

# SOME POSSIBILITIES OF SYNCHRONIZING

## What a new broadcast reallocation might show

THE present broadcasting structure was set up in November, 1928. Since that time, nearly seven years ago, a number of new factors, new requirements, and new advances in the art, have come into the broadcasting picture. Among these are:

- Chain-broadcasting nation-wide service.
- High-fidelity receivers (50-7,500 cycles).
- Demands by Canada, Mexico and Cuba for additional channels.
- Directive antennas for broadcast stations.
- Demands by educational groups for additional stations.
- High advertising rates obtainable for local broadcasts.
- Demand for additional regional and local stations.
- Synchronizing improvements.

With all of these new requirements and new possibilities in mind in 1935, what kind of a broadcast allocation could be made today, utilizing the advances in broadcast technique, and providing improved and increased service for the listening public?

Synchronizing has now reached a degree of successful operation, in isolated cases, which leads its proponents to offer it as a means of greatly increasing the radio facilities on the present broadcast band.

Synchronizing, they point out, could be used in two ways to relieve the existing pressure on the broadcast channels. First, under synchronized operation a number of chain transmitters carrying the same program, could be operated on one or more channels, freeing channels for other uses. Second, by synchronizing the carrier frequencies of stations sharing regional and local channels, such stations, though carrying different programs, could be operated at geographical separations much less than at present; permitting many more stations to share the same channel.

### Synchronized chain programs

Applying these two principles to a new allocation—"starting fresh"—let us see what results might be obtained.

First, in the matter of operating chain programs on a synchronized basis:

In place of a single network program now heard on 20 or more channels, a whole network (80 to 100 stations, or more) might be put on two or three synchronized channels, adjacent to each other—insuring good coverage with a clear signal at all points. While between stations

on the same channel there might be "hash areas," yet by using several channels, and by staggering stations, any areas of interference distortion between stations on the same channel would be well covered with good service by the stations on the adjoining channels.

Thus, a given network program might be listed as operating on, say, "750 kc."—that is, within a channel or two of 750 kc., depending on the locality. Thus, "750 kc." would be the designation for this network program for the entire country; which would be an advantage. At the same time, for the listener no more effort would be required for tuning into the channel carrying the "best signal" than "centering" present sets which are rarely calibrated exactly—and which require some "hunting around" to get the best reception. The listener would merely tune in this region until he found the best tone quality.

In addition to the three synchronized channels for network, one clear-channel super-power station (500 to 2,000 kw.), carrying the same network program, might be provided for covering rural districts over a wide territory. Under such a plan, a network of 90 or more stations covering the principal cities and trading centers of the United States, would be handled by three or four channels.

Chain executives have long lamented the fact that they have not had their own local broadcasting outlets. Instead, they have had to enter into trading agreements with independent stations which are free to "take or refuse" nationally sponsored programs, depending on whether the time can be sold locally at a more advantageous price. In place, then, of the present unsatisfactory arrangement—by adopting synchronizing, a more

### USING SYNCHRONIZING:—

the present broadcast band (550 to 1600 kc.) might be rearranged to provide

High-fidelity (20-kc.) channels

Chain programs on three or four adjoining channels, (each chain program at an established dial position wherever heard)

Facilities for five or more nation-wide chains

Super-power clear channels for rural coverage

Chain stations delivering chain programs exclusively

Additional regional and local stations for profitable local operation

Additional stations for educational, fraternal and religious groups

practical chain set-up could be conceived, whereby each broadcast chain would wholly own all its local outlet stations, and these stations would then become purely chain-program outlets, broadcasting the network programs from 6 a.m. till after midnight, daily. Such chain outlet stations could be grouped on three wavelengths, the spacings and power being so chosen that any areas of interference on one channel would be covered by the same program on an adjoining channel.

### Providing 20-kc "high-fidelity" channels

Since the future high-fidelity radio receivers will demand that for best service the broadcast channels be considerably wider than the 10-kc channels set down in the original allocation of 1928, advantage should be taken of the new allocation to secure, say, 20-kc channels for high-fidelity service, as indicated in the accompanying tabulation. And since undoubtedly additional chains will soon have to be provided for, it might be timely to arrange that all these chain channels be 20 kc in width.

In the accompanying allocation table, provisions have therefore been set down for five chains. Three of them have four 20-kc channels (the fourth channel being for a single exclusive super-high-power transmitter, broadcasting that same chain program). Two other chains are also provided for with three 20-kc channels, but omitting the associated high-power, clear channel.

In addition, it might be well to provide at least seven super-power, clear channels, for independent stations of 500 to 2,000 kw, these channels also to be each 20 kc wide, or twice the present channel width.

So far we have used up 50 of our present 10-kc channels, out of the 106 in the broadcast band (550 kc to 1,600 kc), so that we still have 56 channels to assign for other purposes.

Suppose we allot 40 of these channels to regional use, for 1,000-watt stations. Applying the separation distances which should be satisfactory for synchronized service, at least 12 stations per channel could be taken care of. This assumes that with synchronized carriers, stations can be operated at separations corresponding to

those for unsynchronized stations of one-fifth the same power, as authorized in the separation tables of the FCC. The 40 regional channels would therefore provide space for 480 stations if synchronized. For these regional stations, as for the locals, only 10-kc channels are provided.

On the local channels, 100-watt stations when synchronized can be located at such intervals that 100 or more can be handled per channel. In this way 600 local stations of 100 watts or under could be operated on the six local channels—probably enough to meet any demand that will arise for local 100-watters for some years to come.

The "exclusive channel" needs of Canada, Mexico and Cuba are still to be taken care of—but these countries could be adequately served with high-power broadcasting by, say, ten channels. Moreover, by synchronizing these channels would be available on both borders—ten in Canada, and also ten in the South (when they would be divided between Mexico and Cuba), and should be reserved for high-power broadcasting in those countries. The 40 "regional" channels and the six "local" channels already mentioned would also be available for use in Canada, Mexico and Cuba with the same separations as obtained in the United States. It has always seemed an absurdity that in the "gentleman's agreement" with Canada, any channels were set aside as "shared Canadian wavelengths," when in fact the whole band of United States regional and local channels might be just as freely used "above the border" as below, providing similar separations were maintained. Of course, most of the Canadian cities desiring regional stations are very close to the United States border, and this to some extent limits the freedom of placing regional stations in the United States. But with the shorter separations needed with a synchronized set-up, stations on both sides might be brought in much closer to the border.

### Would provide for 1527 stations

An allocation based on the use of synchronizing, as above outlined, would occupy the 106 present channels

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### A Broadcast Allocation Contemplating Synchronizing, High Fidelity and High Power

Class of service	Number of new channels	Present 10 kc. channels occupied	Number of stations provided for
Chain A*	4 20-kc. channels	8	90
Chain B	4 20-kc. channels	8	90
Chain C	4 20-kc. channels	8	100
Chain D	3 20-kc. channels	6	80
Chain E	3 20-kc. channels	6	80
Clear-channel super-power stations 500 kw. to 2000 kw.	7 20-kc. channels	14	7
Regional 1 kw.	40 10-kc. channels	40	480
Local (100 watts)	6 10-kc. channels	6	600
Exclusive channels to Canada, Mexico and Cuba	10 10-kc. channels	10	
Total		106	1527 stations

\* Chains A, B and C would each use three synchronized multi-station channels and one clear channel for a super-power station,—all four channels carrying the same chain program.