



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.

Science News Letter, April 2, 1938

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

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.

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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