RADIO

Talking into Your Radio

You will be able to operate a two-way radio into which you can talk by 1948. It will be neighborhood and short-range service.

➤ YOUR OWN personal radio—the kind you can talk into, not just listen to—is in the making. Sometime in 1948 you will be able to buy and operate, by permission of the Federal Communications Commission, a compact transmitter-receiver—if you really need this new "citizens radio service" kind of communication.

Fifty manufacturers and experimenters are actually talking on the alloted 460-470 megacycle band under experimental licenses. About 500 small portables are already in use by police, firemen, foresters, geologists and motion picture producers. Experience in the operation of widespread personal use of two-way radio without interference with other radio services is being obtained.

Radio engineering advances made during the war are helping to speed the day when such personal radio-telephone sets can be bought and when the FCC will allow them to be used. Printed wire circuits, in which metallic paint on plastic or ceramic plates replaces conventional soldered wires, will contract and lighten the new sets. Miniature tubes, such as used in the famous wartime proximity fuzes, will be the electronic hearts of some of the sets. Some of these tubes will replace three or more tubes of conventional prewar radio sets. Just as these radio advances are about to appear in more compact hearing aids and conventional FM radio broadcast receivers, so they will be basic to the citizens radio service sets.

The war surplus "walkie-talkies" dramatized in the war just won't work in the new service. These sets were made to operate on radio frequencies that could be used in the war theaters overseas but can't be used here at home because they interfere with marine, police, fire and other radio services. To change their frequencies would cost too much; it is cheaper to build new and better sets taking advantage of the improved methods of making radios.

Manufacturers are not yet ready to guess at what these citizens radio service sets will cost. Probably they will be in the price class with the better kind of living room radio, but they will be rugged and finished for wear rather than primarily for looks. They will be portable and therefore lightness in weight will be desirable.

You can't yet apply for a license to operate a citizens radio because the rules and regulations are not yet drafted by the FCC. The new service probably will not be legalized before early next year.

Some rancher who wants to talk to his home from his roaming jeep may be the number one licensee of citizens radio service. Or a doctor may want sets to keep in touch with his office as he makes his calls. The week-end skipper of a pleasure boat may be an early CRS applicant. And a lumbering company may wish to install a system of its own to keep in contact with crews in the woods.

Government officials working on the new system expect citizens radio service to become one of the largest branches of radio in many ways. It will be neighborhood and short-range service as the distance that it will operate over will not be large. Eventually there may be ways to call a special station within range that will relay the voice over regular telephone lines, thus extending the range of these little radio stations so that they can reach all parts of the world wherever telephone service extends.

Science News Letter, July 26, 1947

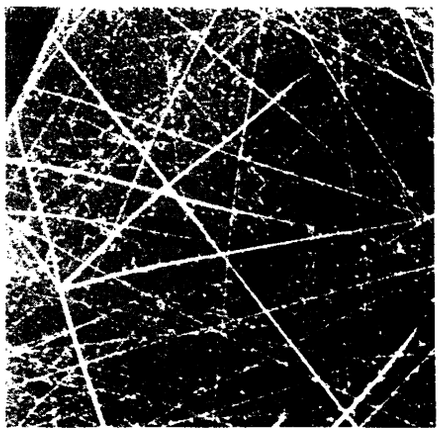
NUCLEAR PHYSICS

Concrete Covers Cyclotron To Absorb Dangerous Rays

See Front Cover

➤ THE GIANT new cyclotron at the University of California is now "buried" in a five-foot-thick sarcophagus of concrete which absorbs the dangerous radiation created during its operation.

As the intensity of the 100 million electron volt neutron beam is increased, the thickness of the wall will be doubled. Of all the substances tested, including water, paraffin, graphite, aluminum, lead and copper, only the latter was more effective than concrete. However, copper was impractical because of the expense.



ATOM SPLITTING—Cloud chamber photograph shows disintegrations of atomic nuclei caused by 100 million electron volt neutrons. The neutrons passing through the chamber cannot be seen, though their effect can be photographed. Each prong of the five-pointed star represents a particle being emitted from an oxygen nucleus disintegrated upon being struck by a 100 million electron volt neutron. The heaviest tracks are caused by alpha particles. The lighter ones are protons and electrons.

The five-foot wall cuts the intensity of the neutron beam down to one hundredth its original strength, which is sufficient protection against the present intensity of the beam, according to Dr. B. J. Moyer, physicist in the radiation laboratory.

The cyclotron's sarcophagus is composed of 98 concrete blocks, averaging 20 tons each and totaling about 2,000 tons. Its dimensions are 20 feet high, 65 feet long, and 55 feet wide.

The neutron beam is so powerful, however, that it can be detected faintly when a Geiger counter is held behind the concrete at the point the beam emerges from the cyclotron.

The 4,000-ton atom-smasher hurls atomic projectiles of 10 times greater energy than any previous heavy particle accelerator.

Science News Letter, July 26, 1947

A kerosene product known as *savasol* kills weeds and almost every garden vegetable except carrots; it is extensively used in carrot raising.