

RADIO

Radio Space Allocated

Final decision reached by the FCC on places for standard broadcasting, television, airplane radio, and police. FM is still unsettled.

► 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-drawn-out 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 airplanes 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 equip-

ment. 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.

Science News Letter, June 2, 1945

CHEMISTRY

Training of Chemists at Standstill Due to War

► WAR HAS all but stopped basic, academic research in chemistry and has stopped the training of new research chemists and chemical engineers, Dr. Roger Adams, leading organic chemist, head of the University of Illinois chemistry department and head of chemical work of the U. S. Office of Scientific Research and Development, charged in a radio talk.

"Basic scientific research finds new truths, and supplies new material upon which much of the industrial progress of the future depends," Dr. Adams said. "Years will be required before basic research activity again reaches its prewar level.

"The war also has stopped the training of new research chemists, and chemical engineers. Thousands of academic and industrial chemists have been drafted



INCA VILLAGE—A miniature model of an Inca village, as it appeared about A.D. 1450 in the Urubamba Valley in southern Peru, has been completed at the Chicago Natural History Museum, and added to the exhibits. The model is based upon observations of ruins made by Donald Collier, curator of South American ethnology and archaeology, during expeditions to South America. The scene represented is in a mountain valley at an elevation of 9,000 feet, near Cuzco, which was the capital of the Inca empire. The village represented is still inhabited by modern descendants of the ancient Incas.

into the armed services with only a few of them in a position where they can use their technical knowledge.

"The research organizations associated with industry, which find new products and upon which industry relies for expansion and for creation of new jobs, are at a low ebb. There is no possibility that they can recover quickly in the near future. This is a matter of great concern to the scientists and should be to the

public, for only by years of patient research by trained and competent investigators can we maintain the high level of achievement in the field of science, on which is based position of eminence among nations."

Dr. Adams talked during the intermission of the New York Philharmonic Symphony broadcast sponsored by the United States Rubber Co.

Science News Letter, June 2, 1945

METEOROLOGY

Pacific Area Typhoons

Due during the summer and fall months, they are similar in violence, velocity and rainfall to the Atlantic and Gulf Coast hurricanes.

► TYPHOONS in the Pacific war area, due during the summer and fall months, will be something new to many American soldiers and sailors, but not to those who know the hurricanes of the Atlantic and Gulf coasts. They are similar in origin, nature, violence, velocity and the amount of rainfall accompanying them. They constitute real hazards for both sea and aircraft. Some 20 severe typhoons occur each year in the Philippine-Okinawa-Japan region.

The usual path of the Pacific typhoon is northerly, along the 1,000-mile eastern coast of the Philippine Islands, sweeping Formosa, and Okinawa and the other Ryukyu islands, and passing northeastward along the coasts of the Japanese mainland. Some pass through the Philippines into the South China sea and the coasts of Indo-China and southern China. Others pass through the Ryukyu islands into the East China sea.

The season for these typhoons extends from early August until late October but many of the most severe of them have occurred in July and in November. They occur in the season when the belt of equatorial calms in the Pacific reaches its most northerly extension. They are usually from 50 to 100 miles in diameter, and move forward rather slowly, but the circular whirl of air in them often reaches a velocity of 100 miles an hour or more.

They are usually accompanied by heavy rains which extend inland, covering western ports on the Philippines and other islands, making land movements as well as ship movements difficult. In one typhoon, Baguio, the summer capital of the Philippines, experienced the heaviest 24-hour rainfall ever

recorded, 46 inches, approximately the annual rainfall in eastern United States. This storm was on July 14-15, 1911.

Tropical typhoons and hurricanes originate over oceans, where there is plenty of moisture and little resistance to winds, in the regions where the trade winds are dying out and merging with the doldrums or calms. The heat and the moisture of the doldrums are probably responsible. Typhoons and hurricanes form when the doldrums have moved away from the equator, where the defective force of the rotation of the earth is sufficient to set up the whirl. In most cases the storms move westward as carried by the trade winds, then curve toward the poles of the earth. When they reach the middle latitudes, or over land, they lose some of their intensity and spread out, becoming less destructive.

Science News Letter, June 2, 1945

HOME ECONOMICS

Vitamin C to Keep Canned Fruits Bright

► A WAY has been found for home canners to keep their fruits from turning dark in the jars and developing an off flavor. It consists in adding vitamin C to the fruit during canning. Research showing that this will work and how the housewife can apply the findings is reported by J. J. Powers and Dr. C. R. Fellers, of Massachusetts State College, in the *Journal of Home Economics*.

The home canner gets her vitamin C in tablets at the drug store. Another related chemical will do the job, too, and is cheaper but because of the war it is not now available commercially. Each vitamin C tablet sold in drug stores is made

to contain either 25 milligrams (abbreviated mg), 50 mg or 100 mg of the vitamin. The label tells which.

For each pint jar the home canner should use one and one-fourth tablets of the 100 mg strength, or two and one-half tablets of 50 mg strength, or five tablets of 25 mg strength. If the label gives the strength in International Units, abbreviated IU, instead of milligrams, divide by 20 to convert into milligrams. If the potency of strength is 2000 IU, this is equivalent to 100 mg and you use one and one-fourth tablets for each pint jar. The 25 mg (500 IU) strength tablets would be easier to use, since they do not have to be divided.

This method of keeping home canned fruit from darkening is not expensive, however. Mr. Powers and Dr. Fellers estimate it, on the basis of prices in drug stores in their town, at between one and two cents per pint jar when the 100 mg tablets are used.

The vitamin tablets are put into the jars before they are filled with the fruit. All the other details of the home canning procedure are followed as usual. If quart jars are used, of course twice the amount of vitamin should be put in each of these larger jars. The method is good for pears, peaches and plums. It does not keep home canned applesauce from darkening though it improves its appearance. Darkening of the applesauce depends more on the variety of apple.

Vitamin C prevents surface darkening and development of off flavor by preventing oxidation, the cause of the condition. Even commercial canners must face this problem. They can overcome it more easily than the housewife, however. For one thing, there is less headspace in the usual commercial jar, so there will be less oxygen to cause deterioration. The commercial canner, moreover, vacuum seals his jars, which means less air is entrapped, and he can, if necessary, deaerate the food.

Science News Letter, June 2, 1945

ENGINEERING

Liquid-Cooled Dynamos For Electric Generators

► THE LIQUID-cooling principle, long standard with internal combustion engines, is applied to electric generators, in patent 2,376,441, granted to Harold M. Martin of Schenectady, N. Y., assignor to the General Electric Company. Tooth-like recesses are cut into the rotor, and in these the coolant is carried around, held against escaping by the opposed smooth surface of the stator and by confining baffles at the sides.

Science News Letter, June 2, 1945