silicone rubber and a layer of protein fibers that together can be "seeded" with skin cells taken from elsewhere on the patient's body. The patented material is now undergoing patient trials in Boston hospitals. Market demand is predicted to be keen.

The insights of physics are critical to medicine, according to Professor Richard Cohen. "The basic laws of physics describe not only inanimate matter but also animate matter," he says. "Unfortunately, most medical and biological researchers are trained in anatomy and biochemistry, not in the quan-

titative analytical techniques of the physical sciences." Through mathematically analyzing heart-beat and breath fluctuations, researchers like Cohen believe they will be able to spot potential victims of sudden infant death syndrome and heart attacks.

**M**IT's strength in medical-related research has spun off numerous new Boston-area corporations. Faculty and alumni helped create Abcor, Amgen, Amicon, Angenics, Applied Biotechnology, Biogen Integrated Genetics, Genzyme, Haemonetics, Immunogen, Repligen, T-Cell Science, and the Biotechnology Development Corp., as well as Ventrex Labs in Portland, Maine, and other New England companies. Alumni and faculty serve on science advisory boards for Damon Biotech, Collaborative Genetics and many others. And of course graduates, with their interdisciplinary expertise, are sought by both established and nascent firms.

Thanks to the new entrepreneurial attitude recently adopted by its Technology Licensing Office, over the next few years MIT will probably stimulate far more spinoffs and related business activity. Meeting with NEBHE commission members in December, John Preston, new director of that office, explained that the emphasis is no longer on legal problems involved with protection of faculty ideas. Instead, aggressive marketing and licensing with businesses in order to transfer ideas quickly to the real world to benefit the public is being stressed.

Thanks to this new attitude, Preston supervised the licensing of more MIT inventions in the last two months of 1986 than during all of 1985. Biotechnology discoveries are taking the lead in Preston's office, followed by electrical engineering, software and materials.

The new MIT office was reorganized during 1985-86 by Niels Reimers, director of technology

licensing at Stanford University. Reimers, an advisor to the NEBHE study commission, diagnosed MIT's problem as being widespread among the larger research universities in the United States: an overreliance on lawyers and an underuse of staff with marketing and business management backgrounds. After Reimers' revamping, the MIT office is now far more entrepreneurial, and intent on building a wider network of businesses large and small and various medical institutions. Predictions indicate that the local and regional economies, as well as the public at large, will enjoy increased benefits from the commercialization of MIT ideas, especially in the field of medical care. □

## Student Aid

*(Continued from page 64.)*

our recent economic recovery, it is that the future of this region depends on the fullest possible development of all our human resources, regardless of socioeconomic status, sex or color. We'll never regain a position of international leadership in a world economy without determined attention to educating the entire workforce.

Although Opinion Research Corporation polls over the past four years consistently indicate that 85 percent of all Americans and an even higher percentage of New Englanders favor federal programs to aid students from low-income families, President Reagan wishes to turn the clock back 25 years. This time, members of Congress, both Republicans and Democrats, will act as they failed to do a quarter century ago in responding to President Kennedy's repeated requests. President Reagan's 1988 education budget deserves and should receive firm rejection. We must support the Congress in renewing and expanding our national investment in learning. Access to our system of higher education is the primary basis upon which the economy of this nation and region will continue to grow. □

# Accountability and Its Risks

BY STEPHEN JOEL TRACHTENBERG

We live at a time when those who work in higher education are experiencing a pressure that has already been brought to bear in our elementary and high schools: the pressure to account for what they do in terms of the results that it produces.

What that translates into is accountability. What accountability implies is externally applied standards. What those in turn imply are systems for examining students in order to determine whether their purported education has actually "taken."

It sounds easy in a politically motivated speech. It's a lot trickier in actual practice. Some who sniff an opportunity to get the voters on their side allege that a lot of college and university teachers aren't doing their jobs, and are charging a lot of money for the privilege. People who work in colleges and universities reply that testing systems devised by bureaucrats can't truly measure the lasting effect of an experience that continues to impact on the individual graduate two or three decades after he or she has received a baccalaureate degree.

As is all too often the case in life, there is some truth on both sides of the argument. Some outcomes can be measured and educators do have an obligation to do what can be done. Assessment is not a passing fad. If we in the Academy do not deal with its potential, others will — and they are likely to be intrusive and less informed than we might like.

College and university teaching developed in this country at a time when underpaid instructors worked with a small fraction of all high school graduates. Salaries and fringe benefits today are somewhat more adequate; those taught represent a significant portion of the college-age population.

Public funds play a serious role in the budgets of both state and independent institutions. In the not-so-good old days, one of the few benefits of working as a teacher in the world of higher education was almost total independence — the right to concentrate on scholarship and research in the areas that interested you, esoteric as they might have seemed to most Americans, to a lot of students, and to their parents. Today, with tuition rising in order to keep up with the cost of maintaining all aspects of an institution of higher learning, we have to acknowledge the demand that colleges and universities deliver measurable benefits in the short term as well as the long term.

But there is always a risk when politics gets involved in higher education, and when testing systems are administered by external officials. A university teacher worried about his or her future can hardly be blamed, under those circumstances, for "teaching to the test." As college



instructors wait anxiously to see "how their students do," and what impact their "teacher effectiveness rating" will have on their lives, some of the most essential purposes of higher education may seem threatened.

Those include critical inquiry, the capacity to resist intellectual intimidation, and the ability to keep an

open mind. The mark of a successful college graduate is as much what he or she doesn't do as what he or she can offer up in the way of accumulated knowledge.

A successful college graduate doesn't join mobs, doesn't draw conclusions in the absence of sufficient evidence, and doesn't confuse public relations with private wisdom. When thoughtlessness of some kind is in progress, the successful college graduate is the one who gravitates to a place where reflection is possible. When society is in danger of taking a toboggan ride over a high cliff, the successful college graduate is the one who helps everyone to take a second look.

Somewhere, no doubt, a test is being devised that can predict success of this kind on Graduation Day, or at the beginning of the sophomore year. Personally, however, I'll only believe it when I see it and have irrefutable evidence that it works. That's what college has taught me. It also taught me that we must address the agenda of assessment positively and do our best to turn our doubt and skepticism into a constructive tool for progress and educational quality.

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## Universities Have Special Needs

New Englanders need to understand vital differences between state colleges and universities, the presidents of the region's six land-grant universities assert.

In a report scheduled for publication this spring, the six presidents claim that their institutions have been hindered by some state policies, "particularly those policies aimed at uniform funding and uniform management."

Such policies, the presidents say, "frequently fail to recognize the distinct nature of a research-based, PhD-granting university."

In the report, "Effective University Leadership," the presidents advocate adoption of a number of "operating principles for more effective statewide action." These principles include:

- Statewide coordination and governance of public colleges and universities should be based on policies that distinguish among the missions, needs and resource requirements of the various institutions.

- Different missions require different levels of

support, and research universities have special resource needs.

- Individual colleges and universities should be granted more fiscal authority.

- State higher education policies should encourage experimentation, innovation and creativity at research universities.

The presidents note that their six universities collectively receive more than \$200 million annually for sponsored research. The six institutions currently enroll 67,000 students and have 516,000 living alumni. They are, the presidents note, "a major source of the professional and scientific manpower for all New England."

State university presidents who agreed upon the mutual statement were: John T. Casteen III, University of Connecticut; Dale W. Lick, University of Maine; David C. Knapp, University of Massachusetts; Gordon A. Haaland, University of New Hampshire; Edward D. Eddy, University of Rhode Island; and Lattie F. Coor, University of Vermont.

## *New England universities*

*continued from page 18*

and professional research-oriented education. I said there were about 720,000 students in New England public and private colleges and universities. Forty-nine percent or 354,632 of those students were enrolled in the region's public colleges and universities in the fall of 1985. Of that 354,632, 10 percent or 35,306 were in graduate school while 22.9 percent of the 366,734 enrolled in private higher education in New England, about 84,000, were in graduate school.

New England as a region, as an economy, as a concept, has built its sense of itself on professional, scientific or technological education. It has built much of its regional marketing on that kind of education. It builds its industrial clout on it, and it builds its political muscle on it. Yet the six states have so starved the very public institutions most committed to New England by statute, by mandate, by public policy and by name, that those institutions produce only a tiny fraction of what they should, of what is needed and of what they could produce at the professional level. Do not assume, please, that the great private institutions of New England can or will carry the day.

All those institutions, whether they are in Prov-

idence or Hanover or New Haven or Cambridge, have problems. Their plants, their physical plants, particularly their laboratories, are virtually obsolete in comparison to the scientific laboratories of major private corporations or even the federal government. Those institutions will always look out over New England to the rest of the nation, if not the world. Any public money they ever have and ever will have is going to be federal in origin, not state, and therefore they won't look at the states. They are very expensive places for people to attend and they are only going to become more so.

If we wish to see New England's people flourish, then let us take pride in all our educational institutions and all they mean to our polity and economy in the larger senses of those words. But let us also remember New England will not and cannot renew herself fully, fulfill herself economically, for her sons and daughters who are with us and for those yet to come, until America's educational seat pays attention through the six state legislatures to those six public universities in a fashion consistent with the rhetoric and true needs of the people. Six public institutions that will be so crucial to the future of everything in New England have been neglected. We have neglected our own and that is not only imprudent but it is shortsighted and wrong. □

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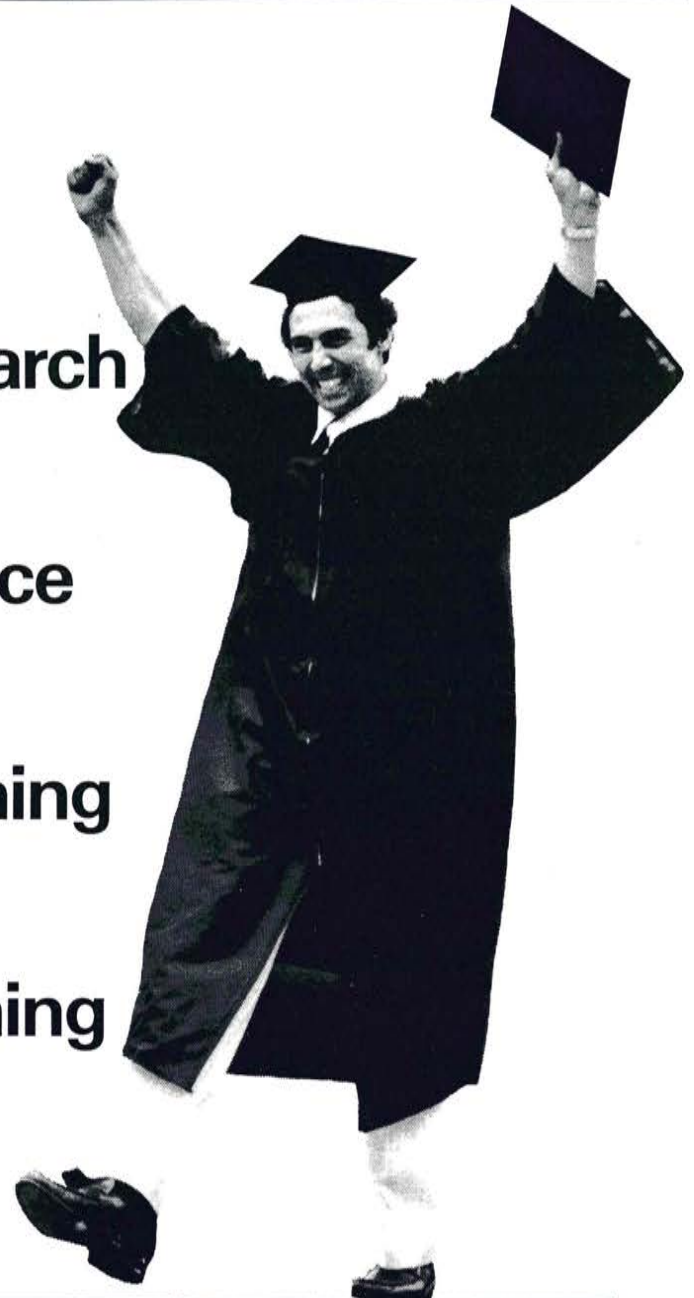


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# LEGAL EDUCATION



**T**he New England Board of Higher Education's study commission on legal education and practice now has a mission statement, a modus operandi and a final membership of 36.

The commission, headed by former Vermont Gov. Thomas P. Salmon, adopted a mission statement pledging to seek answers to such questions as:

- Is there a glut of lawyers in New England?
- Who is entering the 13 New England law schools, how well are they being educated and where do they go after graduation?
- Is there a civil liability crisis in New England? If so, what can be done about it?
- Has the profession of law become too much of a "business" with a profit motive?
- Is the legal community providing effective public assistance to the poor and disadvantaged of New England in civil and criminal matters?

The commission has divided itself into four sub-groups, each responsible for a specific area of study: legal education, the work of lawyers, law and information technology and law and the New England economy.

The last three members to be appointed to the commission are: Paula Alvary, senior manager, Price Waterhouse, Boston; Marcia Hincks, vice president and insurance counsel, Aetna Life Insurance Co., Hartford; and Judge Bruce M. Selya of the 1st U.S. Circuit Court of Appeals, Providence.

At their September meeting, commission members heard Leona M. Vogt, former director of the Harvard Law School Program on the Legal Profession, discuss her recent study of the career paths of select classes of regional law school graduates.

Not only is there no apparent

## NEBHE Study of Lawyers Underway

THOMAS FISCHER

"glut" of lawyers, as is popularly rumored, she said, there is even the possibility of shortages in some areas of practice important to the New England economy. Vogt indicated that the professional interests of attorneys in the six-state region were changing dramatically as more women and minorities entered the profession. She also reported significant changes in the way law is practiced in the region, as indicated by increased job mobility and the tendency of law firms to expand.

At its November meeting, one of the commission's newest members, Paula Alvary, reported on Price Waterhouse's annual survey of large law firms.

She said that while almost all large firms had expanded in recent years, there is not much evidence that growth results in efficiency. The use of paralegals in some law firms is not cost-effective, she said, and law-firm expansion through "satellite" offices often did not result in enhanced business opportunities, except when undertaken to provide service to an existing client or when it involved the merger of successful firms.

Deans of the 13 New England law schools met in October with Gov. Salmon, NEBHE President John C. Hoy, and the project director to discuss commission activities. While the deans were assured that legal education issues would

receive adequate attention in commission endeavors, it was stressed that the focus of the study was the role of the legal profession in New England's social and economic life.

Following is the roster of NEBHE's Commission on Legal Education and the Economy of New England:

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the Bicentennial of the U.S.  
Constitution  
Portland

Thomas Fischer, professor at the New England School of Law, directs the NEBHE study on legal education and practice.

William R. Cotter  
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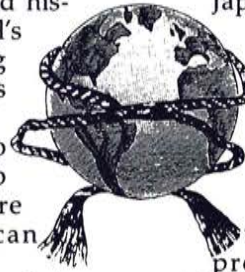


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*People with international experience are rising to leadership positions.*

*continued from page 19*

nascent, internationalization of the academic disciplines.

There is yet another cause of change. We are finding in New England a correlation of the human elements: a rise to academic leadership of many people with international experience who are committed to international education; faculties that are becoming more international in experience and perspective; and a rapid growth in the number of incoming and currently enrolled students who have traveled abroad and, for this or related reasons, fully expect their education to have an international component.

Yet the most basic cause of change at this time is the globalization of the economy. It has moved the American Assembly of Collegiate Schools of Business to adopt an international content standard for accreditation, which New England business schools have contemplated meeting in a variety of ways. It is causing a resurgence in foreign language enrollments and some shift in emphasis from literature toward communication, including language courses for business purposes.

In addition to its impact upon the disciplines and program development, economic change has become the rationale for general educational change: for example, the Carnegie Forum Task Force on Teaching as a Profession couches its call for reform of teacher education in the framework of "A Changing World Economy." Starting next summer, there will be an international content standard for accreditation in teacher education.

Thus, the New England Board of Higher Education is undertaking its project at a time when the field of international education is in the throes of transition, expanding its range as it faces two issues: how to enhance capabilities for involvement in the global economy, which will involve all our states; and, simultaneously, how to approach international education as an integral part of general education.

We will report later upon patterns of lively change at New England academic institutions. We will do so within the framework of a question: Are we making the appropriate connections between economic change, competitiveness and international education? □

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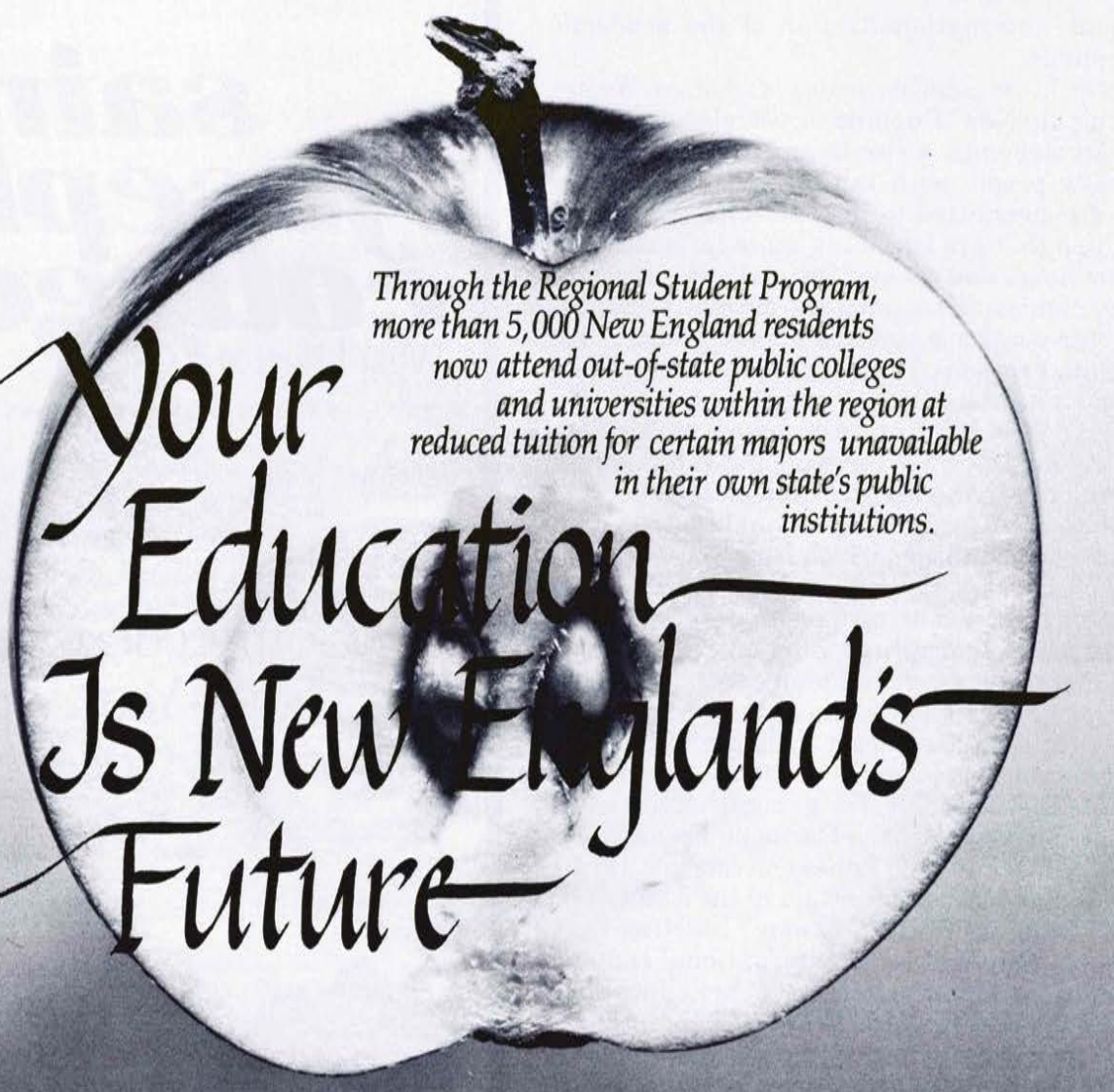
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\*U.S. News & World Report, November 1985  
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## RSP UPDATE



**N**ew England offers varied and exciting options for millions of tourists from around the world. The third largest industry in New England, tourism and related fields employ an estimated 300,000 men and women in hotels, restaurants, retail outlets, transportation services, travel agencies, national and state parks and recreational facilities, most notably ski resorts. New England's revitalized cities have been discovered as an ideal setting for national and international meetings, conferences, conventions and trade shows. Along with its natural beauty, New England also offers special significance for those interested in the historic events and settings that shaped our nation.

More than 15,000,000 people are expected to visit New England in 1987, including 800,000 from outside the United States. They will generate projected sales of \$12.5 billion for the region's economy, including an estimated \$960 million in state and local taxes.

Obviously, prospects for challenging careers, employment growth and business opportunities in tourism, hotel management, travel, recreation and related fields throughout New England are bright and improving. Not surprisingly, more than 300 of the 5,000 students enrolled last year in NEBHE's New England Regional Student Program were pursuing degrees in these areas. Upon graduation, they will join the workforce of a rapidly growing New England industry.

The RSP enables New England residents to attend an out-of-state public college or university in New England at a reduced tuition rate for certain degree programs not available in their own state institutions. The program serves both undergraduate and graduate students and offers more than 1,000

## Providing Resources for New England's Tourism Industry

CHARLOTTE STRATTON

degree programs at 85 participating public campuses.

Within New England, rising personal income, low unemployment rates, growing service-sector industries and increased leisure time have resulted in the rapid development of hotel, recreational and cultural facilities over the last five years. During the next several years, employment related to hotel management, travel, tourism and recreation is expected to rise at an average annual rate of four percent; a larger increase is expected in New England's northern states. The University of Maine at Machias anticipated this growth 10 years ago and with it the need for graduates with the business skills required to flourish in the industry. The UMaine-Machias recreation management program was then designed to provide graduates with those skills.

According to Rick Scribner, associate professor of recreation management at the Machias campus, "The rapid development of tourism and recreation in Maine, as seen 10 years ago, led the university to shift the focus of its recreation management program to business so that our students could be prepared as managers as well as recreation leaders." He added that the program may be unique in that it is housed in the campus business division. "It is," he said, "a very timely program, given the oppor-

tunities for employment and business in Maine."

Students in the UMaine-Machias recreation management program have the opportunity to study several areas of emphasis: park management, public recreation programming and administration and commercial recreation management. The commercial recreation track is the most popular choice of study for most students, according to Scribner. Students in the program may further specialize by studying either

corporate management, preparing them for careers in ski resorts, marinas, hotels and large specialty companies such as L.L. Bean or small business management. Of the small business management track, Scribner noted, "Maine is fertile territory for entrepreneurs in this field. From independent cruise companies to river rafting and ocean kayaking operations, there are numerous opportunities to establish successful small businesses."

Peter Dimarco of Barrington, R.I., a senior recreation management major at Machias and an RSP participant, may be a future New England entrepreneur. Peter pursues the commercial recreation management option and feels the program is valuable because it has taught him to view the field "from a business point of view." Originally drawn to the Machias campus because of its small size and beautiful surroundings, Peter is considering careers in cruise-ship or ski-resort management. "Graduate study is also an option, perhaps in the field of hotel management," Peter added.

Of the RSP, Peter says, "Having the recreation management major available to me through the RSP made my studies affordable. With-

Charlotte Stratton is director of NEBHE's Regional Student Program.

out the RSP, it would have been very difficult. I was aware of the program while I was in Rhode Island and always wanted to study in Maine. The RSP was a great way to do just that at a cost I could afford."

In addition to recreation management, increasing opportunities will result in a greater demand for professionals in many areas, including park design, natural resources management, forestry, historical preservation and archeology.

New England's public colleges and universities offer 40 degree programs in these areas to out-of-state New England residents through the Regional Student Program. There are many fields of study from which to select degree programs at participating community colleges, state colleges and universities, including hotel administration, hospitality management, recreation management,



Peter Dimarco of Barrington, R.I., is an RSP student at the University of Maine at Machias.

forestry, wildlife management, natural resources, ski resort management, leisure studies, sports management, culinary arts and food services.

More information can be found in a new RSP brochure outlining prospects for careers and study in tourism, hotel management, travel and recreation. Copies of the brochure as well as catalogs describing these and other programs are available from NEBHE's Regional Student Program Office, 45 Temple Place, Boston, Mass. 02111. Phone: (617) 357-9620. □

### Correction

In the *RSP Update* column in last fall's *Connection*, incorrect campus locations were given for two new RSP programs at the New Hampshire Vocational-Technical Colleges. New Hampshire Vocational-Technical College at Manchester offers the associate degree program in fitness technology, and the Berlin campus offers the residential specialist program.



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**T**wenty-five years ago President John F. Kennedy suffered the first of three major defeats in his efforts to gain passage of a federal aid to education bill. Kennedy knew that six out of every 10 students in the nation's 15 largest school systems who reached the 10th grade were dropping out of high school. Federal aid to education remained a Kennedy priority and a presidential frustration until his death. "Confronted with a critical need," President Lyndon Johnson later reflected, "the Congress had shown that it would not, and apparently could not, act." The final Kennedy initiative lost by one vote in the all-powerful House Rules Committee.

Francis Keppel, who joined Kennedy as U.S. education commissioner in the fall of 1963, was to play a major role in the ultimate passage of 60 pieces of education legislation during the Johnson administration. A remarkable White House team of advocates joined Keppel to create a seemingly secure place for federal support of education. That talent included Doug Cater, Anthony Celebreze, Wilbur Cohen, Bill Moyers, Larry O'Brien, Sargent Shriver and Jack Valenti. They were joined by others, including John Gardner, George Meany and Sen. Wayne Morse, who fanned out across the nation to convince Catholic bishops, Jewish groups, organized labor, Eastern liberals, Southern conservatives and corporate leaders to support passage.

From Billy Graham to the Vatican Apostolic Delegate, from Gov. George Wallace to Rep. Adam Clayton Powell, Johnson made clear he was determined "to put the entire power and prestige of the presidency" on the line and to consult "all the centers of power and control within the Congress" in gaining passage. In signing the education

## DIRECTLY SPEAKING



# Student Aid Programs Threatened

JOHN C. HOY

act on Sunday, April 11, 1965, Johnson said, "As president of the United States I believe deeply that no law I have signed or will ever sign means more to the future of America."

The sad spectacle of disarray among President Reagan's chief advisers reveals no top White House aide who is committed to the priority of federal investment in education. The Secretary of Education revels in arrogant congressional testimony, insulting Republican and Democratic leaders alike. The current level of hostility toward progressive federal education policy is unmatched in the annals of contemporary presidential leadership.

When President Johnson left office, 1,500,000 American students were attending college who, without federal aid, would today be untrained and unavailable to help strengthen the American economy. In contrast, President Reagan has recommended to the 100th Congress the elimination of 2,225,000 work-study jobs, state incentive grants, Perkins Loans, Pell Grants and supplemental educational opportunity grants, all based upon financial need and, in sum, the primary support for motivated students in need. In a nutshell, the Reagan administration seeks to destroy the national system of student aid built over the past quarter of a century.

The administration's policy includes proposed cuts that would have a devastating impact on disadvantaged and low-income students, virtually destroying the nation's educational talent-search TRIO programs, eliminating at least 350,000 students from participation nationwide. That number accounts for more than 80 percent of the low-income students currently served by TRIO programs.

TRIO programs — Upward Bound, Talent Search, Student Support Services, and Educational Opportunity Centers — provide motivated low-income students with information, counseling, academic instruction, tutoring, guidance in applying for financial aid and, most significantly, encouragement, support and direction.

The administration's proposed 1988 education budget stunned both Democratic and Republican members of Congress. Symbolically, the slashing of TRIO funding by 53 percent, from \$176.4 million to \$82.4 million "reveals the bankruptcy of White House Education policy," as Frank Keppel said in an interview. Among the most vulnerable and "at risk" young people in America, TRIO students are primarily from families in which the parents did not attend college and in most instances did not graduate from high school. At present, 425,000 students are participating in 1,230 TRIO programs across the country. In New England, where 30,000 students benefit from TRIO, student participation would decline to 6,000 — an 80 percent reduction. Funding for New England TRIO programs would be reduced from \$9.9 million in fiscal year 1986 to \$4.8 million.

If there's one thing we in New England have learned in achieving  
*(Continued on page 50.)*

John C. Hoy is president of NEBHE and publisher of *Connection*.

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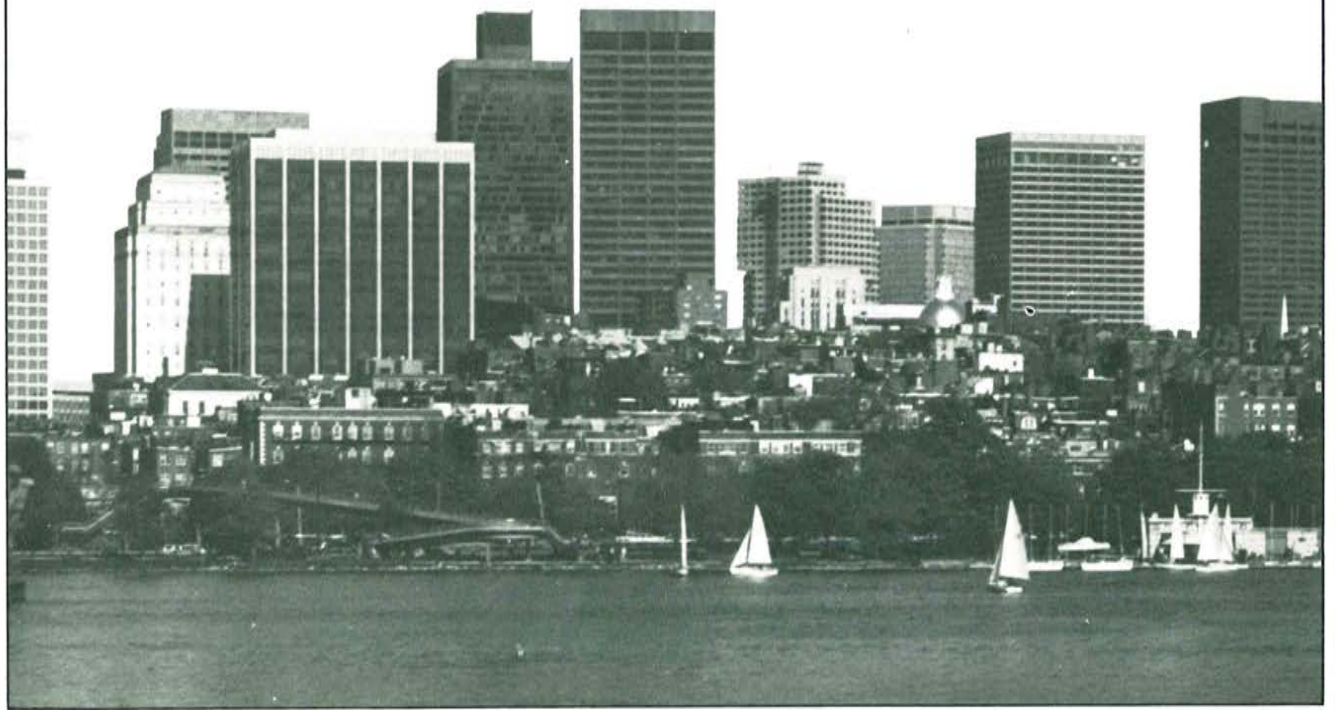
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