May 1935

TECHNOLOGY REVIEW

THE TECHNOLOGY REVIEW, May, 1935. Vol. XXXVII, No. 8. Published monthly from October to May inclusive and in July at 10 Ferry Street, Concord, N. H. Publication date: twenty-seventh of the month preceding date of issue. Annual subscription $3.50; Canadian and Foreign subscription $4.00. Entered as second-class matter at the Post Office at Concord, N. H., under the Act of March 3, 1879.

THE TABULAR VIEW

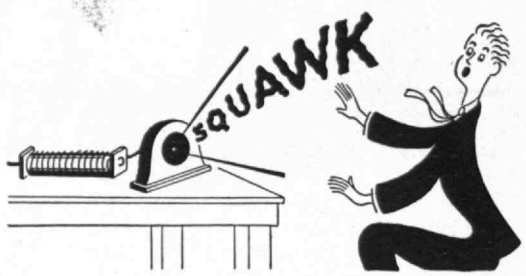
IN commenting on his article on page 304, F. ALEXANDER MAGOUN, '18, writes: "In 1933, with the approval of the Administration, an informal Committee on the Aims and Techniques of Teaching was organized at Technology. It was made up of one representative from practically every department, and although often frankly bewildered, it set about a careful examination of what constitutes an educated man, followed by an attempt to discover and to express the process which produces this illusive pearl of great price. After nearly two years of quiet, consistent effort, the Committee is still very far from making its report. As a portion of my contribution toward its effort to winnow out the truth, a study, only part of which The Review presents, has served as 'intellectual knitting work' for whatever spare time the last two years have afforded. The Committee's conclusions based on these facts belong not here, but in its report." Mr. Magoun is Associate Professor of Humanics at Technology and will be recalled as the author of an article in the November, 1933, issue of The Review, entitled "Training for Leadership."

IN his article "Literary Engineers" (page 313), PAUL C. EATON, '27, details the career of GELETT BURGESS, '87. Mr. Eaton, having deserted civil engineering after acquiring an A.M. at Harvard to become an instructor in English and History at Technology, should have included himself in his inventory of brands snatched from the burning. Mr. Eaton realizes that his roll call may be incomplete and he would welcome other names.

AS a contributor of more than 13 articles to The Review, in the last decade, NORBERT WIENER holds a high place in the roster of our contributors. His collaborator, CARL BRIDENBAUGH, is Assistant Professor of History at M.I.T. ¶ After reading "The Student Agitator" in manuscript, a wise and understanding friend of college youth made the following marginal comment: "The blind acceptance of fixed traditions, and the frenzied embracing of causes, are often exemplifications of mental laziness. They have a kinship to the response to advertising slogans. It is too much to expect that great masses of the population, exposed to radio and tabloids, cramped in their environments and exposed to reiterated trivialities, will think through to judicial conclusions the complex economic and social questions of the times. It is too much to expect this even of the bulk of college youths, with the finest opportunity for such thought the world affords. But it is not too much to expect them to make the attempt. Nor need seasoned thought and balanced pondering be inconsistent with the driving enthusiasm of youth.

"In its short existence, youth must learn that mere exuberance gets nowhere. Races are won by the stoical, calculated application of physical resources. It is no mere chance, when the artificialities of commercialized college sport are absent, that the outstanding athlete is often to be found among the best minds."

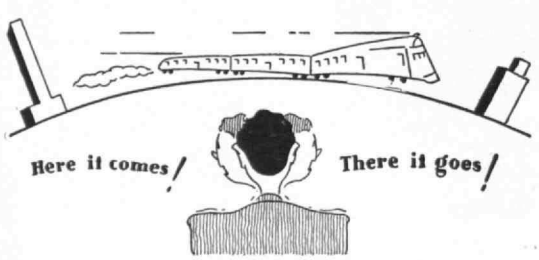
G-E *Campus News*



MAKING FLAWS SQUAWK

A VALVE used in a General Electric refrigerator unit requires a small steel spring, which, during the time that a refrigerator is in operation, is used several hundred times per minute. A small defect, even a microscopic scratch, would be sufficient to cause the spring to fail after a relatively small number of operations. Consequently a fast, certain means of inspection for the steel ribbon of which the springs are made was necessary.

It is generally known that, if a secondary coil is placed around a core of iron and the iron is placed in a magnetic field, there is a definite relation between the chemical and physical properties of the iron and the resultant electrical wave induced in the secondary coil. Using this knowledge as a base, a General Electric laboratory built an inspection device. The spring material is run through a magnetic field, and the induced current is fed through an amplifier to a loudspeaker. A hum peculiar to the magnetic properties of the material sounds in the loudspeaker as long as the quality of the material is uniform. Any flaw, however, changes the magnetic properties, the magnetic field then becomes unbalanced, and the loudspeaker emits a shrill squawk.



STREAMLINE COMMUTING

PORTLAND-BOSTON commuters will shortly receive a taste of real speed. Fairly before they have a chance to swallow their breakfasts, they will be whisked into North Station by the "Flying Yankee." In the morning, the train will streak the 115 miles from Portland, Maine, to Boston in 110 minutes. Then during the day, it will make a round trip to Bangor, Maine, making the 250-mile trip each way in 265 minutes. When the business day closes, it will streak back up Portland way with the commuters it brought down in the morning.

The "Flying Yankee" is a 200-foot articulated train, of lightweight, stainless-steel construction. Its three sections are carried on four trucks. Power originates in a 600-horsepower Diesel engine, directly connected with a General Electric generator. Two General Electric traction motors are mounted in the first truck. An auxiliary generator and the control equipment are also built by General Electric.

HOT DOG

PEG is an elderly English setter, who can trace her family back to some of the very best nobility in her breed. When she was younger, she enjoyed nothing more than romping about in the snow. But in the last few years, American winters, with all their sub-zero weather, have not agreed with her too well.

So last year, her owner, H. C. Ward, U. of Wisconsin, '05, of the General Electric office in Rochester, N. Y., decided to heat her kennel. Quite appropriately, he decided to do the job electrically. He installed a length of G-E soil-heating cable, plugged it into an outlet, and turned on the juice.

He did not stop there, however. Such a fine old dog deserved a polished job. He also installed a G-E thermostat in Peg's quarters to keep the temperature constant through all kinds of weather. Now while other dogs cower in frosty kennels, she disposes herself in luxury. She wags her thanks to General Electric.

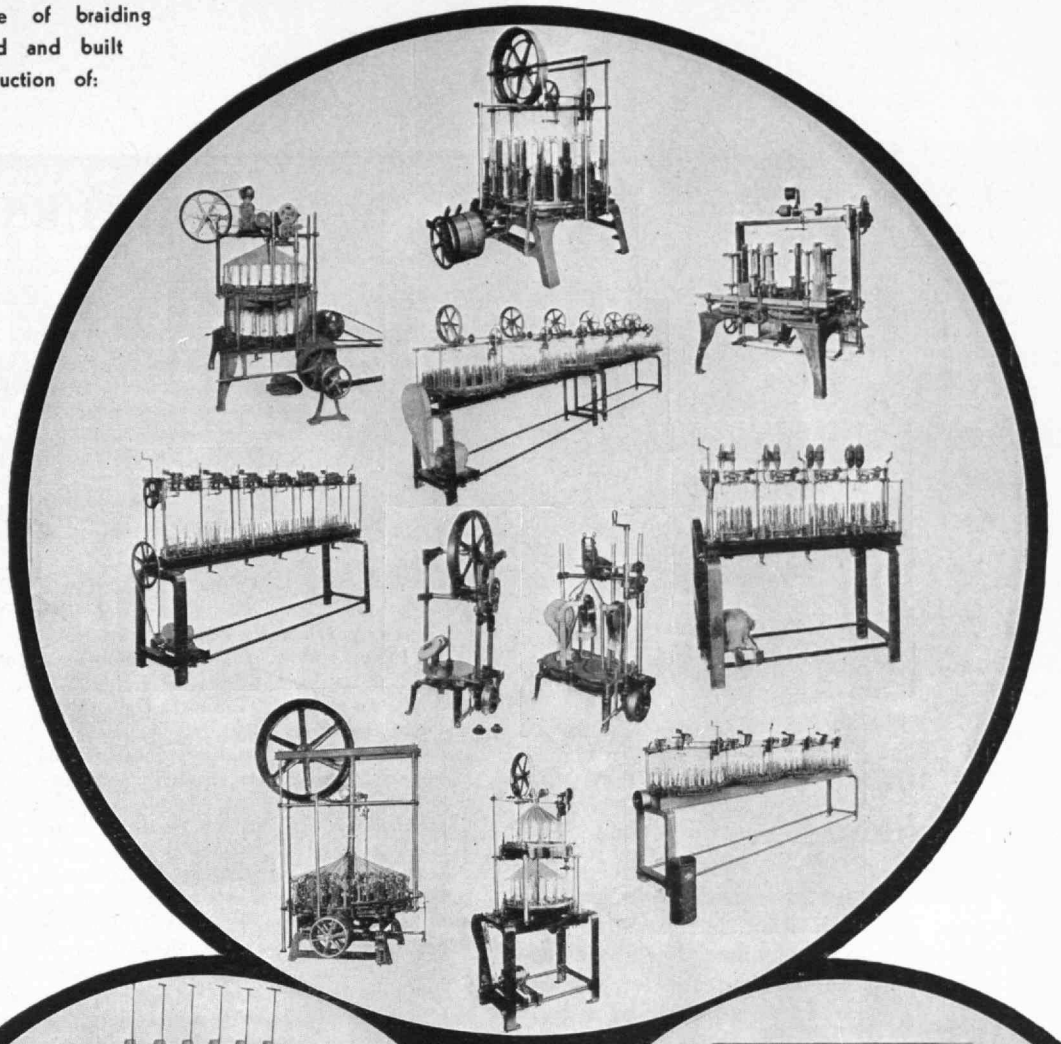
96-138DH

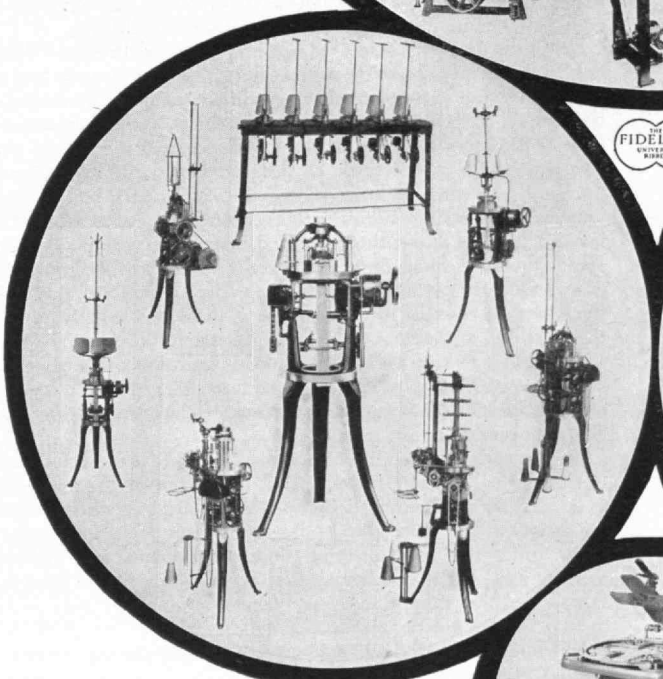
GENERAL ELECTRIC

A complete line of braiding machines designed and built for efficient production of:

Tapes
Bindings
Fish Lines
Shoe Laces
Packing
Round
and
Square
Rug Braids
Candle Wick
Elastic
Round
and
Flat
Hose Covering
Wire Covering

Special
Machines
To Order





FIDELITY UNIVERSAL RIBBERS

WINDING AND POOLING MACHINES

MULTIPLE-DIE CREASING

KNITTING–BRAIDING–MACHINES–WINDING–CREASING

FIDELITY MACHINE COMPANY, PHILADELPHIA, PENNA.

MAIL RETURNS

Most Constructive

DEAR REVIEW:

In my opinion Dr. Compton's "Put Science to Work" [in The Review for January] is the sanest, most logical, and most constructive contribution toward lessening our present difficulties that has been propounded since the advent of administration experimentation.

GEORGE B. GLIDDEN, '93

Boston, Mass.

Red Herring?

DEAR REVIEW:

I should like to reply briefly to the article, "Limitations of Science," printed in the April number. While I am neither so bold nor so officious as to defend the article on science by Dr. Harvey Cushing, which I have read with interest and close agreement, yet it is well, I think, to point out that Professor Norbert Wiener has busied himself to "draw a red herring" across the trail of the fox — if I may emulate his lavish use of metaphor.

Commenting on the statements beginning on p. 256, lines 1–8, one would say that scientists, especially physicists and chemists, should not "temporarily abandon", but should *moderate their voracity* in, the "investigations dear to their hearts in order" that funds may be available to social scientists for their more valuable studies concerning "the social well-being of the community at large." Certainly the large sums spent in chemical research in explosives, poison gas, tear gas, and those spent in physical, metallurgical, and mechanical research to *improve* armaments and the offensive weapons of war and gangsterdom, could be better used for purposes of social well-being.

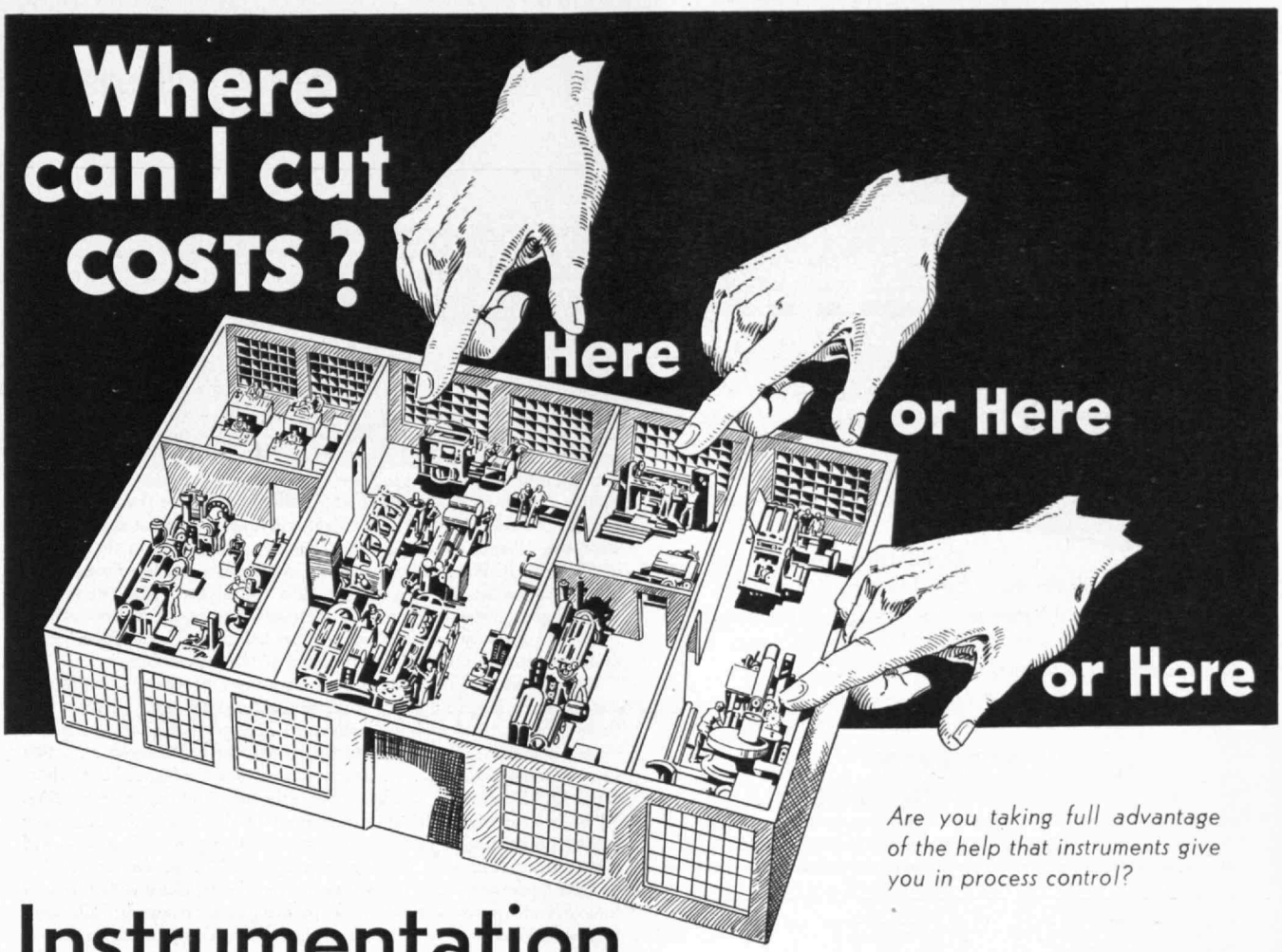
It is not a question of *post hoc ergo propter hoc*, as Professor Wiener implies, but a question of the separate integration of the evils that can be attributed to science and of the good that can be so attributed. In the opinion of those whose judgment is unbiased, or uninfluenced by ulterior considerations, the sum of evil far exceeds the sum of good. The concentration of wealth, of the instruments of production, of "power," electrical and other, of systems of transportation and communication, of public utilities — this concentration in the hands of the favored few has arisen through the discoveries of science and their application in technological inventions. The increasing concentration of ownership in natural resources, including agricultural land itself, the enormous increase of unemployment in all classes of labor — all these are due to the discoveries and applications of science. Not that science and invention are the only possible causes; in other places and at other times, other causes have produced like effects. But at the present time it is science and invention that are the *efficient cause*. The *final cause* is profit.

Science and invention like to pretend that there is no such thing as "technological unemployment;" that labor thrown out of one job finds another job, provided by science, awaiting — with a certain lag. Surely a lag that produces ten million unemployed for a series of years, with the accompanying undernourishment and physical, mental, and spiritual degeneration, is as efficacious as Professor Wiener's plague, famine, and war. "Scientific progress" may be said to have created a fifth horseman of the Apocalypse.

No one suggests that scientific progress brings nothing but evil, or that scientific progress is not an essential part of modern civilization. What one says emphatically is that scientific progress must be limited and directed by broader-minded men than most scientists have shown themselves to be, in order that social well-being shall not be destroyed in a civilization (so-called) of "scientific progress."

A favorite device of the proponent of "scientific progress" is to make comparisons of the present with the material circumstances of medieval and ancient times. Why stop there? By going far enough back in man's evolution, any set of conditions can be proved to be relatively good. Moreover, these proponents stress only the comparison of material goods and conditions, for the reason that present-day physical and chemical science seems most concerned with such.

"A hundred years ago," Professor Wiener says, ". . . the old man and woman did not constitute a great social problem. . . . Their numbers were much smaller" and they had numerous progeny to support them. At the present time — as Professor (*Concluded on page 290*)



Are you taking full advantage of the help that instruments give you in process control?

Instrumentation Will Give You the Answer

Every man in a manufacturing organization today has his eyes on the same ball — a quality finished product priced to sell at a *profit*. Each department, each process, and even each machine is the subject of continual study to further this end. Have you taken full advantage of the possibilities of *Instrumentation?*

Complete Instrumentation places in plant management's hands inexpensive, entirely efficient control of product, quality and unit cost wherever the manufacturing process involves temperature, pressure, flow, humidity or liquid level.

We will welcome an opportunity to discuss this important production "tool" with you in terms of the remarkable results already achieved in widely varied industries. It is a service offered as a definite and necessary part of our business relationship with your own engineering and production departments.

There is no obligation — write today

Foxboro makes a complete line of Instruments for the measurement and control of Temperature, Flow, Pressure, Level and Humidity, and has applied them successfully to every type of industrial process.

Temperature Controllers
Dial and Recording Thermometers
Pyrometers
Flow Meters
Pressure Gauges and Controllers
Humidity Recorders and Controllers
Flow Controllers
Potentiometers
Electrically Operated Controllers
Liquid Level Gauges and Controllers
Time Cycle Controllers
Power Plant Instruments

THE FOXBORO COMPANY
FOXBORO, MASS., U. S. A.
Offices in all principal cities

FOXBORO REG. U. S. PAT. OFF.
COMPLETE INDUSTRIAL INSTRUMENTATION

MAIL RETURNS

(Concluded from page 288)

Wiener does *not* state—the "numerous grandchildren and great-grandchildren" cannot support themselves. He does not state that, industrially, a man is now old at 40. Indeed, the whole of the first paragraph on p. 268 seems a bit confusing. There are too many old men and women (over 40 years), some ten million unemployed, and still not enough labor to work the "old New England farm . . . in the old New England manner." (Rather a nice title for a popular song.) So science and engineering must come to the rescue of society by a "change in industrial and agricultural technique" that will throw more men out of employment! And he places upon both "medicine and engineering," or science, "the responsibility for the fact that the present state is not one of equilibrium." Medicine is to *blame* for prolonging and ameliorating the life of man, and engineering science, apparently, for throwing men out of employment and making them old before their time! But this is rank scientific and industrial heresy, and one must suspect that Professor Wiener's real meaning is hidden somewhere in the Garden of Eden, or in Pandora's box. Truly, as he says, neither Prometheus nor the "boy scout" can extinguish a "little fire" like ten million unemployed; not even by a gush of Omar Khayyam. But Prometheus (science?) and boy scout (industry?) are helping to "extinguish" men and women over 60 by their invention of the automobile.

No one, so far as the present writer knows, proposes to withdraw "scholars in large numbers from the natural sciences . . . putting them to work in sociological sciences." The scientist doubtless would — and sometimes does — modestly, undertake to "remold . . . this sorry scheme of things . . . nearer to (*his*) heart's desire," but others think he has already, and incompetently, done too much remolding. What is proposed is to withdraw funds and opportunity from the futile "indirections" of science and bestow them upon those who will use them for humane, and higher purposes. This is the more to be desired because of the "long-range" complexities and difficulties of sociological, psychological, and philosophical research; although Professor Wiener cites these long-range difficulties as a reason for *not* exploring the "unknown wastes" of sociology. At some length he would seem to reason thus:

(a) The "methods of modern science," *i.e.*, of physics, chemistry, and mathematics, are the only logical methods of investigation.

(b) Those methods are not applicable to sociology, nor to humane studies in general.

(c) Therefore the "scientist" should not pursue investigations in sociology, and so on.

With this conclusion one is in complete agreement, but one may, at the same time, not accept the first hypothesis. And when the further corollary is drawn that the natural scientist should be permitted and encouraged to continue his investigations, his researches, at the expense of sociology and humane studies in general, then one claims a *non sequitur*. The question of values arises.

Doubtless Professor Wiener knows that no one wishes scientists to lead a sociological trek; he knows that there has been an increasing desire that they "stay in their own back yard"; a desire which he shares. But he wants them to remain there with a generous supply of balls and tops and other playthings. To accomplish this end he has fought valiantly a ten round bout of — shadow boxing.

L. Magruder Passano
M. I. T.

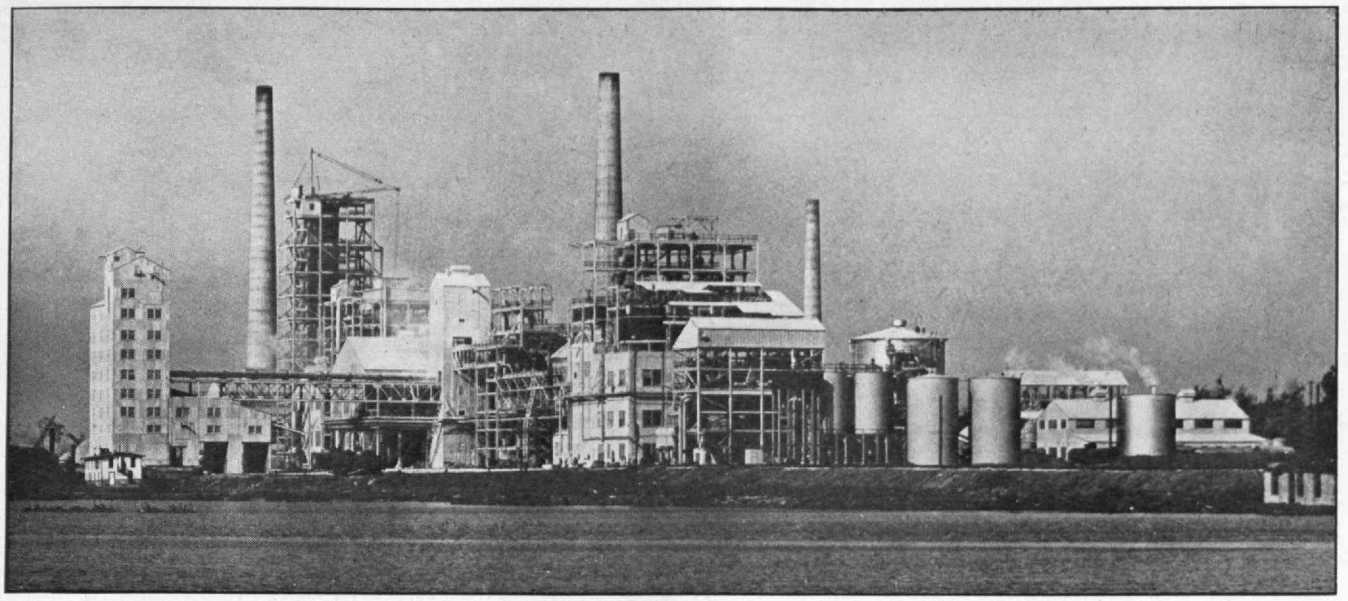
Kudos for Cohen

Dear Review:

Your article on scrap in the April issue is one of the fairest and best discussions on some of our problems that I have seen. I intend to make a photostatic copy of your article and send several hundred to members of the Institute and others who may be interested.

Could you arrange to send me about a half-dozen extra copies of The Review? I would like to send them immediately to some important factors in our industry, before they receive the reprint of your article.

Benjamin Schwartz
Institute of Scrap Iron and Steel, Inc.



NEW PLANT OF THE MATHIESON ALKALI WORKS INC. AT LAKE CHARLES, LA.

Swinging into Production in 1935

REGULAR SHIPMENTS of alkali were started by the new Lake Charles plant of The Mathieson Alkali Works Inc. on February 1st, marking the successful completion of one of the largest industrial undertakings of recent years. The plant represents an outlay of approximately $7,500,000 and involved construction problems of unusual complexity.

The plant was built by Stone & Webster Engineering Corporation which brought to the job a technical knowledge and construction experience gained from many years of activity in widely diversified fields. Participation in this project is representative of the assistance which the organization is able to render to corporations seeking to lower unit costs or otherwise improve their competitive position through plant modernization or construction of additional facilities.

STONE & WEBSTER ENGINEERING CORPORATION

BENDING MOMENTS

For those Who Like Conundrums

SO MANY readers of this fireside journal became excited over the conundrums presented by Phillip Rulon in the February Review that the Quidnuncs hasten to present here the latest brain teaser that is going the rounds of academic circles: An employer had three applicants for a position he wished filled, all of whom seemed equally desirable. In order to resolve this rare quandary, he hit upon this arbitrary device:

He told the three men that he was going to put either a *red* or a *blue* mark on the forehead of each and then bring them together. The candidate who saw a *red* mark on the forehead of either of his competitors was to raise his hand and keep it up until he deduced what colored mark was on his own forehead. The first man to make the correct deduction was to get the job. With these instructions carefully explained to the applicants, he segregated them and one after the other placed *red* marks on the foreheads of all three. He then brought them together and, of course, all three immediately raised their hands. After an interval of obvious puzzlement and severe cogitation, one finally dropped his hand to indicate that he knew what color was on his own forehead. His solution was correct; how did he arrive at it?

Making an Honest Word of Streamlining

NOW that the word *streamline* in all its various forms has made its formal appearance in the 1935 Webster, we hope, but hardly expect, to see progress in its correct use. The usual individual, absorbed in depression and New Deal talk, with now and then a dash of war talk, is not overly concerned with the misuse of this wonderful new word of seemingly universal application. There are, however, those of scientific and catholic tastes to whom, for one reason or the other, the abuse of any word will bring them rushing to its defense. And rightly so, for to the accurate mind of the scientist, this careless bandying about of honest, well-meaning words savors of degradation. In an effort to dramatize products which in themselves frequently lack dramatic power, the magic of the word *streamline* is being thus carelessly employed:

A cigarette advertisement shows two engineers contemplating with much seriousness a 50,000 watt *streamline* radio transmitter!

Reads a local paper: "Improvements on the Culbertson system of bidding at contract bridge, 'built for speed and safety and *streamlined* to resist the winds of chance,' were announced today." (We hear that Sims has retaliated with an *air-flow* system.)

In a business magazine, an article on "Designing to Sell" lists various articles in which *streamlining* is the selling feature; among them, a cocktail shaker, and an ordinary motor cycle, decorated with a few darts and arrows contributing that scientific "It" — alias streamline effect.

Then there is a bakelite telephone hand set, whose chief claim to fame is its *streamline* beauty, and a steam shovel, of all things, that boasts *streamline* performance.

And a modern refrigerator with a new *streamline* body.

An extra truthful advertisement gets by with an automobile which has a *streamline* appearance. (This shows a disposition to be truthful at all costs, though an agile mind can quickly translate this *à la mode*, and again the word scores a triumph.)

This is by no means a complete listing; merely the result of the casual leafing of two magazines and ordinary day-by-day observance, which is no kind of research at all. Whether we like to admit it or not, it seems that *streamline* is destined to take its place with the word *super* in our commercial vocabulary.

If calling things by a name would do the trick, we should like to place an order for a streamline salesman (who would get to the point with no waste of time and energy) and streamline pencils (for fast writing and stenographic use). Our imagination aroused, we are hourly expecting to see the man whose consumption of razor blades does not satisfy the manufacturers of such products placed by advertising copy writers in the horribly embarrassing predicament of lacking that *streamline* effect so necessary to love and masculine charm.

THE QUIDNUNCS