



Fabian Buchrach

## Hugo Gernsback 1884-1967

*Hugo Gernsback, founder and editor-in-chief of RADIO-ELECTRONICS, died August 19, 1967. He was 83.*

ON AUG. 16, 1892, an 8-year-old boy studied intently an electric doorbell he had just been given for a birthday present. It was not the mechanical equipment in the wooden case nor the fast-moving clapper that held his attention. What he was watching was the tiny spark between the contacts as the armature made and broke the circuit. The career of Hugo Gernsback started at that moment—his life from that day was spent in learning more about things electric.

Learning more about electricity in the famous Technikum at Bingen on the Rhine, the young Gernsback conceived and developed a greatly improved dry battery. He decided to take it to the land of opportunity—America.

Little doubt that the battery was an improvement—the idea was used years later in large heavy-duty B-batteries. But it had one weakness: it cost nearly twice as much to manufacture as the batteries it was designed to replace. So Hugo had to give up the idea of making a fortune from his invention, and took a job as an engineer with a storage battery manufacturer, Emil Grossman.

Bringing the original thinking that had developed the layer-constructed battery to bear, and remembering the economic angles this time, Gernsback shortly developed a cheaper, lighter and stronger battery case than any on the market. But here a typical Gernsback characteristic—one invaluable to him in his future success—got in the way.

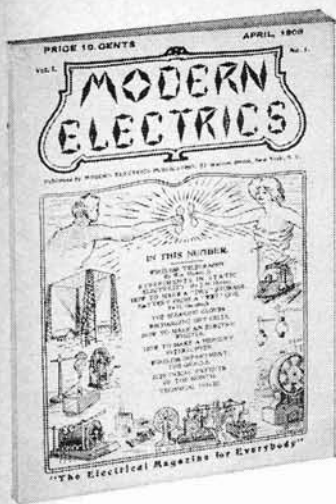
The Gernsback urge to brush aside trivial detail and get to the main objective was, he found, a real handicap in practical engineering. Not carefully tested for corrosion resistance, the new batteries started to leak, and were returned in droves by the dealers. Hugo decided that the plodding detail of an engineer's life was not for him, and formed the Electro Importing Co. to bring equipment from Europe and sell it to experimenters.

Within a year he was selling a radio set to the public. Advertised in the *Scientific American* early in 1906, it was "only" a spark set. But it included both a transmitter and receiver, was portable, had a range of one mile, and sold for \$7.50, complete with send and catch wires (which we would prosaically call receiving and transmitting antennas). Further, it operated (somewhere in the uhf band) without the trouble of tuning.

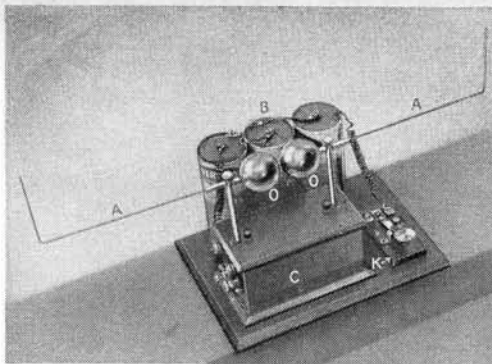
A catalog was published for mail-order customers. It contained numbers of instructive articles on new and unfamiliar equipment. Gernsback decided to put out a regular magazine to carry the instructive material. In April, 1908, *Modern Electrics* was born. Note the name—nobody would have dared to publish a radio magazine in 1908! But the first article in the first issue was titled "Wireless Telegraphy" and the magazine reported all the latest wireless news faithfully, and printed articles on theory and practical construction.

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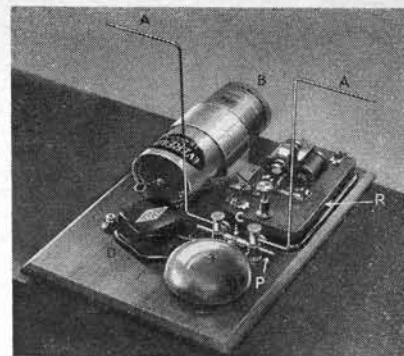
RADIO-ELECTRONICS



The world's pioneer radio magazine, published by Gernsback as adjunct to his E.I. Co. catalog.



The Telimco radiotelegraph set—the first radio sold to the public. The transmitter is on the left and the receiver is on the right. Maximum range was about one mile.



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### Gernsback as publisher

Though Electro Importing Co. continued (and was succeeded in the '20's by RASCO—the Radio Specialty Co.), Gernsback's main efforts in the future were to be in publishing. *Modern Electrics* was sold in 1912. After a number of combinations with other magazines, it (and the others) became today's *Popular Science*.

Gernsback immediately started a larger magazine, the *Electrical Experimenter*, which changed its name to *Science and Invention* in 1920. In 1919 he started the country's first "purely radio magazine," *Radio Amateur News*. It became *Radio News* in 1920 and is still in existence. (The name was changed to *Electronics World* in 1959, after a period as *Radio and Television News*).

In 1926 he founded, with *Amazing Stories*, not only a new magazine, but a whole new genre. Science fiction had appeared regularly in all the Gernsback magazines (quite a bit of it written by Gernsback himself) and a little was published in other magazines, together with weird stories and fantastic fiction. But this was the first attempt at a magazine entirely devoted to true scientific fiction. Its success stimulated dozens of others into being. All, however, look back to Gernsback as the First Cause, and he is unanimously acclaimed the Father of modern Science Fiction.

In the winter of 1928-29 his publishing company ran into financial difficulties and the publications passed into other hands. Almost immediately Gernsback started RADIO-ELECTRONICS as *Radio-Craft* (the name was changed in 1948). He also started a number of other magazines, including *Television News*, which ran about a year in the early '30's, and *Short-Wave Craft* (later *Short Wave & Television* and *Radio & Television*), which was combined with *Radio-Craft* in 1941. In 1933, he introduced *Sexology*, the most successful of a number of biomedical publications he published at different times. Together with its Spanish-language version, *Luz*, it continues as a highly successful magazine.

Altogether, Gernsback published more than 50 magazines in the technical, experimental, biomedical, aviation and other fields (even one called *Motor Camper and Tourist*—in 1924!—and another called *Technocracy*). The number of books he published cannot be estimated accurately, but runs into the hundreds.

### Gernsback as writer-prophet

The young Gernsback had to write much of the material in his earlier magazines, and was a regular contributor to the last years of his life. His first book, *The Wireless Telephone*, 1908, a combination of progress report and hopeful prediction, was an attempt to speed the development of the art.

In 1911 he wrote his most important work, *Ralph 124C 41+*, a science-fiction novel in which he predicted fairly accurately the progress of science and invention for the next half century and more. His other important full-length book, *Radio for All*, was a simple theory and how-to-do-it book for beginners. It was written in 1922.

Gernsback's imagination and scientific method led him to predict an almost unbelievable number of electronic advances that—seemingly absurd when suggested—became facts during his lifetime. *Ralph 124C 41+*, serialized in *Modern Electrics* in 1911, described radar (with an illustration) so clearly that it can be used as a textbook to explain radar today. (The imaginary equipment was used to locate a space vessel, incidentally.)

In the same book Gernsback mentioned two-way television, germicidal rays, tape recorders (with ¼-inch tape!), night baseball, artificial silk and wool, stainless steel, magnesium as a structural material, and fluorescent lighting.

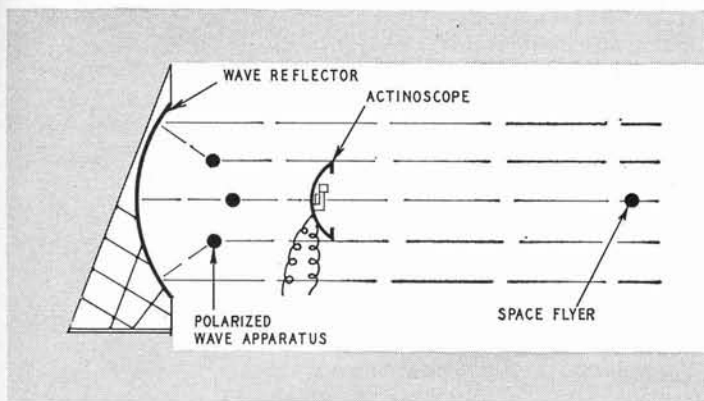
Many of his predictions were made in his annual Christmas booklets, which were called *Forecast* since 1951. Some predictions have already been realized, like the Celestial TV (and airplane shelterway) of *Forecast 1952*, issued at Christmas 1951. Others, such as electronic weather control, are still in the future.

Another class of predictions—which might almost be called demands—appeared very early. The article "Television and the Telephot" appeared in *Modern Electrics* December 1909. In it, Gernsback unquestionably introduced the word "television" into the English language, insisted that wireless picture transmission must come, and suggested ways in which it could be realized.

As early as 1924 he described a radio-controlled military television plane that would transmit six pictures, covering all directions, to a viewing station on the ground. In 1928, he pioneered actual television broadcasting, transmitting tiny pictures from his broadcast station WRNY in New York City on a regular schedule. The 1.5-square-inch pictures were not considered entertainment quality even at that time, but the transmissions were picked up faithfully by 2,000-odd experimenters.

Education by television—"Tel-Education"—was one of Gernsback's favorite subjects, and he advocated it in a number of articles and at least five editorials, beginning in 1951. He circulated some of his editorials on the subject to large numbers of educators, legislators and others.





First drawing of radar equipment appeared in *Modern Electrics*, December 1911, as illustration in the popular "Ralph 124C 41+".

In *Forecast 1955*, he proposed the Tele-Doctor, a device combining a television set with instrumentation for pulse, respiration, blood pressure and other needed data, which could be controlled by a doctor in a central office. The device would be rented by the patient, presumably from the local drugstore, and plugged into the telephone line. The doctor, with his control instrument, could then get all the information that could be obtained in a home visit, in a fraction of the time. (In 1967 a New York headline read "Heart Pattern by Phone Has Saved Many Here.")

One of his last demands was for a National Facts Center—a Washington-based computer and data-processing central, closely allied with the Patent Office. It would record, correlate and store all scientific knowledge. Such a center could save billions of dollars by preventing duplicated, useless research and by keeping researchers abreast of the exact state of any art.

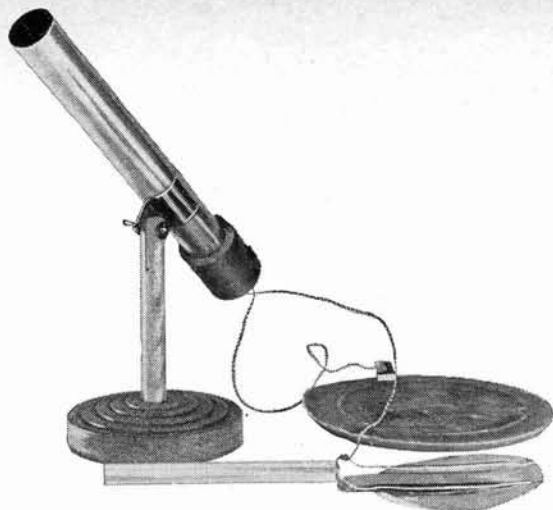
### Gernsback's influence

Gernsback's predictions and his demands on the future undoubtedly affected inventors, researchers and legislators—his correspondence bears witness to that. But his involvement was often much closer—he never hesitated to propagandize, lobby or even point with alarm when necessary.

As early as 1909 he founded the Wireless Association of America, to advance the interests of all interested in or connected with the radio art. In 1912, when legislators sought to eliminate the radio amateur, Gernsback sprang to his defense, pointed out his value to the country and to the art, and listed in an editorial what he believed the privileges and limitations of the amateur should be. The amateur section of the Wireless Act of 1912 is practically a paraphrase of that article.

In 1919 the very existence of amateur radio was threatened. Gernsback's article—with its famous "Verboten" cartoon by Paul—blasting the notorious Alexander Act is credited with being an important if not the decisive factor in the defeat of that bill. Later, he formed the first organization of radio repairmen—the Official Radio Service Men's Association (ORSMA). Gernsback editorialized continuously on service technicians' problems.

But his direct contributions, as early equipment supplier and later as publisher, had an even greater effect. By making it possible for the experimenter to buy otherwise unobtainable equipment in small quantities and at reasonable cost he drew thousands into the field who would never have become interested in scientific pursuits. (A prominent Australian engineer on a exchange visit to Canada came to New York a few years ago to see and photograph the man who had started him on his career. But first he made a



Electret and tester. The tester at left—one of Gernsback's latest inventions—is easy to use.

pilgrimage to 233 Fulton St., home of the Electro Importing Co.) In later years, the interest of many more thousands has been directed toward scientific and technical objectives by Gernsback magazines, with their continuous orientation toward the future and their never-ceasing flow of information presented so that the reader without an engineering education can understand and enjoy it, as easily as the more educated reader.

### Gernsback as inventor

Gernsback obtained more than 80 patents during his lifetime. He made little attempt to commercialize most of them. An exception was the compression-type "condenser" (the principle of the present trimmer capacitor). It was used as the "book condenser" in the Crosley Trirdyn radio, and he licensed Crosley and a few others. A few other patents were obtained to protect some of the 60-odd devices he developed for the Electro Importing Co. His bone-conduction hearing aid, patented in 1928, was re-invented some years later and manufactured without interference from Gernsback. ("I never intended to market it," he said. "Why should I bother someone else?")

Not only did he develop many inventions but he suggested many more. Sometimes—as in signaling the planets—he went into exact details. Some of these turned out to be overcautious—it was not necessary, for instance, to erect sending and receiving stations on opposite sides of the earth to receive radio reflections from planets. In other cases, he suggested several possible approaches, without going into detail.

In other cases he promoted and pushed the work of other inventors directly. His interests in electrets, at a time when the average physicist did not even recognize the word, led him not only to print articles on the subject, but to persuade people into actually constructing them. Thus Edward Padgett first heard of electrets in the office of RADIO-ELECTRONICS and accepted the suggestion that he try to make some. He described his experiments in a series of articles in the magazine. The electret (a wax disc with a permanent positive charge on one face and a negative charge on the other) was publicized at the RADIO-ELECTRONICS booth at the next IRE show. Later, another old author, Victor Laughter, told readers how to make electrets as big as pie plates.

### Gernsback the man

The feeling he invoked among those he inspired into electronic careers is difficult to describe. In many cases he produced disciples rather than readers—a prophet indeed with honor in his own group. The head of one large re-



This picture, from *The Experimenter*, in 1924, was first description of military TV. Radio-controlled plane with six cameras sent pictures back to headquarters for six-panel display.

search organization is impelled to testify, whenever the name is mentioned, that it was Hugo Gernsback who caused him to develop the interests that led him to his present position.

Gernsback, in turn, had a fantastic loyalty to old friends—and he counted his old readers in that group. When the name *Radio-Craft* was becoming obsolescent he asked his staff for a new name. It should contain the word “television” and be reasonably short. Not satisfied with the suggestions received, he sent them, together with a few of his own and a few extras to make weight, to 500 of his steadier subscribers. The result was an upset: more than 50% of the lists—with a choice of 13 names—came back with a vote for one of the weight-makers, RADIO-ELECTRONICS. Gernsback accepted the mandate of his loyal readers and used a title that did not include the magic word of the period.

His personal loyalties were equally strong. While Lee de Forest was under pressure from powerful interests, Gernsback never wavered in backing his claims to having developed a new instrumentality in the Audion (not merely “a Fleming valve with a grid in it”). He again supported him during the struggle over the discovery of regeneration, in spite of the fact that de Forest’s opponent was the largest advertiser in the electronics field. (In 1924 the Supreme Court acknowledged de Forest as the inventor of the regenerative circuit.)

He was also one of the last friends of the great (but in his last years, ignored) Nikola Tesla, and it was through his intervention that Tesla obtained from Westinghouse the pension—or consulting retainer—that maintained him the last years of his life.

## Gernsback and the world

For some years a recognized figure as a great radio salesman and successful publisher, his “window into the future” irritated those whose viewpoint was more limited (Doesn’t he realize the difficulties in the way of. . . ?). His insistence, for instance, that pictures not only could be sent by wireless, but that the engineering fraternity should buckle down and devise means for doing so, did not ingratiate him with a group trained to concentrate on the problems in the way of accomplishing an objective.

With his financial near-collapse in 1928, his critics became more outspoken. Respectable scientists and industrialists often dismissed him as a harebrained crackpot. Only as his impractical ideas became prosaic facts did many of the solid citizenry of the electronics world begin to take notice of him again. And his economic advances in the 1940’s had a profound influence on the same group. Nothing succeeds like success, and it was again a successful publisher talking.

When the scientists at Massachusetts Institute of Technology first announced the successful reflection of signals from Venus in 1958, the paper opened with the statement that it was “first proposed by Gernsback in 1927” (“Can We Radio the Planets?” *Radio News*, February, 1927).

He received recognition and awards from many other sources, and was published in most of the wide-circulation magazines. A four-page spectacular in *Life*, July 26, 1963, was illustrated by his farthest-out (into space) concepts. *Ralph 124C 41+*, which first appeared in book form in 1925, came out in a second edition in 1950; was made a paperback by Crest Books in 1958, and appeared in a Russian edition (Moscow, 1964).

Gernsback drew his power from two things: a child-like and unquenchable curiosity and a strong urge to communicate. At all times he welcomed the new—however improbable—and on occasion was criticized for printing wild ideas. For example, he did not hesitate to publish the theories of Professor Ehrenhaft, who insisted there was such a thing as magnetic current. With Ehrenhaft’s death his theories disappeared (till a few months ago, at least). But Gernsback refused to learn from experience, and in 1950 printed an even wilder account of electronic spaceships that would maneuver with cathodic power. This was by another German professor named Oberth. (One can’t lose all the time, and within three years that wild idea was being discussed by scientific societies, and seemed hardly wild at all after the successful orbiting of Sputnik.)

No single magazine article can hope to cover adequately the life of Hugo Gernsback. He was too many things—was called the Father of Science Fiction, the Father of Radio Amateuring, the Fairy Godfather of the IRE (He retorted, “I accept the ‘godfather’ but ‘fairy’, no!”). For many years he was the mentor of the experimenter and constructor, and later of the radio service technician. (This magazine, incidentally, introduced the term “technician” instead of “serviceman.”)

## Gernsback the humorist

Far from sharing the too-common view that a technical article or magazine must be deadly dull to be serious, Gernsback injected humor into his magazines from the beginning. (For a time, he even published a humor magazine, as well as a series of “Scientific Comics.”)

*Modern Electrics* carried a page entitled “The Martian Screech” in many issues. Supposedly edited by Fips the office boy, an immigrant from Mars, it described many electronic wonders of that planet, plus Fips’ own inventions. These included transmission of matter (such as ham sandwiches) and contrapolar current, a remarkable form of electricity carried on linen thread (insulated, of course, by wrapping it with bare copper wire). A coil of this contrapolar conductor, connected across a storage battery, would cool rapidly beyond the freezing point, instead of heating.

Years later, Fips reported his breakthroughs in the April issues of RADIO-ELECTRONICS. The *Westingmouse* was the most famous. A *vest-pocket* radio (in 1933!) it contained seven APR-1 tubes and was unbelievably small (hardly twice as large as a present-day transistor set). Reactions from a large electric company—that had received numerous orders from readers who were ready to believe the unbelievable—were so positive that Fips emerged again only in 1944, with a Radium Radio, so powerful it needed a throttle instead of a volume control. Every year thereafter he described new and revolutionary inventions, such as a crystal amplifier, office noise neutralizer, electronic brain servicing, and 3-D TV receiver. (The first three wild ideas are now in use, incidentally, and it is rumored that researchers are working hard on 3-dimensional TV.)

R-E