

ELECTRONICS

in

1944

By DAVID SARNOFF*

RADIO activity in research, engineering, communication and manufacturing during 1943 may be summed up in one objective: Win the War! Although wartime secrecy imposes limitations, the end of the year affords an appropriate opportunity to gauge radio's vital role in the world today, and to measure the significance of wartime developments as they may fit into the pattern of the future.

Today, on the wings of the airplane, Victory soars. On the waves of radio, Freedom sends its heartening message around the world. Science triumphant has given winged Victory indomitable power. There is no direct clue, however, to reveal how long and difficult the march to final victory will be. Until the goal is reached, there must be no letdown in the effort to win the war.

The American radio industry is breaking all records in production and communication. As the New Year dawns, the ether pulses with new vigor. Micro-waves accomplish new wonders. Daily, 400,000 radio-electron tubes are manufactured. Every hour of the day and night, all America is informed by up-to-the-minute broadcasts on the progress of the war. At the same time, short-wave broadcasters are reaching every land throughout the world regardless of enemy restrictions. Tons and tons of apparatus are sent into combat every week. Miles and miles of transoceanic radiotelegraph circuits are vibrant with urgent dispatches, news and communiqués. Messages are flashed by automatic high-speed machines at the rate of 600 words a minute.

A radio flash from a walkie-talkie in a foxhole, or from a handie-talkie on a beachhead, may well be the signal of victory. A radio flash from the cockpit of a fighter plane, or from a rubber life-raft, may turn the tide of a battle, or save the lives of struggling men. Radio's record for 1943 attests the triumphs of the deft fingers that make radio tubes; of the hand that manipulates a soldering iron on the assembly line, or the skill of the tester who declares the complete apparatus ready to enter the fight.

AMERICAN RADIO FIRE-TESTED

American-built radios have been under fire now for more than two years. Within that period home-radios in the United States have been used as never before as a source of news and entertainment. A home without a radio is out of tune with the world. Americans everywhere have an ear to the battlefronts. There are 60,000,000 receiving sets; 31,000,000 "radio families"; 900 broadcasting stations; 14 American international short-wave transmitters; millions and millions of radio-electron tubes glow in the service of the nation.

The postwar era will bring many challenges and problems to test American leadership and enterprise. Industry must be prepared to reconvert as quickly as possible from war to peace, yet without the slightest neglect or relaxation in the total war-effort.

Radio as an industry is fortunate to have

* President, Radio Corporation of America.

Radio-electronics has made startling strides during 1943. RCA's president, Mr. Sarnoff, believes that even more striking advances will be made in the coming year and those following.

television as a postwar development of great promise and popular appeal, able to open a new era in service to the public.

There should be no expectation, however, that when the war ends the air will be adapted overnight to television. It will require from 3 to 6 months to get the machinery in operation to resume the manufacture of civilian broadcast receivers. It may require a year after approval of standards and full authorization of commercialization of television broadcasting by the Federal Communications Commission before television sets are available within the price range from \$200 to \$300. Production of television receivers is not the only task. Television transmitters must be erected. Interesting programs have to be planned. Automatic radio relay stations must be built to link key cities into a network.

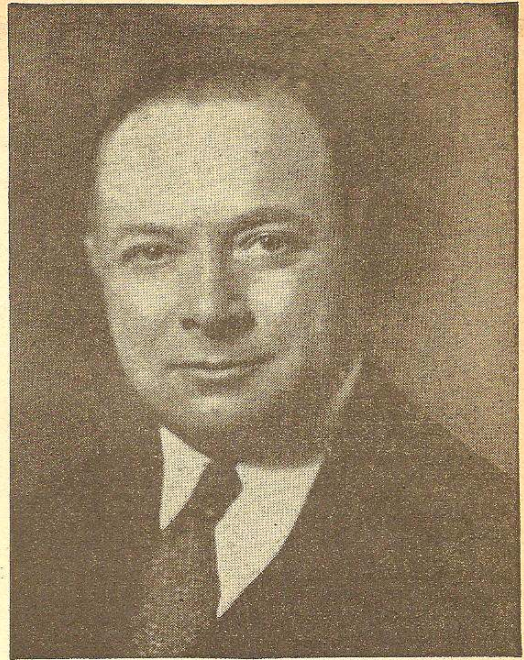
Alongside of television, F.M., or frequency modulation on ultra-short waves, holds great promise of becoming an added feature in broadcasting. Even now F.M. carries the sound part of television. In both television and F.M., much scientific progress has been made in connection with the application of radio to the war. The home radio instrument of the future will be a combination television and sound-receiver incorporating F.M. and phonograph.

Outside the realm of radio communication, the application of radiothermics—or radio heating—is finding widely extended use in industry. The use of high-frequency waves for heating is a wartime development of no small achievement. It is accelerating and increasing the efficiency of numerous industrial processes.

THE FUTURE OF RADIO

Thus, the future of radio is an ever-increasing circle within whose orbit new peacetime services are being evolved through wartime research and engineering. As keys to the microwave spectrum, more powerful electron tubes are opening the domain of tiny wavelengths, which possess unlimited possibilities in radio and its related fields of electronics, television, radiothermics, supersonics and electron microscopy.

Because of spectacular wartime developments, radio apparatus will be adapted for collision prevention to aircraft, ships, railroads and possibly automobiles. All this will be part of the new service of radio in an



era of sight control made possible by the development of electron tubes in the field of microwaves.

As new electron tubes always serve as keys to major advances, so in broadcast reception, new and tiny tubes—smaller than acorns—may introduce "personalized" radio. Small, compact receivers, and even transmitters may be built in a little case that will slip into a pocket. The uses to which such "stations" may be put gives the imagination much to play upon.

All these new developments will not be realized in 1944, but with 1944 as the year of expected decision in the European war, they will date from it, as radio broadcasting dated from 1919.

The new ideas, tools and instruments of progress that emerge from the war may well give us 1960 radio in 1950. War shrinks the lapse of time between invention and its practical use. The merit of a discovery is quickly appraised and harnessed.

THE COST OF OUR PROGRESS

While we can see all these signs of progress, we must not lose sight of the losses suffered to the world through the casualties of battle. The boy who fell in the jungles of Guadalcanal, on the sands of Africa, on the road to Rome, who vanished in the Atlantic or Pacific or parachuted into the realm of missing warriors, may well have carried with him a revolutionary idea. At the year-end, when we review a year of war, we wonder what might have been the fate of wireless had war taken the lives of such men as Maxwell, Hertz, Marconi, DeForest, Armstrong, Alexanderson and Zworykin, in their youth.

But the young men, lost to the world and to science in this war, have, in their supreme sacrifice, made it possible for the civilized world to progress; they have contributed far more than invention. They have made future invention possible by the defense of a civilization in which men can think, work and achieve for the welfare of mankind under freedom and justice.

We may look forward to 1944 with high hopes, bulwarked by a determination never to break faith with those who have fallen, or with those who are marching, with the Stars and Stripes, on the bomb-infested road to Victory.