

# SPLIT SECONDS MARK TIMING OF BIG CHAIN

Time is literally money in the broadcasting business, and its value is so great that it is checked to the split second several times daily.

There are ninety-seven clocks in the National Broadcasting studios and offices at 711 Fifth Avenue, New York, and each one gives exactly the same time as every other. They are set from the Naval Observatory clock in Arlington, Virginia, at noon and at 10 p. m.

And three times daily time signals are sent out by the N.B.C. to its associated stations across the country, so that synchronization of programs may be perfect not a second wasted.

In the broadcasting studios and control rooms clock-watching is a very important part of the day's work. Without it, network programs would be an impossibility.

## How To Read Arlington Time

Arlington gets its time from the Naval experts who "shoot the sun" at frequent intervals. It is exact to a small fraction of a second. And Arlington sends out its signals by short-wave radio for five minutes twice daily, broadcasting the ticks of the clock.

The second-by-second time broadcast starts five minutes before the hour. The twenty-ninth second of each minute is eliminated so that the listening engineer is warned that thirty is next. From fifty-six to fifty-nine inclusive, the ticks again are eliminated to give warning that number sixty is next. The ten seconds immediately preceding the hour also are silent, and then the hour is sounded with a gong.

The same system of second-by-second clicks is used to send the signals to the N.B.C. associate stations, except that in this case, instead of short-wave radio, the Morse wires which link the stations are utilized.

## Synchronization Essential

The ninety-seven clocks in the N.B.C. Building are checked from the master chronometer immediately after the Arlington signals are received, to guard against any possibility of variation.

The absolute synchronization of network units is essential, so that one program may not overlap another. For instance, a station in Chicago may be scheduled to pick up a network program starting at 9 p. m. in the N.B.C. studios in New York. Therefore the previous program must be off the air at exactly nine. The same accuracy is required in all the other eighty-four stations on N. B. C. networks.

In addition, time must be allowed for the local station announcements at stated intervals. The N.B.C. chimes are the cue for these. As the chimes end, each station switches off the network and the announcer gives the call letters. The stations remain off exactly fifteen seconds, and then switch back on to the national chain again.

## Clocks Highly Accurate

Because of this operation by the second, each of the N.B.C. clocks is equipped with a large red second hand which circles the dial every minute. Variation, according to N.B.C. engineers, does not total more than five seconds in six months.

## KALEIDOSCOPE

A searchlight radio loudspeaker can encompass an audience within a radius of three miles. Concentration to this unusual degree gives rise to a problem if its going to earn a living. The flock of listeners must be increased.

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A receiver is a necessity, insists the National Association of Broadcasting, and might cite the charitable feature of orphan sets being adopted by so many families.

A. B.

# ODDITIES BARED IN STATION TEST

A survey has been made by N. W. Ayer & Son, Inc., a leading advertising agency, of the value of various stations as advertising media. Hyland L. Hodgson, in charge of the broadcasting division said:

"Primarily we wanted to know exactly where each station was heard and to what degree; that is, which was first preference, second, third and fourth. But we have also found out some of the vagaries of radio.

"There is a general belief that all radio is more effective at night than in the daytime. Yet we find some localities where Station A gives perfect broadcasts during the day but cannot be heard at night. Such is the report from a section in the West.

"In North Carolina we find that one section consistently listens in on a Florida station at certain times although there is a good station only 35 miles distant. Atmospheric conditions are said to be responsible.

"From a good territory in Oregon we hear that the best reception is from the South and that a Los Angeles station 1,200 miles away is more effective than another station only 200 miles away.

"In Montana there is a town which finds daylight reception impossible while still another reports that a local station is giving marvelous daytime reception especially to rural listeners. Other sections of the West and Middle West report certain stations which have widespread rural acceptance, due to the types of programs, weather information, market reports and such. This is particularly true of a number of stations in Wisconsin, Nebraska and the Dakotas.

"We find also that some stations actually 'hop over' one or two counties and then go merrily on with perfect broadcasts; that some are useless in the daytime and others to all intents and purposes dead at night; there are others which are far more effective in summer than in winter and some that are popular or unpopular because of their programs and others because of their 'attitude'. For instance we have this information from a town in Nebraska: 'Station X is one of the least popular, as they have a snooty attitude which doesn't take; people don't have to listen, you know; and they sure won't if they do not like the station's manner'.

"From central Wisconsin we get the information that there is one completely 'dead' spot for a powerful and otherwise effective station; from another section we learn that Station Y is popular because of its children's programs."

## TUBE PRICE REDUCED

The Arcturus Radio Tube Company, Newark, N. J. has reduced the list price of the 122 D-C screen grid tube to \$3.

# N.B.C. PROGRAM LIST FOR YEAR TOTALS 33,000

Thirty-three thousand broadcasts involving more than one quarter million participants in a score of nations comprised the 1931 program year of the National Broadcasting Company.

The N.B.C. year revealed the world in review with stirring events and dynamic personalities on the air for the first time. First international addresses by Premier Mussolini and Pope Pius XI inaugurated the radio cycle. World flights, political and sport spectacles followed. A globe-girdling tribute to Marconi, the Oxford-Harvard debate and the radio premiere of Metropolitan Opera climaxed broadcasting of 1931.

Analysis of a typical broadcasting month showed program percentages to be: music, 62.9 per cent; literature, 11.8 per cent; educational (all types), 21.3 per cent; religion, 2.5 per cent, and novelties, 1.5 per cent.

Broadcasting developments by N.B.C. brought the addition of \$1,000,000 in talent to daytime programs, establishment of television studios and laboratories atop the Empire State Building, addition of a second Pacific Coast network, and the signing of a lease for twenty-seven studios and other space in Radio City. Included also was the linking of KGU, Honolulu, with domestic networks, and the exclusive broadcasting and entertainment alliance with the Waldorf-Astoria Hotel.

## Literature Wanted

Readers desiring radio literature from manufacturers and jobbers concerning standard parts and accessories, new products and new circuits, should send a request for publication of their name and address. Send request to Literature Editor, RADIO WORLD, 145 West 45th Street, New York, N. Y.

Robin Matthew, 5 St. Michaels Pl., Charleston, So. Carolina.

Jos. M. Darg, 1402 No. 16th Ave., Melrose Park, Ill.

Wesley Williams, Radio-Trician, 23 Pearl St., San Francisco, Calif.

Lloyd U. Wolff, Wolff Repair Shop, 129 No. Willow St., East Aurora, N. Y.

Graydon Constantine, R.F.D. No. 2, Oshkosh, Wis.

Elwood Brooks, Receiver & Short Wave set parts, 1636 E. 36th St., Cleveland, Ohio.

Floyd L. Nycum, Receiver & Short Wave set parts, 6118 Lorain Ave., Cleveland, Ohio.

Howard Merrill, R.F.D. 1, Box 48, Lake Leelanau, Mich.

H. W. Davis, R. No. 2, Leonard, Texas.

Porter Simpkins, Rt. 2, Vernon, Tex.

Ivan A. Burroughs, 1765 Douglas Ave., Clearwater, Fla.

H. T. Siefers, 1101 N. 6th St., Lafayette, Ind.

Mike Banas, R.F.D. 3, Smithfield, Pa.

B. C. Montgomery, Box 18, Rock Falls, Ill.

Lucien Lesaffre, 178 Water St., Lawrence, Mass.

Jacob D. Shear, 80 N. Pine St., Gloversville, N. Y.

Lee Russ, 4354 W. Thomas St., Chicago, Ill.

Harold Scott, "Utility Shop," Marmarth, No. Dak.

## NEW INCORPORATIONS

Radio Weekly Publishing Co., New York, N. Y.  
—Atty., M. G. Lowenstein, 25 Broad St., New York, N. Y.

Todd Transformer Corp., electrical machinery and mechanical engineering—Atty., J. Glenn Anderson, Newark, N. J.

Autogiro Specialties Co., Wilmington, Del., aircraft—Atty., Corporation Trust Co., Wilmington, Del.

George R. Thayer Co., Binghamton, N. Y., musical instruments—Atty., Merchant, Waite & Waite, Binghamton, N. Y.

Gallant School of Music, Inc., Hoboken, N. J., deal in musical instruments—Atty., Levenson, Comen & Levenson, Hoboken, N. J.