

tons, are safely within that figure. But try to put a load three or four times that great across anything but a monumental-type bridge, and your engineer would without further ado order up repair and replacement parts, and ask you how soon you thought you could pry your wrecked super-tank out of his wrecked bridge.

It is probable that the Germans reinforced with supporting cribwork even the stoutly built French stone bridges which severely censured Gen. Corap failed to blow up in time. It is significant that the Germans did need the bridges for their tanks—super-tanks evidently can't plunge down one bank of a stream, ford

it, and climb the other bank as the more agile light and medium tanks can.

American military tacticians stress this country's needs for large numbers of these lighter and medium tanks, as well as the very fast armored scout cars, rather than the very powerful but ponderous and slow super-tanks. The latter, it is pointed out, are built for one special job, the breaching of an enemy fortified line. The lighter, faster vehicles are essentially weapons for warfare of movement, such as followed the initial German success in crushing through the "soft end" of the Maginot line north-west of Sedan.

*Science News Letter, June 8, 1940*

RADIO

## Frequency Modulation May Cause Fast Changes in Radio

### When FCC Cleared Radio Spectrum from 42,000 to 50,000 Kilocycles for FM, It Was Go-Ahead Signal

WITH frequency modulation radio, known as FM, given the green light by the Federal Communications Commission, the stage is set for rapid changes in radio—provided war does not freeze the present art and prevent progress.

Within the next five years, radio engineers are freely predicting, almost every large broadcasting station now operating will be paralleled by an FM station, probably carrying the same program. There will be many local stations serving limited areas that will operate on FM alone.

Within a few months or a year all the larger radio sets will be built to receive both the more ordinary amplitude modulation signals and FM. FM broadcasts can not be received on conventional radio sets. Thousands and perhaps millions of sets in the next few years will be manufactured and purchased, as FM broadcasting grows.

Elimination of static, extraordinary fidelity of tone, and lack of interference from distant stations are features of FM.

When the FCC cleared the radio spectrum from 42,000 to 50,000 kilocycles for FM it was a triumph for a kind of radio that many said could not be produced, the invention of Maj. Edwin H. Armstrong of Columbia University, father of important radio circuits used in almost all ordinary radio sets in use today.

Dominant radio broadcasting interests did not take kindly to a new kind of radio, although there was much more interest on the part of manufacturers of radio sets who saw a chance to fill a demand for more sets.

Radio typewriters, in homes and business offices, pounding out news in the same way that it comes over teletypes in newspaper offices, may be a by-product of FM. Or a facsimile service can be broadcast. Either of these services can be multiplexed or carried on the same wave band as the sound FM without any interference. Whether they will be available will depend upon whether the public wants these services sufficiently to pay the price of the rather costly and complicated receivers.

FM quality will be only as good as the receiver that catches the radio signal and converts it into sound. While much conventional radio broadcasting does not run the whole gamut of the spread of sound frequencies, most receivers are much more woefully deficient in their frequency ranges. For instance, the broadcast frequencies of transmitters often range from 60 to 10,000 cycles per second, while many receivers range only from 150 to 5000.

*Science News Letter, June 8, 1940*

An *armadillo's* armor, at birth, is soft and as flexible as leather.

## RADIO

Dr. Nathan B. Van Etten, president-elect of the American Medical Association will discuss developments in the field of medicine, as guest scientist on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, June 13, 4:15 p.m., EDT, 3:15 EST, 2:15 CST, 1:15 MST, 12:15 PST.

Listen in on your local station. Listen in each Thursday.

PUBLIC HEALTH

## Malaria Mosquito Invasion From South America Feared

INVASION of the United States by a dangerous malaria-carrying mosquito, *Anopheles darlingi*, is feared as a result of the discovery of this South American disease vector as close to our border as British Honduras.

This mosquito is the most dangerous carrier of malaria in Brazil, except the *gambiae* mosquito recently imported from Africa. W. H. W. Komp, U. S. Public Health Service senior sanitary engineer stationed at Ancon in the Canal Zone, points out in his report (*Science*, May 31) of the northward trek of this mosquito.

*Science News Letter, June 8, 1940*

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