

How I Operate My Little



Amando Cespedes Marin.

● Heard in every part of the world, little TI4NRH, more popularly known simply as NRH, the famous 7½ watt short-wave broadcasting station located in Heredia, Costa Rica, Central America, has established for itself and its creator and owner, Amando Cespedes Marin, an international reputation and an ideal thoroughly worth striving for. Without a doubt Mr. Marin, by his persistent study and continual experimenting has accomplished greater transmission distances with the astonishingly small power of 7½ watts, than has any other station in the world.

Mr. Marin's broadcasting has been mostly a "labor of love" as he tells you in this highly interesting story of his experiences. NRH is now using a new 150 watt transmitter, which, of course, is carrying its programs into places thousands of miles distant with less fading and greater clarity than was possible with the old 7½ watt transmitter. You will be charmed indeed by this most unusual narrative of how Mr. Marin had the inspiration and the perseverance to keep "little NRH" on the air for five consecutive years—and she's now going stronger than ever!

● HOW can I best give you an interesting narrative of the world's tiniest short wave broadcaster, TI4NRH? For five consecutive years now, night after night, I have had great fun operating my little station NRH, as it is affectionately known to thousands of short-wave listeners all over the world.

Up to the present time, station NRH has been the recipient of nearly 17,000 letters and the writer is indeed grateful for the many fine articles which have appeared in newspapers and magazines in practically every country praising the ambitious aims of station NRH.

The power behind the throne of NRH can be summed up by stating that success in this endeavor, as in any other, is usually achieved only by hard work and "keeping everlastingly at it." In spite of the small size and low power of the transmitter used at NRH (most of its far-flung transmission over thousands of miles of space has been accomplished on a 7½ watt transmitter!) NRH has accomplished a really worth-while piece of work in cementing good fellowship in Spanish America, as well as in the United States and other countries. Maybe some of the readers of SHORT WAVE CRAFT have read with interest my book entitled, "Me And Little Radio-NRH."*

"Old Cespedes Marin is now 52 years old; perhaps at the narrow end of life"—(as the author quaintly puts it). In 1902, while visiting Nicaragua, I met a man who was endeavoring to start a wireless telephone company and I sure had a big laugh. Later I went to Buffalo, N. Y., and there I had the great good fortune to meet Thomas A. Edison, also the famous Santos Dumont. This was at the time of the great exposition being held at Buffalo, and I also had the pleasure of becoming ac-

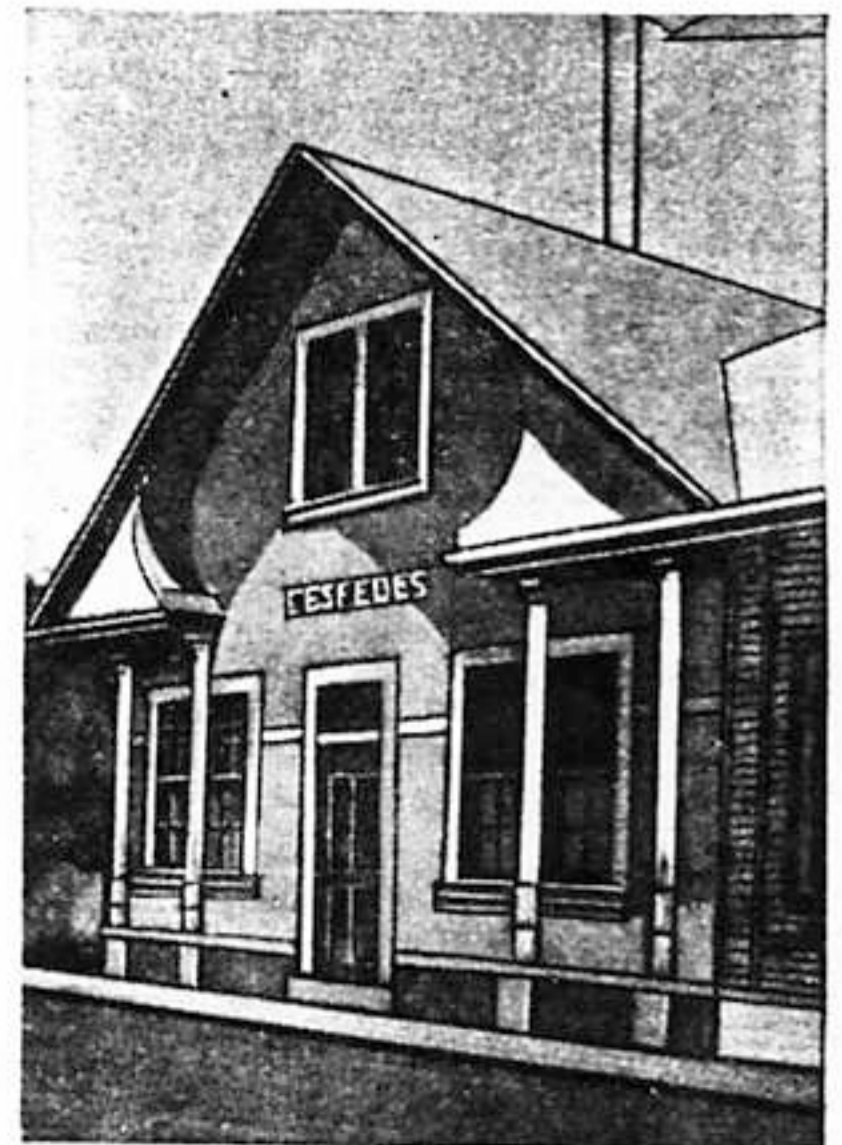
quainted with the then unknown, but now world-famous Dr. Lee de Forest. Although at that time I, of course, admired the genius represented by the Vitagraph motion-picture projector and also the phonograph, and the spectacular stunts accomplished in that early day by Santos Dumont with the dirigible balloons, I was most profoundly impressed with the intriguing and then brand new offspring of the scientific world, the *wireless*. Later on, having been appointed as an attaché of the Costa Rica Commission to the St. Louis World's Fair, held in 1904, and admiring more than ever before the witchery of the beautiful electrical illumination at the Fair, and even more strongly the great perseverance of your Dr. de Forest and his radio developments, I contributed \$10.00 toward the radio art, as we might say, by purchasing ten "hundred dollar" stock certificates, which I later presented to a hospital in St. Louis, who realized the full face-value of the certificates.

Thus I followed the development of radio and electricity in those earlier years, meeting some of the world's famous men who gave me great encouragement. For many years my aim was to follow up the radio telephone; after many years of theorizing and thinking about it, I finally realized the goal of my dreams when I built my first transmitter, which started off with the call letters NRH.

First to Hear "KDKA" in Costa Rica

I will not take up space at this time to explain at any great length, the many hours of study I spent on radio set-building, but it may be interesting to the many thousands of "listeners-in" to NRH, that the writer was the first person in Costa Rica to hear the election returns as broadcast by KDKA at Pittsburgh, Pa. This was the famous first broadcast of election returns which were given by Frank Conrad, from a very unromantic looking studio built in a garage near Pittsburgh in 1920.

You would surely have laughed if you could have seen the receiver that was used to pick up this, at that time very remarkable, long distance broadcast from KDKA. The receiving set was a one-tube affair and among all its curling wires and other radio paraphernalia, two large paper funnels were fitted on to the phone caps, so as to increase the volume of sound and in this way let the whole family and many "unbelievers" hear the voice of the speaker in Pittsburgh. Some of the scoffers laughed and seriously inquired "Where have you hidden the phonograph?" Since that immortal day I have constantly become more interested in improving radiophone broadcasting around the world, and not caring particularly whether the apparatus was of the largest and up-to-date type, such as that used in the usual commercial broadcast stations.



The Home of little "NRH."

*"Me And Little Radio-NRH" is published by the author at Heredia, Costa Rica, C. A., the price of the book being \$2.50 in paper covers, and \$3.50 if leather bound. All contributions or monies realized from sales of Mr. Marin's book go towards defraying the operating expenses of his famous little station, NRH.

Station "NRH" The World's "Tiniest" SHORT-WAVE Broadcaster

By **AMANDO CESPEDES MARIN**

It's Creator, Constructor and Program Director

My First Transmitting Experience

So, in my desire to "talk by wireless," I at first thought to convert my regenerative receiver into a transmitter. I was successful in accomplishing this stunt and thus I furnished music to my many friends for whom I had built receiving sets. You might be interested in knowing that some of these receiving sets, including my own, were so efficient that we were actually able to hear English radio stations in 1924, and, I obtained a verification from Lynch's International Radio Test. All in all, I built around 70 different sets and I burned out over \$200.00 worth of tube of the 201 and 199 type—which is part of the cost of learning the radio game.

Then came the advent of amateur short-wave transmission and I began to read RADIO NEWS and Q.S.T. magazines. I became thoroughly engrossed in the ideas and articles published in those early days and I finally built a transmitting set by means of which I hoped to imitate the broadcasting of the famous KDKA, which I admired very much, particularly due to the fact that KDKA really represented the "cradle of broadcasting." At that time our rather "feeble" receivers designed for short-wave reception, permitted us to hear only such powerful stations as those located at Pittsburgh, Schenectady, Daventry and Eindhoven (Holland); it was surely a great event when we first heard PCJ (Eindhoven) broadcasting all the way across the Atlantic to Heredia.

First Broadcast in 1928

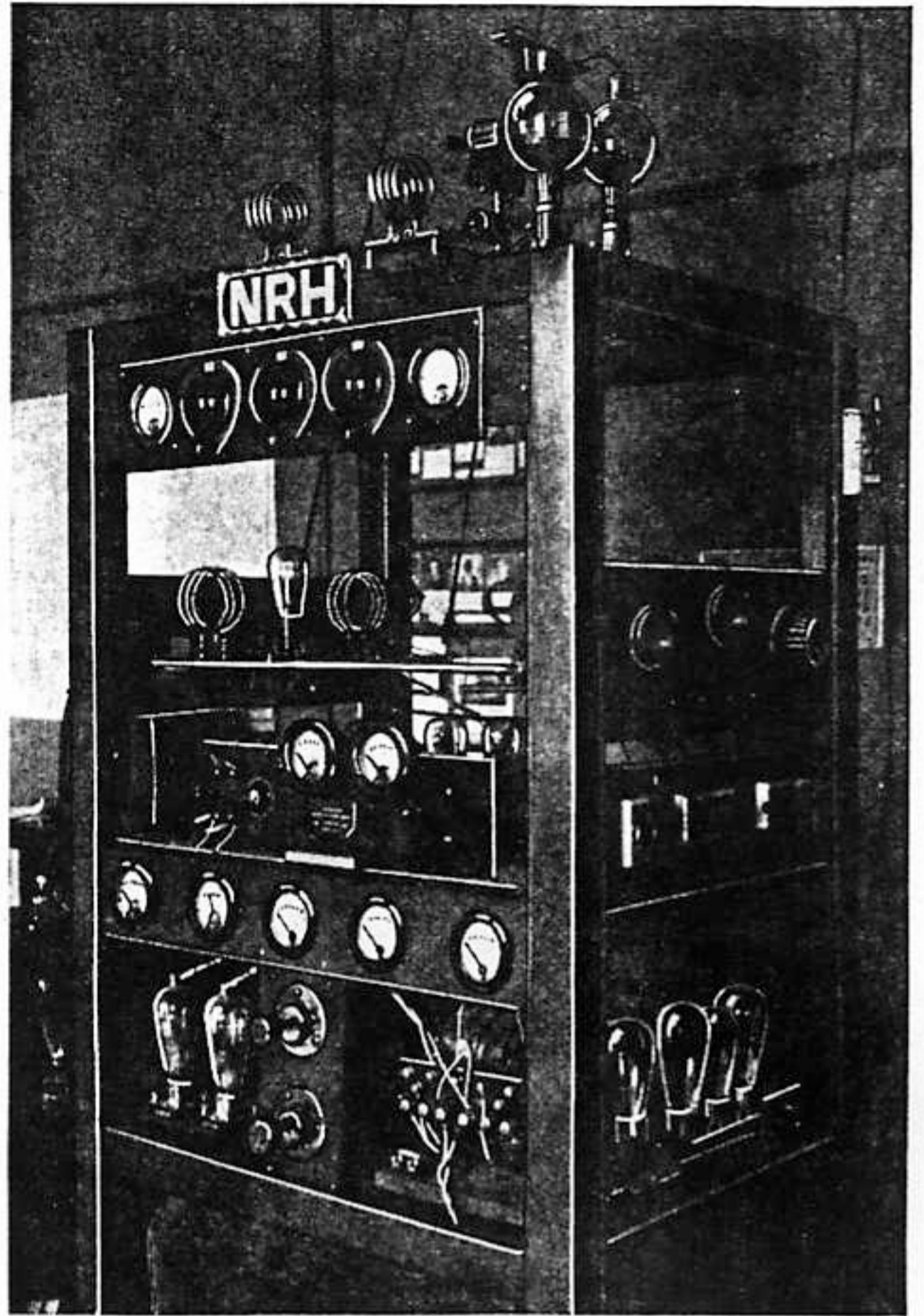
I became wildly enthusiastic to start "broadcasting" and I tried several dif-

ferent arrangements to "get out" on short waves; and I endeavored to find a place in the ether waves just under the frequency used by WGY. Finally I used a 2-volt lamp in checking circuit to see that the oscillations in my antenna system would be just below WGY's wave. I kept at it and I finally rigged up and adjusted my little "junk" transmitter after four months' trial, so that it would really "step out" and broadcast. After all my studies and hard work in testing and retesting, I was finally successful in making my first radio broadcast on May 4, 1928.

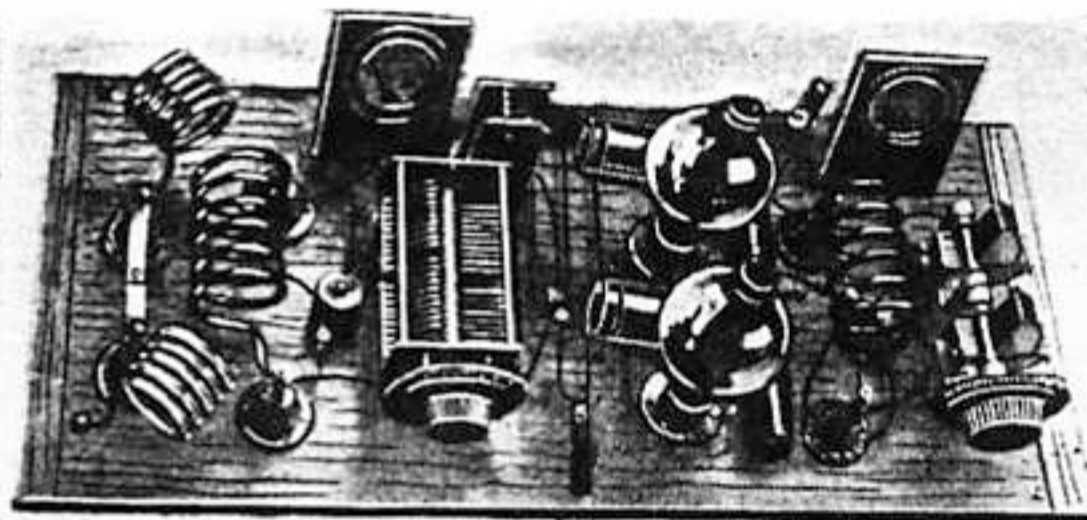
NRH at that time was a very small affair, the transmitter employing a single 210 type tube, which was modulated by another similar size tube, the microphone amplifier comprising the audio frequency stages in one of my receiving sets. The "mike" was mounted on the front of the tin horn of my phonograph and I used another hand-

type, single-button "mike" for announcing. All of this "junk" was part of the accumulation I had been using for broadcasting on 310 meters wavelength since 1922, during which time I was having a lot of fun locally, broadcasting music, etc., to my friends.

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The new NRH transmitter rated at 150 watts and containing master oscillator and power amplifier.



Above—the push-pull transmitting stage of TI4NRH.

Left—The secretary's corner in station NRH, operated by Amando Cespedes Marin, at Heredia, Costa Rica. Here the hundreds of letters received weekly from "listeners in" from all parts of the world are read and answered.

Right—a corner of the studio at short-wave broadcasting station NRH. Note the "mike" on the four-legged table to the right of the picture.

Here the famous Spanish programs from "little NRH" originate.



How I Operate My Little Station NRH

(Continued from page 137)

Hoped to Broadcast 100 Miles!

In *short-waves* my early purpose was to try and reach at least 100 miles, and thus make little NRH known at Port Limon, a gate city of my country, and in which one of the first wireless telegraph stations was built in 1900. Although the operators at that station tuned very carefully, listening for my broadcast, they were not able to hear me; so I followed the work with many trials and tribulations and always hoped to get a reply from the station at Port Limon that they had heard NRH. My efforts were finally rewarded when I received, eleven days later, the anxiously awaited report from Sergeant Karr, located at the radio station in Gatun, Panama Canal Zone. That was a great day for little NRH and "yours truly." I kept on broadcasting every day, hoping to hear more reports from distant points of at least 100 miles away, and suddenly the second report arrived from Guayaquil, Ecuador!

If Gatun was 300 miles east of Heredia, Guayaquil was 1200 miles south of NRH, and it was sure enough the greatest record at that time for broadcasting on a 7½ watt "bottle" (tube). Then came Salvador and Guatemala in Central America; next came Cuba, and in November I had the great happiness to know that NRH was at last "knocking on the door" of the great United States, for I began to receive reports from your country and one of the first I received was from a station 2500 miles to the north, in the "keystone" city—Philadelphia.

As cited in the letters of many friends, who now began to hear NRH broadcasting, it was noted that the voice was not always clearly understandable but they could hear clearly the "bugle calls" given between numbers. Even though they could not hear the announcement giving the location of the station, these "bugle calls" became known everywhere as the signature of that little station at Heredia, Costa Rica. I cannot pass by the opportunity to thank the thousands of radio listeners who have taken the time and trouble to write me and explain how they enjoyed the programs of NRH.

Newspapers in various countries have published articles on NRH and after telling about the station, the editors frequently ask the question—"Why is this little NRH broadcasting?"

The writer and his family and friends have had great "fun" in operating NRH, and we also feel that we are doing a fine piece of work in furthering better relations between Costa Rica and all other countries; from Alaska to the Argentine, from Australia to Spain, from Moscow to the Philippine Islands, and we feel proud and well repaid by the many honors and words of greeting and praise which have been sent to us by people in many different countries who have listened to the music and voice of "little NRH." It really is wonderful to think that with such tiny power as 7½ watts, that we have been able to demonstrate to the scientific world, through station NRH, that with this little power it is possible to broadcast music and the spoken voice all over the world. In fact, as many letters have testified, NRH has been heard as strongly thousands of miles away from Heredia, as were the most powerful short-wave transmitting stations, using up to 50,000 watts.

It is a wonderful feeling of time and labor truly well spent, when you contemplate the nearly 17,000 letters I have received from all parts of the world, some of the letters containing words of approval and praise, while still other letters contain gifts of money which were doubly welcome to be sure, for no broadcast station, even "tiny little NRH," can keep up the good work without money.

The clipping files of station NRH contain over 1,000 newspaper clippings con-

taining notices of NRH, sent to the writer by readers in every country imaginable. Some of the clippings quote the admiring remarks of famous people in science and eminent newspaper editors.

One of my principal aims has been to prove to the world that short waves can go anywhere on this world of ours, on only 7½ watts, and also that this can be done with great constancy, day in and day out. Heredia, from which these globe-circling broadcasts have radiated, on the insignificant 7½ watts, lies among large coffee plantations, 3800 feet above sea level, a distance of 110 miles from the Atlantic seaboard and 60 miles from the Pacific Ocean to the west. Maybe one of the secrets of station NRH's really remarkable performance lies in the fact that the antenna system is located approximately 4000 feet above sea-level, in fine clear air and with two great oceans lying to either side, thus giving a clear sweep to the radio waves. Also we have clear cool air every night, which is also an aid, at least so far as a minimum of static is concerned.

The letters NRH signify the "Newest Radio Home" and it is the real radio home indeed, as attested by the myriads of letters received from people everywhere and also by the personal visits of people who have come to Heredia, anxious to see station NRH.

Yes! Yes! The Finances!

Now that I have told you some of the interesting technical and personal details of how little station NRH is operated, you undoubtedly are asking yourself the question—"but how is it financed?" Your humble servant was the creator, designer, and also the builder of NRH and while I was listening to the music of the outgoing programs and also watching the meters on the transmitter, I was also thinking of the financing and cost of operating. With money I had saved I purchased from time to time phonograph records containing the better class of musical selections and had accumulated an extensive file of these records. Some of my good friends have also contributed dozens of fine records to my library. Thus you see I am also the "program builder" and the engineer-of-all-trades besides being the announcer, the logger, the director, the typist and the "whole music man." And I am also the teacher to my children, for they will have to continue this great effort to keep little NRH entertaining short-wave listeners the world over.

Speaking of finances, I have been relieved of any worry with regard to bills for the electric current consumed from the city supply mains for the operation of station NRH; the municipal government of Heredia doing NRH and its humble director the great honor "as the ambassador of the air" to provide NRH, without charge, with 20 amperes of electric current.

To defray the expenses incurred in mailing verification cards to the thousands of listeners who write to NRH, the government of Costa Rica, in recognition of the "diplomatic service" and "good-will" rendered by station NRH, issued a decree whereby the official postage stamps are affixed to all mail issuing from NRH without charge to the station or its director. Thus, so far as the writer knows, this is the first time that a government has so highly appreciated any radio broadcast station and NRH answers no less than 200 letters every week. With these two important items of electric current and postage thus disposed of, a great part of the financial worries of any broadcast station director have been removed.

When it comes to the cost of apparatus required for NRH, I want to mention the fine financial support accorded NRH by the hundreds of amateur short-wave listeners who have sent as much as "twenty

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bucks"; and many good friends among your American radio manufacturers have given little NRH very ample support, and have supplied many pieces of apparatus, tubes, etc., without charge, for all of which the writer is duly thankful. Some boys operating their little short-wave stations in your country and others have sent a nickel, others a dollar, and so forth. Gifts have even been received from girls. Thus, my dear Mr. Gernsback, you have greatly aided the writer with your editorials in your magazines and even at this great distance you have indeed been a great teacher. Many engineers in the United States have helped me to solve numerous problems; among many of my good radio friends I want to mention Mr. Joseph Brown Sessions of Bristol, Connecticut, to whom goes the honor of having been one of the finest friends I have, thanks to short-wave radio, and whose friendship has been the keystone of all the hard work and perseverance which has made NRH's broadcasting successful.

150 Watts—New Transmitter

Thanks to the many helping hands all over the world a better and more efficient NRH has been developed. The short-wave transmitter has been enlarged and improved and it is now operating with twenty times as much power as that used with the glorious old 7½ watt set. The station equipment now boasts a transmitter rated at 150 watts of power and during this year this transmitter has been operating with very fine success. Hundreds of letters have been received from Alaska to the Argentine, reporting the fine reception of the beautiful Spanish programs which we have been broadcasting from 4:30 to 5:30 P. M. Central Standard Time, on 31 meters.

NRH today, with its two De Forest 503-A "bottles" and 845 modulators connected in push-pull style, is pounding in like a "local" and with the same constancy as the old 7½ watt transmitter, but with far less fading and with less "skip distance" effects. This I know from the reports which have been coming in from nearby listening stations in Canada, and all the way down to Peru.

Amando Cespedes Forms a Club

With all these thousands of contacts with short-wave fans I have built up a great NRH membership club throughout the Spanish American region and the Union Radio Americana, or American Radio Union, of which the writer is the creator and director, for stimulating the development of short-wave radio in Central America. We are publishing a little magazine called "URA," which is helping greatly to extend the activities of our short-wave broadcasting and particularly the work of NRH, the first Spanish transmitter built for broadcasting in Spanish America and the only amateur broadcasting station which has accomplished such a great range with so tiny a power.

In closing I can only give my heartfelt thanks to the many friends NRH has made, also for the special concert broadcast in honor of NRH by New York stations, not to mention the program dedicated to NRH by the famous KDKA, when they called NRH the "little sister to KDKA." (This was in the special program given last February 10.)

(Editor's note:—The many friends of Amando Cespedes Marin and his station NRH, the world's tiniest short-wave broadcaster, will undoubtedly be happy to know that his native city of Heredia, on May 4, decreed a gala holiday and held a great festival in honor of Mr. Marin and his station NRH, celebrating, as only a Spanish city can, the fifth consecutive year of uninterrupted broadcasting to the world—"not only with the smallest power, but with the greatest aim to please.")