

*November 1939*

# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office





*November 1939*

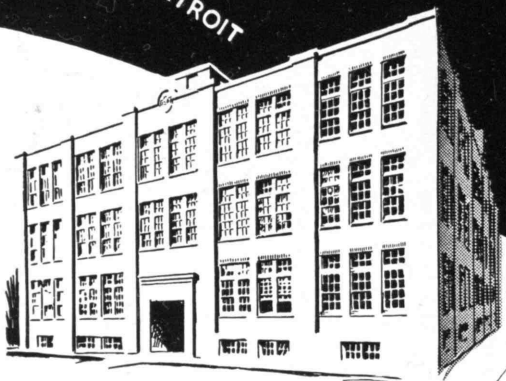
# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office





DETROIT



# NORTON SERVICE

DISTRIBUTION...

*the story of Norton plants and warehouses*

CHICAGO



PHILADELPHIA



CLEVELAND



## Over Half a Million Wheels in Five Branch Warehouses

Each of these branch warehouses is a vital nerve center in the Norton distribution system—a connecting link between customer, distributor and the Worcester plant. With their large stocks of grinding wheels and other abrasive products, their highly trained personnel, their special equipment for altering wheel sizes and shapes they bring real meaning to the words "Norton Service."

And supplementing these five strategically located Norton warehouses there are Norton distributors in 151 key cities of the United States alone with thousands of wheels on their shelves.

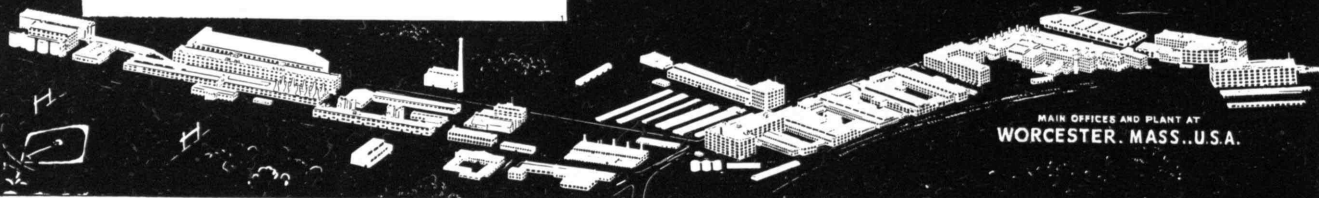
**NORTON COMPANY**

PITTSBURGH



**NORTON ABRASIVES**

MAIN OFFICES AND PLANT AT  
WORCESTER, MASS., U.S.A.





## **DANGER! HIGH VOLTAGE!** ... but Rope Keeps Linemen Safe

Out of the leaden sky, a blinding flash—a peal of thunder . . . then blackness. In the nearby city the word is spread, "The wires are down!" And modern civilization comes to a standstill.

Repair trucks soon are under way . . . racing to the fallen wires. Up among thousands of volts of man-made lightning, rope lifts men and materials. The linemen effect repairs. Electric power . . . life-blood of the city . . . is restored. And as the linemen stow away their equipment, they carefully re-coil their Manila Rope.

For among linemen . . . and wherever the safety

of human lives and valuable property is at stake . . . Manila rope plays its part. And in one such instance after another, there is an outstanding rope favorite . . . PLYMOUTH Ship Brand Manila.

Men who must trust their lives and property to rope . . . whether on land, sea, or in the air . . . know that in PLYMOUTH there is always an extra margin of safety and endurance which comes from careful control of the quality of both materials and workmanship. It is this *controlled quality* which has long since earned for PLYMOUTH Ship Brand its reputation as "The Rope You Can Trust."

### **PLYMOUTH CORDAGE COMPANY**

NORTH PLYMOUTH, MASSACHUSETTS, AND WELLAND, CANADA

Sales branches: New York, Boston, Baltimore, Philadelphia, Chicago, Cleveland, Houston, San Francisco



# **PLYMOUTH**

*The Rope you can trust*



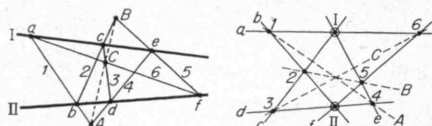


## Just for Fun!

# A CHALLENGE

### TO YOUR INGENUITY

IN plane geometry, the words "straight line" and "point" may often be interchanged without invalidating a proposition. A substitution in Pappus' theorem (below) demonstrates this amazing "principle of duality."



Select any 3 points  $a, c, e$  on line I (see figure at left) and any 3 points  $b, d, f$  on line II. Join  $a, b; b, c; c, d; d, e; e, f; a$  with lines 1, 2, 3, 4, 5, 6 respectively. Join lines [extended] 1, 4; 2, 5; 3, 6 with points  $A, B, C$  respectively.  $A, B, C$  will then lie on a [straight] line! Interchange "line" and "point," and this still works! Why?

We specialize in solving problems for industry.

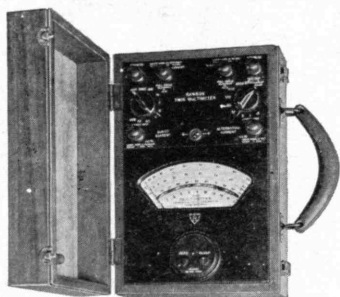
Write for information on our  
"GUARANTEED RESEARCH SERVICE"

described in Notebook No. 5 — our new catalogue

**CALIBRON PRODUCTS, INC.**

West Orange, New Jersey

## RAWSON TWIN MULTIMETER



29 ranges in less space than any near equivalent combination — size 12" x 8" x 6"

Dynamometers, wattmeters, milliammeters and voltmeters. Also ultra-sensitive meters both for A.C. & D.C., fluxmeters, electrostatic voltmeters from full scale 120 volts to over 20,000 volts, thermocouples, earth current meters, cable testers, etc.

Rawson measuring instruments are the only ones having two pivot movements whose weight, when they are clamped for transit, is lifted from the jewel bearings. Electrical clamping does not accomplish this purpose.

Acknowledged leaders in development of high sensitivity meters

**RAWSON Electrical Instrument Company**

100 Potter Street

CAMBRIDGE, MASSACHUSETTS

New York

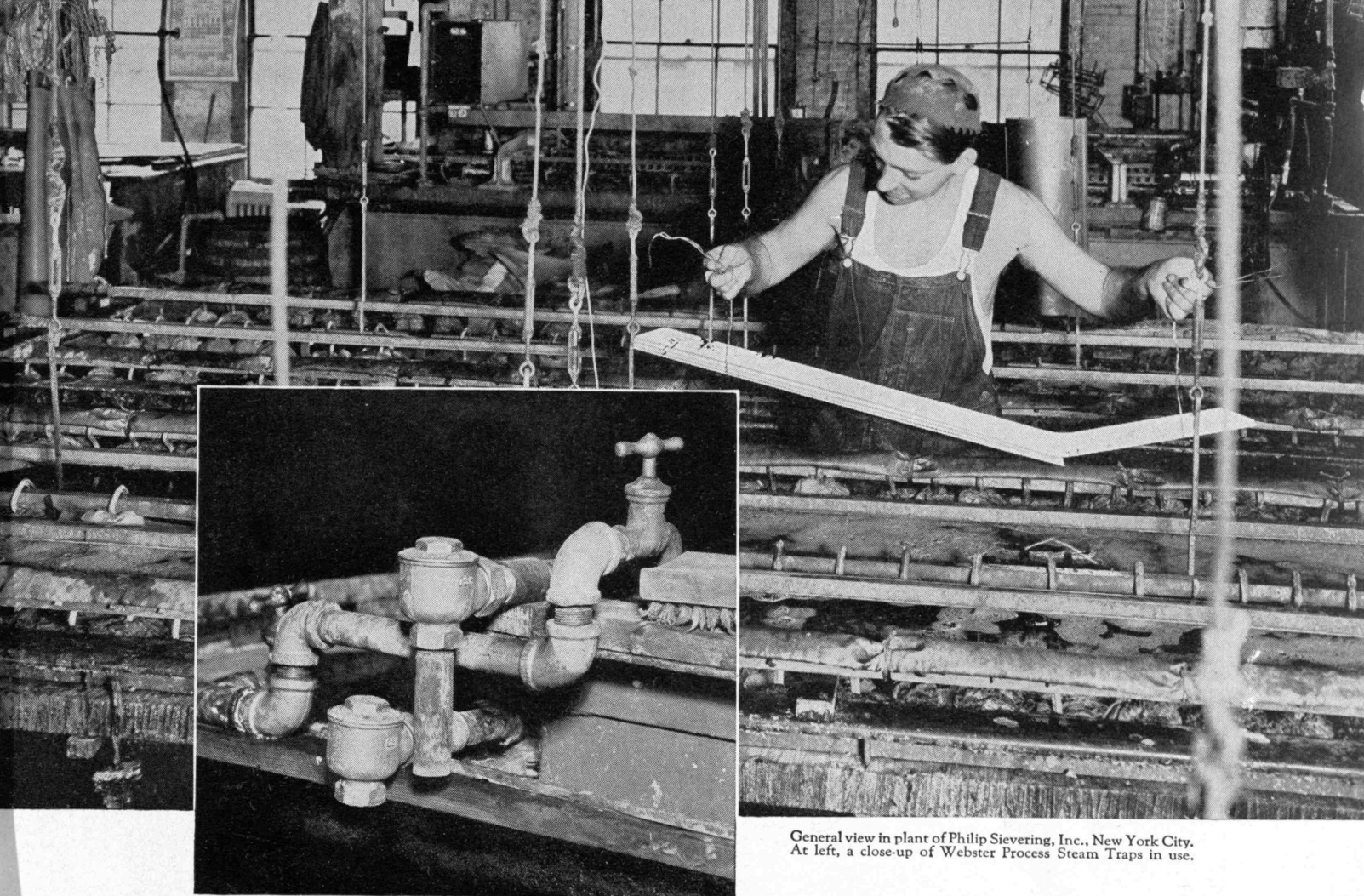
Special Apparatus  
Built to Order

Chicago

## THE TABULAR VIEW

IT is inevitable that war anywhere in the world should be reflected and echoed throughout a civilization as complex and interrelated as that of the Twentieth Century. In few departments of man's activities may its effects be expected to be more constant and conspicuous than in science; hence The Review will, of necessity, from time to time report results of martial developments — the few contributions and the many disruptions which war must mean to scientific progress and to the social evolution which relies upon it. In this first issue of Volume 42, KARL T. COMPTON, President of the Institute, lays stress (page 17) upon the road away from war which science offers, and emphasizes the economic gain that would result should nations devote to research into necessities even a small part of the treasure destined for wartime disbursement. From Dr. Compton's presidential report (page 27) we present thoughtful comment upon the present situation as it bears not only on science through the contradiction of the spirit of inquiry by authoritarian control, but also on the process of education through clarification of responsibilities and imposition of new duties. ¶ ARTHUR M. YORK, '37, who writes of the history of yellow fever (page 20), trained at the Institute to join numerous other Alumni in the fourth estate. His interest in the comparatively little known human side of the history of science led to his study of America's earlier experiences with what has been called the last of the great plagues. ¶ PHILIP M. MORSE, Professor of Physics at Technology and Editorial Associate of The Review, has long been known to readers of the magazine as a skilled expositor of even the most abstruse aspects of present-day nuclear research. His discussion of the building blocks of which the universe is made (page 22) summarizes latest knowledge of the subject and answers many of the puzzling questions with which the unseen particles may plague the nonspecialist reader. As it provides definition and description of these strangely termed strange entities, Dr. Morse's article will prove valuable as well as interesting. ¶ Far less recondite but often fully as mysterious are the operations of analysts who put science to work to unravel crime rather than to untangle the structure of matter. FRANK C. STRATTON, '29, explains (page 24), on the basis of well-rounded experience, the use of science in the routine work of contemporary police laboratories. A graduate of Massachusetts State College, Mr. Stratton did advanced study at Technology and has investigated enzymes for a fruit company both in Boston and in the tropics, conducted endocrine research at a state institution for the insane, as well as served the Boston Police Department for the past five years. ¶ MAURICE HOLLAND, '16, director of the division of engineering and industrial research of the National Research Council, is also executive officer of the Industrial Research Institute sponsored by that organization. His survey of a tour of member laboratories (page 12) thus is written from a background of full knowledge of industry's research needs.





General view in plant of Philip Sievering, Inc., New York City. At left, a close-up of Webster Process Steam Traps in use.

# Tanks and Ovens Heated with 25 p. c. Less Steam

Philip Sievering, Inc., electro-platers and polishers, reduced steam consumption approximately 25 per cent by equipping their heating ovens, plating tanks and drying ovens with Webster Process Steam Traps.

In the Sievering plant, Webster Traps help the high pressure equipment to develop maximum output by insuring prompt and continuous discharge of air and water of condensation.

In discussing the application of Webster Traps to the electro-plating and polishing equipment, Philip Sievering says:

"In May, 1938, we made a trial installation of a Webster Trap on one of our heating ovens. Having been favorably impressed with the results, we

decided to install Webster Traps on all of our plating tanks and drying ovens which are heated by steam. The results so far have more than borne out our earlier impressions.

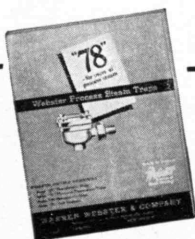
"While it is hard to check the exact savings in dollars and cents, we estimate that it amounts to approximately 25 per cent.

"In addition," Mr. Sievering says, "we have eliminated the fuss and bother of turning on, shutting off and regulating the exhaust valves."

There are 44 Webster Process Steam Traps in use in the Sievering plant.

WARREN WEBSTER & COMPANY, CAMDEN, N. J.  
Pioneers of the Vacuum System of Steam Heating:: Est. 1888  
Representatives in 65 principal cities :: Darling Bros., Ltd., Montreal, Canada

H. F. MARSHALL '19



If you use steam at process pressures let us send you complete information, including tested application data, on Webster Process Steam Traps. Ask for Bulletin 1200D.

-since 1888  
**Webster**  
Systems of  
Steam Heating



Now...  
Two Models

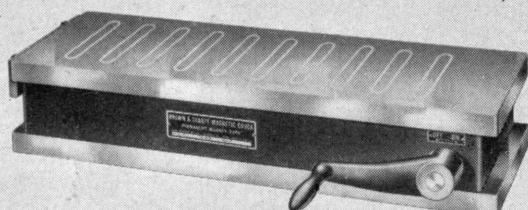
# **ROTARY and RECTANGULAR BROWN & SHARPE MAGNETIC CHUCKS**

**Permanent Magnet Type**

**No Wires—No Heating—No Running Costs**



Ask for Circular — **Brown & Sharpe Mfg. Co.**  
Providence, R. I., U. S. A.



Samson Trade Mark

## **Samson Cordage Works**

**Boston, Mass.**

Herbert G. Pratt, '85, Chairman of the Board

Mills at Shirley, Mass., Anniston, Ala.,  
and Icard, N. C.

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, arc lamp cord, shade cord, Venetian blind cord, awning line, and cord for many other purposes, also cotton twines.

### **SAMSON SPOT CORD**



Trade Mark Reg. U. S. Pat. Off.

Our extra quality, distinguished at a glance by our trade mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than forty years.

## **MAIL RETURNS**

### *Is the Motion Seconded?*

FROM JUDSON C. DICKERMAN, '95:

The June Review was of unusual interest to me for various reasons. Raymond's article lifting inspiration to spiritual ideals, Rhodes's somewhat slight but also helpfully concrete treatment of "A Technology of Trade" suggesting facts and ideas that need serious consideration, and especially "The Deadly Guest" article, which brought home to me vividly the inherent danger of some of the devices I have installed in my home to increase comfort (such as sealing my attic roofs with noncombustible insulation, stopping all outward flow of air) or as protection against sneak thieves (inaccessible fasteners on windows) — all these articles had an appeal.

Here is a suggestion: Why not get a series of modest advertisements for The Review from manufacturers of home safety devices, not neglecting the simpler, less expensive kinds. I would like to install a device that would sound an alarm if the temperature in two or three most likely or important places became unduly high. Also I want window latches that can be reached and operated by a child. Fortunately every second-story bedroom in my house has at least one wide window opening out on a porch or extension roof. With sash thrown up, there is ample room to get out without falling. But my full-length screens in summer are hooked in place so tight that they often cannot be unhooked without pliers!

What problems are raised by Holbrook's paper! Anything The Review can do to aid householders to correct such dangerous conditions should be appreciated by many. I intend to show Holbrook's article to our local fire chief in Chevy Chase. . . .

*Chevy Chase, Md.*

### *Endorsement*

FROM CHARLOTTE WINNEMORE, '30:

May I underscore every word of the letter from Albert J. Gracia, '28, "Keep the Laboratories Open," which was published in the July Review? He has very ably called attention to the tendency to do that which we condemn in others, and he has stated well the reasons for maintaining the true scientific attitude.

*Columbus, Ohio*

### *Better Use of Soils*

FROM VLADIMIR NUKUROVICZ:

I was very interested in what your journal told about the barrage at Sukkur in your April issue [page 245]. That great project by itself is of much importance to the future of India, as your contributor so rightly suggested. I cannot tell you, too, how impressive is the spectacle — philosophically considered — of the thousands upon thousands of hands and backs laboring at one time upon the mighty structure, aided and supported in their endeavor by the best that steel and steam and modern scientific technology can bring to their assistance. It is a meeting of the old and the new, to produce a thing which is new but very old as well — the fertility of the land.

But there are other and maybe more important things to come from India. Colonization of the land thus rendered useful by irrigation presents by itself a vast problem and a vaster opportunity. That this colonization will be done by educated youths who have been trained especially to bring the greatest result from both the material with which they work and the energies they themselves supply is a thing to be hoped, and a thing that probably will be seen. However, knowledge of the land itself — all the land of India — remains to be gathered. The groups of soils which make up the arable lands of India, and how these groups of soils are related to the great world groups, must be learned. It is upon such work as this that farseeing ones among the Indian people are even now embarking.

*New York, N. Y.*

### *Noted with Thanks*

FROM ARTHUR F. JOHNSON, '26:

I wish to say that The Review makes me very proud to know that I am an alumnus of M.I.T. My only criticism of it is that there might be more pages of the same material between its covers than at present. *Big Bell Mine, West Australia*





## **SPECIFYING FOR DEPENDABILITY PLUS**

Failure in the motor crankshaft of a piece of fire fighting equipment may mean the difference between a small fire and a large one, even between life and death.

That is why a leading manufacturer chooses Chrome-Molybdenum (SAE 4140) steel for this vital part. It has the requisite strength and toughness. And, most important, it has good fatigue strength to meet the continually alternating loads which are characteristic of crankshaft service.

Furthermore, the uniform response of this steel to

heat treatment assures the consistent qualities essential in volume production, while its comparative inexpensiveness and ready machineability in the heat treated condition keep costs down.

Molybdenum steels and irons, industry's modern materials, make production dollars go further in many ways and help produce better products at lower cost. Our booklet, "Molybdenum in Steel", containing a great deal of practical data will be sent free on request to technical students and others interested.

PRODUCERS OF MOLYBDENUM BRIQUETTES, FERRO-MOLYBDENUM, AND CALCIUM MOLYBDATE

**Climax Mo-lyb-den-um Company**  
**500 Fifth Avenue • New York City**



# Living up to the Greatest Name in Rubber



Pliofilm's waterproofness exemplified by its use in raincoats and umbrellas offers new possibilities in packaging popcorn, cereals, drugs and other products requiring absolute moisture protection.

## Pliofilm is revolutionizing packaging...and a dozen other industries

**T**O transparent packaging Goodyear now brings the signal advantage of inherent moisture-proofness—in a new synthetic sheet material of unusual strength and toughness called Pliofilm\*. It is so completely waterproof that raincoats and umbrellas are being made of it—so stoutly durable that many liquid-packed products heretofore packageable only in glass or tin are finding new economy in Pliofilm containers. And it seals with an airtight weld, making it possible to vacuum-pack coffee in inexpensive Pliofilm bags.

These unique properties promise

important savings to many industries. Tests show bread keeps moist and fresh for weeks when sealed in Pliofilm. Hygroscopic chemicals keep tinder-dry in Pliofilm-lined bags that replace metal canisters. Its high tear-resistance gives lasting protection to all fine merchandise from counter wear and soilage, keeps it clean and price-worthy. And in the home Pliofilm finds wide utility in colorful curtains, table covers, lamp shades, garment bags and toilet accessories. Product of a thousand uses, it is one more proof of Goodyear's leadership as the greatest name in rubber.



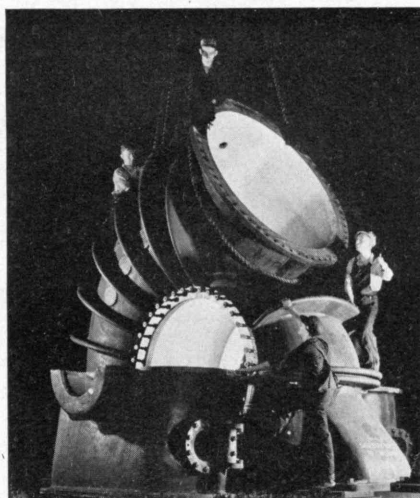
1839 • THE CENTENNIAL OF RUBBER • 1939

*Great beyond all other names in rubber is that of Charles Goodyear—discoverer just a century ago of the process of vulcanization that made rubber usable to mankind. To honor him The Goodyear Tire & Rubber Company was named long after his death; from his lifelong effort to extend rubber's utility it takes inspiration and seeks by serviceability to deserve his name.*

\*Trade-mark of The Goodyear Tire & Rubber Company

# GOOD YEAR





Allis-Chalmers

*Figures in an industrial pantomime — workers dismantling a six-foot sewage pump in preparation for shipment*

# THE TECHNOLOGY REVIEW

Title Reg. U. S. Pat. Office

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VOL. 42, NO. 1

CONTENTS

NOVEMBER, 1939

## THE COVER

MOUNT WILSON

*From a photograph by James N. Doolittle*

STRENGTH . . . . .	FRONTISPIECE	8
SCIENCE IN GLASS HOUSES . . . . .	BY MAURICE HOLLAND	12
LOOKING AHEAD IN RESEARCH . . . . .	BY KARL T. COMPTON	17
<i>Science as the Road Away from War</i>		
HISTORIC YELLOW JACK . . . . .	BY ARTHUR M. YORK	20
<i>Battles with an Elusive Virus Recall Earlier Medical Preoccupations</i>		
ULTIMATE AND INDIVISIBLE . . . . .	BY PHILIP M. MORSE	22
<i>Surveying the Fundamental Particles Composing Matter and Energy</i>		
CHEMIST AND CRIME . . . . .	BY FRANK C. STRATTON	24
<i>The Jack-of-all-Trades of the Police Department</i>		
THE TABULAR VIEW . . . . .		2
<i>Contributors and Contributions</i>		
MAIL RETURNS . . . . .		4
<i>Letters from Review Readers</i>		
THE TREND OF AFFAIRS . . . . .		9
<i>News of Science and Engineering</i>		
THE INSTITUTE GAZETTE . . . . .		27
<i>Relating to the Massachusetts Institute of Technology</i>		

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