

RADIO INTERNATIONAL

MAY

1939





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RCA AT THE NEW YORK WORLD'S FAIR 1939

The following is a brief outline of the Radio Corporation of America's exhibit at the New York World's Fair 1939:

(While the scope of the exhibit will include the many activities and services of the RCA in the fields of radio research and development, manufacturing, broadcasting, and communication, its outstanding feature will be the largest and most comprehensive exhibition and demonstration of television ever presented in this country. It has already been announced that, coincident with the opening of the Fair, the RCA will inaugurate, through the National Broadcasting Company, the first regular television program service in the New York Metropolitan area and will make available to the public, through the RCA Manufacturing Company, Inc., television receiving sets. Television transmitters have been available to broadcasters and others interested in the new art for some months. Ranking second only in significance to the television exhibit will be the display of RCA's system of facsimile broadcasting.)

BUILDING AND GROUNDS

The RCA exhibit building occupies a plot of ground, with a front of 200 feet and a depth of 252 feet, on the Avenue of Patriots, not far from the Fair's theme trylon and perisphere. The building, 40 feet high, occupies the full frontage and extends back into the plot 188 feet. It is designed in the shape of a huge radio tube attached to a base and lying on its side, the base forming the front section and the tube forming the rear section. The entire length and height of the front of the building is enclosed by plate glass windows and doors. A building-high niche in the center of the facade is occupied by the largest replica of a radio tube ever built. It is 24 feet high and 8 feet across. A cut-away section at the front permits inspection of the animated mechanism of the tube. The design of the building and the tube replica are symbolic of the entire radio industry, since all radio is dependent upon the tube. The front section of the building—semi-rotunda—forms a large main hall, the walls of which extend up the full height of the building. Around the inner semi-circular wall are six medium-sized exhibit rooms. The rear section of the building has three levels, the ground floor for exhibits, the second floor for store rooms, and the third floor for a guests' lounge with windows opening onto the gardens in the rear.

Surrounding three sides of the building at the rear are beau-

tifully landscaped gardens, which contain trees, shrubbery, flowers, reflecting pools, fountains, and special outdoor exhibits. Comfortable seats for use of visitors are scattered through the gardens. Unusual lighting arrangements make it a delightful spot at night.

EXHIBITS

Twenty individual exhibits will tell RCA's story of radio progress:

TELEVISION

At least seven of the exhibits come under the heading of television, but due to a recent revision in plans, detailed information concerning them is not available now. The objective, however, is to exhibit and demonstrate in the most effective manner possible television as it will be available to the public this Spring and as it appears in some of its more advanced stages of laboratory development.

Two phases of the television exhibit which have already been decided upon are the Radio Living Room of Today and the Radio Living Room of Tomorrow. In the former, receivers in separate cabinets for television, facsimile and sound broadcasting will be presented amid period-style furnishings. In the latter, a single cabinet of unusual design and several years in advance of present-day practicalities will house means for receiving television, facsimile and sound broadcasting, and for phonograph recording and record playing. This room will be decorated in the most advanced styles of modern furniture.

Television programs will be provided from three sources: (1) the NBC television studios in Radio City, via the Empire State Building transmitter; (2) the RCA-NBC telemobile unit operating both on the Fair grounds and in New York City, and (3) motion picture film picked up locally. When not in use, the telemobile unit will be at the RCA exhibit for inspection by visitors.

FACSIMILE BROADCASTING

Facsimile broadcasting, a means of transmitting and reproducing in permanent form graphic material by radio, which is

now undergoing experimental tests in various parts of the country, will be demonstrated in two exhibits. Scanning apparatus, which picks up the material to be transmitted, will be located in the main hall and at regular intervals it will be used to broadcast news and information which will be reproduced on receivers located in the Radio Living Rooms of Today and Tomorrow. This equipment will transmit at the rate of one 8 x 12 inch page every eighteen minutes, and is of the type which has been designed for home use. High-speed facsimile capable of sending one 8 x 12 inch page every minute, will be demonstrated in a special exhibit in the base of a 250-foot radio antenna tower at the side of the RCA building. Like several other of the exhibits, high-speed facsimile is still in the laboratory stage of development.

MARINE COMMUNICATION

The various radio devices for communication and safety at sea will be demonstrated in three exhibits. One of the most unusual and beautiful is a 53-foot Elco motor yacht floating in a basin on the rear of the RCA garden plot. Another is a replica of a ship's radio cabin, which will occupy one of the six rooms which open off the main hall in the exhibit building. Both the yacht and the ship's cabin will be fully radio-equipped. The equipment includes transmitters and receivers for telephonic and telegraphic communication, direction finders, auto alarms, motor generators and various types of gear. The third marine exhibit, located in a room adjoining the ship's radio cabin, will be a diorama, an electro-mechanical instrument, which dramatizes the destruction and sinking of a vessel at sea, with heavy loss of life, in the days before radio communication was available, and illustrates the part radio plays in saving life and property at sea in modern times.

INTERNATIONAL POINT-TO-POINT COMMUNICATION

Two exhibits will demonstrate the services of world-wide radio communication. A regular radio communication office, typical of those to be found in practically every country on earth, will be located in the base of the large radio tube replica in the center of the building's facade. Here, visitors will be able to send and receive messages to and from forty-seven nations directly and all nations indirectly by radio. The whole story of international radio communication will be told in an animated diorama built around the base of the 250-foot antenna tower at the side of the building. Starting with the filing of a message in New York, the diorama carries the action through until the message is delivered in London, England. The process of secret transmission, whereby messages in plain language move into a coding machine, flow out in coded hieroglyphics and thence to far off lands also will be demonstrated. The diorama will employ colored motion pictures in explaining some phases of radio communication.

PHONOGRAPH RECORDING AND PLAYING

The most modern devices for picking up and recording the human voice, musical and other sounds will be shown in another of the rooms opening off the main hall of the building. In an adjoining room, the latest instruments for playing records will be demonstrated.

BROADCASTING STUDIO

A broadcast speaker's studio, which will be used to demonstrate equipment for sound broadcasting, is located adjacent to the visitors' lounge on the top floor at the rear of the building. From time to time, distinguished guests will use this studio in broadcasts from the Fair grounds.

CAROLLON

A forty-nine note carollon, its console located in the main hall, will be used to provide music from time to time for the duration of the Fair.

LOUD SPEAKER SYSTEM

Both the exhibit building and the grounds will be equipped with a loud-speaker system, through which will be directed broadcast programs of fine music, the carollon music, and high fidelity musical recordings. The time of day will be indicated over the system by the sound of the NBC chimes.

250-FOOT RADIO ANTENNA TOWER

The RCA radio tower, which, after the Fair's trylon, is the tallest object on the Fair grounds, will be used for the support of special antennas for the reception and transmission of television, facsimile and sound broadcasting. It will be painted gold.

As the erection of steel on the Radio Corporation of America's exhibit building at the New York World's Fair 1939 was completed, the last rivet to go into place was heated by radio frequency currents.

PARTICIPANTS

The RCA services participating in the exhibit are the RCA Manufacturing Company, Inc., the R. C. A. Communications, Inc., the Radiomarine Corporation of America, and the RCA Institutes.

RADIO-MARINE EXHIBIT AT FAIR

Landlubbers, as well as those "captains" of the sea who sail the coastal waters in pleasure craft, will be given an opportunity not only to see but also to operate the latest radio devices for communication and safety at sea under practical conditions in the Radio Corporation of America's exhibit at the New York World's Fair 1939.

World's Fair visitors will be invited aboard a 53-foot Elco motor yacht, which will be found in a specially constructed marine basin in the gardens at the rear of the RCA exhibit building. Backed by a large semi-circular screen, the basin extends out diagonally toward the center of the gardens and, with the boat, forms one of the most interesting and picturesque exhibits on the Fair grounds.

The RCA and the Elco Works have combined their ingenuity and resources to produce the greatest amount of luxury, convenience, seaworthiness and safety ever achieved in a boat of

this size. Radio and boat engineers are now at work preparing the yacht and its equipment for "launching" some time in March.

The magic of radio, as adapted to marine uses, will be demonstrated in three devices, products of the Radiomarine Corporation of America, an RCA service. One of these is a radio telephone set having a range of 150 to 300 miles, which enables voice communication with persons on land through any one of several harbor stations, including the Coast Guard. The set also receives standard American and foreign short-wave broadcasts. A much smaller radio telephone unit, designed for use in the yacht's dinghy or motor tender, also will be displayed. This set permits a voice communication with the mother yacht, the Coast Guard and one shore station.

Of particular interest is a radio direction finder, which is to be installed atop the yacht's main cabin. By simply tuning this instrument to one of the many radio beacon stations which dot the coasts, the exact line of position may be determined in a very few seconds. In case the direction from which the beacon signal is coming is not known, an electrical "sense" device, which is part of the instrument, will quickly determine it. No special knowledge or training is necessary to operate the direction finder.

Both the large telephone set and the direction finder will be in operation aboard the yacht and visitors will be permitted to experiment with them. The smaller telephone set will simply be on display.

The yacht being supplied for the exhibit by the Elco Works is known as the "flag ship" of the Elco fleet and, during the recent New York Boat Show, was hailed as the flag ship of the show. It has ample accommodations for six in the owner's party and two crew on either short or long cruises. Two 165 horse power Gray General Motors marine diesel engines drive it through the water at a speed of 17 to 18 miles an hour. At three-quarter speed, the boat has a cruising radius of five hundred miles.

The boat's overall length is 53 feet, with a beam of 13 feet 9 inches and a draft of 3 feet. A large, light and airy deck saloon—"living room"—is located amidships. A table, chairs and a divan, which makes up into two roomy single berths, are the principal furnishings. The radio instruments are also located here. The owner's stateroom is located aft. It is outfitted with two wide built-in berths, a closet, lockers, bureau and private lavatory with a fresh water shower. Across the passageway is a guest lavatory and just forward of it are two single staterooms. The galley and quarters for the crew are located forward of the deck saloon. The boat's controls are located on a "flying" bridge. Sliding windows at the after end of the saloon permit communication with the operating crew.

RCA'S TELEVISION EXHIBIT

There will be seven exhibits devoted to television:

1. A television theatre or auditorium with a capacity of approximately one hundred fifty persons will be used to exhibit and demonstrate television reception on the stock model receivers such as those which will be available to the public this Spring, and on projection apparatus. This theatre will be located on the ground floor in the rear section of the building. Visitors will enter through a series of doors near the center of the building, watch a television show and exit into the gardens. In the auditorium stock model television

receivers will be arranged in a series of three rows, spaced at regular intervals. Spectators will be enabled to view the image on these receivers and compare it with a projected image on a large screen at one end of the room. The projection type television apparatus to be shown is still in the stage of laboratory development.

2. An indication of the methods used in television research will be obtained from a laboratory which will be set up also on the ground floor near the television theatre. Some of the actual television experiments under way at the present time will be moved into this laboratory making it possible for visitors to see RCA's research scientists and engineers actually at work.
3. One of the most unusual television exhibits of all will be the Radio Living Room of Tomorrow. This room, decorated in the most advanced styles of modern furniture, will feature in one single cabinet means for the reception of television, facsimile and sound broadcasting, phonograph recording and phonograph playing. This device is several years in advance of present day practicalities.
4. Comparing favorably with the Radio Living Room of Tomorrow will be the Radio Living Room of Today. This room, decorated in period furniture, will feature in separate cabinets such as those which are available at present, radio devices for the reception of television, facsimile and sound broadcasting.
5. The RCA-NBC Telemobile unit will be situated on the grounds under canopies erected for this purpose. The telemobile unit consists of two motor carriers, one of which is used to house the camera equipment and the other to house the transmitting equipment. When this unit is not in actual operation on the fair grounds or in the City of New York, it will be open to RCA's guests for inspection.
6. A stock model television receiver enclosed in a clear glass cabinet will permit an inspection of the receiver mechanism. This cabinet will be placed on the floor near the front of the semi-rotunda section of the building.
7. Across the rotunda from exhibit No. 6 will be situated a "flask" type television receiver by which the image may be viewed in a bright light. This receiver is still under development in the RCA laboratories.

(All of the television receivers in the RCA exhibit will be serviced with programs from three sources: 1) NBC television studios in Radio City, via the Empire State Building transmitter. 2) Outside pick-ups by the RCA-NBC telemobile units, operating on both the World's Fair grounds and in the City of New York, and 3) motion pictures broadcast locally.)

ADVANCES IN RADIO TELEGRAPHY EXHIBITED

Just thirty-seven years ago a slender young Italian, Guglielmo Marconi, sat huddled over a set of queer looking instruments in an old barracks near St. John's, Newfoundland. Suddenly, after many minutes of tense waiting, three low buzzes, or dots, broke the silence. It was a momentous occasion; for the Atlantic had been conquered by wireless telegraphy.

"That day in 1901 is one of the most significant dates in history," David Sarnoff, president of the Radio Corporation of America and for many years an intimate friend of Marconi, said yesterday. "The success of Marconi in receiving signals in code, transmitted from Poldhu, near Cornwall, England, is directly responsible for the great, world-wide services of radio

today.

"Marconi had the good fortune of living to see his early experiments develop. First, there was international and marine radio telegraphic service. Then telephony was applied to radio and broadcasting, which provides daily programs of information, culture and entertainment to millions of people, was introduced. He also saw, before his death, the beginnings of television and radio facsimile.

"Visitors to the New York World's Fair 1939 will be able to see more completely than ever before the many radio devices and services which have been produced for mankind as the result of Marconi's work."

In the exhibit building of the Radio Corporation of America at the New York World's Fair, every phase of the present-day radio industry, including some things which will be of service in the immediate future, will be exhibited and demonstrated.

Just how great the service of radio telegraphy has become since the days of Marconi's early experiments will be graphically depicted in an exhibit arranged by RCA Communications, Inc., where it will be seen that the simple code used in 1901 by Marconi in spanning the Atlantic by radio is still of great importance in transmitting radiograms to all parts of the earth. Part of this exhibit will be an office, located in the base of a huge replica of a radio tube at the front of the building, for receiving and sending messages. The other part, consisting of a large, circular animated diorama, is being installed around the lower section of a 250-foot antenna tower at the side of the building. The diorama will show how radio communication works and the path taken by a radio wave in circling the globe. RCA Communications maintain direct radio service to forty-eight nations and indirect radio service to all nations of the world.

Two of the radio art's latest developments—television and radio facsimile—will be features of the RCA exhibit. Mr. Sarnoff announced that television would be introduced to the general public in the New York metropolitan area coincident with the opening of the Fair. Other exhibits will show all of the products and services of radio which have been developed in the RCA laboratories. There will include various devices for both communications and broadcasting, laboratory equipment, and applications of radio to marine shipping, police, aviation, education, industry, and commerce.

RCA World Fair Exhibit Dedicated

David Sarnoff, president of RCA and chairman of the board of NBC; Lenox R. Lohr, president of NBC, and Grover Whalen, president of the New York World's Fair, will speak during dedication ceremonies at the RCA exhibit building at the Fair and will be heard on Thursday, April 20, from 12:30 to 1:00 PM, EST, over the NBC-Red Network.

At the same time, the speeches and dedication ceremonies will be televised and seen by viewers in the RCA building in Radio City.

Also on the program will be orchestral music and a description of the RCA exhibit building which will house 20 exhibits telling the story of RCA and radio progress. The exhibit deals with television, facsimile broadcasting, phonograph recording, radio marine communications and other RCA services.

New 77C, 3-Way Microphone

Switch Makes New Unit Suit Any Studio or Auditorium Requirement

One microphone which combines in its compact, streamlined case all the characteristics of three different type microphones, making it ideal for radio, movie or any public address use, has been announced by the RCA Manufacturing Company. A handy switch at the base makes the new unit uni-directional, bi-directional or non-directional instantly.

Perfected in the same RCA research laboratories which developed the first ribbon type velocity microphone and the first uni-directional cardioid pattern microphone, the new unit finds limitless applications in radio studios, on movie sets, in auditoriums, night clubs, and any other indoor or outdoor location where an ordinary velocity, pressure or uni-directional microphone proves insufficient for every application. It is designated as Model 77-C.

With the control switch in the uni-directional position, the instrument picks up only sounds reaching the front, or live side . . . turning a deaf ear to those emanating from any other angle. As a bi-directional microphone, it performs like an ordinary velocity instrument, being responsive on only two sides. In the third position, the control switch permits sounds coming from any angle to be picked up.

The microphone is actually two mikes in one . . . a bi-directional velocity microphone and a non-directional pressure instrument. The output of each comes down to the control switch, which cuts in one or the other, or both. When the two are connected in series, they give the uni-directional response.

Because of its small size (2½ in. x 8½ in.), the three-way unit is ideal for use by speakers or singers before an audience. It is not large enough to act as a barrier, and can be adjusted in an instant to pick up or "ignore" audience reaction.

In small broadcasting studios space may be conserved by using it as a uni-directional microphone and placing it against a wall or in a corner. Its value is also apparent for use with public address systems, particularly portable types, because of its adaptability and light weight (2 lbs.).

Its directional characteristics are uniform at all frequencies, an advantage which has come to be accepted by many engineers as exclusive with velocity-type microphones. This has been accomplished in the 77-C by using ribbon units for both the velocity and pressure sections. The 77-C microphone has a uniform frequency response from 40 to 10,000 cycles. In spite of its small size and light weight a high order of sensitivity (-62 db for a 10 bar signal) has been achieved through new structure design and the use of new magnet material.

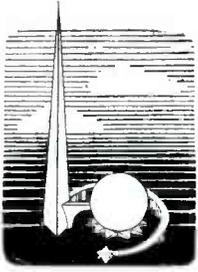
NEW YORK NEWS

A. A. Cooper, NYME, was elected Maintenance Councilman to fill unexpired term of Edwin Stolzenberger, recently transferred to Television.

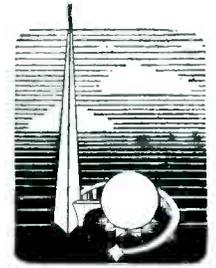
F. R. Rojas, NWMC Councilman, resigned as such, and the Control Group elected genial Ted Clements to fill the unexpired term.

ATE members desirous of becoming members of the National Geographic Society, advise Ed Stolzenberger. (\$3. per year dues)

Spring must be in the air, M. A. Lewis, NYME, seen reading "Henderson's Garden Guide and Record" revised edition.



NEW YORK WORLD'S FAIR



PREPARATIONS OF SITE

By
L. B. ROBERTS, *Assistant Chief Engineer,*
New York's World's Fair 1939, Inc.

The construction of the New York World's Fair is of particular interest to the prospective visitor because of the magnitude of the undertaking and the evidence as shown by the structures that many novel problems of design and construction have been solved. The temporary type of unusual structures which were to be erected and the unusual foundation conditions of the site were important factors of the job. Moreover it soon became evident to the organization that the problems must be solved and the work finished according to a very definite time schedule.

The magnitude of the work may be appreciated when it is realized that we are now constructing a city on a site which had previously been considered useless for any purpose except as a rubbish dump.

The site selected for the Fair was known as Flushing Meadows—a tidal marsh over three miles long and more than a mile wide in certain places, traversed by a sluggish tidal stream known as Flushing Creek.

For more than thirty years portions of this swamp had been used as a City dump, and some 50 million cubic yards of ashes and rubbish had been placed on the area. During this period the fill in some places attained a total depth of over 125 feet and its weight had forced the swamp surface downward 30 to 40 feet below the original level.

Future Park

When preliminary plans for holding a World's Fair in New York City were first discussed, it was decided that the Flushing Meadow site would be ideal due to its adequate area (some 1216 acres) and its accessibility to high speed transportation facilities. An agreement was entered into between the World's Fair Corporation, of which the Honorable Grover A. Whalen is President, and the City of New York providing for the temporary use of the site by the Fair, in return for which the latter would install extensive landscaping and other permanent improvements for the future park.

The rough grading of the site was carried out by the New York City Department of Parks and upon its completion in the summer of 1937, construction of the World's Fair structures started. As the program called for completion of all construction by April 1, 1939, the total construction period, as far as the Fair Corporation was concerned, was limited to about 26 months.

The fill was made by placing the initial layer only 4 feet thick which consolidated the humus mattress and with it provided a distributing mat to resist the tendency of the silt to flow as subsequent layers were placed, the combinations of the humus mattress and the 4-foot ash layer being strong enough in most cases to support the subsequent deposits of fill to final grades without lateral movement of the underlying silt.

The rough grading of the site consisted of cutting off the

top of the rubbish and ash dump and spreading the excavated material over the exposed meadow surface. In addition, a new river channel was dredged, together with two lakes covering 132 acres. The "meadow mat" obtained from the dredging was spread out to dry in convenient locations and afterward treated physically and chemically to render it suitable for future use as topsoil. An interesting feature of this grading operation was that due to the large amount of decomposable material in the original fill, the material showed a substantial shrinkage in volume when removed to a new location—contrary to usual experience in cut-and-fill work.

The entire grading program was planned after extensive investigation of the sub-surface conditions. About 6,200,000 cubic yards of dug material were excavated and transported for use as fill for an average distance of about 4000 feet. The total dragline excavation from the lake areas was in excess of 800,000 cubic yards. The fill was made by placing an initial layer 4 feet thick, which consolidated the humus mattress and with it provided a distributing mat to support trucks and to resist the tendency of the silt to flow as subsequent layers were placed.

When the grading was completed, extensive soil boring and load tests were carried out by the Fair organization throughout the entire site. Loading tests were also made to determine the safe loading capacity of both the ash fill and the sand stratum underlying it.

The major problem in foundation design for the World's Fair structures was in the prevention and control of lateral soil movements, as well as the proper provision for adequate support of the vertical loads.

During the grading period considerable difficulty was experienced in holding survey points. Stakes had a habit of moving as much as 30 feet in a month and level benchmarks were continually changing in elevation. However, after the grading operations were completed and the fill had a chance to consolidate, there was a steady decrease in these difficulties.

The sub-surface conditions resulted in the logical use of several types of foundations. The borings showed that the soft semi-fluid silt deposit extended to depths up to 60 feet, and occasionally 80 feet, below the surface and decreased in depth as the underlying sands rose to approach the surface along the east and west margins of the meadow. Where there was a considerable depth of ash fill over the meadow mat, structures could be built with spread footings on the ground, though the soil loads were kept quite moderate. These spread footings were generally of concrete, but where it was desirable to reduce the weight of the structure to a minimum, timber footings, combined with steel grillages, were sometimes used. Where the fill was too shallow for spread footings, piles were used, driven through the fill and silt to a firm bearing in the underlying sand. Generally the floors were placed directly on the ground, but in the worst portions of the site both floor and structure were supported on piles. In general, the weight of the foundation installation and the intensity of load at points of support were important factors in providing against ex-

cessive consolidations of the underlying sands. These factors, together with their greater resistance to lateral movement, led to the selection of long timber piles for many of the foundations.

The piles generally reached a firm bearing soon after hitting the sand stratum. In a few cases the desired resistance was not attained at the first driving, and the piles were then given a load test. The actual driving of the piles under the conditions described is very interesting. Where the ash fill is thin, a hole is punched in it by a steel "spud," which is then removed. The pile is lowered into this hole and the steam hammer placed on top of it. Even a light tap will drop the pile and hammer as much as forty feet as the pile passes through the silt. The pile meets resistance as it penetrates the underlying sand and this resistance increases until the desired bearing capacity is reached. It is also interesting to note that if the driving of a pile is discontinued at this point for only a limited period of time—often less than an hour—the pile is "frozen" in the silt and ash fill. It becomes difficult to start driving it again—often 50 blows not producing any increase in penetration.

THEME CENTER

By
A. J. DILLON

The general plan of the New York World's Fair 1939 is laid out with its main avenue, The Esplanade, bisecting the exhibit area north and south. At right angles to this major axis is the Fair's minor axis—dividing the Fair grounds east and west.

The "Theme Exhibit," symbolic and descriptive of the Theme of the Fair, portraying the purpose and spirit of the Fair, is in the center of the principal exhibit area.

The Perisphere is a hollow ball, having an outer shell two hundred feet in diameter and an inner shell one hundred and eighty feet in diameter. The Trylon, a slender pyramidal form whose base is a triangle sixty-three feet seven inches on each side, reaches seven hundred feet above the ground. A bridge connects these two structures.

Two electrically driven moving stairways start at the base of the Trylon and ascend through the interior of the connecting bridge, forming the entrance to the Perisphere. Egress from the Perisphere is through doors opening onto the deck of the bridge, fifty-two feet above the ground.

Crossing the connecting bridge, one passes from the Perisphere through the Trylon and emerges onto the Helicline. This structure is a broad ramp 1000 feet long and eighteen feet wide curving in a spiral or helix four hundred and seven feet in diameter and sloping toward the ground. The Helicline forms three-quarters of a circle with its center at the center of the Perisphere.

In the case of the Perisphere and Trylon there was no precedent on which data suitable for basis of design was available. So far as is known, no such structures as these had ever been built before. Search of engineering papers fails to reveal any literature on similar projects.

Models of the two structures specially tested in a wind tunnel furnished basic assumptions for design. Immediately on completion of tests and research the 1088 piles on which these structures are supported were driven.

A circular reinforced concrete ring girder or collar rests on

the 528 piles to carry the weight of the Perisphere. The supports of the Perisphere, eight steel columns, rest on the ring girder. These columns are connected at their tops by another circular or ring girder of steel, seventy-two feet in diameter.

Rising from this second girder thirty-two "meridian" trusses, similar to the lines of longitude on a globe, form the ribs of the frame. These meridian trusses are in turn connected by fifteen horizontal trusses or girts, and a system of cross bracing connecting the point of intersection of the trusses and girts. The depth of the meridian trusses—11 feet at the bottom, 8 feet at the equator and five feet at the top—produces the effect of a sphere within a sphere.

The framework of trusses and girts supports a series of purlins, or minor beams, each bent to the radius of the sphere, to carry the material forming the outer skin of the sphere. A similar series of purlins, attached to the inner chords of the girts, supports the inner shell.

The Trylon rests on three groups of piles totaling 513. Each of these groups is capped with a block of concrete, hexagonal in shape, forty feet across and seven feet thick. These blocks serve as counterweight to resist high winds on the exposed sides of the structure.

Up to a point about 125 feet below the top of the Trylon, the steel frame consists of three legs connected by horizontal braces and a system of cross bracing similar to that seen in a radio tower. At the top of the Trylon these legs became too close together for economical construction and here the structure was changed from a frame to a three-sided box girder, the plates of which form the outer walls of the Trylon.

At the points of juncture of the bridge to the Trylon and the Perisphere, expansion joints are provided so that stresses in one structure are not transmitted to either of the others.

On the legs of the Trylon, connections had been provided for attaching cables which in turn supported a "basket boom." This boom was used to raise all but the uppermost sections of the plate work at the top of the Trylon and as each section or tier of steel was fastened into place, the cable slings or basket was moved up to a higher connection.

With the steel framework of the various structures under construction, the problem of applying a covering to these frames necessitated the design of scaffolding to "fit the job." The scaffold surrounding the Perisphere is cantilevered out over the top of the ball for several feet. This cantilever position is supported by cables which are carried up to the tops of the hoist towers which in turn are guyed back to anchorages buried in the ground. On the Trylon, two sets of out-riggers were projected from the steel at points about two hundred and fifty and four hundred feet above the ground, these in turn supported a tubular steel scaffold above these points. The lower two hundred and fifty feet were supported directly on the ground. On the inside of the Trylon a hoist was installed, serving the various levels of this scaffold.

For placing the inner shell of the Perisphere, a revolving scaffold was devised. This scaffold consists of a steel frame made up of through trusses curved to conform to the slope of the inner shell. These trusses are attached to each other by cross frames and on these trusses is mounted the wood decking upon which the men work.

At a point about fifteen feet below the equator or mid-section of the Perisphere, the inner surface of the sphere is broken by a light gallery. On this gallery there is a circular track completely circling the inside of the sphere. Wheels on the bottom

of the revolving scaffold are mounted on this track and support the major portion of the weight of the scaffold. At the zenith of the sphere a "spider" was suspended from the steel frame. At the bottom of this spider, a steel pin mounted on a crane hook bearing forms the pivot about which this scaffold revolves.

Within the Perisphere, two platforms, shaped like giant washers, with a hole one hundred feet in diameter are mounted one above the other. These platforms will revolve and carry spectators around the interior of the sphere.

ELECTRIC SERVICES

By

C. W. NICKERSON, *Chief Electrical Engineer*

Electricity will play a greater part than ever in the World of Tomorrow and likewise will play a very important part in the World's Fair of 1939 which has for its theme, the World of Tomorrow.

The visitor will see practically no evidence of electrical equipment, but in the windowless buildings he will see remarkable interior lighting effects and at night he will see exterior lighting effects exceeding all previous applications. The lighting of the buildings and the displays are in harmony with the spirit and construction of the buildings and the exhibits in them and has been accomplished after research and laboratory experimentation.

Electricity will perform many other services at the Fair. It will provide power for the operation of moving stairways and platforms to carry the visitor through certain of the larger exhibits; it will provide power for the operation of air conditioning equipment in the buildings; and it will provide power for the operation of pumps for the various fountain displays. One fountain display alone will require over 2000 horsepower to drive pumps to supply the water, and in addition, two million watts for the lighting effects.

Electricity will also perform many other operations such as the operation of fire detecting systems and communication systems.

To provide sufficient power for all of these various operations, two substations have been built, one on each side of the main exhibit area. The total ultimate capacity of these two substations will be 90,000 kilovolt-amperes or approximately 100,000 horsepower. The expected load will be about one third of that for the entire County of Queens, which, with a population now estimated at nearly a million and a half would mean that the electrical installation would be equivalent to that necessary for a city of a half million people. Yet all of this power will be consumed in an area of about two square miles as compared with a hundred square miles, the approximate area of Queens.

To supply this power, four cables are brought into each of the two substations from the system of the Consolidated Edison Company of New York. The power is brought into the substations at 27,000 volts and transformed to 4000 volts at which voltage it is distributed throughout the Fair grounds. The 4000 volt feeders from each substation radiate out through the entire grounds. In general each building is serviced by two 4000 volt feeders, one from each of the two substations. At each building there is a transformer vault where the voltage is again transformed, this time from 4000 volts to 120 volts and 208 volts for utilization within and around the buildings.

The 4000 volt feeders are 3 phase, 4 wire with 4160

volts between phase wires and 2400 volts between phase wires and ground or neutral. Likewise the low tension services in the buildings are 3 phase, 4 wire with 208 volts, between phase wires and 120 volts between phase wires and ground or neutral.

Each substation consists of a single story building and a transformer yard. In the yard there are 4 transformers, 3 each of 10,000 kva capacity and 1 of 15,000 kva capacity. These transformers are connected directly to the 27,000 volt feeders and step the voltage down to 4000 volts. These 4000 volt connections are carried through voltage regulators and then into either end of the substation building. The regulators permit maintaining the proper voltage at the substation.

Substation buildings are divided into three sections. The two end sections are switch rooms, containing switches controlling the 4000 volt distribution feeders. The center section contains station control battery, transformer for series street lighting, metering equipment and facilities for operation.

Each 4000 volt distribution cable as it leaves the substation consists of 3 insulated 500,000 circular mil cable for the phase wires and one bare 4/0 cable. At the end of the feeder the insulated cables are reduced in size to 4/0 and the bare cable to No. 2. The bare cable is used for the ground or neutral line.

Insulation is a special ozone resisting rubber compound over which there is wound a special flame-proofed braid. This type of cable was decided upon after extensive engineering research and field tests. No cables with the conventional lead sheath or covering are used on the 4000 volt distribution system.

No solder is used in making connections in this cable. Joints and tap connections are made with a mechanical fitting called a "crab" which consists of two pieces of tubing twisted together with the end brought out parallel. The center, or twisted, portion is pre-insulated. To make a tap or connection the insulation on a cable is cut off for a distance of several inches and then tapered or pencilled back. The end of the cable is inserted into the crab and the crabs squeezed tightly onto the cable with a hydraulic press. The joint is then taped with a special rubber tape.

Cables are run in pre-cast concrete ducts. Splices and taps to the various buildings are made in manholes which are likewise pre-cast. All feeders from one substation are run in different duct banks or groups than the feeders from the second substation. Also the feeders from the two substations run in separate manholes. Thus the feeders from one substation are isolated from the feeders from the other substation at all points. These feeders may be run in the same trench but so separated that the isolation is maintained.

Street lighting and various small concession stands receive low tension power at 120 and 208 volts from adjacent transformer vaults associated with the larger exhibit buildings. The cables for these low tension feeders are also rubber-insulated with a braid covering but for the lower voltage. In general low voltage cables are simply buried in the earth immediately in back of curbs and covered with a plank to prevent mechanical injury. Where they pass through foundations or under roadways they are run in duct.

On account of the magnitude of the World's Fair telephone traffic, a telephone exchange has been assigned to the World's Fair and is known as "World's Fair."

There will be about 3000 telephones distributed throughout the grounds for use by the Fair for operating purposes and for use by the public. All of these telephones will connect into

Continued on page 24

THE NEW VIVU METER

*The New Volume Indicator, New Reference Level,
The New Term VU, and Their Applications*

By WHITNEY M. BASTON, NYTE

Some features of the new volume indicator, the new reference level, the term "VU," and standard practices covering the application of each, follow.

On May 1, 1939, the National Broadcasting Company will inaugurate in all its plants the use of a new standard volume indicator, a new zero or reference level, a new measurement term called the "VU" and recognize definite practices connected with the use of each. The volume indicator change was brought about by the recognition of a general confusion caused by the existence of a number of different types of volume indicators and the desire to provide a better and standard instrument. Zero or reference levels had much the same status. It was found that a different reference level was being used by almost every broadcaster and manufacturer, different from the one used by the telephone companies. The level being used by each seemed to be one which fitted their particular requirements the best, but not fitting with any of the others without a lengthy interpretation. Some of the reference levels in use were 12.5 milliwatts in 500 ohms, 6 milliwatts in 600 ohms, 6 milliwatts in 500 ohms, and 1 milliwatt in 600 ohms. Needless to say a large amount of unnecessary confusion existed. To improve the situation, the National Broadcasting Company, the Columbia Broadcasting System, and the Bell Telephone Laboratories with the collaboration of the Weston Electrical Instrument Corporation developed a new and standard volume indicator. A careful study of the meter requirements was made, a large number of meter users were consulted, and many painstaking measurements taken. The results of the cooperative development is a greatly improved volume indicator much more suitable for the general monitoring of broadcast programs. In the NBC, the new meter will be known as the NBC-22.

The new reference level is the result of a careful study of program transmission problems. The three originating companies have released for publication the following definition: Zero or reference volume level shall be defined by specifying, a) the characteristics and method of use of the volume indicator instrument, and b) a steady state reference of one milliwatt. The impedance of the circuit across which the instrument is calibrated shall be 600 ohms. The characteristics of the instrument, as well as the value of the calibrating power, are important features of the definition.

In order to avoid the more cumbersome term "DB above zero volume level" and confusion with several existing standards, it is proposed to designate the readings of the new instruments as so many VU, numerically equal to the number of db above or below the reference volume level.

The reference level of one milliwatt in 600 ohms was selected for a number of reasons. It is a unit quantity that is easy to work with, it results generally in positive values for most transmission requirements, it conforms to a large amount of telephone company equipment and was the one value that could be agreed upon.

The term VU was added to distinguish absolute measurements with the new volume indicator in order that the db might be reserved for its original purpose, namely, the measurement of power ratios. If as an illustration, a number of db was given to express the program output level of an amplifier, it was obviously wrong, since the db definition states that a number of db is equal to 10 times the common log of the ratio of two powers. In the illustration, only one level was mentioned, that of the amplifier output. It is, however, correct to express the gain of an amplifier as a number of db, since the word "gain" implies that two powers were involved. The correct expression for the gain of amplifiers, the loss in circuits or attenuators, etc., is in db. The amplifier output levels, circuit levels, etc., are correctly expressed in VU.

The new volume indicator instrument is a dc milliammeter that is calibrated to respond to the r. m. s. value of an impressed sine wave voltage by utilizing a full wave non-corrosive copper oxide rectifier mounted within its case. The meter resistance is 3900 ohms and is designed to operate in series with an external resistance of 3600 ohms. The total resistance of the instrument used is 7500 ohms, 3900 ohms in the case and 3600 ohms external. The external resistance provides a point in the meter circuit where a 3900 to 3900 ohm variable attenuator can be inserted to measure higher levels.

The instrument pointer movement is highly damped and will move to 99% of its reference point in 0.3 seconds. The over-swing at the reference point upon the sudden application of a sine wave voltage is only 1 to 1.5%. This small amount of over-swing is a marked contrast to the present NBC-21 type, where, under the same conditions the pointer swings a considerable distance above and below the reference point before it finally comes to rest. The damping of the pointer movement is determined by the resistance of the circuit to which it is connected. The proper characteristics are obtained when the meter faces 3900 ohms, 3600 ohms in the external resistance, and an additional 300 ohms by connection across a 600 ohm terminated circuit. The meter movement is not appreciably affected by connection across circuits of less than 600 ohms.

The instrument sensitivity is such that the pointer will reach the reference mark when a voltage of 1.228 r. m. s. is applied to the meter in series with its external resistor. This is not as sensitive as the NBC-21, where 1.0 volt r. m. s. is required to bring the pointer to the 30 reference mark. The db voltage difference between 1.228 volts and 1.0 volt is approximately 1.8 db.

The distortion caused by the meter and its external resistor when connected across a 600 ohm circuit is less than 0.3%. When connected across a lower impedance circuit, or when used with an attenuator the distortion is less. This amount of distortion is less than that caused by the NBC-21 when used under the same circumstances. When the meter and its external re-

sistor is connected across a 600 ohm circuit, its shunting effect will reduce the level on the circuit 0.35 db.

The frequency response of the instrument is uniform within 0.2 db of the 1000 cycle reading from 35 to 10,000 cycles, and within 0.5 db from 25 to 16,000 cycles.

The instrument will withstand a momentary overload of 10 times the voltage required to cause it to read to the reference mark, and a continuous overload of 5 times that voltage.

Other features are a larger meter, one model of which can be obtained with indirect lighting.

The instrument's zero or reference mark has been changed from the midscale position to a point 71% of the full scale reading. The scale card is cream-yellow to minimize eye strain and eye fatigue and is printed with bold markings to provide good legibility. The scale is a compromise between the high contrast of black and white, and the softer cream yellow. On one of the two meter cards available, the scale above the pointer arc is marked in black numerals from zero to 100, and is approximately linear with voltage. Above the 100 mark, the arc is a red band. The scale under the pointer is marked in VU from -20 to plus 3, with less prominent red dots. The markings on the other card are exactly reversed except for the 0-100 scale which is black instead of red. The scale with the 0-100 or "voltage" markings at the top of the pointer arc will be used by the broadcasting companies. The other scale card will be used by the telephone companies who are more concerned with program transmission measurements. The zero-100 scale shows the percent of the utilization of facilities, or percent modulation of a transmitter. An agreement has been reached between those adopting the new volume indicator, that the zero-100 scale will be used whenever peaks are checked. Differences in level as indicated by peaks are correctly expressed in db. Level differences are not expressed in VU due to the differences involving the gain of an amplifier or the loss in a circuit, which as previously mentioned, can only be expressed correctly in db. The VU is reserved for the absolute measurement of level by the new volume indicator.

The reference level of one milliwatt in 600 ohms is equal to approximately 0.7746 volts across 600 ohms, or approximately 1.291 milliamperes flowing through 600 ohms. To compare this with the reference level with which we are more familiar, 12.5 milliwatts is equal to 2.5 volts across 500 ohms, or 5 milliamperes flowing through 500 ohms. The db difference between 1 milliwatt and 12.5 milliwatts on a power ratio basis is 10.97 db. Since a volume indicator operates from the voltage applied to its terminals, the difference between the two standards as indicated by a volume indicator is 10.2 db.

As previously mentioned, the new NBC-22 volume indicator is not as sensitive as the NBC-21. If each of the meters, properly calibrated and connected, and without additional attenuation, are connected across a common source of tone, the NBC-22 will read approximately 1.8 db lower than the NBC-21. It was found to be impossible to manufacture a meter having the same sensitivity as the NBC-21 and retain the desirable operating characteristics of the present NBC-22. In addition to the above, there is another sensitivity difference when the two volume indicators are compared with program material. If the meters are connected across a common circuit and the sensitivity of each adjusted on tone so that they both read to the reference mark, and the tone is removed and program material introduced, it will be found that on peaks of 30 on the NBC-21, the NBC-22 will read only 80 or approximately 2. db lower. This further

decrease in sensitivity makes a total of about 4.0 db. The lowest level that can be read with the NBC-22 with the pointer at its reference mark is plus 4.0 VU above one milliwatt.

The maximum program level that may be transmitted into a loop is plus 8.0 VU. In the case of some types of remote pick-up equipment, this level cannot be fed to a loop without distortion. In such cases, the amplifier at the remote point will be adjusted so that the amplifier pad output will feed to the line plus 4.0 vu or 0 vu, and the telephone company will compensate for the difference. The level of testing tone is one milliwatt, except for those times when a circuit is being set up for a level adjustment. Then a tone level of plus 8.0 VU at 400 or 500 cycles is permissible.

Due to the impedance of non-loaded loops varying from a value above 600 ohms at low frequencies to a value below 600 ohms at high frequencies, the minimum amount of isolation between a volume indicator and a loop should be equivalent to a 6.0 db pad. The impedance variation from 600 ohms will depend upon the length of the loop. In the NBC ND-10 type amplifier the combination of the 2 db pad and reversed feedback is approximately equivalent to the isolation obtained from a 10 db pad. Larger pads can be used where more isolation is desired, and the transmitting equipment is capable of compensating for the increased isolation without lowering the line level.

Radio lines will be equalized by the telephone company for 600 or 150 ohm output amplifiers. Unless specifically ordered they will be equalized for a 600 ohm feed. Radio lines to be used with a normal ND-10 Field Amplifier should be equalized for 150 ohms.

Circuits equalized by the telephone companies will unless otherwise ordered, be equipped with coils at each end of the line. The coils will be connected so that the impedance ratio is 4 to 1 or 600 to 150 ohms. The 150 ohm side of the coils will be connected to the line. It should be kept in mind that the isolation of a volume indicator from a loop with a 6.0 db pad is decreased when 4 to 1 coils are used.

To summarize, the important features of the change are, a new standard volume indicator having more desirable operating characteristics than any of the several instruments now in use, one reference level that will be accepted and used by the communications industry, a distinguishing term VU to eliminate measurement confusion, and standard operating practices covering the use and application of each. The new instruments and practices are scheduled to be placed in operation in the plants of the National Broadcasting Company, The Columbia Broadcasting System, The Mutual Broadcasting Company, and the Long Lines Department of the American Telephone and Telegraph Company on May 1, 1939.

For further detailed information, the following articles are recommended:

1. A Standard Volume Indicator and Reference Level, by H. A. Affel, BTL, H. A. Chinn, CBS, and R. M. Morris, NBC.
2. The Standard Volume Indicator, Reference Level, and the Term VU, by George Nixon, NBC.
3. Type 30 Volume Indicators, circular R-1006-C by the Weston Electrical Instruments Corp.
4. Recommended Practices Covering Program Loop Transmission and Application of the Standard Volume Indicator, a report prepared by two representatives from NBC, CBS, MBS, and AT & T Long Lines Department.

KOA, DENVER

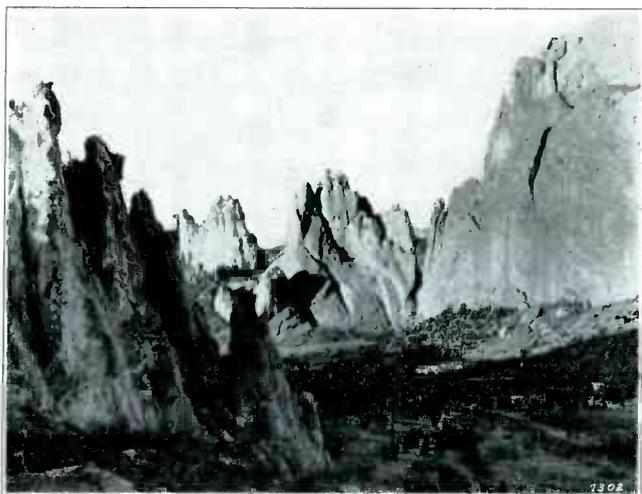
By

AL ISBERG

As the sun's first crimson darts played their color symphony upon the Will Rogers Shrine of the Sun and the singing tower filled the air with silvery music our portion of the nationwide Easter Sunrise Services was begun. The Shrine, dedicated nearly two years ago with another nationwide broadcast, is situated on the summit of Cheyenne Mountain, 8000 feet above sea level, overlooking Colorado Springs and the vast home range of Will Rogers.

To the northwest, at the foot of Pikes Peak, is an area of weird vertical formations of stratified red sandstone comprising a natural amphitheater where 25,000 persons gathered for the worshipful celebration of Christ's Resurrection. Years ago, the Ute Indians gathered here to worship their gods; hence, it became known as the Garden of the Gods.

Two circular formations running north and south frame this unique forum. The one on the west is backed by snow capped mountains of the great divide and is nearly 750 feet long and 350 feet high. High in a natural pulpit near the face of the formation the minister faces the east to deliver the Easter



message. The natural acoustics are so perfect that a sound reinforcing system is unnecessary.

This Easter service was the nineteenth since its inauguration in 1921, the last two have been released to the NBC networks. Many homesick Coloradoans, who are thrilled to hear the voices of meadow larks, telegraph or write us commenting in particular about the songs of the birds which furnish a warm and joyful background throughout the program.

The birds do not sing from the Garden of the Gods, but are picked up at the Broadmoor Golf course where the parabola

mike is directed toward the Will Rogers Shrine about a mile and one-half away. Perry assumes the responsibility of getting the birds to sing, and says he spent most of the time praying that the ducks who chose that particular region for their morning calisthenics would not join in the chorus. Glasscock twists the knobs at the Garden of the Gods (his head sticks through the hatch of the mobile unit in the right corner of the picture) and Joe Rohrer mixes the two pickups at the Colorado Springs telephone exchange.

The April Journal just arrived and I note that I didn't mention the sex of the newly acquired member of the family. He is a boy (that makes two boys and a girl), he weighed seven pounds plus, looks more like a prize fighter or lady killer than a radio nut, and so far seems content to eat and sleep except between one and five A. M. But I should brag. According to the Journal Einar Johnson of N. Y. has a baby weighing 8,31416 pounds. Does the guy who runs the linotype have a sense of humor or is it to be an exhibit at the N. Y. World's Fair?

So Tad Fullaway is a fellow seismographer! Hi, Jerb! I guess your fun must have been in the rather uncertain refraction days if your reference to a ton of dynamite is a criterion. I've seen the holes and heard the natives talk about them, but in our reflection work we thought twenty pounds was an awful waste of powder and that five pounds was a good healthy charge. If you tell your story first, I'll retaliate with mine. Any more doodlebugs in the organization?

Bill Williams has a worried expression on his face and the next door neighbors are about to move out. He's afraid the land lady won't approve the ten foot tower and rotatable beam on top of the house, and she is due back in town any time now. The call is W9UXZ on ten meters.

Rohrer's ambitions know no limits. Now he has moved out of town where he has rented a five acre ranch with privilege for putting up diamonds, V's and what not umphity umph wave lengths long. The tower came down one fine Sunday morning with the help of about twenty hams and weathered the trip to the Rohrer manor excellently. Another coat of paint and a few licks of a hammer on the nails and it's ready for anything short of a hurricane. No fooling, you boys in California where you have those gentle sea breezes should build 'em like Joe did. The tower was shown in the Ham issue, was made of sugar pine and nailed together with cement coated nails. It was unguayed, 70 feet high, and stayed put for three years in all kinds of weather and it blows awful hard once in a while.

Speaking of vacations, why don't you fellows who are pestered to death with World Fairs spend them here in cool restful Colorado? You'll find a ready welcome here at KOA and I'm sure you will enjoy our mountains.

WOR

By

R. A. SCHLEGEL

The members of the ATE of WOR wish to thank the ATE Journal for the space which has been made available for news of WOR engineers . . . all here agree that it is a great idea . . . so far no one has sent in any news or comments that could be used in the column . . . 'twas ever thus! Not one word received from the transmitter at Carteret, New Jersey but did notice in one of the trade papers that Al Jorda is the latest addition over there. He is from WHOM and replaces Johnny Morse. Dick Davis at the Newark studios must be about ready to bust loose on ten and twenty meters again. From what he tells me, he has quite a location, buried ground system and all. Think I'll write up a lot of phoney stuff on the transmitter gang . . . perhaps I'll be able to get some material that way.

Charley Kibling, W2EOA, and wife, W2HXQ, rolled up a tidy score on the recent DX brawl . . . 225 contacts on fone, 50 countries on twenty meters and 25 countries on ten. They haven't figured their score yet, so for further details read your QST (plug). Charley runs a blushing kilowatt to a few "V" beams. How's the modulator now Kib? Bet you'll install relays so that high voltage won't go on before filaments! . . . Wonder why real estate developers put houses on 50' x 100' lots . . . Carl Warren the announcer signing W1ZL, ran up a score of 6000 points in the CW contest with a single 809 which makes my 35T look sick. Took my winter vacation during the entire CW dx contest and spent the first four days trying to make my new multiple xtal oscillator and buffer work. Wonder why the wife always had someplace to go when "ten" would open up?

Jack Byrne and Johnny Cook still house hunting, both trying to find a location that will permit them to get in for the 6 am sign on. Try and do it! Dick (Casanova) Borner looking at houses and thinking of getting married. He does that every spring tho. Still, he finds time for an occasional game of checkers. Says he'll gladly arrange a match with anyone at NBC. Jim O'Connor, recording, getting married. Why is it that the boys who plan on marriage always buy their ham equipment before the ceremony? They won't use it for at least a year and then it becomes outdated . . . The honeymoon of Howard Donniez must be over. Heard him on twenty fone the other day . . . Paul Reveal trying to put over a "deal" for a new receiver. The ham bug must be biting. What's happened to the photography "Pop"?

Shirley Davis still trying to find a house with built in dark room and a place to raise Siamese cats . . . Maybe we can talk these photographers out of a few pictures . . . Bill Ulrich getting the deep sea fishing tackle oiled up again and keeping his eyes open for lead scraps . . . Is Russ Thompson in Denver (March Journal) the fellow I knew in Minneapolis too many years ago?

He had a Thor spark transmitter with enclosed Benwood rotary gap (not beam). Maybe he'll remember 9HR-9CSJ? . . . Now that winter vacations are over, we're thinking of what to do and where to go this summer. Samuelson taking a month tour of the country and going to the coast for a look-see. If you hear of anything good Cy, keep me in mind.

Easter morning in New York the remote department got out the UHF equipment for a broadcast of the Easter parade as viewed from the top of a "coach and four." The morning started with a snow storm at 7 am but clearing skies gave the boys a sunny but chilly day on the Avenue . . . See by the April issue of the Journal that one of Fundrum's gags back-fired! Wonder if the statute of limitations applies to incidents that happened over ten years ago? How much do I get to keep quiet Ed? Remember "Strawberry Mansion" etc.? . . . Henry Miller rebuilding his rig and offering many mounted crystals for sale. Wonder if he is going ECO? WOR recording department alterations nearly completed. Will have facilities for cutting eight programs at one time. Extensive alterations in master control and studios keep the construction department busy . . . Now that the minicam craze is abating, the boys are casting glances at the new junior speed graphics. Several of the boys are also going in for 8 and 16 mm home movies. How about showing some of that 8 mm stuff Hax? Better take the lens cap off next time . . .

Hadden laid up with severe case of poison ivy . . . sure sign that spring is here . . . Should be about time for Poole to come in with white gloves and his usual case of poison ivy . . . these farmers . . . Nilson getting his Chinese junk "AMOY" ready for the World's Fair. Understand he plans on showing it at the harbor there . . . James MacKenzie Reid showing a picture of his newly constructed "hot house." Now you'll be able to supply the office girls with fresh flowers during the winter and how about me? . . . D'Agastino please note: Herman Berger stil has the first tube used by NBC . . . Late bulletin on the O'Connor nuptials: Left April 11th for a week cruise to Bermuda. Wonder if he will visit the radio room on the ship? . . . Another late bulletin: Reveal closes deal and now has new RME 69. Hope you keep this one and really get on the air . . . Lew Tower still finding time to add to his "O" gauge model railroad. Or is it "OO" gauge? . . . Ray Lyon looking at catalogs of model railroads. Where will you put it? . . . Hope that next month you fellows will come thru with some information. Let me have your calls, frequencies, and what's going on around the place . . . This coming month is going to be a busy one for me while moving to a new house. Assortment of masts, beam antennas and just plain antennas for sale or what will you trade?

CHICAGO

F. C. Shidel

On Thursday, April 6, 1939 a gathering of Transmitter Engineers and their wives was held at the WLS-WENR transmitter at Tinley Park for a farewell party to Justus Allen who is leaving for Television in New York. A dandy meal was arranged for by the wives and Allen was presented with a Shaffer pen and pencil set . . . Evening spent playing bridge.

The annual flood of scenic post cards from all parts of the South and parts of Mexico have started to arrive in the control room mail box which tells us that Field Engineer Tom Gootce is on his vacation.

Joe Conn recently departed for New York and his new assignment in television. Paul Clark took over Joe's duties as chairman of the ATE Dance, being beat up for serving April 14th.

Jim Platz, W9GY, Bill Cole, W9BU, Willard Conrad, W9WC and yours truly, W9CIU burned up a few extra kilowatts during the recent phone contest. Due to lack of time and lousy receiving conditions low scores were enjoyed by all concerned. After tiring of hollering at DX for a week I was much amused when QSO a W1 in West Hartford who ask, "What is all this number racket about?" (On further questioning I found that he lives three blocks from ARRL HQ) Well . . . I thought it was funny anyway.

Just as an example of how they do things in a big way in W6 land . . . was GSO a ham using 100 watts input to his transmitter and three and a half H. P. into the rotating motor of his beam antenna. He said he could not tell what direction it was pointed as the fog was too thick . . . Wonder why Brooke doesn't have a subtitle "Fog" in his column.

Randolph Field, Texas
April 2, 1939

F. C. Shidel
A. T. E. Journal
Chicago, Illinois
Dear Fred;

As per your request here in a short account of the activities of the Chicago Field group at San Antonio in connection with the Army Day preview of the Magic Key show, April 2nd. Our portion of the program was short but in the three minutes time allotted gave a fair picture of the part that Randolph Field plays in the training of our future Air Corp Officers.

Messrs. Limberg and Cummings left Chicago by train with all the equipment and Mr. Lanterman and myself followed later by plane. Mr. Limberg and Mr. Lanterman were stationed at Kelly Field, Mr. Cummings and myself at Randolph Field.

Randolph Field is the primary training school for the flying cadets and here they get the first eight months of their training. I understand that 60% fail to qualify. If they pass they spend the next four months at Kelly Field where they complete their training and become second Lieutenants in the Air Corp. The entrance requirements are very rigid from a physical standpoint. A cadet must have at least two years of college education or its equivalent, be between 20 and 27 years of age. The physical

exam disqualifies nearly 75% of the applicants.

Captain Todd, Post Adjutant, was assigned by Col. Brooks, Post Commander, to see that we received all the co-operation that we needed. We were regarded and treated as officers while on the Post.

Our portion of the show opened with the sound effects of a bus load of recruits arriving at the Field. The sound of the bus stopping and the babble of voices as the boys unloaded was picked up on a parabola mike at close range. The voice of Col. Brooks was then picked up on a mike inside the hanger and he gave a short synopsis of the activities at Randolph field. He then turned the program over to an instructor at a mike out on the field who gave typical conversation while some of the cadets were making practice landings. The sound of the landing planes were picked up by swinging a parabola mike on them. From the field the mike was turned back to the hanger for a demonstration of the Link trainer. The Link trainer is a small plane with clipped wings mounted on a pedestal and revolves and simulates the motion of a plane in the air. It is completely equipped with instruments and the cockpit is covered so that the same conditions as night flying are experienced. The instructor can talk to the student by telephone and the student also hears the radio beam signal. When he is on course he hears a continuous tone, if he veers to the right of the beam he hears dot dash or A in code, if to the left he hears dash-dot or N. We received the radio beam signal directly by bridging our amplifier to the radio beam amplifier, and mixed this with explanatory comments from the instructor and student on a mike.

The program at Kelly field consisted mostly of short wave communications between the planes and officers on the ground.

To make our visit more pleasant we were invited to a shipwreck dance given on the patio of the officer's club. As it was a costume affair we went without shaving and borrowed old slacks and torn shirts around the post. Bill and I were somewhat embarrassed, in trying to borrow slacks, that practically all of the officers around the post had 29 inch waists while Bill and I needed about a 34 or greater.

After the program Captain Todd made arrangements for the NBC crew to go up in three of the BT-9 training ships. We did a few formation maneuvers and then Captain Todd, whom I was with took me over to Kelly field and executed a few acrobatics which at first completely flabbergasted me but after a bit I began to enjoy it. Bill said that the takeoff and landing didn't bother him but the plane began to bounce a bit in rough air his stomach objected strenuously to handling a malted milk that he had had just previous to the flight.

The army personnel that worked on the broadcast at Randolph Field were extremely interested in how the program was arranged and executed and want to fly up to Chicago so that they can spend some time in the studios and see more of how it is done.

Hoping this reaches you in time for your deadline, I am, yours truly,

JIM THORNBURY.

THEY SAY . . . J. R. Miller had quite a time shaking off a persistent salesman of brief cases in gross lots . . . M. F. Royston is driving a new DE SOTO coupe . . . President L. R. Lohr was in Chicago recently for a brief visit . . . Bill Cole and Paul Moore originated the idea of soldering beer cans together to make a vertical radiator for the ham rig . . . J. M. Wilson, who is vacationing in his home town of Brownsville, Texas, has promised to bring back a few quarts of Mexican "varnish" . . . M. J.

has a new Pontiac coupe . . . One of the boys called on Vern Mills and found him in a vacant lot flying a kite while his little boy stood by and watched . . . Since Fred Allen made that crack about finding Minsky's by going outside the studio and following anyone wearing spats W. T. Knight has ceased wearing his around the studios . . . R. C. Bierman has a synopsis of each VIC & SADE show written down in his pocket notebook (RCA Reference Book—plug) . . . For several days after Easter, Hunter Reynolds was observed consuming colored eggs during his lunch hour . . . DON McNEILL has been plugging our dance on his BREAKFAST CLUB show on the BLUE, hope we are not billed for same . . . Marv Royston is memorizing the highway numbers and mileage and names of the principal towns on his vacation itinerary so he won't have to bother with maps and misinformation from service station operators . . . Glenn Webster put an ad in QST for the sale of his ham rig and is getting lots of bites . . . Hub Abfalter now on vacation in Detroit home of his girl friend, I wonder, I wonder . . . Hugh White has forsaken his ham rig for his Seabird Yawl . . . Marshal of the Field Department, Marshall Rife is also getting his boat ready to dunk in Lake Michigan.

The Radio Engineer's Lament

By GENE ARNOLD, (Chicago NBC)

Let me get out of here, stranger
And don't mind my hat or my coat
These headphones are drivin' me crazy
This Control Room is gettin' my goat.

Yes, I'm a wreck—what of it?
I'm through and I know it, old boy,
But I can remember the time, pal,
When life was an endless joy.

I came from a small country town, lad,
Yes, left my old mother, so dear;
But I wanted to get on the air, lad,
To be known as an engineer.

She warned me against those announcers,
She said they would drive me insane;
But to get on, I thought I could take it—
I was "nuts," pal—plumb "goofy," that's plain.

You ask what they did to me, brother,
You wonder how such things can be—
That announcers can drive a man crazy,
I'll tell you—just listen to me.

In the first place, announcers are creatures
Who yell from the day of their birth,
And go talkin' and squawkin' their heads off
As they roam o'er the face of the earth.

Just as sure as the sea finds its level,
To a radio station they go;
They find there the chance of their lifetime
To puff, rave, rant, holler and blow.

Well, it's easy to get an audition,
Of the microphone they have no fear;
They look through the plate glass partition
And see the poor, meek engineer.

There he sits, with his gadgets and headphones,
As helpless as rats in a trap,
And, to the announcer, he's "Deadpan"
Because there's no smile on his map.

But how can he smile—now, I ask you,
As, hour after hour, through the day,
He sits there and hears those announcers—
He hears them,—he can't get away.

There's voices that sound like a fog-horn
Or some savage creature, at bay;
There's dog-barks and cat-calls and whistles
But that is announcing, they say.

Some voices come through like a hoot-owl
Or cats that are scratching on wood,
And the poor engineer is the fellow
Who sweats blood to make them sound good.

And so, pal, in time, it just "gets you"
You hear those weird sounds in your dreams;
You can't get your mind off announcers
Nor shut out their blood-curdling screams.

So I'm washed up. I'm "nuts" and I know it—
I haven't a thing on the ball,
But you tell the world 'twas announcers—
They, alone, were the cause of it all.



CHECK YOUR OIL, Sir!

When you make this your service station there's no need to use the old "oil" on your customers. With real values to offer you can forget the high-pressure stuff. And it's real values you get when you order from Wholesale Radio Service Company. We stock only top-quality equipment — all nationally advertised goods. We carry a complete line of more than 50,000 radio items. You can't beat the prices. Shop here and watch your business step on the gas!

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ATE AMATEUR NET

By

GLEN GLASSCOCK, KOA, Denver

So you'd like to know something about the "ATE" net? Suppose we go back to about a year ago this time and follow the developments up to date.

Much letter writing took place prior to the actual beginning of operations. The final decision being—to pick out a frequency that was not in use at that time by one of the then organized ARRL Trunk Lines, and a frequency that would permit operation in all three of the principal amateur bands (3.5, 7, & 14 MC). ARRL Headquarters was consulted and advised us that 3570 kcs was open and would be set aside for the NBC engineering group. Then followed more letter writing, procurement of crystals, and setting a day and time for the first get-together.

The first round-up took place on October 5th, 1938, with 8 stations getting into the swim. W9GY, W9WC, W9SBC, W2ZA, W8LLG, W8LEX, W3HN, and W9FA. The first few weeks a combination of 7140 kcs and 3570 kcs was worked to test out the reliability of both frequencies. The first hour being devoted to the higher frequency. This worked fine except for the fact that some of the boys were not equipped to operate on 3570 kcs and had to drop out after the first hour. A little later on, when all were fixed up to handle 3570 kcs, the 7140 kcs was dropped because signals seemed to be more reliable on the lower frequency as we approached the winter season, and too, because the QRM problem on 7140 kcs prevented reliable contacts just when we wanted to put something thru. By this time the net had grown so that it included every division point and a total of about 16 ham stations. Along about this time it was suggested that some of the gang give 14280 kcs a try on Sunday afternoon. A few of the fellows did get on a bit but results were rather spotty because Sunday seemed to be a more desirable day for outings, etc. As a result not much was gained from 14 MC operations.

By the first part of 1939 we had a total of 20 stations represented on the "ATE" net and things were going in fine shape. Then operations were shifted to Wednesday nite instead of Monday nite and things began to happen. It looked as tho most of the gang had been having Monday nites off because only about 5 or 6 stations were clicking regularly.

About the first part of March, ye writer of this episode decided that something must be wrong so a letter was sent to all who had previously participated in the activity, asking how come? The replies were quite convincing that certain changes would help to increase activity . . . namely, get the net operations back to Monday nites, set a time every day for contacts on both 7 and 14 MC, and to drop the 3570 kcs operation except for local short hops or late night contacts. Well, this was quite an order to put thru in one jump but letters were mimeographed and sent to all active participants (plus a few others who might be interested) changing the day, time, and frequency. Much to our surprise it worked well the first time, and the second time it really "took." We now have a total of 23 stations accounted for in the work and every division point is represented. The only group we lack now is Schenectady, and we have hopes of having them in on the work soon.

At the time we changed the day for net operations back to Monday and the frequency to 7140 kcs, we also set aside noon EST each day as the time to try for 14280 kcs contacts. Thus far very little has been reported on this part of the operations but it is hoped that by next month we will have quite a list of contacts on that frequency.

Before we go into listing the active participants and a tabulation of the operating times, let's take a look at the ideas and principles of the "ATE" net. The main idea is to get all of the NBC hams acquainted. . . All are invited to participate. Get on the air on the designated frequencies and at the times specified and hook up with some of the gang. The listing of ham stations in the last issue of the Journal indicates that we still have a great number of the fellows to hear from. How about joining in the fun? Contacts are urged every evening on 7140 kcs at 8PM EST or at Noon EST every day on 14280 kcs. Really get acquainted with the rest of the fellows in the outfit . . . find out about such things as "Parky" W6IY now has twins to keep him busy, and W8LEX Caskey has a pet lizard to keep him hunting flies to feed the durned thing. Did you know that Dick W6PHS is an aviator?

Then too, if you're interested in handling a little bit of traffic, join in the "net" operations on 7140 kcs on Monday evening or work the 14280 kcs spot every Friday Noon EST. That brings up another reason for the "ATE" net . . . to provide reliable communication in case of emergency. Remember, "public service" is one of the principal points that helps us to maintain the amateur bands, and the more we use them for that purpose the better chance we have of maintaining them "as is." If you like the traffic idea, stick with the traffic hounds, if not then take advantage of the other nights and chew the fat with some of the gang . . . but get on the air at the times specified and on the frequencies designated and keep the ball rolling.

Next month Fricker W2IHI will get out this little column and give you some more dope on what's going on. After that we'll get someone else to dish out his ideas.

Here's the schedules of operations as mentioned above, and a summary of the stations to be found in operation on the net.

	Day	Time	Freq.
Net Operations	Monday	8 P M EST	7140 kcs
Rag Chews	Daily	8 P M EST	7140 kcs
Net Operation	Friday	Noon EST	14280 kcs
Rag Chews	Daily	Noon EST	14280 kcs
New York	W2ALB, W2IHI, W2ZA, W3HIH, W3AOH W2ARB, W2VY, W2JJ		
Washington	W3ANJ, W3HN		
Cleveland	W8DBC, W8LLG, W8LEX, W8FP		
Chicago	W9GY, W9SBC, W9FQ, W9WC		
Denver	W9FA, W9FKQ		
San Francisco	W6JJ, W6KM, W6ACX, W6IY, W6PHS W6CRO		
Hollywood	W6OSH		

73 to all, C U on the air.
Glen W9FA.

NEW YORK

By Ted Kruse and Jon Larson

Ashworth, NYFE, is rapidly recovering from his recent appendectomy and is so anxious to get back to work that he is getting cabin fever at home. Better not apply a half-nelson on WNBW too soon Ash'.

George Shields, NYSE, is vacation relieving at WEAJ this year. We recall Al Wies' return when he said "Call me high power!"

When NY Telephone instituted their new weather service at their dial number WEather-6-1212 Mullaney was heard to exclaim, "Well, blow me down!"

The Rockefeller Center Camera Club announces the date of its first annual exhibition on the No. 3 Mezzanine Floor, RCA Building to be May 18th to May 24th inclusive.

Wies, Thompson, Fricker, and Larson spent the weekend of March 31st at Old Point Comfort, near Langley Field and Ft. Monroe, way down south in Ol' Virginny for the U. S. Army demonstrations on the RCA Magic Key. The sharp contrast between the warm climate and our belated Spring in New York was hard to take.

Admiral High Power Wies may soon be seen sailing the treacherous (!) and hurricane swept south shore of Long Island in his new outboard powered yacht.

Gilbert Markle is reported to be on the little nibble list again after being on the long time no see steak diet. Yumm!

Sun bathing via the Engineers Lounge in 589. Treasurer Markle still trying to collect \$.25 per each for the last bulb bought. Oh Me! And they are investigating rackets in New York too.

Rudy Bauer and Dave Moloney have Spring fever . . . new hats and a yen for cruises. Falcone remains undecided.

Abbott has been seen looking at new pipes lately . . . and cleaning old ones.

"Banana Merchant" Montilla says a new Buick is safe now that the 6th Avenue L is down. I wonder what he means?

Milt Kitchen has added a picture of Harry Hiller to his Rogues Gallery. Better not doze again Harry . . . Golf is almost here . . . John Pawlek says Yeah. . . Hollis Young was seen carrying a baby rabbit around in a shoe box. Looking for Easter eggs Hollis? . . . Bill Kelly making progress musically via the plunk plunk method . . . Frank Williams reading music. Finds there are scales in other places besides on fish . . . Field reported selling one pair of binoculars now that the new building has shut out view. Anyway, who wants to be a peeping tom . . . Waist lines: one going up . . . John Kulik; one going down . . . Ted Kruse.

Note: In the future, the symbol NYV shall indicate the NY Video Group.

Ed Manning, SFSE, while at the San Fran Fair, long-distanced Burrell, NYV, who got quite a kick from the realization that out of sight is not out of mind!

Orchids to Nixon, DE, and Baston, NYTE, for their swell cooperation in giving Journal readers the article on the new VU."

Request was made of SF for material on the SF Fair; nothing received up to deadline; why?

Rumored, that WMCA transmitter must be moved by Dec. 1939 because its towers are only 4 miles from the Pan American air bas at Port Washington, L. I.

The proposed new location of WEAJ at Port Washington, L. I., is about one mile from the Pan American air base, but it seems the tower cannot possibly be a hazard because the big planes cannot land on the inlet from the direction of the tower.

We are looking forward to Pres Horstman's next news letter!

With the exception of 2 members out sick, the NY Chapter reports its staff 100% paid-up 1939 dues.

Engineering Chapter also 100% paid up.

Harry Hiller, NYSE, is rumored going to NY Fair as Technician.

At this writing, the Tele-Mobile Unit has not been sold for junk; very much alive and kicking.

Recent additions to Television include, Beverly Fredendall, E. Dudley Goodale, Edward Cullen, William McMillin, Robert Thatcher, Wilbur Resides, and Herman Gurin, all from New York.

If your auto battery gives you trouble during the winter months, advance the third brush on the generator, remove connection and insert rheostat between the removed connection and the brush. The rheostat may be mounted on the under edge of the dash, giving full control of the charge rate from the driver's seat. Caution! If you have an auto radio, use shielded wire to the rheostat.—Ed. Stolz.

Another tip for you fellows who leave your cars out in the rain and experience difficulty in starting. Instead of wiping spark plugs, wiring, etc., remove the distributor cap, wipe out the moisture between the contacts and replace the cap. If the car does not start then, write us enclosing a stamped self addressed envelope and we will send you five cents carfare by return mail.

This issue of the Journal will find the 6th Avenue El gone, and we advise those fellows who frequent H & H to wear raincoats or use umbrellas on rainy days, as the protection afforded by the "Old El" is missing.

It looks as if the NY and Eng. Chapter personnel will have to visit some other Chapter if they want to attend an ATE dance! A jointly sponsored dance by the NY and Eng. Chapters could prove the finest in ATE history. Is there a second, or are we anti-social?

Sellar, W2ALB, and Fricker, W2IHI, are at present active in the ATE Network on 7140 and 14,280 kc, regularly contacting the gang in Chicago, Denver, etc. Monday nite sked at 8 PM EST on 7140 kc; Friday sked at 12 noon EST on 14,280 kc. Your traffic is solicited. There are apparently some of our "ATE Hams" that are not familiar with the history and reasons for wanting an ATE Ham Network, operating on some spot frequency on reliable skeds. The Journal expects to pre-

Jay Sehn
R.R. Coanville Ind
W8TBT - W9A1N-WEOR

sent an interesting story about the ATE Network in an early issue.

A. W. Christopher, NY Maintenance Supervisor, reports success with an RCA Little Nipper.

George Shields, ex-SE, recently transferred to WEAJ transmitter; we will miss popular George.

A. W. Saunders, NYME, has been transferred to Recording as vacation relief.

Fishing Club Charter Members, Charlie Dickinson, Harry Hiller, and Phil Falcone, in a huddle these days planning their Spring excursions into the wilds.

The addition of WJZ, NY Blue, to the repeat Fred Allen show Wednesday nite, is a swell break for a lot of toilers, etc., who have been deprived of this excellent piece of entertainment thru no fault of their own.

When States, NYV, was transferred from Chicago he left his NBC pass behind. Upon the arrival of his first paycheck, the bank recognized his ATE Due Card as valid identification and cashed his check!

Blessed Event at the home of Mr. and Mrs. R. M. Morris of Milburn, N. J. The visitor has been named Ruth, and arrived March 30, 1939. Our Development Engineer has previously been blessed with a boy, Alvin.

The NY Chapter plans a General Meeting April 26th to straighten out the mess of rumors recently circulating about union activities . . . and lead pipe!

Trying to determine "who would fit best where" in regard to the proposed television operations scheduled to start April 30th, has been a major problem of the NBC's Engineering Department for the past three months. However, after much "shuffling" and "re-shuffling" of engineers, transferring, hiring and the like, the information contained in the following paragraphs relative to the personnel of NBC's television staff can be relied upon as being authentic—subject to change without notice, of course.

On January 1st, 1939, the total television personnel connected with the technical operations consisted of 35 men. To date, this total has been boosted to 54. Here's how the additions and transfers took place:

From Chicago—W. L. States, J. W. Coon, Jr., and J. A. Allen; from Washington—W. S. Carson. New men employed from outside of the company were K. U. Landsberg and H. C. Baumann. The General Service Department of NBC contributed A. Naszimento, W. J. O'Hara, R. Werrenrath, Jr., and F. Burns, who will serve as technicians in the television studios.

The following men were transferred from the various groups within the Engineering Department in New York into television: B. F. Fredendall, W. R. McMillin, E. R. Cullen, R. O. Thatcher, E. Stolzenberger, R. D. Chipp, W. C. Resides, E. D. Goodale, and H. Gurin.

Since January 1st approximately 25 men have been involved in these various transfers and additions.

On Friday evening, April 21st, approximately 40 engineers and their wives or best girl friends, as the case may be, donned tophat and tails and "nudged in the groove" or "fell in behind the rug-cutters" at the NBC AA annual dance held at the Hotel Roosevelt, with Peter Van Steden's Ipana Troubadors doing the honors. 'Twas a gala affair, indeed, and woe be unto those who were reluctant to part with their snoozin' and missed this extravaganza.

With the coming of spring (I daresay there are some doubtful Thomases who would disagree with this statement) NBC's Engineering Department are getting down to brass tacks in organizing a couple of softball teams. With approximately twenty-five candidates signed on the dotted line it certainly looks as if there is going to be quite a fight for that Athletic Association prize

when the final games are played. An added thought—it seems as if everybody would like to play *against* Al Protzman, of the television staff—so you can be sure that there will be plenty of interest to those participating, as Al doesn't care who he plays against or with—so long as he wins—and of that he is certain.

REFLECTIONS

By

H. E. MEYER

Sun . . . According to the latest reports from our Hollywood Scribe, the weather has been perfect in the West all winter. Maybe so, maybe so, but if we are a bit skeptical it is only because of what we read. Quoting an article from the New York Times dated April eighth, we find the following: Seven persons were prostrated as the mercury reached 84 degrees here, in Los Angeles, yesterday. The day before it was 91. Well, it seems that one must have either plenty of heat or plenty of cold because in New York the temperature was 32 on that same day. In fact, the thermometer has hung around 32 all winter here in New York. What used to be called the "land of milk and honey" is no more, or, as Brooke would say . . . no oranges . . . nothing green. But wait! As we go to press, the leaves and flowers are beginning to appear. Maybe Spring is here at last.

Changes . . . The 6th Avenue L has finally gone! The last of the steel structure has been dismantled and taken away. What a difference! See photo. What sunshine! One would hardly



know the place. When the board walks and streets are removed from atop the new subway the change will be amazing . . . New lighting has been installed in Master Control. The old lighting caused shadows and the new should be much better on the eyes . . . The new type VIs are to be installed in all studios the first of May. Though they are not new to Hollywood, we, in New York, will be using them for the first time. Finally, all concerned will operate on a common basis. Many new faces in Television. Names will be found elsewhere in these columns . . . Ward and Gallant on vacations. Ward went to Bermuda and Gallant to Havana but neither have returned at this writing.

Journal . . . We note with pleasure that the boys are tossing orchids around. This is a good sign, we think, so we will throw a few ourselves. Brooke . . . That was a fine reporting job on the general and engineering meetings in the last issue. Keep up the good work! Fullaway . . . Thanks for the suggestion regarding more technical articles. We will try to please. Newman . . . Expect to receive a story from WEAJ any day now

commenting on the WMAL award. You see, WEAF did not have the correct dope after all. Or did you fellows profit by their story last year? Isberg . . . The boys in New York liked your story on the Roy Felts new home. Rather late for some of us but others can profit by experience. Shidel . . . Your picture of Ed Horstman and Ina Ray Hutton has caused considerable comment in local circles. The concensus of opinion seems to be that Ed. should sign her up now for the next Christmas issue. To all our contributors . . . Thanks for your help in making a bigger and better magazine . . . From time to time we have made changes and additions to our box. If we have failed to mention these changes, we hope no one will feel slighted. The omission was unintentional.

Active Interest . . . It is rumored that a definite lack of interest in ATE is being felt in New York. This rumor is untrue but caused, no doubt, by our inactiveness in local and national affairs. It is up to us to show our president that we are in back of him 100%. We can only show the effectiveness of our organization by active participation. Let George do it is not our motto. Or is it?

Sports . . . DeSomov, Dickson, Falconi, and Hiller have done some early fishing but reports are meager. It looks like the West has them stopped on fish stories for the time at least. A. T. Williams still spends his spare time flying. "AT" says his offer to take Jake O'Kelly aloft still holds when and if Jake is willing. Meyer is still swinging a mean golf club in his garage but a recent offer of a bet with Brooke will not be taken until Meyer finds out what odds the "Pro" is offering.

Expansion Policy . . . In line with the present Journal policy of increased circulation, we are happy to report this month that both Columbia and Mutual Networks are receiving our magazine. It will be noted that Mr. R. A. Schlegel of WOR has kindly consented to take the job of associate editor for Mutual and Mr. M. Escher of Columbia's New York Studios has consented to take the job for Columbia . . . Mr. W. C. Pruitt, our Cleveland Editor, has been replaced by Mr. F. C. Everett. We are glad to see you Everett but sorry to lose Pruitt. He has promised to come back and assist with the news whenever needed . . . John Fricker, NYFE, has consented to take the job of ATE Network Editor. Good for you, John. Let's have all the dope!

RUMOR & GOSSIP

CBS-IBEW: We of course know that the CBS Engineers have chosen to affiliate with the AF of L's IBEW. It would be interesting to have President Horstman's comments on this move. We understand there can be no changes in the existing agreement at CBS until August 1941; it appears they are an autonomous Chapter of ABT within the IBEW; the national assessment is \$2.00 per man per month; about 280 CBS Engineers are involved; the National Organizer to be chosen by the CBS Boys, at \$5400 per year salary guaranteed for 5 years.

Understand that someone of authority at the New York Fair said in effect, that "This Fair will be a 100 per cent AFL Union project!"

Heard that the Wagner Labor Law will be modified to outlaw jurisdictional union troubles.

We observe that a Federal Court jury awarded an Employer damages of \$700,000.00 against its employees' union, as a result of a 48 day strike. In connection with this, we earnestly refer you to the New York Daily News editorial of April 6, 1939, "Dangerous Labor Decision." This case should make each of us realize the precarious financial position we might find ourselves in without notice, and for many and varied reasons.

The "Wise Money" says we stand to lose if ATE ties up with IBEW.

We heard that the predominating union at the San Fran Fair finally recognized the ATE Due Card as representing a reputable union in the field!

To divide Journal production work, Compton and Stolzenberger have agreed upon individual responsibility for alternate issues of the Journal; April issue by Compton, May issue by Stolz, etc.

Philosophy: "My wealth lies not in the greatness of my riches, but in the fewness of my wants." Any subscribers?

Rumored, that Hitler and Mussolini are cashing in on their apparent influence on the Stock Exchanges of the world; if true, this might explain the source of money feeding their military machines.

Associate Editors: In your next telegrams indicating that your material is in the mails, please add two additional words, "Quarter Page," "Two Pages," etc., there are about 2,000 words per page.—Stolz.

From Pg 24, April 1939 QST: (CREDIT)

. . . . The examination of these bills (White and Wheeler bills—Ed) by Congress, amateurs should note, is going to be done in a highly political atmosphere. Most of the politics will revolve about broadcasting, because next year is election year, and broadcasting plays an important part in that story. There are going to be long and bitter wrangles, investigations, counter-attacks. The political atmosphere will not be conducive to sober examination of facts, and things will not be what they appear . . .

FCC announces there are 51,000 amateur operators in the United States, as of February 1939.

Next ARRL Board Meeting to be held in San Francisco, May 1939. (Now is the time to advise your Director of your desires, complaints, etc.—Ed.)

Net gain of ARRL operations, exclusive of appropriations, for the last quarter of 1938 was \$7,705.23.

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KFI-KECA

By H. M. McDONALD

WORK OR PLAY? George Curran and Ray Moore just returned from a two weeks' trip up North some 500 miles where they measured KFI's field strength. They called it work but we call it a pleasure jaunt.

Here are a few excerpts from their itinerary: Up through miles of orange groves, heavy with the perfume of billions of blossoms; many more miles of foothills and fields carpeted with wild flowers; hundreds of miles (correct) of fruit trees in blossom and fields of spring vegetables; up through the Mother Lode gold fields; and into the snow-covered mountains, slowed down a bit now and then by dozens of skiing parties; further up, where nothing except the purring of their motor breaks the silence, and each curve reveals breath taking views of mountain peaks more than two miles high, deep under many snowfalls, and giant evergreens, their branches heavy with snow, and swift mountain streams far below. Over the summit and down past Donner Lake where the ill-fated Donner party perished while on their way to California during the Gold Rush, and then 25 miles along the shore of beautiful Lake Tahoe, the second largest lake in the world at that height, 6,250 feet.

We knew that, despite the intervening Sierra Nevada range with its peaks up to 14,000 feet, our signal was good up that way but the FCC demands evidence to prove assertions and the boys brought back evidence a-plenty, including yards and yards of material from the Brown Recorders, all of which will show a 50% signal of 1½ mv. after sunset. George Curran has given much testimony before the FCC and they recognize him as an expert on field measurements.



The four pictures, part of the three dozen taken by Curran, show some of the scenery around Tahoe, the Field Car with the 40 foot detachable telescopic pole raised, and a view of the inside of the Field Car with the two Brown Recording Potentiometers for recording the field intensity in the upper rear and their associated receivers below.



SIGNS OF SPRING: From reports heard on 2738 kc (ship to ship phone frequency) we learn that great schools of fish are coming up the Mexican coast, on their annual trip north. In anticipation of a good season the salt water fishermen in our organization are putting their gear in order. Tokar bought Bruere's fancy pole and hopes for Bruere's luck. Everett is putting in all his spare time overhauling his boat. Much argument

among boat owners over rules and regulations, safety devices, fog horns, number manuals required aboard each craft, etcetera, all brought about by the recent activities of the U. S. Coast Guard inspectors and the heavy fines being assessed for violations.

RESCUE: Four times within a few months Seymour Johnson while at sea on the M/Y Seyelen II has sighted small craft in distress and has summoned the Coast Guard by radio to assist them. States that the Coast Guard answers the first call, reaches the scene in short order and are very efficient at rescue work.

OWN YOUR OWN: A building boom is on here and everyone is talking FHA and floor plans. The article from Denver on Roy Fell's home was timely and read by many here. Had three requests from outside the department for copies of the article. Charley Bruere has just let the contract for the building of his new home in Temple City.

FCC CRACKS DOWN: A resident of San Diego county was recently convicted in a Federal court of operating a radio transmitter without a license and was sentenced to one year in jail. Sentence was suspended though and defendant, who had been operating a five meter transmitter for some time, was placed upon a year's probation.

Until the regulations forbidding modulated oscillators recently went into effect, and practically silenced the five meter band hereabouts, there were a number of unlicensed low powered stations who claimed they were not subject to Federal regulation because their signals were too weak to be heard in other States. Federal judge stated that the signals are interstate in character and that ALL stations must be licensed.

Also hear of another "ham," said to be employed by a Los Angeles broadcast station and hold a Radio Telephone First, whose amateur license was suspended for three months for failure to answer summons, being off frequency and A2 emission.

EMBARRASSED: Two men from KNX, Columbia's 50 KW here, passing by KFI transmitter one evening dropped in to get acquainted. Bill Edwards passed around cookies and candy, the only refreshments he could find in the station refrigerator. Shortly after the guests left Bill found that many of the fancy filled cookies had shaving cream in them instead of vanilla icing and that much of the candy was filled with soap. He then remembered that it was April Fool's Day and that the men on the day watch never miss the opportunities it affords. Question is did the guests get the real or the doctored sweets, and if the latter what reprisals may we expect.

HAMMING: Clarence Seamans, W6GP, after almost complete absence from the air for many years, is back on 20 with an NTE exciter and the slogan "DX with flea power." Taking much kidding from the kilowatt (plus or minus) boys around the station. He counters with "Wait'll I get my new antenna up."

Seymour Johnson, W6OE, is building a ten meter set for his car to replace the five meter rig he has had for years.

BEACONS: Al Lincoln is busy revamping the pec cell control of the lights on the two 400 foot towers at Buena Park. He tired of rural life last month and moved into Los Angeles and now has to drive twenty miles each way to work.

NOT RADIO CABINETS: Carl Sturdy who is plenty handy at lathes and such-like, is buying woodworking tools and is going in for cabinet making. Bad idea; wives always think up too many things they want cabinet makers to build.

HOLLYWOOD

By BOB BROOKE

More Engineers go FHA . . . Cappy baby . . . Vacations start . . . Economy arrives in Hollywood . . . Everybody at the beach . . .

PERSONALS . . . De has transformed one side of his two unit garage into a swellegant play room for the kids and a spare bedroom . . . Denny out for three weeks having his troublesome appendix removed and recuperating . . . Three appendectomies in a week around studio . . . Confidential reports indicate Full-away (SF scribe) to be married in June to beautiful Honolulu gal . . . Fergy back from Palm Springs and no big shows aired from there due terrific cost of maintaining casts in \$25 a day hotels . . . Steve Hobart reports his new Westwood home a honey . . . working hard putting in lawns and cleaning up loose ends . . . all concrete with steel casement windows . . . warm in winter, cool in summer . . . three radio outlets . . . no tennis court . . . sez, "I'm going to try that beach of yours this summer" . . . (writing this at beach) . . . Frank Figgins took third prize in party candid camera contest . . . his first contest try and his second roll of film . . . Al Korb worried when youngster had double pneumonia . . . new English serum brought him right out of it . . . Charley Norman getting a ham license again and building a 15 watt mobile 28 mc job for his Zephyr . . . Norman, Lorenz, Korb, O'Kelly, Miler, polishing trout gear for 3 A. M. the morning of May first . . . All will be fishing for the trout they missed last year at Big Bear Creek, 6,500 feet up and 80 miles from Hollywood . . . Eddy and Charley have equipped the lounge with the most complete set of detail maps we have seen . . . Eddy talking new car . . . Katie Phelan has a new desk to match other new Radio City furniture in Engineering office . . . Gert and Jake O'Kelly to Sequoia for few days following auto trip to San Francisco Fair . . . His first to SF and likes it . . . much impressed by our little neighboring metropolis, so much like New York . . . Going in to Sequoia he was almost run off the side of a cliff at night by big landslide across road . . . Yes sir, he likes California . . . snow and everything . . .

NBCAA . . . Athletic association getting under way with a kick . . . big party in "A" and "B" started things socially and now bowling, golf, badminton, tennis, ping pong, and cribbage are tournamenting via a "Ladder" . . . Names are posted on new AA bulletin board near artists entrance and players challenge name above until champs gradually work to the top of the list . . . Engineering not too well represented as yet . . . Guess our most popular game is tennis . . . Golf tourney to be played at Midwick next Sunday being arranged by Lasley and Brooke . . . expect some hot golfers . . . Bing and Bob Hope are playing . . . KFI engineering have put up a beautiful trophy for team play between NBC and KFI . . . will be played for by office personnel only of the two outfits . . . Walter Baker promises us a Trophy case soon to house the many trophies being collected . . .

MISC . . . Hollywood will be well equipped with new type VI's for change over day, May 1st . . . modification will not be 100% complete but most studios and all of master control will have the new instruments . . . After all these years we'll finally have a standard . . . no more, "Well, let's see, I'm sending zero but that's plus three in your language; naw, I can't drop mine three but I can drop it two or four, what, Oh, drop it six so I won't overload that repeater at Anaheim . . . Or . . . aw, skip it, the main thing is are you getting anything at all?" . . . Thanks to Stan Radom, Guide and W6KBY, for a story on guest tours . . . also to Walter Davison (ex NY) in charge of Tours, for his cooperation with the Journal at all times . . . The Paul Greenes

sporting a new Ford coupe . . . one Rolls Royce roadster for sale . . . Carl Lorenz reports PK4FS in Sumatra worked and makes 61 countries and 29 zones since the first of the year . . . Still wants a DX contest . . . Ted Hediger W6QED working tri-weekly skeds with PK6XX, the Archbold Expedition in Dutch Guinea, for Buddy Twiss of special events who wants a couple of programs from the expedition . . . Karel Pearson of traffic reports trip to SF studios . . . Typical Pearson remark to a guest, "This is how radio was run ten years ago" . . . sez boys didn't laugh very long . . . was invited up at 11A Sunday to watch the patch cords fly on Magic Key . . . "SF the home of patch cord switching" . . . or something . . . Anyway they have one of the toughest jobs on this network of ours . . . Hollywood congratulates 'em on a consistently fine job . . .

A & A PARTY . . . Following last show from NBC the boys threw a party in studio "H" for people who had worked closely with them during their twelve years with NBC . . . The Brown Derby took care of arrangements . . . Charley, Freeman, Madeline and Bill, were hosts and to us guests of honor . . . Press gave the boys a framed picture of the publicity gang crying over a tombstone inscribed, "Amos 'n Andy, Born March 1928, Died March 1939." Program gave the boys a parchment scroll signed by all members of the department . . . All departments produced a fifteen minute transcription titled, "March of Time" and gagging events during A & A's sojourn with NBC . . . a good laugh to all and seemed to wow the boys . . . Engineering presented them with a copy of the record . . . The party ended with a general get together following brief speeches by Freeman and Charley . . . Both boys in conversations with engineers stated their thanks and appreciation especially to the engineering department . . . Said, "Our contacts have always been with engineering primarily" . . . "To us engineering is the most important department in radio" . . . "NBC engineers are the best bunch of guys in the world and our biggest regret is leaving our many friends in engineering" . . . ETC . . . Freeman mentioned that his new Collins 30J is in and almost completed . . . Party ended with pictures (including Ray) . . . so ends an important chapter in radio history . . . but with us we'll be expecting them back one of these days for a new chapter . . .

NEWS . . . Cappy was telling me last night that if and when the baby arrived it would be named Judith if a girl and Ronny if a boy . . . Well sir, today he was passing the cigars cuz her name is Judy and arrived at 4AX this morning . . . Mother and daughter doing fine . . . Ken Hicks reports first swim in the Pacific yesterday . . . sez lil rougher than Lake Michigan but he didn't go out far . . . reports water salty . . . Fergy and 91st pursuit will try and show Hicks the proper way to attack an advancing wave front . . . Joe Kay sold a comedy spot script to the Vallee Show . . . Was used on the broadcast of April 6th . . . Mrs. Cappy assigned W6RG recently . . . The old man has no call . . . Pickett driving east with Mother and Father during his May vacation . . . Kay Phelan going along as far as her home town near St. Louis . . . New Grouch Club show produced by Warrner Brothers keeping Frank Figgins busy building a complete studio channel for installation in old studio "G" back on the Warners Sunset lot . . . Grouch Club released East by NBC . . . West by CBS . . .

GOSSIP . . . Al Korb building a new home in Burbank . . . Carl Lorenz has a new lot but isn't building until he sees how good a location it is . . . lots of FHA talk around the lounge these days . . . beautiful spring flower season . . . about over

Continued on page 23

TELEVISION

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CLEVELAND

By F. C. EVERETT

Bidlac and Makinson of the studio and transmitter respectively, lead off the vacation schedules for this year. Both claim that nothing much is in line for a trip, but we'll wager that by now they are both a good many miles away. Of course Bidlac has children in school, something that isn't bothering Makinson.

H. V. Brandt, TE, took a little vacation he didn't expect. Old man flu up and smacked him down in no uncertain terms. That makes Harold last but not the least of the victims. After laughing at the rest of us, too.

J. A. Cheeks, TE, blossomed out unexpectedly with an Oldsmobile the other day. That and yours truly appearing with a Dodge, is reducing the Ford population at the transmitter to the vanishing point.

A. H. Butler, TE, is trying to wipe out the crow population single handed. Feeling the need for larger quarters and the wide open spaces he is moving himself and family into a brand new house not too far from the transmitter. With a sort of a "musical chairs" effect F. C. Everett is moving into the place in Brecksville thus vacated. Slowly the transmitter crew is drifting in closer and they are now all within a few miles of the transmitter with a couple of exceptions.

Perhaps A. B. Stewart, TE, will also be moving one of these days. With plans all drawn, even to a scale model constructed in cardboard. Al is frantically looking for a lot upon which he can construct the dream house. The real estate situation refuses to unravel itself so far, but we hope to attend the house warming one of these days.

In order that all members of the engineering staff will be more familiar with the various equipment and units comprising the plant at the studio and transmitter, Mr. Leonard, division engineer, expects to inaugurate a series of meetings to be held alternately at the studio and the transmitter. At these meetings a member of the staff will explain some feature of the equipment and enlarge upon its design and operation. These meetings will continue until each member has been heard on some subject and the equipment has been pretty well covered.

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WASHINGTON

By S. E. NEWMAN

ANNUAL NBC STAFF DINNER—Why doesn't some one tip off the powers that be in the Y production department when Washington gives forth in a blaze of talent each year at the annual staff dinner? We are informed that NBC inaugurates Television on April 30th. We beg to advise that Washington did so on April 1st at the Carlton Hotel. The combined staffs of Washington NBC and RCA descended en masse on the Carlton on that date and after a splendid repast the various departments entertained the gathering with a number of witty sketches. A parody on the recent FCC investigation rendered by the program department was particularly good. Too bad Mr. McNinch wasn't there. The engineers did their bit with a Televised scene. To NBC, Mr. F. M. Russell, our boss, and all of those responsible for a fine evening's entertainment, a big hand!

INTRODUCING our new Chairman, Dorsan A. Ullman, Jr. C. S., and Secretary-Treasurer Ralph L. Hamill, Relief Super., succeeding W. H. Chew and C. S. Fisher. At our last meeting a rising vote of thanks was tendered Messrs. Chew and Fisher in appreciation of their services for the past two years.

APOLOGIES to our readers. Part of item regarding engineering First Aid class was accidentally cut in last issue. What we went on to say was that Washington staff for the second time has successfully gone through the various phases of First Aid as prescribed by the Red Cross and after the conclusion of the tenth class and final exams, most of the engineering force are once again full fledged "First Aiders." Thanks to Messrs. Gould and Robinson of the Red Cross for their comprehensive instruction.

WHAT has that man Godwin got that the rest of us haven't when it comes to the ladies. My! My! such technique and finesse.

A. R. MCGONEGAL and D. O. HUNTER were recently smoked out while on a remote at the Carleton Hotel. The fire did little damage and Mac and Dan put it down as just another experience in the hectic life of a studio engineer.

GLAD to inform our readers that our new Chairman, Dorsan Ullman is back on the job, good as new, after an attack of bronchial pneumonia. La Grippe, flu, etc., has made its mark here this past winter and, yours truly, for one, is happy that spring is here again.

WALLY ENGLISH is now well established in his new Maryland home and among other things, boasts of a fine set of tools including some power driven units. Also a dark room. Yes, we understand Wally is going into photography in a big way, sound on film, etc.

WRC TRANSMITTER men now appreciate more than ever the job of an NBC page, or guides of all descriptions for that matter. Two hundred some odd members of the ATE visited the transmitter last month in the interval of a few hours and were shown through the plant from A to Z. After a barrage of questions relative to equipment, e.c., at the conclusion of the tour, the guide-engineers went home and gargled to relieve their sore throats.

VACATION time found Frank Fugazzi, studio eng., and John Rogers, TE, whiling away the hours at Miami. Catch any fish, fellers?

SPEAKING of pages. W3HN recently worked W9ZEA, page at KOA Denver on 20 meter phone. Nice signal you have Vern. See you on the ATE net some day.

WANTED some kind of a device besides a horn, to warn approaching automobiles that they're getting too close. After an epidemic of banged up fenders certain engineers swear "they're gonna do something about it."

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SAN FRANCISCO

By TAD FULLAWAY

SUN . . . It's been a BEAUTIFUL winter . . . Now that it seems to be the order of the day to blast Hollywood's weather will stick in our word. A recently published article stated official weather bureau figures to the effect that San Francisco has more clear sunny days every year than her close neighbor Los Angeles. Those were weather bureau statistics—no Chamber of Commerce figures. Hi, Bob! And while we are blasting—national sports writers rate the Pacific Coast baseball league a very good class AA. Aw, heck . . . Let's forget about the weather and baseball and talk about people.

This month's Person-AIR-ity is none other than Leland B. Kolm.

Lee was born December second, 1911, in Schuyler, Nebraska, and shortly thereafter moved with his family to Coos Bay, Oregon. When about five years old another move took him to Portland, Oregon where he grew up and attended school. While attending Polytechnical High in Portland, Lee decided to follow radio as a career. He joined the school radio club and very soon had his first amateur call, W7WY.

With the idea in mind of operating the broadcast station KBPS owned by the high school, after graduation in 1930 Lee attended Oregon Institute of Technology where he brushed up on his code and theory to enable him to obtain his second class commercial license. This obtained, instead of joining KBPS, he joined KEX in May, 1931 as relief transmitter operator. When NBC took over in the fall of 1931 he became a full fledged studio and transmitter engineer.

In 1934 KEX and KGW consolidated their studios so Lee moved on to KFJR as a relief operator for a while and then on to KIEM in Eureka California as chief operator and announcer. While at KIEM he helped build and install a separate transmitter building and change from 100 to 500 watts.

Came February of 1937 and Lee moved on to NBC San Francisco where after a very short time he started plugging patches on the board. With his six feet four he has found little difficulty in reaching the highest parts of the tall board.

Married in 1933 to Kathleen Lewis of Portland, Lee is the proud father of three children: Richard, who is four, Eileen who is three, and David who is two. Despite the ages he wants it known that he is not gunning for the record held by Maher of Chicago. Lee claims as hobbies kids, gardening, and sightseeing—a group that keeps him more than busy. He had one bout with music and theatricals as usher and automatic organ player in a Portland theater. Trying to improve on the limited capacities of the automatic organ he rigged a Victrola through an amplifier to a loud speaker behind the screen. It worked but the young audience hooted the Victrola recordings so Lee decided he had better stick with radio.

A compliment on the Ham issue of the JOURNAL from Gene Clark, NBC SF producer. Also a chiding that we did not include him in the roster of NBC hams. Our apologies. Gene is W6DQH, forty-five watts cw on 3640 and 7280 kcs. Gene is—among other things—assistant producer of the serial Virginia Lane. Not so long ago Virginia Lane came into the booth

and to Gene said, "Hello DQH." Virginia Lane in real life is Mrs. Grace Holtby, W6QLR of 160 meter fone. Doesn't get enough so goes home at night to a ham mike. She had talked to Gene's brother the night before and learned that her assistant producer was none other than W6DQH. Gene, the other day, dug up his broadcast second license renewal. Over two years old and the oath still not executed. Used to be an engineer at KQW. Another ham we failed to mention is staff musician Eddie Swartout, W6HYB, heard Sunday mornings on twenty meter fone.

Recording Engineer Alan O'Neil back at work from an attack of the flu with a new nickname for Ed Parkhurst. Alan thinks he should be called Pop-pop inasmuch as he is the proud father to twin adopted boys, Terry and Jerry—aged two and a half months. Our congratulations to both Mr. and Mrs. "Parky."

Other engineers who had a bout with the flu were Summers and Sugg. The old bug bit hurriedly but did a good job. Sugg had no luck—was sick on his days off.

Everyone thinking of vacations—Sanders already off on his—a trip with his family to Idaho. Berg bought himself a new car but instead of putting miles on it, is planning to stay home and see the fair. Dunnigan planning a trip to Lake Tahoe. Hall to leave soon on his planned trip south via Hollywood. Sugg has changed his mind from Mexico City and now favors a week at Feather River Inn, a week in Hollywood, and a week in Carmel. Jacobs not sure whether it will be trip to Dallas via Kansas City or a fishing trip in the mountains. Williams doing his best to convince Jacobs he ought to go fishing with him. Palmer planning on going north to Victoria, B. C. Rothery counting on Tahoe, depending on when he has to be back to put his son in his first year in school. Fullaway still hoping on Mexico City with a visit to old stamping grounds at Fort Bliss, Texas almost a certainty with short side trip south two hundred miles to Chihuahua City, Mexico.

Several of the engineers to get a taste of the "goldfish bowl" feeling. All news broadcasts over KPO for the period of a week to originate in a downtown store window. Equipment, announcer, and engineer to be in full view of the "gaping" crowd.

Cassidy reports trouble from thieves at home. Has a habit of putting socks with holes in a corner of the dresser. Suddenly aware of the fact that the supply of holeless socks was getting low. Check-up disclosed that they were disappearing from his clothes line at night—along with shirts and other apparel. Now busy inventing a clothes line burglar alarm. How about some high tension, Guy?

Palmer busy taking pictures with his new Kodak Cine Eight. Sugg back in the swim with his new Speed Graphic and busy shooting pictures at the fair. Andressen without his Speed Graphic while it is in Hollywood having a new Abbey syncro-flash installed. Watson still reading ads on movie cameras and undecided on what to buy.

Jefferson, Williams, and McElwain busy with several big shows. Williams and McElwain had the recent Magic Key Army Day pick-up from the Army Mine Planter "Ellery Niles" while Jefferson had the Firestone show on Treasure Island.

BROADCAST FROM THE AIR

By DAN F. WILLIAMS

For the broadcast of the dedication of the Brazilian Pavilion at the Golden Gate International Exposition on March 18, 1939 plans called for a portion to originate aboard an attack-bomber of the Brazilian Army flying over Treasure Island, San Francisco Bay.

The plane, a Vultee, was flown up from Los Angeles for the program. Normally a land plane, for the program and for tests it had been converted to a seaplane. This attack-bomber, the twenty-sixth of its type sold to Brazil, was piloted by Jack Ayres, test pilot for the Vultee Aircraft Corp. and by Major Archimedes Cordiero of the Brazil Army Air Corps. The ship has a top speed of two hundred and fifty miles per hour, cruised at two hundred, and lands at one hundred. Radio equipment in the ship is all RCA—with all the controls marked in Spanish. Prior to her departure from Los Angeles, Miv. Adams, Hollywood Field Supervisor, installed all the broadcast equipment.

The ND-14 transmitter was mounted in front of me; the batteries and dynamotor up forward. The ND-31 receiver was between my legs, while the antenna reel was above the bomb doors behind me. After the take off it was impossible to move out of my seat. The pilot sat forward, the Major in the machine gunner's seat, and I in the bomber's compartment. Each position was about six feet apart. The crowded condition wasn't helped any by the parachute packs and life belts that we all wore.

The ship's compass receiver was tuned to KGO for the starting cue. The compass receiver amplifier also served as the interphone amplifier which connected me to the pilot. Sign language connected me to the Major and worked better than the interphone for, due to the high power engine, the noise level was so high that in flight I couldn't hear myself shout. To hear the KGO cue the level had to be set so high that it actually rattled the phone diaphragms.

In view of the noise level two close talking aircraft microphones were used, one for the pilot who introduced Major Cordiero, the other for me and the Major. Between talks either phone was patched to the amplifier. The ship flew so fast that, despite a six and a half pound "fish" on the end of the trailing antenna it remained almost parallel to the ship, clearing the tail by no more than two feet.

Testing and program took two and a half hours so we were in the air considerably longer. The biggest thrills came when the bomb doors were open in flight and in making landings at one hundred per on the surface of the Port of the Trade Winds. That's when you really know you are moving.

HOLLYWOOD

from page 19

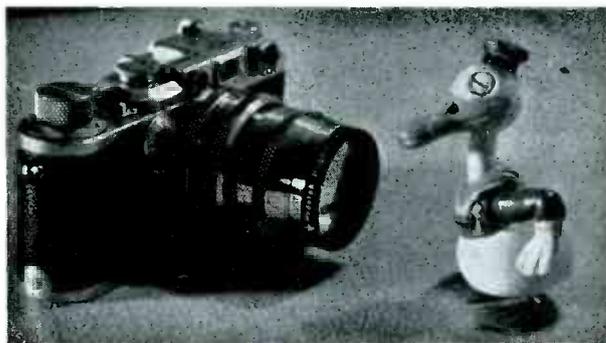
now . . . hay fever time comes early in California . . . De assigned to Master Control relief and operations including schedules in an economy shakeup that moved Jake O'Kelly into studio . . . Sax speaking before convention of Society of Motion Picture Engineers . . . Jake sez mebbe now I can get outside once in awhile and corner some of Brooke's tan . . . After all that's what I came out here for . . . Alice Tyler's horoscope reports possible marriage in June . . . The lounge needs a good checker table like NY has, to play chess on . . . Sax planning trip to NY division engineers' meeting via his Buick convertible . . . Recently visited SF Fair and much thrilled . . . Walt Davison reports 25,000 persons through building on tours since January first . . . sez California holidays for tour attraction differ greatly from good days in NY . . . We'll be here when you come . . . 73



A Radio Man's Hobby may be Radio . . .

That is . . . to a certain extent . . . You know, of course that we are a radio store . . . catering to the needs of radio men . . . to you, yourself. But let's not go into that. What we really want to say is that another hobby has really gripped the boys.

CAMERA



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THE NEW YORK WORLD'S FAIR

from page 7

the exchange located in the World's Fair Administration Building.

The cable containing the various pairs of wires for these telephones are run in wood ducts known as "pump log." These ducts are installed in the same trench as the ducts for the distribution feeders, but separated therefrom by sufficient distance so there is no interference.

The cables in addition to providing telephone service also carry circuits for sound system, public address system, fire alarms, fire detectors, and miscellaneous signal systems.

The substations are now practically complete and men are now being trained as operators. The distribution system is likewise complete and is now being used to furnish light and power to completed buildings and power to those buildings under construction.

ORGANIZATION FOR CONSTRUCTION

By

JOHN P. HOGAN

Chief Engineer and Director of Construction

The New York World's Fair is primarily a city for the accommodation of a million people, constructed at top speed and containing all the facilities for business and living, except only home shelter. Its construction therefore involves all branches of municipal engineering, architectural construction, terminals for rapid transit and bus transportation, international, bridge construction, landscape engineering, and utility construction and management, for light, power and water supply and general sanitation. Finally, construction involves execution and application or erection of extensive mural paintings and sculpture. In all of this work there has been the desire that

the greatest variety of structural design should be permitted, consistent with preserving the harmony of the whole.

At the head of the entire design program is a Board of Design which prepares all general plans, basing its determinations of the physical facts, technical studies and estimates of cost prepared by the Construction Department and subject to the budget control of the latter. The Board of Design also prepares detailed plans for layout, landscaping and lighting of the Fair and preliminary architectural plans for numerous miscellaneous structures which are too small to merit the services of a contract architect.

The architectural designs of buildings, in general, are prepared by architects or groups of architects employed under contract. The Board of Design selects all contract architects, sculptors and painters and criticizes and approves their work. It also maintains a number of consulting advisors on various technical details . . . architecture, painting, sculpture, lighting, etc. During the preliminary stages of design by contract architects and approval by the Board of Design, the Construction Department also exercises cost control through the Board. When the design by the contract architects on the staff of the board has reached a definite stage the project is turned over to the Construction Department for the preparation of working drawings and the execution of the project. This includes the working out of all architectural details which are resubmitted to the Board of Design for final approval when the working drawings have been completed. Actually a very close liaison is maintained between the staff of the board and the architectural-engineering staff of the Construction Department throughout the progress of the working drawings, and where radical changes are required the contract architects are called back into consultation. The foundation, structural, electrical and mechanical designs are prepared by the Construction Department.

Engineering projects such as water supply, paving, sewers, electrical distribution and drainage are initiated and carried to completion in the Construction Department. Other engineering projects such as bridges are initiated in the Construction Department and are referred to the Board of Design for architectural criticism.

The Board of Design, therefore, is very similar to a General Staff in a military organization, initiating the general plans and criticising the detailed plans of the field organizations but not exercising administrative control.

The Construction Department, due to the diversity of the work being handled in the many branches, also has a staff organization which might be likened to that of an expeditionary force or an army in the field. The staff actually consists of an architectural section with a force of designers and draftsmen under a chief architect; an engineering section under the assistant chief engineer, which comprises an electrical section, a mechanical section, a sanitary section, a structural and foundation section, a material section, a cost section, an accounting section and an executive and personnel section. Landscape work is under the direction of the chief landscape designer. Finally there is a section dealing with construction needs of exhibitors which will eventually be merged with the Operations Department of the Fair Corporation, and a technical section which administers the World's Fair's own building code. This department is similar to the building department of a municipality. It works in close liaison with the exhibit section and the permits section of the Operations Department.

In the field, due to the diversity of the work, it has been found necessary to establish four divisions . . . building construction, engineering construction, road construction and surveys.

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The latter section serves all three of the field groups, and the work of all four is coordinated by the Assistant Chief Engineer. These field divisions also perform a certain amount of maintenance and operation during the construction period, which will gradually be turned over to the Operating Department.

The engineering and architectural forces engaged in design layout and supervision of construction and administration in the Construction Department now comprises 300 persons. The direct labor force of the Corporation employed in construction exceeds 700, and employees of contractors of the Corporation number about 3,000. Other thousands of skilled laborers are working for exhibitors.

SURVEYS

By

LOUIS F. CATTANEO, *Chief of Survey Section*

The World's Fair Survey Section was organized on October 15, 1936 beginning with a force of five men which, at the height of the Fair construction period during the summer and fall of 1938, grew to a force of sixty-two. All of these young surveyors were hopeful that they might attain the same success reached by George Washington who also started life as a young surveyor, and for whom, on April 30, 1939, the World's Fair is dramatically celebrating the one hundred and fiftieth anniversary of his inauguration as the first President of the United States.

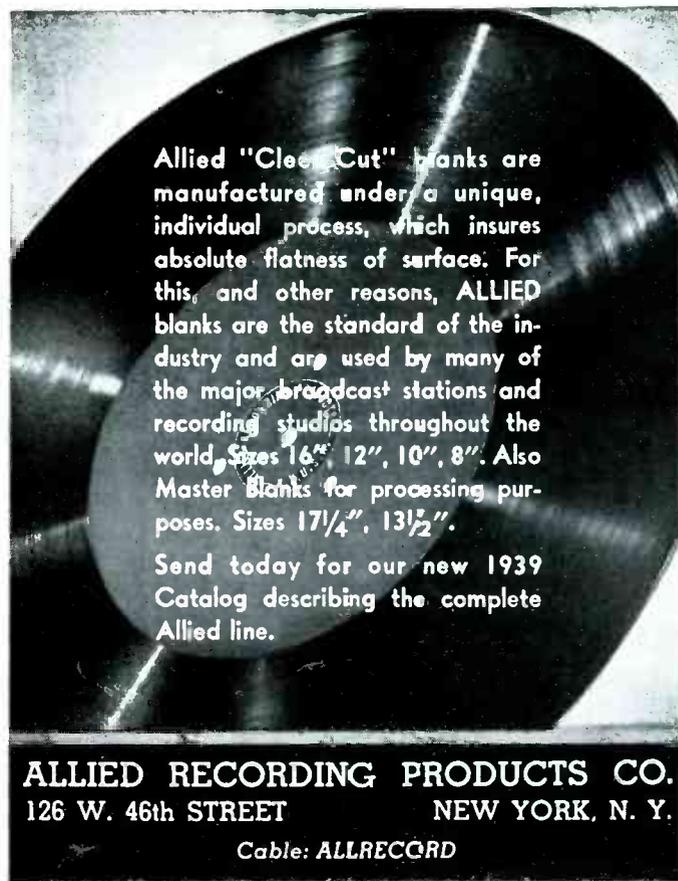
The story of building the New York World's Fair of 1939 at Flushing is not just a tale of the construction of an exposition but also a narrative of the conquest of a swamp, overcoming unsanitary conditions, constructing two artificial lakes, and the rearranging of the shape of the land . . . with time the greatest opponent. All of these things were dependent upon data obtained by the surveyors who, before any design of the layout and buildings can be contemplated, show on maps, the position of all structures and natural formations such as trees, hills, rocks, waterways, railroad structures, bridges, buildings, existing streets and roads; and underground structures such as water mains, gas mains, sewers and electrical conduits.

The site of the Fair was formerly a marine marsh. The surface of the ground was just above sea level and stretched south a distance of three and a quarter miles and over a width of one-half mile. At the north of Flushing Bay end, the width is much greater. The ground along the east and west sides sloped sharply upward for about fifty feet. From this description it is only too evident that any monuments or stakes to fix a permanent line or point with accuracy would have to be established on either or both of the side slopes.

The main feature of surveying work for the fifty buildings erected by the Fair was constant checking of foundations to make certain that the steel framework fabricated in distant mills would fit the bolts whose positions could not be changed after being embedded in concrete masonry.

Further complications arose from the frequent changes of building design to meet changing public demands.

Gradually, as the Fair took shape on the ground, other smaller details had to be attended to such as locating one hundred drinking fountains and numerous building connections to water mains and trunk sewer service stubs which were covered over and no longer visible at the surface; one hundred pools and statues, three hundred flag poles, garden plots, and numerous other details. An indication of the amount of work performed by the Survey Section is that over one hundred thousand wood stakes about two feet long were used, sufficient to stretch over a distance of forty miles, if placed in the figurative end to end position.



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HOLLYWOOD'S TOUR GETS A REACTION

By GUIDES AUBREY ISON AND RADOM

"GREETINGS GATE LET'S MAKE A DATE FOR A TOUR AT EIGHT!" As expressed by the delicate sentiment (a la Jerry Colonna) we, as guides find the public eager to learn about the mysteries of radio, yet at the same time they seem to enjoy being mystified, because here at Radio City, Hollywood, we can present not only fact but personalities as well. If you haven't realized that radio is a glamorous business, one trip through your Hollywood plant will fully convince you.

Many visitors, when first entering a studio become awed with the silence surrounding them (nine-tenths of the time it is their first visit to a broadcasting plant), and they impress themselves with the fact that they are in the very studio where their favorite program originates and reaches millions. They are imbued with the facilities provided for program creation. Timidly tottering on their toddlers, Mr. and Mrs. John Q. Public heave a great sigh and whisper to themselves, "It is all too wonderful!" Our visitors take notice of the delightful air conditioning, pastel shades used in different color schemes for each studio . . . they find that touring a two-and-a-quarter acre building is not in the least bit tiring.

For an hour of their time they can start the tour by viewing an exact model of the building and then touring Radio City itself. They walk down the Sunset Terrace and watch rehearsals through the windows in the outer lobbies, then they tour one large studio, one non-audience, and standbys. The air-conditioning plant is explained in detail, sound effects hold them spell-bound, they are thrilled beyond words to actually see and hear their voices in elaborate exhibits such as the \$12,000 RCA Cathode Ray, ABC of Broadcasting, and Recording spot on the tour. Mr. and Mrs. Johnny Q. Public take pride in saying that they have walked the entire length of our Artists' Corridor, finishing at the nerve center of Hollywood activity, the master control room which they may view behind panes of invisible glass.

Frequently unusual moments for the guide arise: which reminds me of the time that Miles Auer (no relation to Mischa) was taking a tour one Saturday evening. It so happens that the tour passes right down the Artists' Corridor and on this particular occasion the party went by Studio "A" and passed a group (and what a group) of the cast that were taking "taking five" from the Chase and Sanborn rehearsal. Now this was no ordinary group, as its members consisted of Wynn Rocamora, Robert Armbruster, Don Ameche, Edgar Bergen (straight man for Mac), Claudette Colbert, and Dorothy Lamour (!). As the tour passed them, Wynn Rocamora motioned to the C&S "gang" to "come on"—and they did! From then on Guide Auer could have faced rock-wool and orated, they weren't listening, he couldn't see much sense in talking anyway, at that particular time. By now the group was in the standby studio and Miles was explaining its use. There was no standby pianist present so guide Auer made the remark, "Right now there is no one in here." This was just a little too much for Don Ameche's sense of humor and he burst out into his infectious laugh with the remark, "No—only about twenty-five of us!" Miles tried to cover up by explaining, "I mean that there isn't any artist here at the present time." Just then two pairs of eyes were leveled mischievously in his direction and Claudette Colbert and Dorothy Lamour remarked innocently, "Aren't we artists?" At that

point the laughter rose to a new high, and Miles, (who was laughing so hard himself could hardly talk) determined to get the last word and shouted above the tumult, "Well, can anyone here play both the organ and the piano?" To which Edgar Bergen replied "He's got us there, Don." And so at this point the "stars" laughingly bid good-bye to the tour and went back to prepare another C&S hour, and the group went on their way to finish a tour that they will never forget.

(The purpose of the tour is to give the public a behind-the-scenes look at radio broadcasting, but here is a view that is even farther back than that).

Because Guide Lucian Dilatush's watch has stopped, he had to rush to the studios to make a two o'clock tour. Everything was okay until he entered the corridor leading to the main lobby where he was already five minutes late for his tour. As he came to the end of the corridor, he took a powerful quick swing at the door, but at the same time his suspenders snapped and his trousers took a prompt fall to the floor. Undismayed at disaster, he pulled them up, and made his way to the tour desk and started off with his tour (at the same time holding tight). He struggled through the hour tour (letting them fall in the sound effects booth as the party couldn't see for the mixing table) without a whimper. Winding up the tour at Master Control he was unfortunately engaged in high powered conversation by one of the tour party and couldn't brush him off until his scheduled 3:30 tour popped up—and he had to go through the painful process of pointing with the right hand and holding with the left and pointing with the left and holding with the right for another solid hour. Mr. Dilatush has informed us that he is having steel-core suspenders molded by Bethlehem.

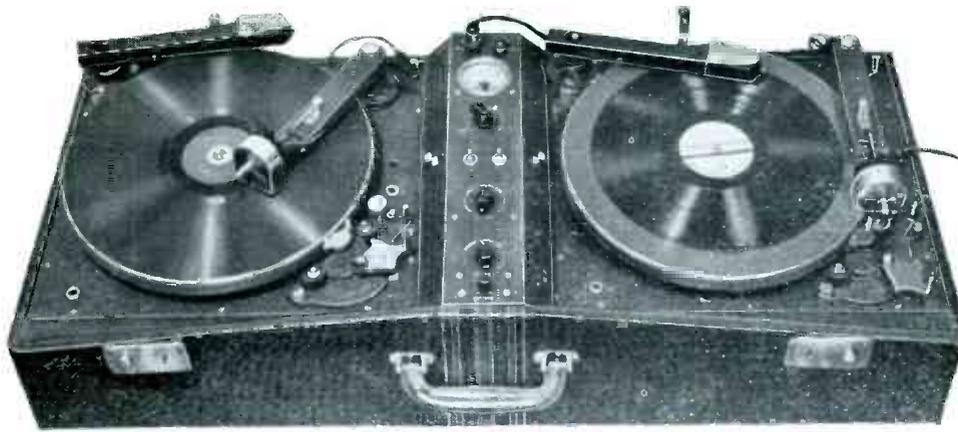
The most surprising thing from the technical angle is that an overwhelming majority of our guests are shocked beyond words to know that networks are wire and not wireless. Their popular conception is that from the origination point, the program is sent from station to station through the ether, and then re-broadcast in the local community. After correcting this misconception, the guide has a good chance to impress the party with the fact that we are closely coordinated with the telephone companies, and control our own traffic over leased wires.

Mr. and Mrs. J. Q. P. are surprised to know that stations are actually paid to carry such fine programs as C&S, Good News, Benny and others. Somehow or other they have been made to believe that all stations hooked in on a network are either owned or controlled by a national concern.

Acoustics intrigue the tour-taker. They are fascinated to know that the approximate reverberation time, of a room-to-be, can be pre-determined. They are surprised to learn that sounds can be reflected, distorted, scattered, intensified and absorbed by treating architecturally or with materials. They are fascinated to know just why more than one microphone is used in production. Timing, long rehearsal periods impress them; sound effects amuse them.

So there you have the tour situation in a nutshell; but how would you feel, after giving your all on an hour tour and then hear a "fugitive from McGee's studio C" whisk by and say, "That's pretty good buddy, but that ain't the way I heard it?"

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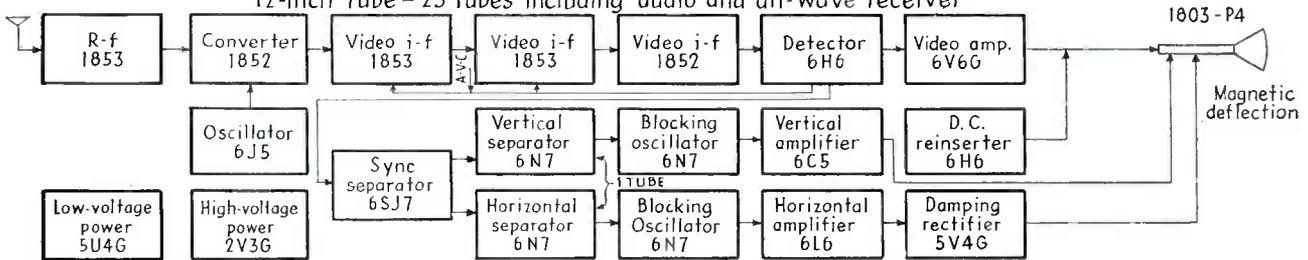
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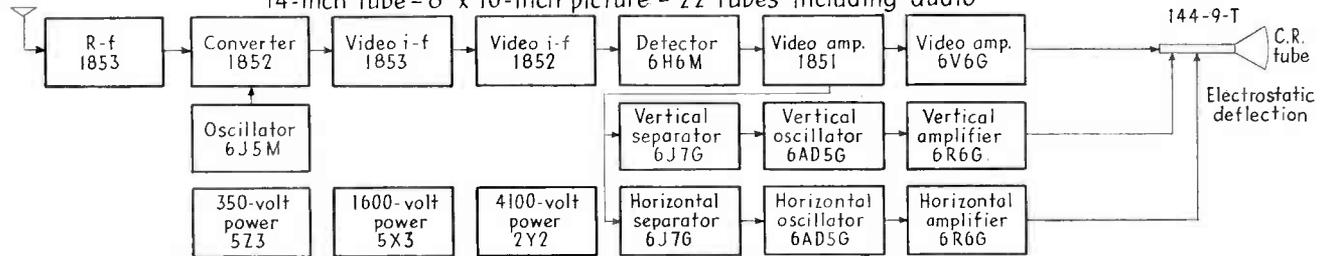
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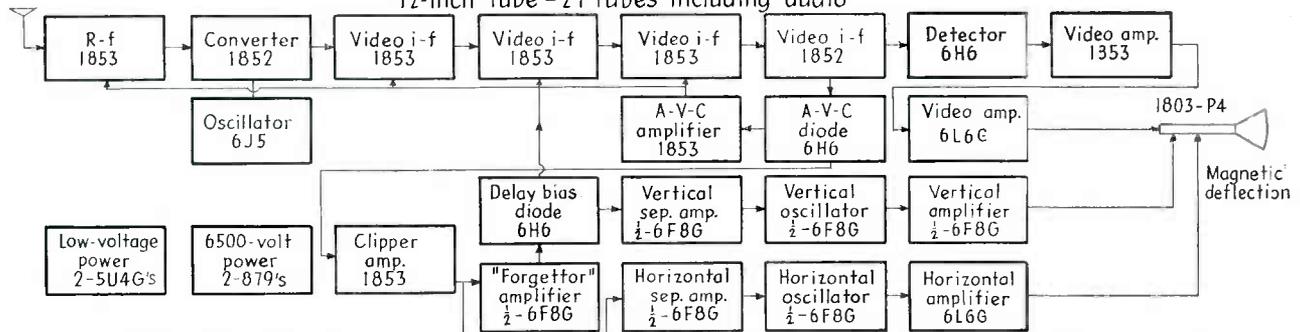
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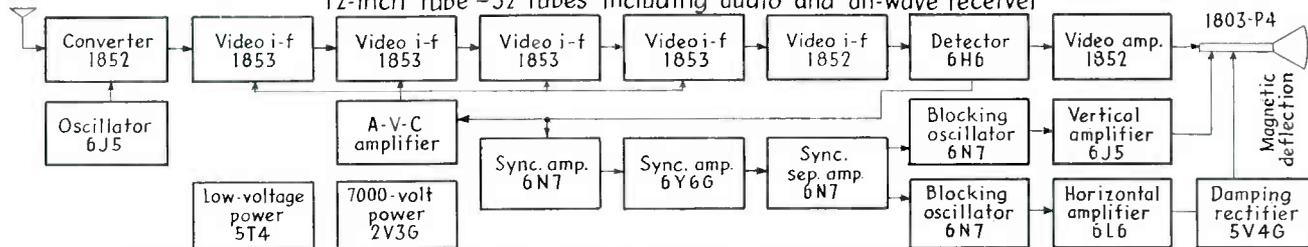
DUMONT - 4 channels - 4 Mc. bandwidth - 300 microvolt sensitivity
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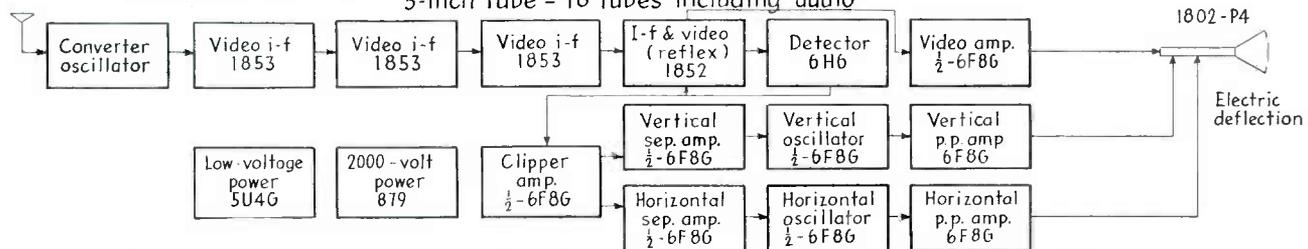
GENERAL ELECTRIC - 5 channels - 4 Mc. bandwidth - 200 microvolt sensitivity
12-inch tube - 27 tubes including audio



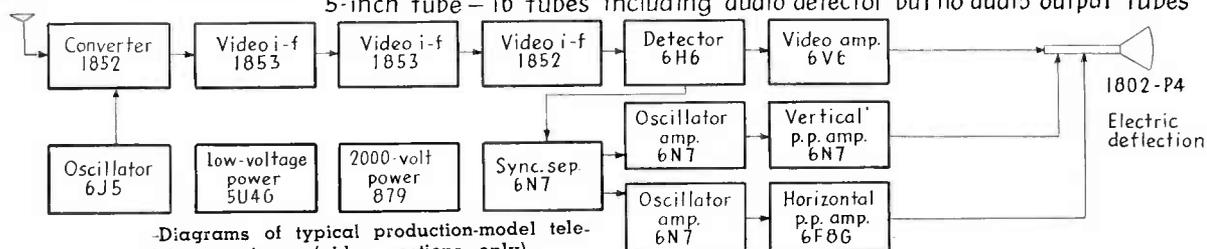
RCA MFG. CO. - 5 channels - 4 Mc. bandwidth - 100 microvolts for 10-v. r.m.s. on C.R. tube grid
12-inch tube - 32 tubes including audio and all-wave receiver



GENERAL ELECTRIC - 3 channels - 2 Mc. bandwidth - 400 microvolt sensitivity
5-inch tube - 18 tubes including audio

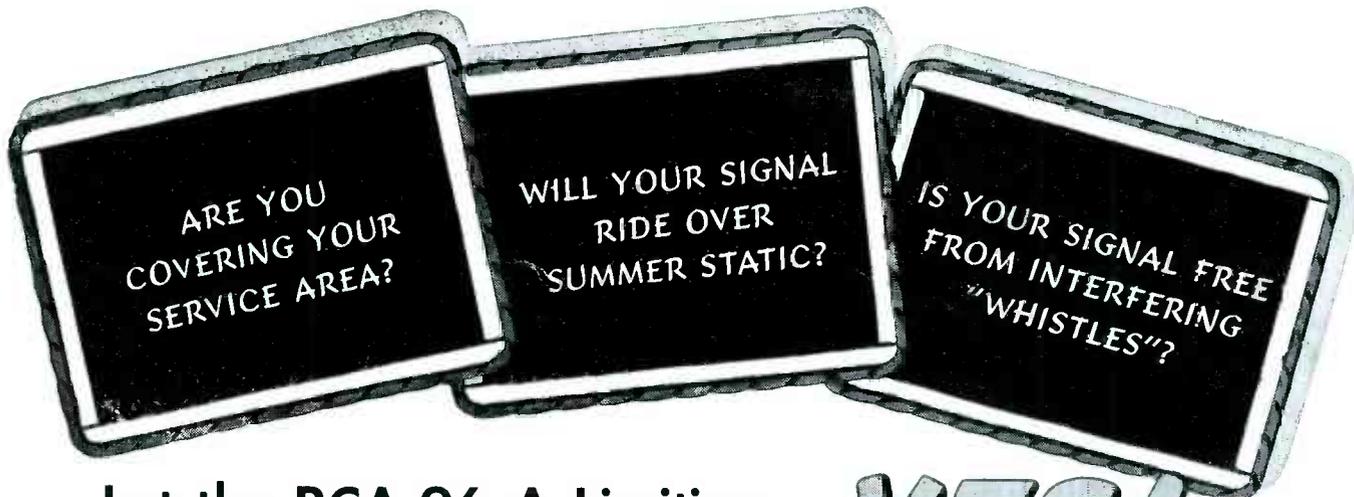


RCA MFG. CO. - 5 channels - 2.5 Mc. bandwidth - 500 microvolts for 10-v. r.m.s. at C.R. grid
5-inch tube - 16 tubes including audio detector but no audio output tubes



Diagrams of typical production-model tele-
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