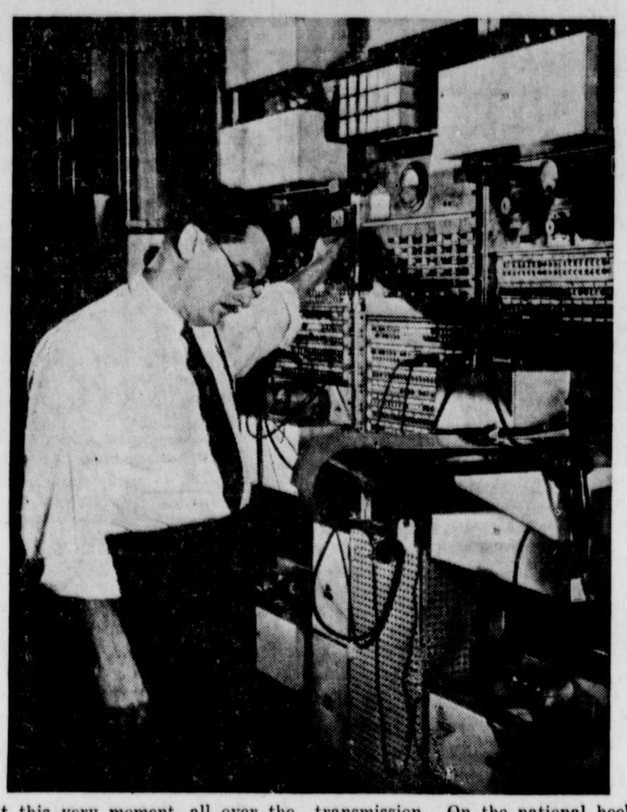
TELEPHONE COMPANY PLAYS IMPORTANT PART IN RADIO PROGRAM TRANSMISSION

Chain Programs Carried from Originating Studio to Local Stations on Phone Circuits



At this very moment, all over the United States in numerous Bell System offices, men stand at rapt attention, watching clocks to determine split second intervals before pushing many buttons of various colors. These buttons are used to control various sections of the broadcasting companies' national networks which interconnect the studios in the larger centers and the broadcasting stations located in every important city from Florida, Texas and California to New England and the northwest.

Even today, seventeen years after broadcasting began, many people still think that radio programs which are broadcast from one station are picked up by radio in another station for rebroadcasting. This has not been true even from the outset, for the first radio programs jointly broadcast from more than one station used telephone lines as a connecting link between the studios and the stations. From time to time during this period rebroadcasting has been used, but at the present time only a few cases of rebroadcasting using radio links remain, having been generally eliminated because of interruptions caused by thunderstorms and other similar natural interferences.

In Washington, Maryland, Virginia and West Virginia, territory served by The Chesapeake and Potomac Telephone Companies, the paths followed by the main networks of the National Broadcasting Company, familiarly known as the "red" network and "blue" network; the Columbia Broadcasting System's "purple" network; the Mutual Broadcasting System's "gold" network; and the Knickerbocker Broadcasting Company's "bronze" network, follow the routes taken by the long distance telephone cables. From the east the circuits from New York first pass through Elkton on their way to Baltimore, Washington, Richmond and the south. At Richmond a branch leads to Norfolk. Roanoke is fed from Greensboro. Wheeling and Fairmont are served by program circuits coming out of Pittsburgh. Parkersburg and Clarksburg are connected to the main network through Cambridge, Ohio.

In addition to the regular services furnished to broadcasting stations, throughout the year there are many special networks established. Often these special networks require the installation of special amplifiers where stadiums are located at remote points.

The type of equipment which is used for broadcasting is determined by the user's requirement for fidelity of transmission. On the national hookups, where both speech and music are transmitted, a wider frequency range is generally desired than on the networks which are used only for broadcasting football games. To furnish this higher fidelity the circuit requires not only special amplifiers or repeaters which will pass the wide range of frequencies found in music, but also requires special treatment of the cable and open wire facilities so that distortion may be kept at a minimum. Special cable circuits and wires are set aside for these networks and are used for no other purpose. The loading coils which are used on these circuits occur more frequently along the circuit than on those which are used for telephone service. Special transmission correctors are associated with the repeaters at each of the offices in which the circuits are amplified.

Due to the importance of radio programs, since they serve millions of listeners, continuous monitoring at certain points is necessary. To many people this job would seem to be one of the most pleasant that is offered in the Bell System, but after one listens continuously to various programs for several months, radio loses a great deal of its glamour.

Between midnight and morning of a routine day in the program department the networks are tested, the amplifiers which are used on the circuits are checked for satisfactory tubes, and lines are observed for noise conditions. Measurements are made from the control terminal of each network to selected points along the networks at which radio stations are served.

Just prior to the opening of the first program in the morning, broadcasting companies transmit a test program which is checked through to each of the broadcasting stations that takes the first program. If satisfactory reports are received, the service goes ahead for the day. With the opening program, monitoring begins at the key points along the network and records are made of each interruption or each case noise which may be observed. At the end of the first period of broadcasting some rearrangements in the network may be required so as to add certain stations and to drop some. Such rearrangements are designated as "switches." A "switch," to be accurate, must be timed to the exact second and a cue for action must be furnished. The work done by those who switch radio programs requires extreme accuracy in timing and in action, since an error would affect millions of listeners.

HANDSET IS HANDTAILORED

The handset telephone is really "tailored" to fit the face. This is not due to accident, but to the painstaking efforts of the Bell Telephone Laboratories, research organization of the Bell System, which measured the faces of 4,000 people in order to get an average distance between the mouthpiece and the receiver.

The woman who is proof against flattery has the whole world at her command

We Americans spend $150 a minuet putting chemicals on our forest products to preserve them.

New Study of Sun Spots Detailed in Publication

Popular conjecture as to the importance of sun spots to inhabitants of the earth is just so much wild guessing until scientists learn more about sun spots themselves. Among other astronomical centers where widespread study of sun spots is being carried on is the University of Michigan observatory at Ann Arbor. Discoveries of the last few years have made possible the prediction of latitudes of sun spot activity throughout an 11-year cycle. This fact, together with evidence that regions of maximum and minimum sun-spot activity recur with each 27-day rotation of the sun about its axis, led Michigan astronomers to believe that further studies might reveal the basis for predicting the longitude of sun-spot activity, as well as its latitude.

After three years of intensive study of the problem, Dr. Hazel Marie Losh, of the Michigan observatories, has published the results of her observation of the distribution of sun spots in longitude, indicating strong evidence for the belief that sun spots follow regular patterns in their distribution across the face of the sun, as well as they do in distribution up and down between the solar poles. Most striking among Dr. Losh's findings is the tendency for opposite sun-spot activity to appear in the northern and southern hemispheres of the sun at any one longitude. While occasionally similar activity areas were found at the same longitude in both hemispheres, by far the most common situation was the finding of maximum activity in the northern hemisphere, accompanied by minimum activity in the southern hemisphere.

Refuse Used in Bricks Tells Story of the Hopi

Watermelon and cantaloupe graced the tables of Americans in the Far Southwest 300 years ago and perhaps before the first white settlers arrived at Plymouth. These delicacies, not native to either of the American continents, made their debut in what is now the United States as early as 1629, says Volney H. Jones, University of Michigan anthropologist, the story of whose research story appeared in the New York Herald Tribune.

Evidence that American Indians included these melons and other foreign foodstuffs in their diets at this early date is provided by, of all things, the bricks of a Spanish mission in the old Hopi Indian village of Awatovi in northeastern Arizona. In Mr. Jones' research waste food and other refuse was separated from the adobe bricks of the mission. This refuse, Mr. Jones explains, was used as a binding material in manufacturing the bricks.

Because records give 1629 as the date for the building of the mission, the introduction of these foods by the Spanish is known to be not later than this date. In addition to the melon seeds found in the bricks, fruit pits, grain and straw also indicate that the Hopi people were cultivating wheat, peaches and either plums or apricots at this time. The information given by the bricks indicates that there have been no important changes in the climate, vegetation or animals of the region in the 300 years since the mission was built.

Jumping Beans

Most Mexican jumping beans come from the province of Chihuahua; they are the seeds of various members of a family of swamp trees listed as euphorbiaceous plants. When the plant is in blossom the moth (Carpocapsa saltitans) lays an egg in one part of the flower. The hatched larvae bore into the growing beans but do not attain full growth until the beans are hard and ripe. The larva inside the bean moves it by coiling up and then suddenly extending itself. Later in the season it cuts a circular door through the bean and changes to a pupa, then when the pupa is transformed to a moth it escapes through this door. Close examination of the bean will show this means of exit.

About Cans and Canning

The "tin can," in which so much of our food comes today, is made of very thin sheet steel, coated with tin; and the American canning industry has grown to such proportions that it now uses more steel than every other industry except automobile manufacture, taking a greater tonnage even than the combined railroads of the country or the nation's building requirements.

American can producers now make more than 12,000,000,000 containers annually, 60 per cent of which are used for the canning of food and 40 per cent as containers for tobacco, paint, oil and other commodities. Laid end to end and side to side this number of cans would cover an 80-foot highway from New York to San Francisco.

New York Constitution

The original constitution of New York state is older than that of the United States for on July 6, 1776, a constitutional convention met in White Plains, N. Y., to set up a substitute for the royal regime in the province of New York. In April, 1777, the constitution was adopted at Kingston without submission to a popular vote. The United States Constitution was adopted on September 17, 1787.

Natural Pearls Cannot Be Duplicated by Man

Dr. A. E. Alexander of the Mellon institute has been studying pearls chemically and physically only to reach the conclusion that nature's product has not yet been exactly duplicated by men. Cultured or artificial pearls, fine as they are, bear no more relation to nature's than gold-filled jewelry bears to the solid gold article.

As nearly everybody now knows, a real pearl forms in an oyster around a grain of sand. Layer on layer of "nacre" is deposited. The color is always that of the shell lining.

Chemical analysis shows that a pearl is almost all calcium carbonate, which is formed around a delicate, lacy framework of organic matter (conchiolin) much as enamel is formed around the dentine of teeth. The difference between natural and cultured or artificial pearls seems to be not so much chemical as physical.

Dr. Alexander bases his conclusion that natural pearls have not yet been successfully duplicated on some fairly new tests. One of these was devised by Chilovsky and Perrin. They found that light, totally reflected within the natural pearl, produces a characteristic flash. There is no such flash within the cultured pearl.

Magnetic tests have been devised by Richard Nacken. These also differentiate between natural and artificial and cultured pearls.

Simplest and oldest of all scientific tests is that for specific gravity. Cultured pearls have a specific gravity of 2.760; natural pearls of 2.685. The test has its limitations.

Commonest of all tests is that of the X-ray. A natural pearl will scatter X-rays uniformly and form a 6 or a 12-fold "spot" pattern, which is really that of aragonite in the pearl. A cultured pearl gives a maltese cross or something that suggests it.

Amazon Valley Shelters Gorgeously Plumed Bird

In the dense forests of South America through which flow the Amazon river and its tributaries, lives the cock of the rock, according to naturalists who have described him, the most beautiful bird in the world, writes a correspondent to the Michigan Farmer. He is a glorious creature, in a coat of bright orange, black-tipped wings and tail, and a marvelous double crest which runs backward from the tip of his bill, over the top of his head, like the ridge of a helmet.

To see them dance you must peep through the underbrush in the dense shadows. If you are fortunate, you may see a score of birds in a natural amphitheater, the spectators gathered on bushes surrounding an open space in the center—the stage.

Here this radiant, feathered actor takes his place, and his solo dance begins. With lowered wings, and outspread, pumping tail, he walks round and round the stage, scratching the ground and springing into the air—the spectators in the bushes, meanwhile, giving every evidence of keen enjoyment of his act.

When he is tired, he joins the spectators, while another male takes his place on the stage. Nobody knows how long the dancing continues—probably until every young brave has done his stunt.

What About Mu?

The mythical continent of Mu is pictured as having sunk in the Pacific just as the equally mythical land of Atlantis in the Atlantic. A map of Mu which has been exhibited is a contour map of the bottom of the Pacific ocean based on soundings. Hindu tablets discovered in India are alleged to show that the continent of Mu sank about 10,000 B. C., destroying 64,000,000 persons, including a ruling race of whites. None of these, nor their works, were saved, unless we except the carved rocks on some of the South Sea islands, the peaks of which were not submerged. Lemuria is another hypothetical continent in the Indian ocean, including Madagascar and other islands and home of the genus of mammals known as lemurs.

Joke File on Sale

Jokes of almost every type are offered for sale in the vast collection compiled by Fred Duprez, a famous English comedian, who died recently. Included are his sketches, songs, monologues, patter, wisecracks and many other types of laugh-provokers. As displayed in London all are efficiently compiled in a complete filing system, with index, neat paper packages carefully labeled and looseleaf notebooks beautifully typed and tabulated.

There are reams of patter on marriage, mothers-in-law, lodgers, and horse racing. There are two minute blackout revue sketches, many pages of quick-fire gags for a pair of comedians. There is also material for toastmasters, also quips for introducing artists or speakers.

Value of Refrigeration

In scientific research work in the preservation of cultures, in working with toxins and anti-toxins, electric refrigeration is invaluable. Regular electric refrigerators work admirably in many phases of research work, because of their close temperature operation within the limited temperature range required.

HOME CANNED TOMATOES HAVE PLENTY OF VITAMIN C

With the Maryland tomato season in full swing the question of whether canned tomatoes retain their vitamin C. is again being asked, says Miss Margaret McPheeters, specialist in nutrition for the University of Maryland Extension Service. Women want to know whether the method of canning or the length of time the canned products are stored affect the vitamin C content of the tomatoes.

"If canned in the right way," says the Bureau of Home Economics of the U. S. Department of Agriculture, "tomatoes lose practically none of this valuable vitamin. They may, however, lose from one-third to one-half of their vitamin C if stored for 6 months or more at ordinary room temperatures. But even after this loss, the tomatoes still supply a considerable amount of vitamin C."

The correct way to can tomatoes as recommended by the Bureau is pack them either raw or preheated into containers, then process them in a boiling water bath. Tomatoes preheated to the boiling point, then packed hot into containers need a shorter processing than those packed raw. Tomatoes precooked and packed hot in pint or quart glass jars will need 5 minutes' processing. time should be 45 minutes.

Processing consists in putting the containers into boiling water in a boiler or bucket that has a tight-fitting lid. This water bath has a rack in the bottom so that the water can circulate under the containers as well as between and above them. Water must come over the tops of the jars or cans from 1 to2 inches. Processing time is counted from the moment the water comes again to a full rolling boiling after the containers are put into it.

Pint glass jars were used in the Bureau's study. It made little difference whether the tomatoes were stored in a light or dark room. They lost about the same amount of vitamin either way.

A. F. Vierheller, specialist in horticulture for the University of Maryland Extension Service, says that growers who have apple trees that are developing weak crotches can brace them with water sprouts growing on the main scaffold branches inside of the tree. Select two good water sprouts on opposite branches, bend the sprouts in line with each other, twist them around each other several times, and let them go. In a few years they will graft together and make excellent living braces. They are better than wire braces and will last as long as the tree stands.

Science Says Cleanliness Helps Child's Adjustment

Getting good marks in academic subjects is the traditional goal of the average pupil and the standard by which parents judge whether or not their children are doing well at school. Yet fundamentally the aim of education should be to help children to become well-rounded, well-adjusted individuals.

According to psychologists and authorities in child welfare, self-adjustment is simpified for the chid who establishes cleanliness habits early.

"Many clinical cases of maladjustment are associated with lack of cleanliness," says J. Mace Andress, associate editor of Hygeia. "It would be difficult to prove that uncleanly habits alone are responsible for serious maladjustment, but there is enough evidence to show that they are contributing factors. They offer a promising field for research, but it is not necessary to wait for a more scientific collection of facts to realize the importance of teaching cleanliness to promote mental health."

A Slight Deviation

King George V of England used to tell this story on himself. Once when, as a lad, he was serving on a British naval training ship, the captain handed him the sextant and asked him to find the ship's position in latitude and longitude. When, after quite a mathematical struggle, the future king turned in his reckoning, the captain glanced at it a moment, then said gravely: "Your Royal Highness, please remove your cap!" In answer to the young sailor's look of astonishment, the captain explained: "According to your figures we are just about to sail into Westminster Abbey!"

Oak Is Tombstone

Near Newberg, in Yamhill county, Oregon, a great oak marks the grave of the picturesque pioneer, Ewing Young, who died in 1841. The tree, so the story goes, was planted on a bright May day, in 1846, when Sidney Smith (in whose arms Young died) strolled with his sweetheart down the trail to Young's burial place. While there the girl picked up an acorn, which she and Smith planted on the grave as a memorial. In commemoration of Ewing Young, a bronze tablet has been placed on the tree trunk by the Daughters of the American Revolution.

Our Bureau of Mines spends two dollars every minute of the year—conducting inquiries and investigating the safety of mines.

700,000 WILL VISIT STATE FAIR EXHIBIT IN FIVE MONTHS

Maryland's exhibit at the New York World's Fair will be viewed by approximately 700,000 persons by October 31st if the 140,000-per-month figure average up to the present time continues to be maintained, according to a report submitted to Governor Herbert R. O'Conor by Dr. Hugh, chairman of the Maryland New York World's Fair Commission.

With attendance figures at the Fair showing an increase as the weather gets cooler, it is entirely possible that the above estimate will be exceeded greatly. In the first 70 days the Maryland Exhibit was open, approximately 27,500 pieces of descriptive literature concerning Baltimore and Maryland were given out, upon request, to those visitors who displayed more than a passing interest in the State.

Of those who have visited the Exhibit, more than ninety per cent of Marylanders expressed themselves as well-pleased with the representation their State enjoyed, and a large percentage of visitors from outside Maryland compared the Maryland Exhibit favorably with their home State's Display.

Dr. Young notified Governor O'Conor that the Commission, to date, has been able to finance the Exhibit, the expenses of Maryland Day (including the making of a motion picture reel of the ceremonies), and has procured 15,000 ten-page booklet, illustrated, on the state of Maryland, for free distribution, and yet is still well within the $35,000 appropriated for the Fair Exhibit by the Legislature.

PLAN STATE PURCHASE OF FAMOUS WYE OAK

Plans for the purchase by the State of Maryland of the famous Wye Oak Tree, in Talbot County, are under way. The plans call for the purchase of the tree in the name of the State and its maintenance as a point of interest on the Eastern Shore.

In completing the plans for the purchase, Governor O'Conor stated that a great number of requests from Eastern Shore Societies and Garden Clubs, as well as from tree lovers all over the state, would be gratified. In commenting, he said: "This acquisition is in accordance with our desire to preserve places of historical and outstanding interest and to emphasize the attractive points in Maryland. There is such a multitude of attractions for visitors, as well as for our own citizens and we plan to do everything possible to focus attention upon them."

The Wye Oak is one of the most interesting land marks on the Eastern Shore since it is estimated to be about 400 years old. It stands along the State highway at Wye Mills between Centreville and Easton on land which was granted to The Lloyds of Wye, who were among the first settlers of Talbot County. The Tree stands 95 feet high with a spread of 165 feet and at a point 4½ feet from the ground measures 27 feet 8 inches in circumference. It is beautifully symmetrical and with proper care should live for many years longer.

This tree was designated by Dr. Charles S. Sargent, who visited it some years ago before his death, as the finest specimen of white oak on the American Continent. Dr. Sargent was Director of the Arnold Arboretum at Cambridge, Massachusetts, author of the most authoritative books on tree description and had a wider knowledge of trees than any other living man.

The Wye Oak is recorded in the Hall of Fame of the American Tree Association and also the American Forestry Association.

CHRISTIAN SCIENCE SERVICES

"Matter" will be the subject of the Lesson-Sermon in all Churches of Christ, Scientist, on Sunday, September 17.

The Golden Text will be from Psa. 73:26, "My flesh and my heart faileth, but God is the strength of my heart, and my portion forever."

Among the citations comprising the Lesson-Sermon will be the following from the Bible, Hebrews 11:7: "By faith, Noah, being warned of God of things not seen as yet, prepared an ark to the saving of his house; by which he condemned the world, and became heir of the righteousness which is by faith."

The Lesson-Sermon also will include passages from the Christian Science textbook, "Science and Health with Key to the Scriptures," by Mary Baker Eddy, among which is the following, page 430, "Faith should enlarge its borders and strengthen its base by resting upon Spirit instead of matter."

We all face death, in peace as in war. And all you can do, in either case, is to keep busy enough to forget it.

How human the creatures are. A grown young robin standing within reach of crumbs won't feed itself so long as it can persuade dad to feed it.

Women would not object to men going out between the acts if they did not annoy them by returning.