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THE TABULAR VIEW

IT WAS a foregone conclusion," says Professor NORBERT WIENER in his article, "Limitations of Science," "that after the bankers and business men had had their day in court, a summons would come in due order to the scientist to prove his right to existence." A cross-sectional view of conversation today would reveal many a discussion, pro and con, of the responsibility of science and engineering for the economic troubles of the world; and through it all persists the notion of a holiday in science. Professor Wiener, internationally known mathematician, presents in his article clear and logical reasons why such a holiday is impractical. He has been a frequent contributor to The Review, perhaps the best known of his articles being "Mathematics and Art" (January, 1929), which testifies to the breadth of his academic knowledge, and "Leibniz and the Modern Physicists" (February, 1932), in which he writes as a specialist. Dr. Wiener has accepted an invitation to join the faculty of the National Tsing Hua University in Peking, one of the largest universities in China, as research professor of mathematics for the next academic year. In 1932 he went to Cambridge University, England, as a lecturer.

DURING his 40 years in the educational world, Professor SAMUEL C. PRESCOTT '94 has been in a position to observe those qualities which make for success in the teaching profession. An unusually successful teacher himself, Professor Prescott is Head of the Department of Biology and Public Health and Dean of Science at M.I.T. He is especially well known for his application of biology to industry, the field in which he has specialized. On several occasions he has taken leave from educational work: during the War, when he was in charge of food research and the problems of storage at the Army training camps; in 1918–1919, when he was in charge of the Division of Dehydration of the Bureau of Chemistry in Washington; and when he was for three years director of the research laboratories of the United Fruit Company in Costa Rica, where he made notable studies in food preservation. For 17 years he was director of the Boston Biochemical Laboratory, and he worked out for the first time the bacteriological aspects of the canning industry.

A PHYSICIST by training, ROBERT D. POTTER is now News Editor of Science Service. In 1931 through 1934 he was Science Editor of the New York *Herald-Tribune*. Mr. Potter holds degrees from the University of Buffalo and Duke University. His research work has included a study of ultra-ionization potentials of mercury vapor and investigation of the remote infrared region of the spectrum from 200 mu to 1,200 mu. ¶ PAUL COHEN is a senior at the Institute and recently retired editor of *The Tech*. He has made in recent months a particularly detailed study of the scrap-iron industry in all its curious ramifications.

MAIL RETURNS

Mr. Wells on the Dayton Experiment

DEAR REVIEW:

Brook Farm, from which Nathaniel Hawthorne withdrew to avoid being "nurse-maid to a cow," passed out in 1847. Books and newspaper and magazine articles explaining its failure were being generously printed well into the Nineties. There is no desire to start a 50-year controversy about the Dayton production units and subsistance-homestead project; but may I record that it is unfortunate that Professor Burdell did not get real first-hand and up-to-the-minute information concerning these late enterprises before writing the article for the March number of The Technology Review?

Production units and homestead units were conceived in ethical thinking and executed (the reader may use either meaning of this word) without scientific investigation or planning. Every suggestion that the schemes should be examined by the application of the methods used in the development of ordinary business ventures was met with cries of "obstructionist" from the enthusiastic promoters. The lessons of the failures of similar attempts were disregarded.

In the horse-and-buggy days, men lived on small tracts of land and worked in Dayton factories. The advent, at the end of the last century, of the network of traction lines centering in Dayton added hundreds to the number of factory workers who found satisfaction and easier living on the land or in the villages near by. Good roads and the automobile greatly increased the number. In recent years they have been known to drive to work daily from points 40 miles away. Hence Mr. Borsodi and Miss Nutting brought nothing new to Dayton, except the attempt to graft on to what we already have, the features of the Brook Farm experiment which caused its failure almost 100 years ago.

The so-called Dayton plan was doomed to failure from the first for the following reasons:

1. Those who joined the unit were promised a house, with conveniences unknown in rural communities, for less than $1500, plus sufficient man-hours of labor to build it. The money could be borrowed from the Government. Mr. M. L. Wilson's published estimate of cost was $2800, and the Reedsville experience to date seems to indicate a cost three times that suggested. There is no success in an enterprise under-financed.

2. Insufficient amounts were allocated for roads, sewerage, water supply, supervision, architectural and engineering service. Water, sewerage, and roads, or streets, are expensive necessities in thickly settled cities. They reach a high per capita cost when applied to homes spread out on three acre tracts.

3. There was no one included in the group of participants capable of leadership; and no one connected with the management of the enterprise having the executive ability and experience required to develop leadership or manage the technical staff necessary for successful construction.

4. The town-meeting idea of community government or management was ineffective, caused endless and costly delays, and, instead of producing the "sense of security and mental calm" of which Professor Burdell writes, produced scenes rivaling those to be found at meetings of the members of a church split three ways or Democratic conventions in the Sunny South. Lack of an appreciation and understanding of the really important matters led to hours spent in discussing trivialities.

5. The method of exchanging labor was unworkable because there was a great diversity of skill and experience. Industrious individuals having experience in the building trades rapidly accumulated labor credits which those not so skilled or not so industrious could hardly hope to liquidate. No adequate method could be devised to convert the labor credits into food, clothing, or cash.

6. Much of the work, because of lack of skill and poor supervision, was very crude, and it is fortunate for the owners of houses completed that the weather man has been most kind.

The objections raised by neighbors or prospective neighbors, were not serious at any time. They did not appear till it was proposed to establish a negro homestead in a community of white farmers. Ethical thinkers could not, of course, appreciate the very practical fear that great depreciation of the surrounding land values would surely result. It may be true that one energetic opposition (*Continued on page 276*)

MERCHANTS BANK REDUCES HEATING COST $3,067.95

Webster Moderator System Improves Heating Service and Increases Comfort

OVERHEATING IS REDUCED

Unique Program Retains One-Pipe Air Line System But Produces Two-Pipe Results

SYSTEM SELF-LIQUIDATING

Indianapolis, Ind.—Heating costs for the 17-story office building of the Merchants National Bank were reduced 30 per cent during the 1933-34 heating season, according to figures made public here by the building management.

"This reduction," officials explained, "was achieved after we modernized our heating system in accordance with recommendations made by Warren Webster & Company."

The annual steam bill before modernization was $11,025, based on an average of 5,092 degree days. During the 1933-34 heating season, the first with Webster Moderator Control, the steam bill was cut to $7,757.05, a 30 per cent reduction. This record was made despite the handicap of unusually severe weather which increased the heating load to 5,446 degree days.

The original installation was a one-pipe air line system and arrangements were made to purchase steam from the Indianapolis Power & Light Company under a contract at a flat rate per year.

Following the sound policy of keeping the building up-to-date, the building management began an investigation in 1932 to determine if recent developments in heating system control and operation offered the possibility of reduced heating cost by changing over to purchase of steam on the basis of meter readings.

After sifting all of the modernization proposals submitted, the building management and Vonnegut, Bohn & Mueller, prominent Indianapolis architects and engineers, settled upon Webster Moderator Control with certain modifications which would result in substantially the same savings without the large expenditure necessary to convert the installation to a two-pipe system.

The equipment was installed by W. H. Johnson & Son, heating contractors, and placed in operation at the beginning of the 1933-34 heating season.

"Besides effecting a substantial reduction in our heating overhead, we have increased tenant comfort by reducing overheating," the management declared. "Operation is silent and savings have been effected without any attempt to starve the system, a range of 72 to 75 degrees being provided."

A continuation of the present rate of savings is expected during the coming year and at the present rate the entire investment should be recovered in less than four years.

If you are interested in (1) improved heating service and (2) lower heating cost in your building, address

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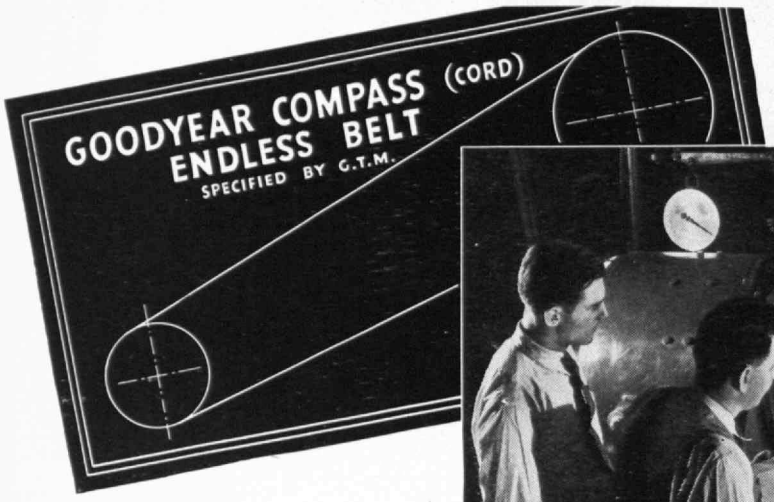
PERHAPS THIS WILL TELL YOU WHY GOODYEAR BELTS LAST 2 TO 10 TIMES LONGER



Dynamometer test measures efficiency — helping Goodyear build better belts

IN THE Goodyear Development Laboratory stands a huge machine with a control panel almost as large and complicated as that of a radio station. It is known as the 100 H. P. Dynamometer — but it ought to be called the belt buyer's best friend.

For it has contributed in no small way to Goodyear's ability to build belts that often deliver up to *ten times longer* service than other makes, especially on heavy duty drives.

Duplicates actual service conditions

This ingenious belt-testing dynamometer has not only made it possible to duplicate, in the laboratory, the most severe operating conditions — from the high speed, mile-a-minute drives on flour mill grinders and paper mill rag cutters, to the heavy loads encountered on oil well powers, rock crushers, beaters, etc. — *but it actually measures the efficiency of a belt by recording its slip and power capacity under any combination of speed and load, or overload.*

But what interests you is that these tests have enabled Goodyear to ferret out the weak points — to make belts more nearly stretchless — to increase power capacity without increasing size and weight. In short, to develop better belts for every type of drive.

The best proof of that is typical records like these: *Goodyear* THOR *Belts cut belt costs 50% on beater drives in mid-west paper mill!*

Goodyear COMPASS *Belt gave seven times longer service than best previous belt on southern oil well pump drive. Goodyear* TRANSMISSION *Belt now in 13th year of service on eastern cement mill rock crusher drive.*

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Goodyear Belts will give you this same cost-reducing service because they are correctly designed for your particular operation — and because the right type and size of belt is correctly specified for it by the G.T.M. — Goodyear Technical Man.

For more than 20 years this practical belting expert has been the right hand man of American Industry on all belting matters. Never was his experience, and Goodyear's proven leadership in belt design, so important as in these days of rising costs.

To consult him, write Goodyear, Akron, Ohio, or Los Angeles, California — or the nearest Goodyear Mechanical Rubber Goods Distributor.

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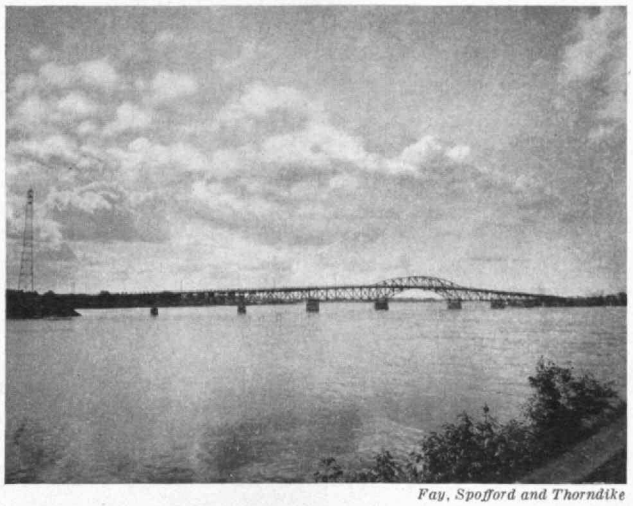

High-level steel bridge, 1,528 feet long, across Little Bay, N. H., from Dover Point to the Portsmouth side

Fay, Spofford and Thorndike

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VOL. 37, NO. 7 CONTENTS APRIL, 1935

THE COVER

Chemical Glass — From a photograph by Margaret Bourke-White

MARCH OF THE ARCHES . . . . . FRONTISPIECE 246

LIMITATIONS OF SCIENCE . . . . . BY NORBERT WIENER 255
The Holiday Fallacy and a Response to the Suggestion that Scientists Become Sociologists

MARK HOPKINS: NEW STYLE . . . . . BY SAMUEL C. PRESCOTT 257
What Qualities Should a Teacher of Science and Engineering Possess?

THE COLDEST COLD . . . . . BY ROBERT D. POTTER 259
Some Engineering Implications of Low-Temperature Research

THE TABULAR VIEW 241
Notes on Contributors and Contributions

MAIL RETURNS 242

THE TREND OF AFFAIRS 247
News of Science and Engineering

THE INSTITUTE GAZETTE 261
Relating to the Massachusetts Institute of Technology

BENDING MOMENTS 265

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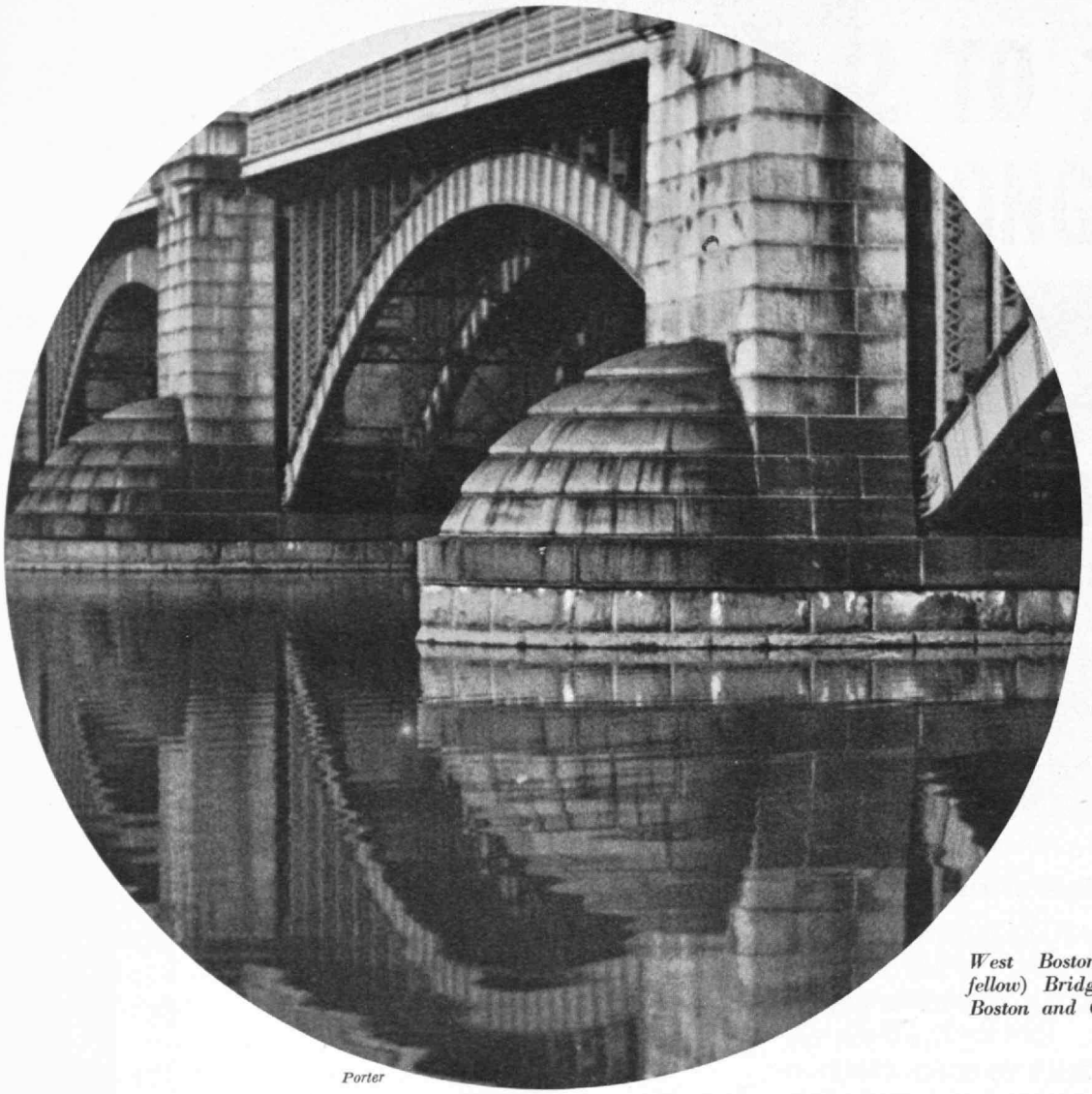

West Boston (Longfellow) Bridge between Boston and Cambridge

Porter

March of the Arches

Over the Mississippi at Minneapolis

C. E. Patch, '02

At Fergus Falls, Minnesota

C. E. Patch, '02

Near Framingham, Mass.

J. A. Seaverns, '84

THE
TECHNOLOGY
REVIEW

Vol. 37, No. 7

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The Trend of Affairs

Notes and Observations

UNLESS international complications prevent, it seems possible that the many-times proposed tunnel from Spain to Africa may actually go into construction. According to present announced plans, working operations will begin in 1936. As long ago as 1894, conversations between France and Spain took place over the project, which finally was tabooed because Alfonso XIII feared Madrid might diminish in importance, since the connecting railroad would not touch that city.

Current revival of the project is due principally to the hard work of Lieutenant Colonel Jevenois, born a Belgian but now a Spanish citizen. Under his direction a special research commission has been working since 1927. This commission has spent nearly a half-million dollars in preliminary soundings and borings. As a result, they have concluded that the shortest route from Algeciras to Point Ciris (9 miles under 3,000 feet of water) will not be so cheap nor so feasible as the longer one from Tarifa to Point Altares (20 miles under 900 feet of water). These soundings were by no means made with ease, owing to the strong currents in the straits. Engineers have already determined that geological formations on both sides of the tunnel are identical and offer no difficulty to construction. As their latest exploit, the Spanish engineers are now building a diving tank on caterpillars, capable of crawling on sea bottom at a depth of 1,200 feet, at a rate of a mile an hour. This machine will carry a powerful searchlight and, after dynamite has been exploded, it will be let down, the bottom explored, and specimens picked up.

Estimates indicate that the tunnel will cost about 50 million dollars and will be five years a-building. Complications arise from the fact that railway gauges of France are narrower than those of Spain and a brand new railroad track must therefore be built from the Pyrenees to Gibraltar, so that *de luxe* passengers may go to Morocco without changing cars.

Other complications would seem more serious, but have not been discussed — for example, the attitude of other nations to such a tunnel, which will be of primary value to France. Although Spain is known to have African ambitions, she cannot be taken seriously in the African New Deal. How Italy, with her newly awakened aspirations for the Dark Continent, and England, with Gibraltar so close at hand, will regard the tunnel idea are certainly matters for consideration. The cynic about these great engineering projects may also ask

BAEDEKER

For this Section

NOTES AND OBSERVATIONS

	Page
Tunneling from Europe to Africa. A romantic engineering proposal with economic and international handicaps	247
Television calls for a new term	248
Isotope hunters bag new varieties of the elements	248
Aerial sculpture and the work of a sculptor newly acclaimed	249
Fliver balloons recall the Brothers Montgolfier	249
NEW FABRICS	
Metallic finishes on cloth — unshrinkable wool — yarn from straw	250
COPPER PAINT	
Is metal dust always crystalline?	250
BATTLESHIPS AND DIAPER PINS	
Surprising facts about the scrap-iron industry	251

Other items: *New and somewhat appalling equipment for the amateur cinematographer* (253); *Measuring the stretch of steel* (254).

Courtesy W. S. Forbes, '93

Jack Frost excels in a one-man show. Frost patterns on window-panes photographed by Charles J. MacQuarrie

why the tunnel is needed for such a short crossing which modern transport planes can negotiate at the rate of at least two round trips an hour. The only possible value (tourist travel not being, or likely to be, heavy) would be for transport of munitions and guns. Is Spain ready, then, to play thus completely into the hands of Madelon? Quite likely this tunnel is just a dream of the indomitable Jevenois, but even then the idea is sufficiently spectacular to be regarded with sympathy by any engineer with a trace of romance in his make-up.

OUR British cousins overseas, nothing if not thorough and even a little "previous," are already worried about what to call the people who look at television broadcasts. A considerable correspondence is even now filling the editorial pages of the more dignified English press. The unimaginative word *lookers* is approved by the government, while the official wordsmith, Bernard Shaw, busy reading adverse reviews of his "Simpleton of the Unexpected Isles," refuses to be bothered, saying, "Go to the errand boys and ask them, not me."

A friend of ours, age four, is more resourceful. She suggests *peekers*.

Word or no word, England is much excited over the possibilities of television and is eagerly watching the trial broadcasts of the Baird System from Crystal Palace.

NO longer is it possible to say simply that all matter is composed of 92 elements. Physicists and chemists have demonstrated that many of the elements have twins (isotopes) composed of the same stuff but possessing different masses. That noted isotope hunter, Professor F. W. Aston of the University of Cambridge, has announced the discovery of 20 additional varieties of the chemical elements, and his census of these new entities now shows that there is an average of three and a tenth isotopes for every chemical element! Heavy water, made of ordinary hydrogen's isotope, or heavier twin brother, is first in the procession of novel compounds that will flow from this multiplication of the elements. With so many new building blocks placed at his disposal it would seem that the work of the creative chemist has only begun.