FROM MUSSOLINI IN ROME—

*Such events as this, showing Il Duce starting the excavation of the Mausoleum of Augustus, are often broadcast by short waves, around the world.*

# THE FUTURE OF SHORT-WAVE

From the radio fan's point of short-wave reception craze? Is it a future of radio? This subject is cally in this series by the president

## Charles A.

*Part*

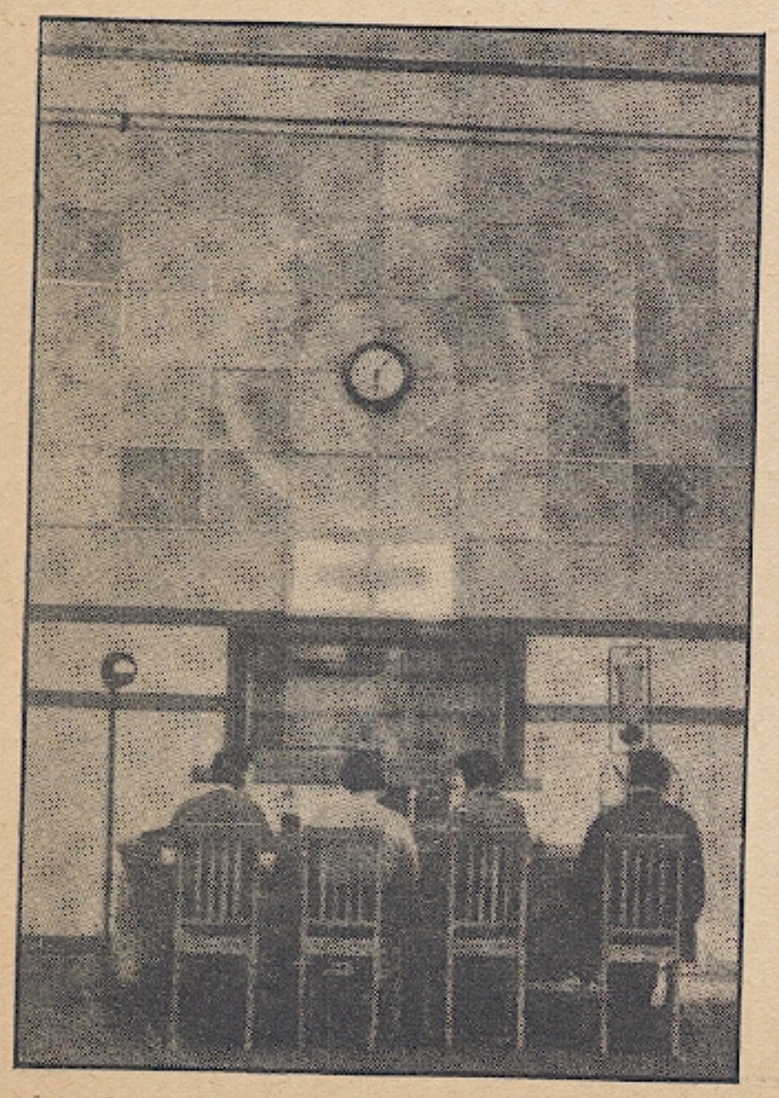
**TODAY world-wide reception on the short waves is an accomplished fact. On a day of average reception conditions with a moderately sensitive all-wave receiver, it is possible for a radio listener to have his choice of the program offerings of many lands. We are accustomed to accepting the marvelous results of modern scientific endeavor in a very prosaic and matter-of-fact manner, so that it is indeed quite easy to lose sight of the fact that world-wide reception—for the average layman—is a thing of only recent growth.**

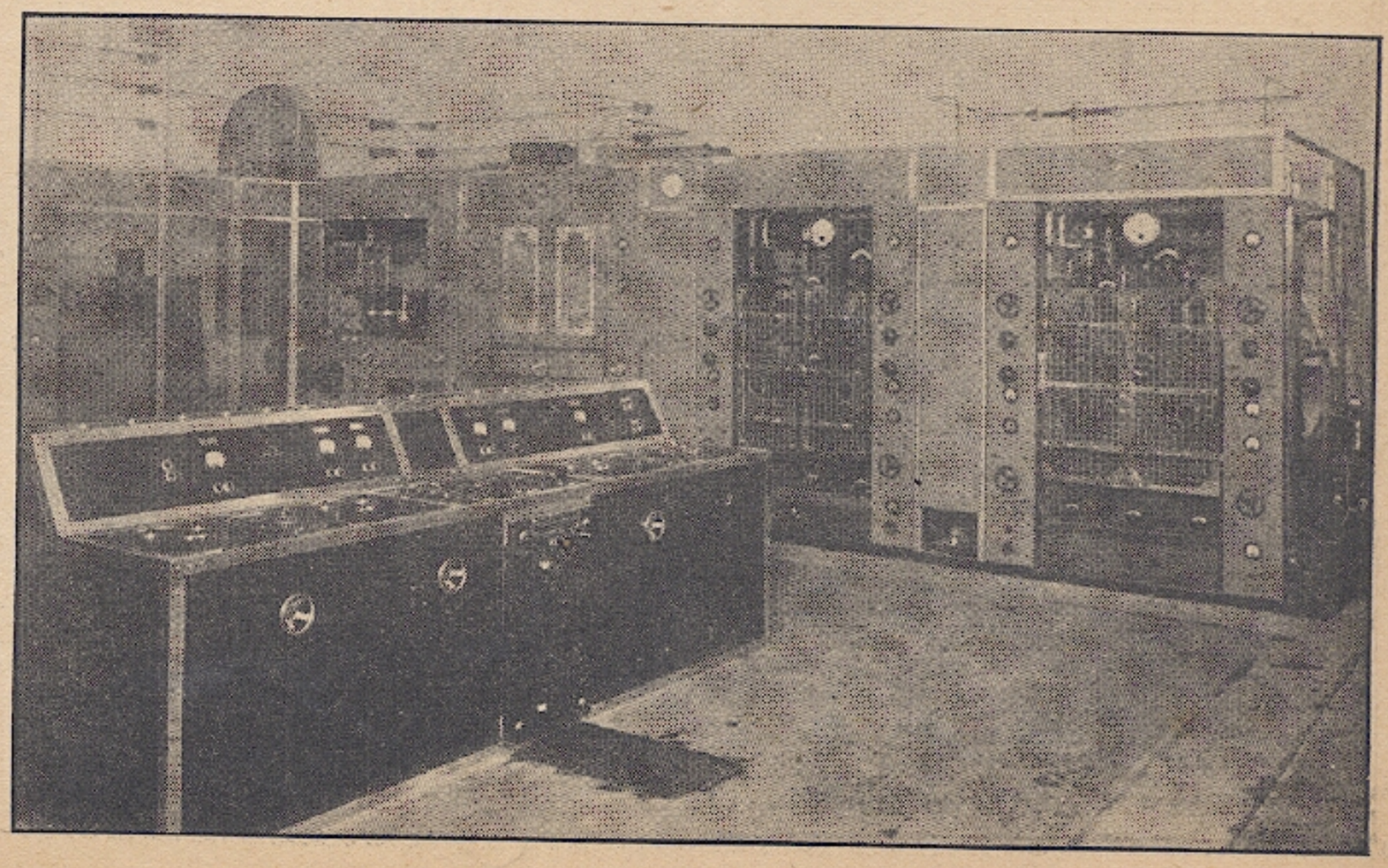
THE Short-wave Dx'er, the Amateur, the experimenter in radio equipment has been receiving foreign short-wave stations for some years now. In fact it is largely through the research and patient experimentation of these groups of radio enthusiasts that the consistency of our present day international short-wave reception has been made possible. It would be a mistake to say that short-wave reception is today in a fully perfected state, as perfection in scientific development comes only through years of minute research, invention, and the building up of a vast sum of knowledge which satisfactorily explains all the "Whys and Wherefores!" Recent successful ascents into the Stratosphere will do a great deal, we hope, in solving some of the vagaries of the actions of these high-frequency currents that go traveling, and bounding along through the upper stratas, or layers of air, which are better known in radio as the "Appleton," "Kennelly" or "Heaviside" layers. Recent developments in transmitting aerials are doing a great deal towards solving the problem of fading. Electrical interference has been, perhaps, the greatest problem of all. The average person should not hesitate in buying an all-wave receiver because he does not believe that foreign reception is practical, or possible, or because he believes a later model receiver will bring a great improvement. This is false reasoning as in scientific research there will always be some new changes and developments and to put off buying on this account will be to deprive yourself of one of the greatest developments of all times. Within reasonable limits you will find international, or foreign short-wave reception on an up-to-date receiver surprisingly good and in fact at times unbelievably good. Any one familiar with short wave reception will tell you that at times foreign stations come in as good or better than local stations. I have perhaps heard the short-wave transmissions from Daventry hundreds of times, but nevertheless I never fail to get a new thrill when I hear the announcer say "This is London Calling," or to wait in anticipation on the hour for the first booming strokes of Big Ben chiming from the towers of Parliament. It might be surprising to some people to know that thousands of radio listeners in all parts of the world, daily set their watches and clocks to the tone of the first stroke of Big Ben in London. So I say to those who, as yet, do not know the great fascination of foreign reception—"Do not delay longer in purchasing an all-wave receiver."

Short-wave reception of foreign stations being a comparatively recent development, it is a little risky to even venture a guess as to what the ultimate expansion of short-wave facilities will bring. I firmly believe however that we are just on the threshold of a new "International Unity." This will be

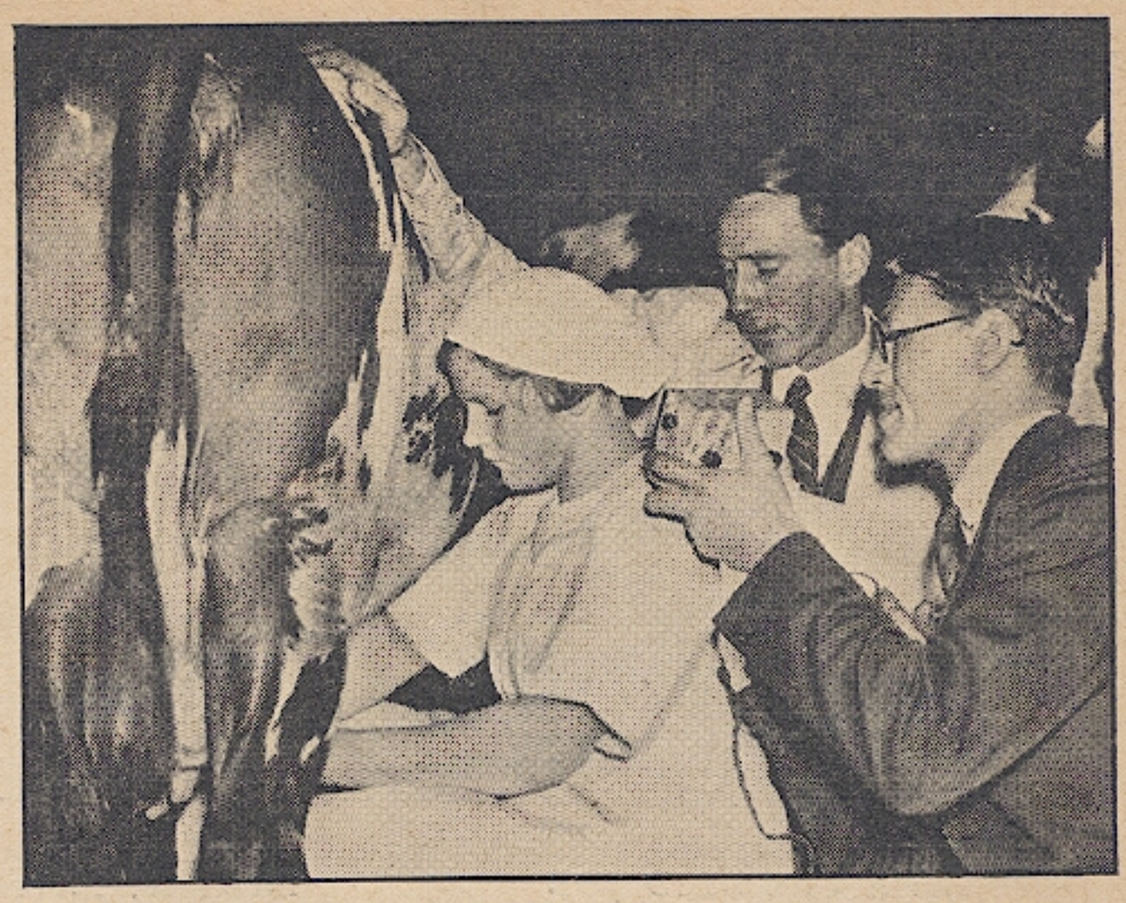
HEARD AROUND WORLD

*Below is the new Prato-Smeraldo, Italian short-wave transmitter, 12RO, which carries the "American Hour," on Mondays, Wednesdays and Fridays at 6 p.m., E.S.T. At left, the studio of the Moscow radio station during a characteristic "dialogue" broadcast.*





# INTERNATIONAL RECEPTION



—TO MILKING CONTESTS IN SWEDEN

*One short-wave world broadcast from Stockholm carried the winner's voice, telling how she won.*

view, just what is there to this passing fad or is it really the big discussed frankly and enthusiasti- of the International DX'ers Alliance

## Morrison

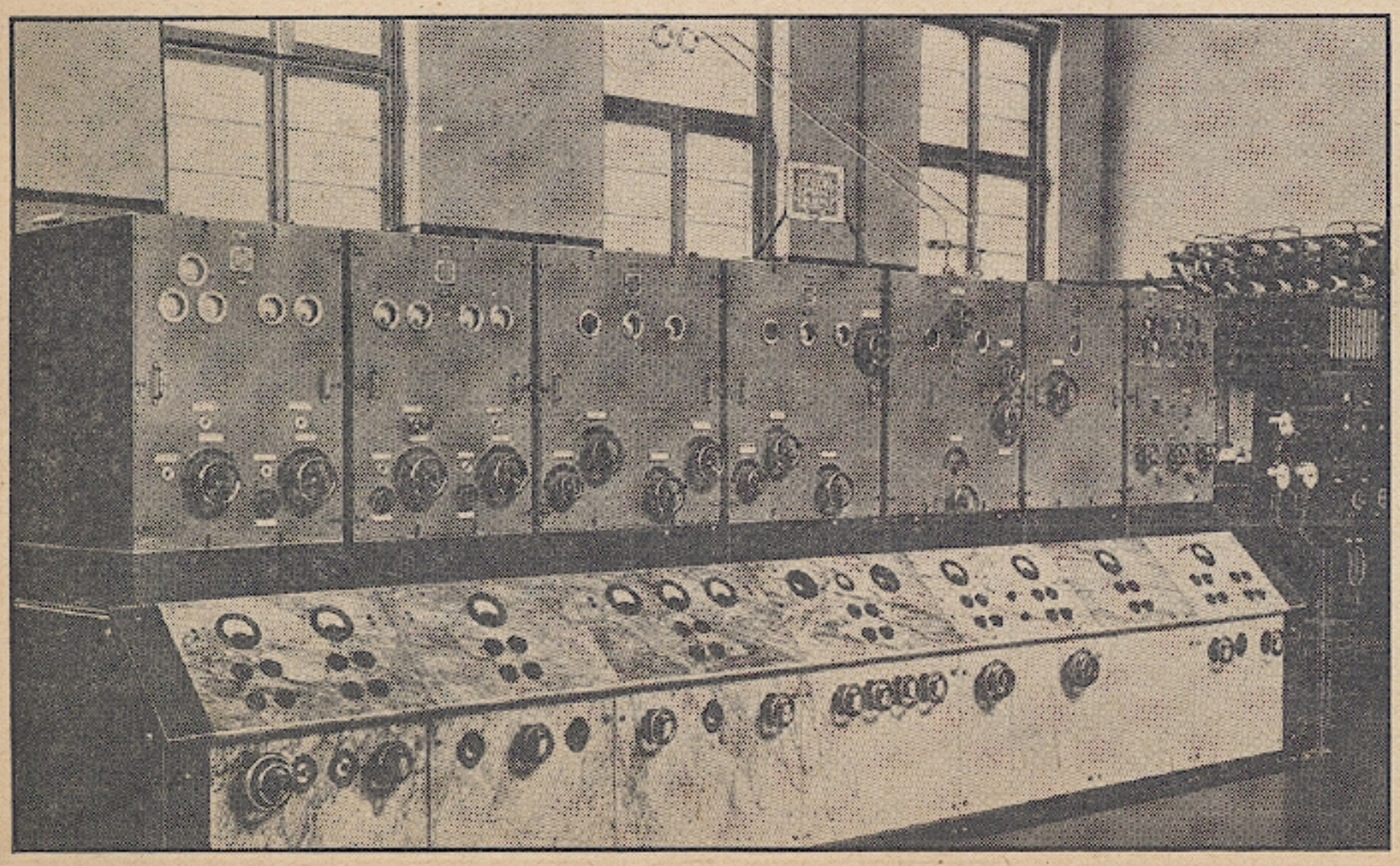
*One*

brought about by short wave radio more than any one factor. Through the magic of radio, distance is completely annihilated. No longer is it possible for nations to carry on secret intrigues, or to fool the people of their own countries for any length of time, as now before a historical event is even over, it is being carried into the homes of a nation; yes, even into the homes of the whole world through these same willing servants of the ether. Radio has become the strongest weapon of established government, and countless examples might be given of the role that radio has played in the dissemination of political authority. The administration of the National Recovery Act has been carried on to a great extent by radio. President Roosevelt's calm fireside radio messages of reassurance, and good faith have been carried to the homes of the nation and by short waves to the peoples of every civilized country in the world. Daily newscasts in English are a regular feature of the short wave stations of Europe. It is a never ending source of interest to me to read of some topical event of major importance, and then to turn to my radio to see what London has to say about it, to see what Germany has to say about it and to see what the French have to say. Many different angles of the same subject are brought to light, and the same event viewed from these international angles brings a new vividness to the events of the day. Every world-minded person, and every student of world politics should by all means avail themselves of short-wave facilities as they will find here a medium more satisfactory for first-hand knowledge than anything heretofore known. I firmly believe that the future of international short-wave reception will bring with it Peace among the Nations, as it is quite important to note that as we learn to understand the peoples of other lands, to appreciate their national heritages, to become acquainted with the best things in their music, their culture and their everyday life, we will find fear, distrust and jealousy vanishing. We will learn to have a great admiration for these offerings of great music, oratory, and drama. These people who have heretofore existed, only in the pages of some dusty Atlas, now have become warm living personalities whom we actually hear daily over the short-waves. They in fact *become* our friends. Friends do not resort to blows to settle a misunderstanding. They sit down and talk things over in a sensible manner and come to some definite conclusion without hard feelings. This is the logical result of understanding and friendship.

I predict that the Empire type of broadcasting systems, of England, of France and of Germany, will eventually be adopted by *every large nation!* These national broadcasting stations are not alone *merely* broadcasting stations for the dissemination of music or entertainment, but have become in reality the OFFICAL VOICE OF THAT NATION! That this is a recognized fact is daily brought to our attention, as when we tune our dials to Daventry, England, we cease to think of it as merely station GSB, GSA, or GSC, on a certain wavelength, but (*Continued on page* 638)

A FAVORITE STATION

*The powerful German "D" transmitter that flings its short-wave programs across oceans. At right, Major Andrew Harris, conductor of the huge British band of the Scotish guards, whose programs have often been broadcast by the British Empire "G" short-wave stations.*



*"And here is the best point of all. They have found in* RADIO NEWS *their greatest ally, in creating and holding new short-wave enthusiasts as satisfied customers. They have found that with the Radio News World Short-Wave Time Schedule in the hands of their customers, they eliminate many complaints, from new and old users of short-wave sets, that they cannot get all the foreign stations. Of course, it is true that you must know when and where to tune in these stations to be able to get them. That is just what our time schedule tells you—at a glance."*

We hope that our readers will *not* feel that the repetitions, above, are given with any sense of "I told you so," but that they emphasize a viewpoint which *has been realized* and is even *more true today*. The Future of World Radio lies in the Short Waves!

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# S. W. Reception

(*Continued from page* 599)

rather of establishing direct contact with England, with the English people, the English way of doing things, and with those things that are in fact so typically English that they bring tears to the eyes of a son of Great Britain who, relegated to some isolated outpost of the British Empire, is thus brought into direct contact with the Mother country. It can be imagined what a thrill it is to this lonely individual to hear the cheery voice of the British announcer giving the latest cricket, or rugby scores, or in a transmission from the river Thames, with all of the every-day steamboat whistles and noises of river traffic which in themselves are of little importance, but to this man bring a real heart-throb. I read some time ago of a short-wave receiver which had been brought far into the interior of the African jungles, involving great difficulties in the carrying of heavy batteries on the backs of natives, these same batteries later being charged by the primitive method of generating power by hand, all that this man might thus be kept in direct touch with home. The Empire broadcasts from the great transmitting short-wave stations at Daventry, England, send out five transmissions daily, each one "beamed" (pointed) to a certain section of the world and so scheduled to reach that particular section of the world at their best time of reception.

The Empire broadcasting service of Zeesen, Germany, is officially recognized as its political voice and is used solely in the transmission of a cross-section right out of the heart of German life. Whether or not you can understand German, you cannot help but capture some of the enthusiasm that is created by listening to one of the German political rallies where the speakers hold forth with great enthusiasm and the cheers of the crowds, the playing of the bands, the singing of national songs, the laughter and sounds of marching feet are clearly brought to your ears. I personally never tire of listening to the German waltzes and folk songs at which these people are past masters. These stations transmit daily on different wavelengths and at certain scheduled hours, which are regulated, like the English, to coincide with the best periods of reception in the countries to which the programs are directed.

In France we find the same situation existing, as there the broadcasting service, which is directed to its colonies, is located at Pontoise, a suburb of Paris, and goes under the name of "Radio Coloniale." One of the most stirring pieces of music ever written is the French national anthem, "La Marseillaise" which is played at the conclusion of each transmission. These national anthems play an important part in all of the Empire broadcasts and in Great Britain each transmission is closed with the playing of "God Save the King," and at Zeesen, Germany, with the playing of the two German national anthems. A French broadcast can be easily picked out by the rapid-fire, slightly nasal, sharp-cut intonation of the voice. France carries on its national broadcasting services on three different wavelengths, which are also arranged on a definite daily schedule for various countries.

In Italy we now find a similar system, which is known as 'Le Voce di Roma'. This powerful Empire broadcast service consists of four separate transmitters, each for the use of a certain wavelength and beamed on a certain part of the world. These transmitters are of the very latest construction and each have a power of 20 kilowatts, which insures reliable reception in North America, and all parts of the world.

In Portugal, a national service has been installed at Lisbon, and operates under the call of CT1AA. This station also calls itself 'Radio Coloniale'. Although this station is not quite so well heard as some of the others previously mentioned, due no doubt to its lesser power, it is often the means of providing some enjoyable entertainment and typical Portuguese music.

There is no better known station in the world, than the famous EAQ (Ee Ah Coo) at Madrid, Spain, which, with its unusual music and programs of good-will, has endeared it to every short-wave listener. Soon Spain is to have a new national broadcasting service, but we know that no matter how many stations Spain erects, none will ever take the place of EAQ, Radio Madrid, España.

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# R. N. Converter

(*Continued from page* 601)

for receivers with low-impedance inputs. Sufficient capacity range is provided in C5 to permit the selection of any intermediate frequency between approximately 500 and 600 kc. About 540 kc. is generally employed for this purpose.

Originally it was the intention to design the converter with home-made coils and provide data so that builders could wind their own. However, after extensive experimentation, the conclusion was reached that no matter how detailed the coil data might be, it would be utterly impossible for constructors to duplicate the inductance values of the three circuits close enough to permit anything like the accurate alignment required in gang tuning. Also three-gang tuning condensers, of standard make, do not have wide retail distribution, and there was, therefore, no certainty that the condenser with which the coils were originally designed to work would be obtainable by constructors. If not, then, of course, the coil specifications would not hold.

In view of these obstacles it was decided to have some manufacturer or distributor market uniform components for the tuned circuits. The Wholesale Radio Service Company undertook this and is supplying a complete foundation kit of coils, etc., made according to RADIO NEWS specifications. As a result the prospective constructor can build up this converter with full assurance that when it is complete it will duplicate the original model in frequency range, alignment, etc.

The next article on this converter will provide information on the assembly and

# *The Future of* SHORT-WAVE RECEPTION

## Charles A. Morrision

*Part Two*

**WORLD-WIDE reception on the short waves is now an accomplished fact. Last month Mr. Morrison, who is President of the International DX'ers Alliance told us of some of the coming uses of short waves and outlined reception results that could be obtained from some of the leading European stations. In this article he talks of reception from South America, Australia, Japan, etc.**

IN South America we have a slightly different situation, as short-wave broadcasting there is not organized on a national basis. Radio Station HC2RL, in Guayaquil, Ecuador, was built with the sole thought of diffusing to the world that typical Latin type of music that is distinctly found only in Ecuador. HC2RL's bi-weekly transmissions are eagerly awaited by thousands of radio listeners both in the United States and in other parts of the world. They are expertly organized and frequent announcements are made in English. HC2RL transmits an extremely high-class program, with apparently no end of fine talent.

Another of the popular voices of South America is PRADO, in El Riobamba, Ecuador. This station puts on a fine weekly broadcast somewhat similar to that of HC2RL, but usually of a little lighter type of entertainment.

Colombia in South America has a great abundance of small short-wave stations, which can be picked up with varying tone quality and power each night. One example is the HJ1ABB transmitter at Barranquilla which, although only using 300 watts of power, is seldom absent from the dials. HJ1ABB specializes on popular Colombian melodies played in their distinctive style, and dance rhythms. A new station, HJ1ABG, at Barranquilla, also is being heard at present with excellent quality and a fine selection of program material.

Paraguay and the Guianas have no short-wave broadcasting stations, and Argentina is only heard through its commercial transmitter, LSX. No doubt within a very few months the national voices of these countries will be added to our international bill of fare.

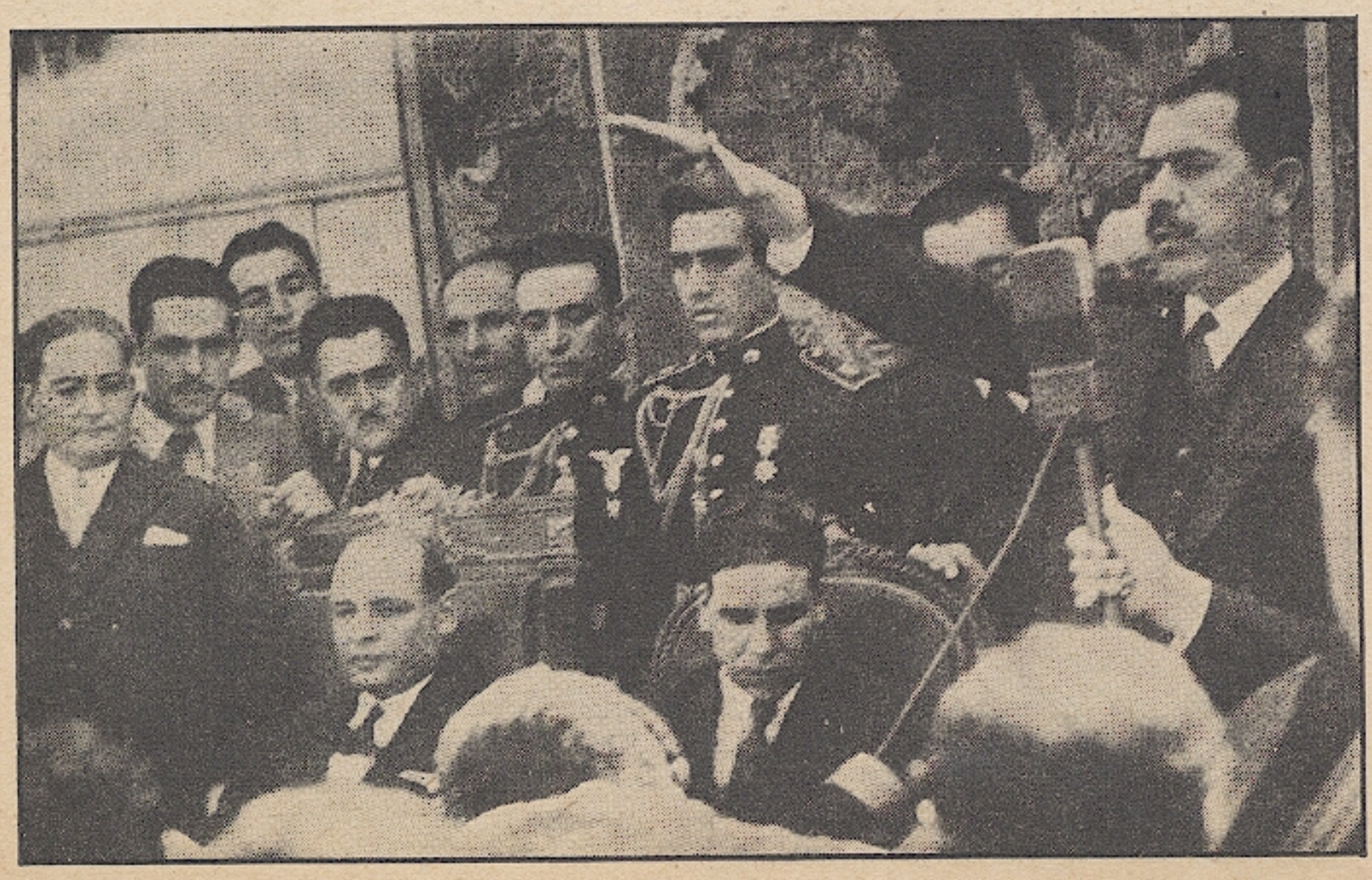
One of the most consistent and strongest transmissions radiated from South America is that of the Radio Compania of Brazil's station, PRF5, located at Rio de Janeiro, who holds forth for 45 minutes each day (in the late afternoon) with a rapid-fire dialogue of Portuguese and occasionally a little music. It is a shame more music is not heard from this station, as with the strength of their signal it would be enjoyable. They announce in both English and French two or three times during their program.

AT A TENSE MOMENT

*Germany's Ambassador to Japan, Dr. H. von Dirksen (center, wearing headphones) at a short-wave circuit in Japan receiving the official announcement of the plebiscite in the industrial valley of the Saar.*

WORLD EVENTS ON SHORT WAVES

*General L. Cardenas broadcasting, during official ceremonies at the National Stadium in Mexico City and pledging himself to policies of government over the short wave.*



The trio voices of Australia, VK2ME. VK3LR and VK3ME, are too well known to more than mention in passing, as these stations for several years have provided an early morning fare of some of the most varied and interesting programs put on the air. The laugh of the kookaburra, that peculiar little animal found only in Australia, is a regular feature of the broadcasts and, once heard, is never forgotten. Another of the regular features of these stations are their talks on different phases of Australian life and glimpses of the little-known interior of the Commonwealth, its Bushmen, animals, flowers and geographical features. These are very eagerly received by short-wave fans. These two stations come in from fair to good the year around, under average conditions, with their scheduled transmissions on certain days of the week.

Bringing to a close this brief summary of the national voices of a few of the countries regularly heard, it would be well to mention Japan. It used to be quite a feat to get a broadcast from Japan, and accomplished with no regularity. Now Japan has installed one of the most comprehensive and complete national short-wave services in the world. Part of the large array of short-wave transmitters are used for program purposes, relaying the programs of the Japan Broadcasting Company. Others of the group have been erected especially for commercial transoceanic telephone communications. Every morning it is possible for the early riser to tune in one or more of these Japanese stations with their delightfully different programs of typical Oriental music and voice. To have not heard a relay of one of the Japanese baseball games is to have missed one of the most amusing and comical broadcasts on the air.

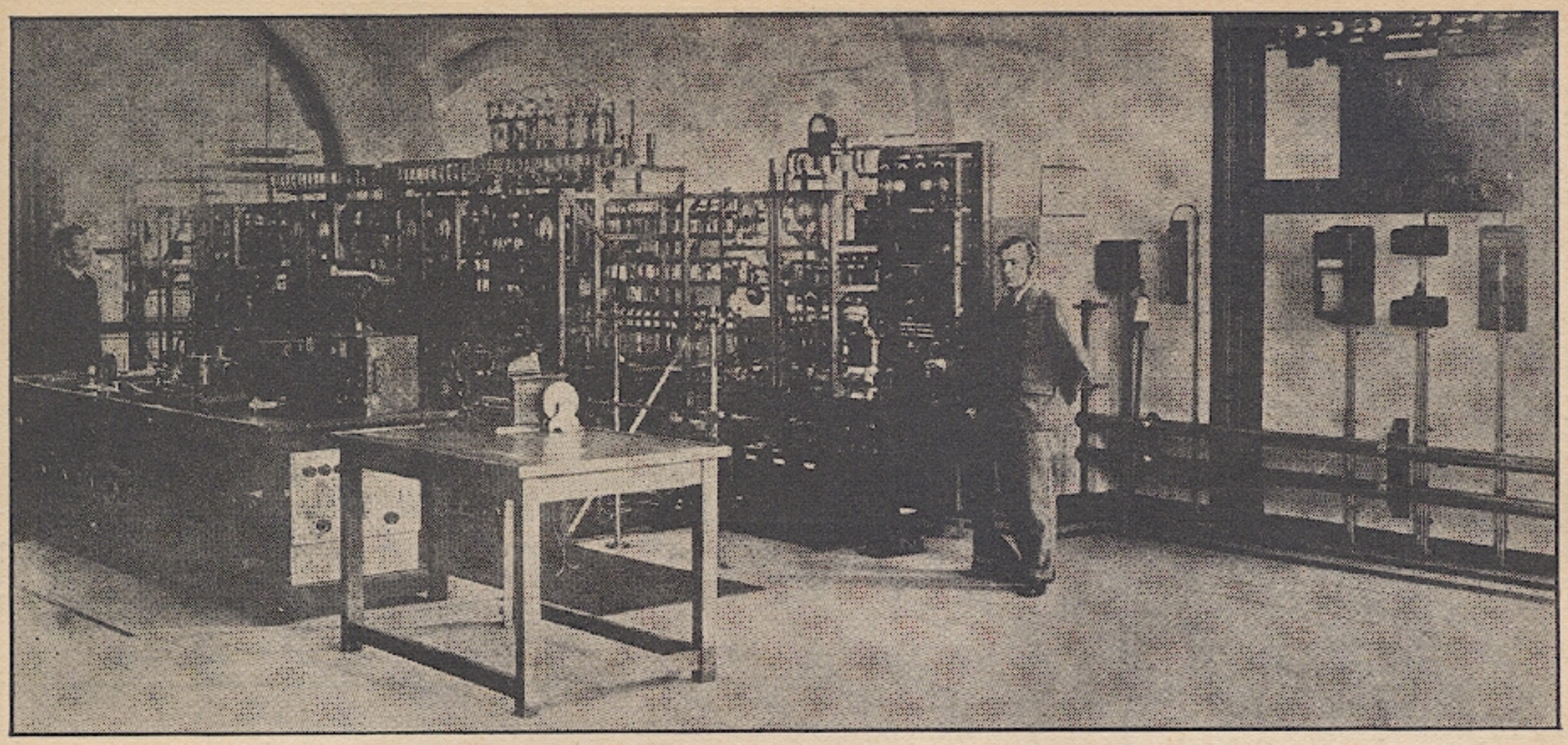
It is a pity that our own United States short-wave stations are not officially recognized as a national voice, although inasmuch as they relay the "chain" offerings of the NBC and the CBS, they do (*Continued on page* 701)

# S.W. Reception

(*Continued from page* 674)

carry to the peoples of the world the very choice of our national talent in music, song, drama and sports. I believe that within the near future the United States will employ a national short-wave transmitter, molded after those in use by Daventry, Zeesen and Pontoise, which will put on daily programs of national importance for various parts of the world.

What does all of this bring us to. Simply that in the future we will have a complete selection of national programs from every important country on earth. These will bring to the microphone the very life ebb and flow of these peoples, with all that goes to make it characteristic or unique, from other nations. These broadcasts will tend to preserve and intensify the traditions and national heritages of each country and to mold for it a permanent place in the lives of the radio listeners of the world. We will not realize just how much some particular station or country really means in our everyday existence until some emergency removes it temporarily from our dials, and then we will realize, with somewhat of a shock, that we miss that program and that no other can take its place.



THE BELGIAN TRANSMITTER ORK AT RUYSSELEDE

*This is the 9 kw. short-wave transmitter which utilizes 60 percent modulation and is heard throughout America in the early afternoon.*

# *The Future of* SHORT-WAVE RECEPTION

## Chas. A. Morrison

*Part Three*

**IN this installment Mr. Morrison, president of the International DX'ers Alliance, tells of some of his own personal ideas of how short-wave reception can be improved in the future.**

IT can be readily seen by anyone looking ahead that sooner or later some definite international understanding must be had as to the allocation of certain national short-wave channels, in order that each country may have an equal chance to express itself on the air. The present congestion of the 49-meter band is a good example of the need for action on this line. Many really fine broadcasts are spoiled nightly by some station thoughtlessly wandering from one wavelength to another like a lost soul, first settling on some established wavelength and spoiling some regular program and perhaps the next night going to some other channel and repeating the performance. Each country should be allotted a specific allocation on each band which would neither encroach upon or affect the channels of some other country. International agreement will no doubt remedy this congestion of the ether lanes in the near future, just as it was finally remedied to a great extent upon the broadcast band.

One of the factors that has brought about improved international short-wave reception is a vastly improved knowledge of transmitting antennas. Marconi, the father of beam transmission, was the first to really put to a practical use the theoretical knowledge that short-wave energy, concentrated into a single beam instead of spread around omni-directionally, would give a strong signal to those living within the confines of the beam and a weak signal to those outside of the beam. Engineers now make use of this knowledge in the construction of directional antenna "arrays." Thus all the energy of a station may be pointed or directed at a particular direction and, taking into consideration the time of the season, time of the day and hour, project a broadcast program with almost rifle-like precision at some distant country. This concentration of energy tends to overcome that old bogey of short waves—fading. A good example of directional antenna systems was that used by KFZ at Little America in their weekly broadcasts for the Byrd Expedition. It can be readily seen that to have this tiny station in the Antarctic wastes spread its power around aimlessly would have been futile effort and it would be unlikely that it would be picked up with any consistency whatsoever. Instead, this antenna is aimed like a rifle at short-wave station LSX at Buenos Aires which is a huge commercial station and with fine receiving equipment picks up this tiny signal, reamplifies it and sends it out again by its directional antenna to Riverhead, New York, the receiving point of R.C.A., where it is again picked up and then sent by land wires to the key station of the C.B.S. network for the chain programs.

In the future we shall see as great an improvement in transmission equipment and antennas as we have witnessed in the past, and with greatly increased power, which is bound to come, fading will practically be eliminated at the point of transmission.

Short-wave receiver design is also in for some definite evolutions in design. On account of the local electrical interference (man-made static), which is the greatest single handicap to short-wave reception, the majority of receivers in the past have been far too noisy. In the race between manufacturers to see who can provide the greatest number of tubes and the greatest amount of fractional microvolt sensitivity, the thought has sometimes been lost sight of that it it is not the loudest signal that is the best signal, but the signal that shows *the greatest ratio of signal strength to noise level!* This is clearly demonstrated by a comparison of several different makes of receivers. It is sometimes found that those utilizing a carefully designed and isolated circuit brought in stations that could not even be heard above the noise level of the receivers on test. Practically every receiver today provides enough volume to fill a large hall, but if the receiver was turned on fully, the noise level would also be raised to a prohibitive point when working with a weak signal. It is the *usable* sensitivity that counts, and all that tends to increase the noise of a set without increasing the signal ratio, is wasted. Therefore my contention is that in the future we will see a lesser number of tubes providing an adequate volume for home use and with a very high ratio of signal strength to noise. Tubes performing two or even three separate operations have been developed from time to time. It was no doubt the idea of the tube manufacturer that in building such tubes it would not be necessary to build such a large receiver, but that more receivers could be turned out at a smaller cost of manufacture, thus producing a simpler set with less inherent tube noise. (*Cont'd on page* 780)

ground terminals of the radio set should be connected respectively to the high output and ground posts of the oscillator. The output meter should be connected as before and both the oscillator approximately 1000 kilocycles.

The first radio-frequency tube should then be removed and either a dummy tube (one with the filament burned out) should be placed in the socket, or, if the receiver is an old one having bayonet type sockets, a slip of paper wrapped around one of the filament prongs of the particular tube used in this socket so that it will not heat up when replaced. With the oscillator and receiver controls at maximum settings, a signal should be indicated on the output meter, but of course it will be a low value, due to this particular tube not functioning. The neutralizing trimmer associated with this tube is then adjusted to show a zero or minimum signal on the output meter. This adjustment will be most critical with the set full on.

When the first tube has been put in working condition again, the same procedure should be carried out with the second radio-frequency tube.

O. J. MORELOCK, JR.,
*Radio Engineering Division,*
*Weston Electrical Instrument Corp.*

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# S.W. Reception

(*Continued from page 745*)

There has also been in the past a great room for improvement in coil-changing devices and although the past few months have seen some great strides on perfecting this purely mechanical device, some of them still seem to have a tendency to eventually become noisy, or inoperative. For real DX, many of the dyed-in-the-wool DX'ers and amateurs still prefer plug-in coils, which give really satisfactory service, but at the best are a nuisance when it is desired to make a rapid change from one wave-band to another. Eventually we will see perfected coil-changing devices generally adopted which will at one time make all plug-in coils obsolete.

Most all-wave receivers now employ some kind of a device for locating the exact peak of an incoming signal. This sometimes takes the form of a neon shadow which moves as the dial crosses an incoming signal. Others appeal to the ear instead of the eye and are in the form of beat oscillators which produce a whistle which becomes low pitched or vanishes entirely as the exact peak or point of resonance is found. This is a big help in locating new stations but it also has its disadvantage and it is often difficult to distinguish a weak signal above the noise level of the set. Many of the visual indicators are all right in principle but are not sufficiently sensitive to operate on a weak station where you need them most. There are exceptions to all of these statements but I am writing critically or where I think improvements will be made. The all-wave set of the future will, therefore, automatically tune an incoming signal to the exact peak desired. Two or three years ago it was said that no all-wave receiver could be calibrated over the entire range of frequencies with any degree of satisfaction. What should have been said was that it "Had not been done—Yet," because at the present time several receivers really show a good degree of calibration over the entire spectrum which is adequate for ordinary use. However, not far in the future we shall see all-wave receivers that will possess such a degree of exact calibration *that any known frequency will be located almost instantly with a very small percentage of error!* Easy location of important short-wave stations on a receiver will do much towards making for a universal popularity for the high frequencies.

Very definite progress has been made in the way that short-wave signals are received under fair conditions. Short-wave reception in the past was a difficult proposition at best and never really enjoyable for entertainment purposes. Now short-wave programmes can be really enjoyable all the way through, with good tone quality, little fading and almost perfect understandability. In the future foreign reception will be almost as reliable as local reception and only limited by such especially adverse weather conditions that no signals can be received at all.

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# A Tri-Band Set

(*Continued from page 731*)

it will be necessary to cut the lead between the grid resistor of the first audio stage and the ground, and insert a 1½, 3 or 4½ volt bias on the 19 tube.

Switch S2, when closed makes a potentiometer out of the regeneration control. When the switch is open, the control becomes a series variable resistance. The set will work both ways but one method may give slightly better results than the other. When turning off the receiver, this switch should be opened so as not to place a drain on the B-batteries.

The receiver described above is not intended to be used with a doublet antenna system. The resistor "T" pad in the antenna circuit is designed especially for the elimination of "dead-spots" and body capacity effects and is effective only when used with the grounded antenna. The doublet type can be used, however, if a suitable method of coupling is utilized. An "H" pad, or better still a coupling coil, will do this effectively.

The author would be interested in hearing (in care of RADIO NEWS) from readers who build the little receiver and to learn of the results obtained with it.

## List of Parts

C1—Hammarlund Midline Midget variable condenser, 80 mmfd.
C2—Sangamo fixed condenser, 100 mmfd.
C3—Sangamo fixed condenser, 2000 mmfd.
C4—Small adjustable condenser, neutralizing type
C5—Bypass condenser, 1 mfd. paper type
C6, C8—Cartridge condensers, .01 mfd. 400 V. type
C7—Sangamo fixed condenser, 250 mmfd.
L1, L2—Grid and tickler coils. (See Figure 2)
R1, R2—Fixed resistors, 300 ohms
R3—400 or 500 ohms
R4—3 megohms
R5, R9—75,000 ohms
R6, R10—1 megohm
R7—15 ohm rheostat
R8—Potentiometer, insulated shaft type, 100,000 ohms. (If potentiometer has switch attached the p.p. switch illustrated is not required)
SW1—3 point inductance switch (see Figure 2)
SW2—s.p.s.t. switch (see R8 above)

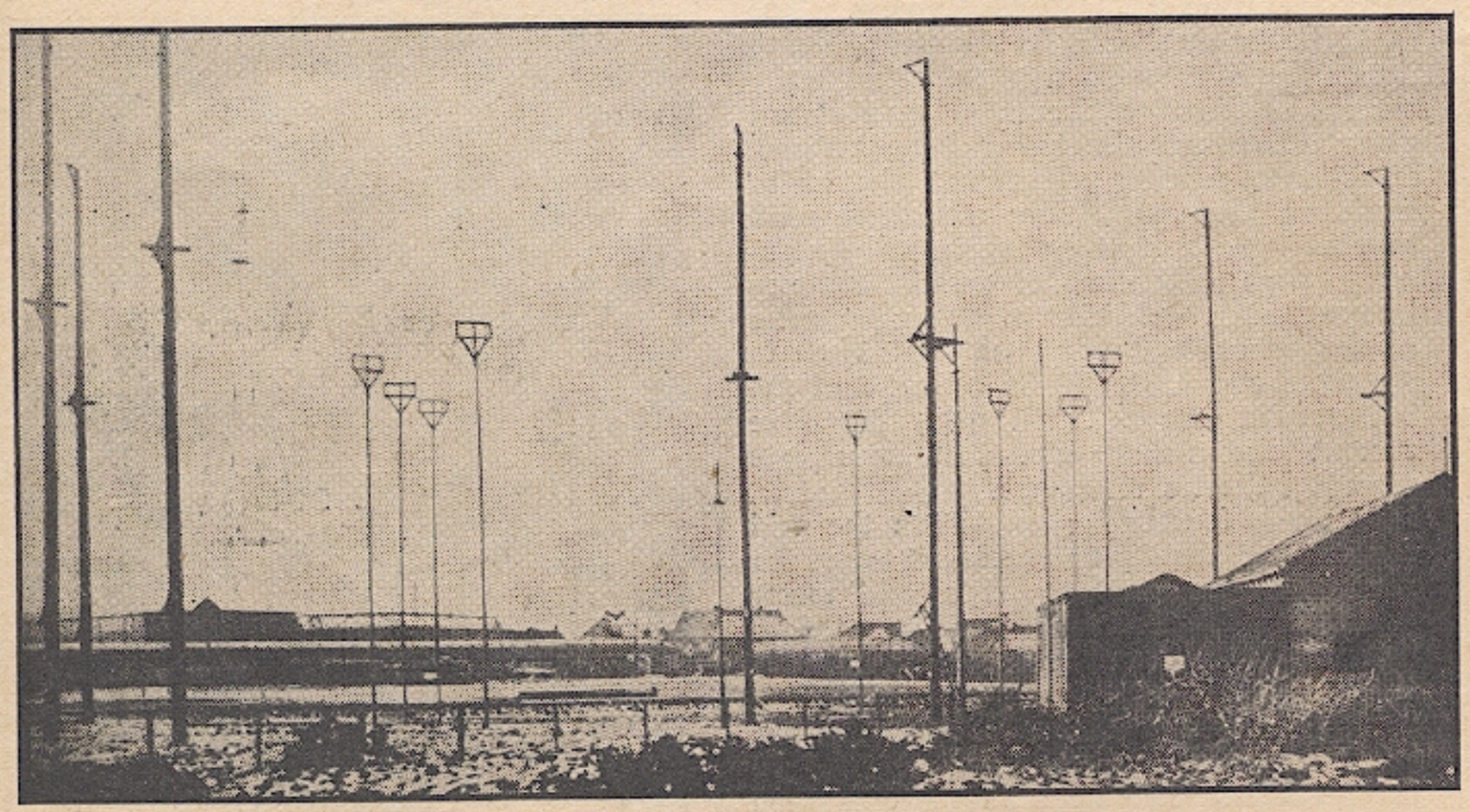
One 6-prong Eby isolantite socket and one 5-prong wafer type bakelite socket.

One piece sheet aluminum, size 6 by 10½ inches (for panel)

One piece sheet aluminum, size 7 by 14 inches (for chassis)

One piece 1-inch bakelite tubing, 2¾ inches long

Dial, tubes, knobs, batteries, necessary hardware, etc.



THE UNIQUE ANTENNA ARRAY AT PCJ

*Here are shown the queer-looking antennas and supports used by the experimental short-wave station at Eindhoven, Holland.*

# *The Future of* SHORT WAVES

## C. A. Morrison

***Part Four***

A GREAT deal of the credit for international radio reception on the high frequencies should be credited to the work of various scientific short-wave societies and magazines who have helped to make it popular, to solve its problems, and to furnish definite and up-to-date information regarding the stations in operation, together with their frequencies and hours of operation. It is a commonly known fact that short-wave stations do not operate at all hours, or every day. It is also well known that these stations change their wavelengths with the changing seasons, and some of the large stations use different frequencies at certain hours of the day. Short-wave broadcasting also covers only narrow bands within a wide wave spectrum which runs from 1500 to some 40, or even 50 thousand kilocycles, including thousands of separate channels. A lot of credit is due to the clubs of Listening Post Observers who have searched out information on these stations and have printed regularly revised short-wave lists, and schedules of operation. If it were not for the up-to-date and accurate short-wave time table, all the best equipment in the world would be of very little use, as it would be like searching for a "needle in a hay-stack" to find out *when* the stations were operating, *where* they were located, and *upon what frequencies* they were operating.

Speaking in a commercial sense the uses to which the short waves may be put, are almost unlimited. The field of their usefulness has barely been scratched. The most common commercial application of short waves that concern international short-wave reception is that in use by the trans-oceanic telephone circuits. These circuits have already made it possible for us to converse enjoyably with someone thousands of miles away, separated by oceans, mountains and continental boundaries. World telephone service now makes it possible for you to pick up your home telephone, and ask for London, Moscow, or Tokyo and be sure of a fair connection within a comparatively short period of time. These systems, too, will be vastly improved, permitting almost instant connections with all foreign countries and at a fraction of the cost that makes such traffic prohibitive for ordinary use. All telephone calls will be "scrambled" in the

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# The Future of Short Waves

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next few years, thus insuring secrecy. Already many of the telephone circuits employ scramblers (speech inverters) which make a telephone conversation non-understandable to outside listeners. This is quite important as most people do not care to talk over a circuit with the ears of the world listening in, even though the federal laws *do* impose rigid restrictions upon any one listening in on these conversations *not to divulge anything overheard!* Police calls, too, must come to some such sort of system, as this remains one of the greatest barriers to the most effective usefulness of the police networks, although it is not denied that they have accomplished a great amount of good in the apprehension of criminals. Police systems will also employ international circuits that will make it hard for a criminal to find a hiding place anywhere in the world.

Another thing that we undoubtedly have to look forward to is some sort of a system of universal news broadcasting direct from the scene of interest. Events of major news importance will then become available to the whole world simultaneously through a network of criss-crossing international circuits, set up expressly for this purpose, so that within a few minutes of an event transpiring it will be known throughout the world. I am sure public interest will eventually demand such a system, although just how it will be handled or by what parties I will not hazard. We hardly need to peer into the future to find such a condition, as hardly a day goes by but what we are permitted to listen-in on some unexpected drama of life or politics that has happened on the spur of the moment and that has been brought immediately before the microphone. We all know the excitement of such moments as this! The whole world waited with bated breath during the broadcast of a recent stratosphere flight, as the pilots, falling through space in a doomed balloon, dropping like a plummet, stuck to their guns (or to the microphone in this case) and calmly told what was transpiring even up unto the moment when they were forced to bail out. I also listened to the broadcast, direct from the schooner "Effie Morrisey" through its transmitter W1OXDA, which was moored at Hopedale, Labrador. Captain Bartlett had brought to the microphone a group of Eskimos from the nearby mission school and there, amidst their rude surroundings, they sent out onto the ether a simple program of native folk songs which sent quite a thrill through me. Another broadcast was intercepted from the top of Jungfrau, in the Swiss Alps. The crunching of the feet could be heard in the crisp frozen snow and one could almost breathe the mountain atmosphere as a group of Swiss yodelers sent their songs ringing out with crystal clearness through the rarified atmosphere. Hardly a day goes by but what some new drama of the ether is unfolded and, to me, it is this unexpected and dramatic interest that makes short-wave reception so exhilarating. Although we are not all privileged to "sail the seven seas," we can all be transported, at least for a time, far from the hum-drum realities of our everyday existence by sailing the ether lanes on our present-day short-wave radio receiver.