

FROM

# CATSWHISKERS TO COLOR

AN EDITORIAL by OLIVER READ

**R**ADIO & TELEVISION NEWS (titled "Radio Amateur News," July 1919) was in existence long before the first broadcast station went on the air, as it was not until November 2, 1920, that KDKA, the world's first broadcast station, was put into operation. Dr. Frank Conrad, 8XK, radio amateur, and prominent engineer of *Westinghouse* had been consistently experimenting with voice transmission, occasionally sending out programs of phonograph music and talks over his ham station. A newspaper carried the advertisement of a Pittsburgh store offering radio receivers which would enable one to tune in the broadcasts of 8XK. The rest is history. *Westinghouse* officials decided that radio should be developed as a publicity medium rather than a straight communications service and early in 1920 plans for the operation of KDKA were made.

Mirroring the development of radio for the past 35 years, RADIO & TELEVISION NEWS has recorded the progress of radio virtually from the "stone age" of reception when the crystal receiver was titillating the imagination of the amateur up to the high standards of communications now in existence. R&TN not only has acted as a historian of radio progress, but the various departments of amateur radio, television, and broadcasting have been crystallized, based on the pioneering of many articles which have appeared in early issues. Such developments as television, synchronization of two or more stations on the same wavelengths, and the first radio musical instruments were all pioneer developments of our writers.

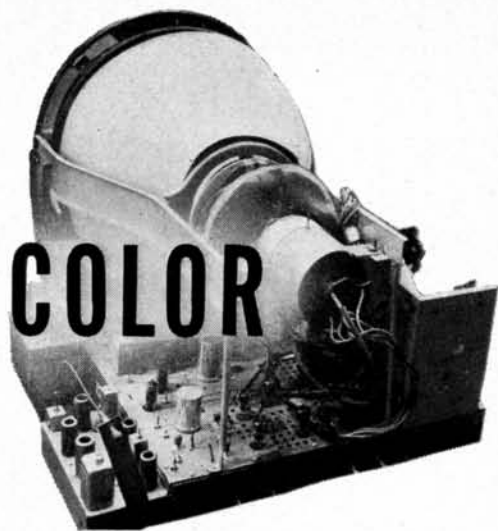
During the initial year of R&TN's publication, crystal sets costing from \$15.00 to \$25.00 were in vogue. One-tube sets were too expensive for the average purse, considering how slightly better they were than crystal sets. Soon the regenerative receiver made its appearance. Dr. de Forest, for example put out the MR-6 which sold for approximately \$150.00 without accessories. It consisted of a honeycomb coil tuner and two stages of audio-frequency amplification. Shortly there-

after, *Radiola* came out with a model that resembled a small table radio phonograph having a lid and concealed horn. It operated from dry batteries and used four WD-11 tubes. It was considered a luxury to have accessories in those days. Some horns, to which a headset could be attached, sold for around \$15.00. Even grid leaks and rheostats cost as much as \$2.50 each, while other components were similarly high priced. When the famous 201A tube came out, dealers were getting premium prices for them as there were no "ceilings" in those days. Many hams paid ten dollars apiece for these cherished "bottles."

The entire progress of broadcasting is due largely to the efforts of the amateur, even though he seldom got a break from the authorities who regulated activities in those early days. All broadcast stations were operating on 360 meters while the hams were found from 200 meters and below. They were then putting on amateur talent shows from their own stations and most of the entertainment was by means of phonograph records and musical instruments.

The Department of Commerce then relegated them to the short waves and banned entertainment directed to the public. Their transmissions were confined thereafter to code and voice. They bowed gracefully to the decree and pushed on to explore the new realms which were opened to them despite the premonition that as soon as these were developed they, too, would be taken from them.

Throughout the years, RADIO & TELEVISION NEWS has recorded the ever growing development of the radio amateur since the early trail-blazing days of such prominent hams as the late Major Edwin H. Armstrong of regenerative, superregenerative, and superheterodyne fame; John Grinan; Dick Richardson, the Princeton boy who had one of the few operator's licenses during World War I; J. O. Smith, the first amateur to install c.w. in place of spark; Ralph Waldo Emerson Decker; Frank Conrad; Lloyd Hammarlund; and a host of others.



The first issue of this magazine (15,000 copies) included a release to the effect that amateur stations were permitted to re-open on April 15, 1919 following World War I. Approximately sixteen times as many copies of RADIO & TELEVISION NEWS are now printed monthly. In this same year, a young man by the name of A. H. Grebe was working on an amateur apparatus after analyzing the outstanding features of the new types of equipment that were being used by the radio amateurs in government service and who were returning to their peacetime vocations following the signing of the Armistice. Dr. Lee de Forest, in his article "The Audion and The Radio Amateur" told of the advantages of using the vacuum tube and the superior performance that it was capable of providing over existing detector methods.

On October 1, 1919, all restrictions on amateur radio stations were removed. A warning was issued by G. K. Thompson, *American Radio and Research Corp.*, to amateurs that unless they cultivated at once a conscientious respect for Federal radio regulations, the liberties of amateur radio would be doomed. Considerable work was being done with underground antenna systems, but this method was soon discarded in favor of flat-top and cage systems. Maj. Gen. George O. Squier, then Chief Signal Officer, United States Army, in his article "Tree Radio Telegraphy and Telegraphy," August, 1919, RADIO NEWS, described further experiments, which he had started as early as 1904, in the use of growing trees for antenna systems for radio telegraphy. Amateurs were using loop antennas commonly in their shacks. In fact, many of them were attempting to take advantage of their directional properties by using them for transmission as well as reception. Moulded and oil-immersed condensers were finding wide acceptance in amateur stations. Crystal detectors of many varieties were still popular.

During the year 1920, considerable work was done by amateurs on the development of audio amplifiers. Sev-

(Continued on page 105)

## An Editorial

(Continued from page 31)

eral special tubes made their appearance and these were quickly purchased and tried out by hams in an effort to enhance the performance of their receivers. The tendency to purchase parts instead of making them at home really took hold during this year.

In 1921 amateurs, in cooperation with the Government, were giving daily market reports to farmers, newspapers, and local telephone exchanges. On April 15, 1921, the Bureau of Markets, United States Department of Agriculture, sponsored an extended system of disseminating news of marketing conditions by means of amateur radio.

On September 3, 1921, the Radio Exposition was held in Chicago. Approximately 2000 delegates attended the convention held under the auspices of the American Radio Relay League, marking the first national convention of the association. Some 300 sectional clubs affiliated with the League represented more than 6500 amateur wireless stations. Plans were perfected at the convention for trans-Atlantic wireless tests to take place in December.

In 1922 a warning was given to amateurs using wavelengths in excess of those authorized in their licenses which had resulted in much unnecessary interference. Following tentative reports of the Department of Commerce on radio telephony, waves were allocated according to class of service. The Amateur Committee accepted the recommendation that the band for amateurs be 150 to 275 meters and that the limits be fixed by law under the Department of Commerce. On December 8, 1921, the first amateur overseas transmission took place and later Dr. Lee de Forest gave his first demonstration of the "talking movie" with perfect synchronization. With or without accompanying pictures, he could photograph sounds, vocal or instrumental, on an ordinary moving picture film and from the same standard film reproduce the photographed sounds. 1922 was also the year that Edwin H. Armstrong developed the famous *Armstrong* regenerative receiver. He was also one of the designers and constructors of station 1BCG which was heard in Scotland.

This interest in radio was demonstrated by the applications for amateur transmitting stations of which there were 16,467 on September 1, 1922. On June 30, 1921, there were only 10,809 amateurs authorized to send radio communications, an increase of 5658 during that short period.

Fighting hard to demonstrate the real mettle of the radio amateur, Mr. Louis Bastain of New Orleans, Louisiana, 5HB, during the American Legion Convention, sent two complete messages to another radio amateur, 7SC, at Seattle, Washington, some 2200 miles distant. Bastain's home-made transmitting set, although rated at



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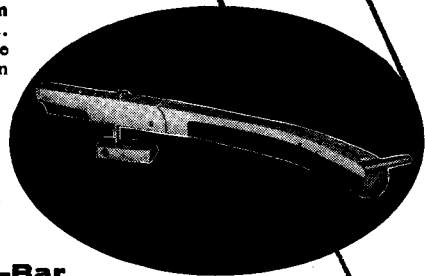
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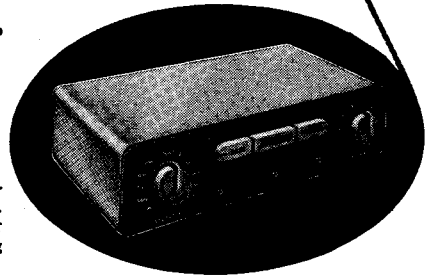
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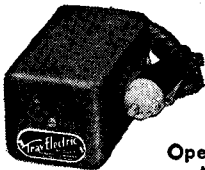
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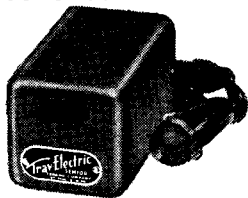
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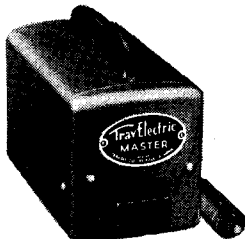
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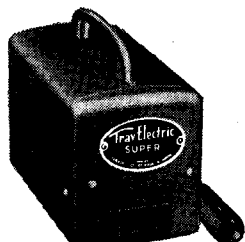
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A new world's record was established for daylight transmission by using a Beverage antenna. This transmission took place on October 28, 1922 and spanned the distance of 2800 miles from Honolulu to Seattle. The station was operated by Thomas Marshall, 6ZY.

Amateur station licenses increased from 10,809 to 15,504 between June 30, 1921 and June 30, 1922. The total on December 1, 1922 showed 16,888. The increase in amateur interest was gratifying to the Government and it recognized the fact that these young men constituted a reserve of trained operators, some of whom had already contributed to the radio art. They had learned during World War I that many amateurs were found to be superior to the average commercial operator in resourcefulness, technical knowledge, and operating efficiency.

The ARRL, December, 1922, made plans to attempt two-way trans-Atlantic amateur radio communications. In all, 316 amateurs succeeded in spanning the Atlantic. The highest honor for amateur radio, the Hoover cup of the ARRL, was awarded in 1923 to Fred B. Ostman, 2OM. This cup, awarded annually, was given to the best all-around amateur radio station.

The year 1923 found Donald H. Mix, 1TS, chosen as wireless operator to accompany Dr. MacMillan on his famous polar expedition and to transmit from the ship "Bowdoin" a story once a week on his arctic adventure. Later the same year, Jack Barnsley, 9BP, Prince Rupert, B. C., communicated with the "S. S. Bowdoin" then in the Arctic.

In September, 1924 the Government extended radio channels for amateurs. General and restricted amateur station licenses were issued permitting the use of the wavelengths between 75 and 80 meters; 40 and 43 meters; 20 and 22 meters; and 4 to 5 meters for pure c.w. telegraphy 24 hours a day. This was great news for the ham and the field of experimenting was thrown wide open. Shortly thereafter the 13,000 miles separating London and New Zealand were bridged successfully for the first time when two British amateurs exchanged radio messages using low powered home-made apparatus. Other events of equal importance followed immediately thereafter, opening up further possibilities for the amateur.

1925 was the year when the French experimenter, Pierre LaFond, F8CN, experimented with resistance-coupled amplifiers which have now become commonplace. A combination transmitter and receiver called the "Uni-Set" was described in the March, 1925 issue of RADIO NEWS by H. M. Towne, 1ADG. The use of short waves and wire interconnection of stations was developed at a rapid pace in 1925. Short waves had finally found their place in commercial and amateur transoceanic communications and transmission of rebroadcasting, both at home and to places across the seas. The "Regenerative Neutro-

dyne" also made its appearance that year and John L. Reinartz, 1QP — 1XAM — wrote an interesting article telling how amateurs were exploring the short waves below 40 meters.

Yes, 1925 was a banner year for the ham. The Government, realizing the potential possibilities of the ham, was giving more leeway and cooperation with short-wave experiments already under way and special schedules of transmissions were formulated. Short-wave tests had proven very successful over long distances and the Government, at that time, had planned to equip Naval District Communication Centers with small high-frequency receiving sets for practical and training purposes. They had a definite interest in developing amateurs into prospective Naval Reserve radio operators.

The Signal School at Ft. Monmouth, New Jersey (1924) recommended that a system be organized so that radio amateurs of the United States could join an Army amateur radio system (AARS) and a board of officers was ordered to get together with officials of the ARRL to work out a plan of organization and operation. This was approved by the War Department on September 28, 1925 and with this official blessing the newly created AARS went to work. Some 300 amateurs were included in the initial membership but its growth thereafter was slow. Although the plan aroused much enthusiasm among radio amateurs who were willing to do their part, the lack of funds and personnel prevented the Signal Corps from giving proper attention to the organization. Soon many lost interest in the AARS and resigned. Something more timely, something more within the dream of the average amateur, was needed to make the AARS click. This vital something was introduced when a revised plan was put into effect on January 1, 1929. It emphasized as its prime objective full cooperation with the American Red Cross.

On May 17, 1926 George W. Linn, Jr., 2CJE, established radio communications between the Byrd North Pole Expedition and the Navy Department at Washington, D. C.

Down in Australia, in the year 1927, amateur radio played an important part in maintaining communications during the severe cyclone and flood which cut off all telegraph service. In this emergency the authorities fell back on the assistance of amateur radio. Licensed amateurs, working on short waves, were invaluable in maintaining communications during the disastrous New England flood of 1927. They were also contributing, during that period, to the progress of civilization by keeping exploring expeditions in touch with their home bases. In that year, Col. Clair Foster, 6HM, succeeded in working South Africa and China on the same day, thus completing his coveted record of all continents on the same tube—a common 201A and dry batteries. Contacts were made on 38.2 meters; except for communica-

tion with an English amateur on 20.2 meters.

During the period from 1927 to 1941 the ultra-high frequencies were developed largely through the efforts of the amateur. Public address systems, facsimile, amateur television, sound-on-film recording, tape recording, and many other new developments were being worked on in many a basement shop.

The late '20's and the '30's were years of continuous development and experimenting with new circuits, improved vacuum tubes, a.c. power supplies, and scanning-disc television.

When the United States entered World War II thousands of amateurs were eager to serve with the Signal Corps and other branches as radio operators, technicians, etc., and on the home front thousands more joined up with industry to produce the finest military communications equipment almost overnight.

Dr. Lee de Forest, in 1941, wrote of "Color in Television" and described the CBS tests of Peter Goldmark. The difference between the *Farnsworth* dissector tube and the RCA Iconoscope were explained. Alfred Ghirardi and John F. Rider were monthly columnists in RADIO NEWS. ASCAP and BMI were quarreling over the air. The sale of phono-radios increased tremendously. The term "high-fidelity" was used frequently by this magazine as far back as 1941. FCC stepped in to stop ham contacts with foreign stations. RADIO NEWS scooped the press with its article, "British Radio Combats Blitz."

The Japs struck at Pearl Harbor while the January, 1942 National Defense Issue was on our presses. This special and well-timed review of military communications was the forerunner of four historical "firsts" for a technical magazine. These issues became essential reference for all military communications and are still in demand. Throughout the war RADIO NEWS reported extensively on radio developments and its editors were active with the Radio Intelligence Division of FCC and the Foreign Broadcast monitoring stations—reporting techniques employed and results achieved in combating clandestine radio.

Following World War II we were privileged to witness the Atom Bomb Tests at Bikini and to publish our exclusive reports on communications at "Operation Crossroads." There follows the impact of television, microwaves, color TV, and interest in hi-fi.

When RADIO & TELEVISION NEWS made its debut in July, 1919, radio was still in its swaddling clothes of spark coils and oatmeal box receivers. To cover all of the highlights of the past 35 years is not possible in one article and we have touched only a few. The growth of our industry still continues and we welcome many new readers each month. The success of any publication is a measure of reader and advertiser loyalty. To both we say thanks—and to pledge ourselves to a continued effort on your behalf. —30—

## Certified Record Revue

(Continued from page 58)

times muddy. It's easy to tell that you're in a large hall, as acoustic perspective here is almost over-reverberant. Soloists sound far away, until you hear the orchestra and then you realize the balance is correct. I heard a distinct "wow" or two in the recording. This is probably due to the curse of much European recording; electric voltage fluctuation which affects tape speed adversely. Is this "Lohengrin" worth the outlay of nearly thirty dollars? I would say yes. In spite of its faults, the virtues are many. While this version may not earn the appellation "definitive," it is close enough to it to warrant your interest. Now that there are three versions of this opera, it will likely be a long time before another edition becomes available. If you've held off buying "Lohengrin" until now, take a listen to this version. As far as I'm concerned, the combination of better over-all sound and the authenticity of the Bayreuth performance makes this the preferred recording. The recording conformed to the new RIAA curve with a slight boost in the bass and a slight cut in the treble. Surfaces were moderately quiet. An excellent English-German libretto is furnished.

### TCHAIKOVSKY

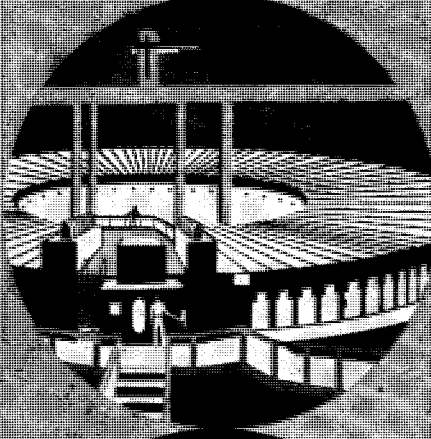
#### THE NUTCRACKER

Minneapolis Symphony Orchestra conducted by Antal Dorati. Mercury "Olympian" OL-2-101, Old AES curve. Price \$11.90.

Before you sigh and say in disgust, "What's this, another Nutcracker Suite?," take a good look at the title in this heading. For this is *not* the Suite from the "Nutcracker," this is the first complete recording of the "Nutcracker Ballet." And what a delightful treat it is to hear. One wonders what dictated the selection of the familiar music in the Suite, and the deletion of much music that is infinitely more interesting. Taken as a whole, with all of the well known music of the Suite in its proper sequence, this is an utterly new listening experience. Why a score so rich and colorful has not been committed to LP before is a mystery. At any rate, it's ours now to enjoy and Mercury has given the project its most deluxe treatment. The album is two heavy wooden covers bound by a linen-like material in peppermint candy striping and a fancy red cord holds the illustrated pages of the "program notes" in place. On the front cover and throughout the pages which tell the story of the "Nutcracker," are some of the most charming and delightful line drawings of the various characters in the ballet. The album came "factory sealed" in cellophane, certainly a step in the right direction.

The recording itself is magnificent. Antal Dorati's conducting is obviously a labor of love and each section of the

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