

RADIO

Radio Amateurs Will Attack Home Television Problem

With Development of Cathode Ray Tube and Receiver Parts on Market, "Hams" Are Ready to Renew Experiments

HUNDREDS of devoted radio amateurs, who attempted unsuccessfully ten years ago to bring the television of the old mechanical scanner out of the laboratory into the home, are getting set these days for another assault on the problem.

They are known to the public only as the enthusiastic men who stay awake long hours talking to distant brother fans whom they cannot yet see and rarely know, and who render yeoman service when disaster pulls down telephone and telegraph wires. But they are also active experimenters. They are preparing to go forward again on the basis of new methods worked out in America's radio laboratories in the past decade.

Under the leadership of the American Radio Relay League, premier organization of the 48,000 licensed amateurs in the United States, they are ready to serve as sight-and-sound transmission's proving ground, as they served the talking wireless twenty years ago.

With them rests an important share in determining the answer to today's radio question: How soon will we have television and how cheap will it be?

Recalling their bitter experience of ten years ago when they believed vainly that satisfactory progress could be made by use of the whirling disc that converted picture into signal, they have gone slow during recent years.

But now it is felt that the development of the cathode ray tube, outstanding television improvement, and the recent placing of television receiver parts on the market, justify renewed interest.

In centers near experimental television transmitters, "hams" who are used to long hours bending over their complicated wire and tube assemblies will as a result soon be putting together home manufactured television receivers.

Out of their experiments, James J. Lamb, technical editor of QST, the A. R. R. L.'s official organ and the amateur's monthly "bible," declares, will come thoroughly tested equipment. Just as fifteen and twenty years ago, the "hams" took the "bugs" out of early

sound receivers, they will eliminate many of the troublesome kinks from television.

One-third of QST's 43,000 readers have asked the editors of the magazine in a poll to publish material covering thoroughly the latest in television theory and practice.

Marshall P. Wilder, Station W2KJL, a leading amateur and a leading television student as well, is serving as "teacher" in this new undertaking. He is author of a series of articles now running in QST on how television works and on what the amateur can do about it.

In addition, for the first time vital parts such as the cathode ray tube, which converts electric signals into electron beams which paint the picture on the flat end of the tube, are available to whoever wishes to buy.

Amateurs are saving dimes and dol-

lars, for television will be an expensive proposition. One model of cathode ray tube will cost \$40, another slightly larger one \$60. For the time being at least there will be no amateur transmitters, for sending sight-and-sound signals is far beyond the reach of the average "ham."

Amateurs have stayed away from television during the past decade because of their sad experience during the late 'twenties. In 1929, QST wrote finis to the fan's efforts and expenditure of time and money with two debunking articles, "Rotten Television" by the late Hiram Percy Maxim, inventor of the Maxim silencer, and also president of the A. R. R. L., and "What Price Television" by M. B. Sleeper.

"It was not until about a year ago, in the fall of 1936," Mr. Lamb states, "that television had reached a stage where we became convinced that our active experimentation would not be much longer delayed. Technique in the art had reached the state where refinement rather than new basic developments had become the ruling order."

Back in the days of the 'twenties, television still used almost exclusively the crude mechanical scanner. A whirling disc with holes arranged in a spiral passed a beam of light over the scene



TESTING

Marshall P. Wilder, radio amateur, television student and a guide to many "hams" interested in television, tests an experimental superheterodyne type receiver, a model developed by him. Mr. Wilder, Station W2KJL, is in his laboratory in Newark, N. J. Building and operating television equipment is ticklish business, he advises; only expert radiomen should attempt it.



EXPENSIVE

A cathode ray tube, used in television receivers. Electrons paint the image on the fluorescent screen, white in the picture, at the end of the tube. Amateurs buying cathode ray tubes pay \$40 for a tube giving a three-inch by five-inch image.

being televised. The varying beam of light reflected by differently shaded parts of the scene passed to a photoelectric cell, where it was converted into an electrical signal impressed on the radio waves. The receiver used a similar setup, but in the reverse direction.

But since that time, the cathode ray tube receiving and sending schemes have replaced the ponderous whirling discs. Now electron beams translate the image into signals and back into an image again.

Television fans are at present limited to New York, Philadelphia and Los Angeles, for these are the only areas in which television broadcasters are operating. But transmitters are in prospect for Boston, Albany, N. Y., Bridgeport, Conn., and Kansas City, Mo.

"Looking in" on television is confined to those areas because the ultra short waves which carry the sight signals travel only as far as the horizon. These waves have many of the properties of light, traveling only in straight lines being one of those properties. Broadcasts from the NBC station atop the Empire State Building, for example, can be picked up only within a radius of 50 miles.

But the amateurs, come what may, are interested again. And, they say, they're in television to stay.

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ENGINEERING

Two Airplane Manufacturers Developing Diesel Engines

TWO of the greatest airplane manufacturers in the United States are hard at work on a highly confidential Army and Navy project looking toward the development of Diesel engines for American military and naval airplanes.

The Wright Aeronautical Corporation of Patterson, N. J., and the Pratt and Whitney Aircraft Company of East Hartford, Conn., are both engaged on the project.

The development, it is believed, is aimed at producing engines capable of developing 2,000 horsepower or more. Civil aviation, which has had the use of powerful Army and Navy engines shortly after they were placed in production, is expected to benefit from the project.

Unusual interest is attached to the project in aeronautical circles because of the fact that the present type of gasoline engine used in this country is believed near the limit of its development. The largest gasoline engine in American use is the Wright 1500 horsepower engine with which the six Boeing Clippers, now building at Seattle, will be equipped.

The two companies are believed to be carrying on their research projects separately, although in close cooperation

RADIO

New Television Parts Placed On Sale

ADDITIONAL parts for the construction of television receivers are ready for sale to interested amateur radio operators, the Radio Corporation of America has announced.

The new parts listed for sale include a deflecting yoke, two power transformers, a vertical output reactor, a vertical oscillation transformer, a horizontal oscillation transformer, a horizontal output transformer, two power supply capacitors and a power supply reactor, it was stated.

Sale of the parts does not mean the placing of commercial television receivers on the market, RCA emphasized, but it is in line with the radio industry's policy of making equipment available to qualified amateurs.

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with government authorities, as they have been competitors for years.

Advantages of the Diesel stem not only from the more powerful engines of this type that can be built, but also from the fact that no fire hazard exists and that since each cylinder is an independent unit, it can keep functioning even though one part may be damaged. Elimination of the fire hazard is of importance when the high mortality of military aircraft from fire is recalled.

Although construction of production model engines is still a matter of the future, it is believed that some of the \$15,000,000 allotted in the Naval Bill just passed by the House for prototype construction will go into the Diesel project now being worked on.

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GENERAL SCIENCE

About Cent Out of Dollar Spent For Research Work

RESearch is the lubricant that makes the wheels of civilization turn faster. Without it, industry and agriculture would not accelerate but would slow down and perhaps even stop altogether. The financial support of research is therefore important. It is a matter of more than idle curiosity as to how many dollars are being spent for research, dollars plowed back into our workaday world to produce more scientific dividends in dollars and better living.

In good round figures, somewhat over a cent is spent for research out of each dollar grossed by U. S. manufacturing and agriculture, according to figures collected from a score of sources. Industry spends more than agriculture, 1.7% (some \$250,000,000) out of the \$14,690,000,000 gross manufacturing income of 1936. Agricultural research, almost wholly by state and federal institutions, used 0.37% or some \$35,600,000 of the estimated \$9,530,000,000 cash farm income and value of home consumed farm products combined.

In terms of population, the total for research expenditures in these two great fields is only a couple of dollars per person in the U. S.