

SCIENCE NEWS

*Science Service, Washington, D. C.*THE ALLOCATION OF FREQUENCIES IN
THE RADIO SPECTRUM

AFTER several months of deliberation the Federal Communications Commission has finally made up its mind how it will allocate space in the radio spectrum to standard broadcasting, television, airplane radio, police and other services. The stumbling-block in making final the FCC proposals published last January were the long-drawnout objections registered by owners and operators of Frequency Modulation (FM) radio stations. FM radio is staticless broadcasting.

No final decision has yet been reached by the FCC regarding the place in the radio spectrum that will finally be set aside for FM or for the space below 25 megacycles. Three possible sections of the waveband are under consideration, and during the coming summer months, scientists of the FCC will experiment with FM broadcasting in these three parts of the spectrum to determine which of the three is best for FM radio. These experiments will be conducted at the field offices of the FCC, from which FM broadcasts will originate. Cellulose tape recording equipment that can record sound for several hours without stopping will be placed at various spots in the area around each FM station. Continuous recordings will be made day and night. From these recordings, engineers will be able to find out just which section of the spectrum permits FM broadcasting with the least interference.

The spectrum is still congested, although every service that asked for space in the airwaves got at least a part of what it asked for. In making the decisions, the commissioners engaged in a give-and-take study, giving more space to services which proved by their testimony that they needed more frequencies in order to carry out their operations in the public interest, and to new services that promise to extend the use of radio to the benefit of more people.

Probably the most important new radio service is the Citizens Radiocommunication Service, which will make it possible for every U. S. citizen to have his own broadcasting station in the form of walkie-talkie or handie-talkie equipment. Regulations covering licensing and operation of the equipment will be simple and easy to comply with. The only stipulation made by the FCC is that no charge may be made for messages carried over the air in this portion of the spectrum.

Other new services that have heretofore never been licensed are radio for railroads; rural radio communication for farmers that will permit them to reach telephone communication lines and make use of telephone service even though they have no telephones; and mobile radio for buses and cross-country trucks.

The allocations extend to 30,000,000 kilocycles in the spectrum, farther than the FCC has ever before licensed. This is by no means the upper limit of the radio spectrum, and in the future the FCC may allocate channels to services beyond that super-high frequency range.—ROBERT N. FARR.

ITEMS

WATER for drinking purposes is sterilized, to destroy microorganisms and free it of all biological contaminations, by a treatment, just patented, in which it first is subjected to positive pressure and moderate heat, and then injected into a high vacuum. The patent was granted to James A. Camelford, of Cleveland, who has assigned it to the Buckeye Laboratories Corporation. In the process, the contaminated water is strained or filtered to remove solid impurities, and then passed through a high-pressure pump which puts a pressure of from 1,000 to 4,000 pounds per square inch on it. It is heated to about 125 degrees Fahrenheit, then sprayed through a nozzle into a vessel maintained at as nearly a perfect vacuum as possible. The result is a palatable water relatively free of biological contaminations.

DIATOMACEOUS earth will be used to filter water in all new purification units shipped to the armed forces in the Pacific as a result of tests conducted by the Engineer Board, Fort Belvoir, Va. The new filter, experiments showed, not only removes the cysts of amoebic dysentery but also filters out the blood flukes prevalent in Philippine waters. Another improvement featured by the new purification units is the glass-fiber tank which, coated with Buna S rubber, replaces the old canvas type. It will not mildew and is little affected by climatic changes. Whereas the canvas tank loses a considerable quantity of water before the fibers swell to waterproof proportions, the new type is waterproof and fills at once. It is presumed that U. S. troops going directly to the Pacific field from Europe will take their old-style purification units with them. Plans are being made to equip them with the newer type.

RADAR, the radio echo device that can pick up targets through the clouds and spot airplanes miles away, may confuse homing pigeons and cause mild headaches among men who operate the device. Studies of the effects of microwaves and ultra-high frequency short waves upon pigeons and men are being made by Major Otto Meyer and Lieutenant Commander L. E. Daily, a Navy doctor. While no evidence of physical damage has been discovered among the men who operate the Navy's radar devices, some of the men reported mild headaches and the feeling that their faces were flushed. These symptoms are reported to have ceased when they were more than four feet from the radio wave emissions of the transmitting equipment or the receiving antennae. These studies have disproved the theory that radar waves might cause baldness, and that radar emissions interfere with the ability of men to father children. Periodic physical examinations of radar operators are being continued, as is the practice of shielding the men from the radar waves. The long waves of ordinary radio do not seem to bother pigeons, but they appear to be somewhat upset by the short radar waves. The Signal Corps is investigating the matter because officials hope the study may show why pigeons can find their way home.