

WONDERFUL SHORT WAVES

GENERAL ELECTRIC COMPANY'S ACTIVITIES

New York, July 12.

Reports are being received from all parts of the world in connection with short wave tests conducted by the research engineers of the General Electric Company from May 28 to June 4.

Radio auditors were asked to observe reception of special transmissions over two twenty-four-hour periods, a week apart. The experimenters were not interested in local observations, because short waves generally skip the first 400 or 500 miles; but beyond that distance up to 12,500 miles radio listeners received the programmes and noted the volume, fading, distortion, intelligibility, static, carrier intensity, quality and modulation, according to the mail now being received from distant points, including Australia and New Zealand.

A Careful Analysis.

Through a careful analysis of the mail the engineers hope to learn what wave length, what hour, and what power are best to reach a definite objective during a particular season. The operators of the short wave installations explain that it is possible that the 32.77 meter wave is superior for transmission when there is darkness between transmitter and receiver; whereas it is also possible that the 22-meter channel is best when it is daylight at either transmitter or receiver.

"W. A. Waters, engineer and manager of the Manawatu-Oroua Electric Power Board, of Palmerston North, New Zealand, gave a most exhaustive log and graph showing the comparative strength of the 22 and 32.77 meter transmissions," said a General Electric Company representative. "The concluding line in the log for June 5 was: 'Went to bed, unable to keep awake any longer.'"

Twenty-four Hours' Test.

An exhaustive report was also received from G. S. Daughtin, of Stratton and Co., Ltd., radio manufacturers, of Birmingham, England. Mr. Daughtin reported that one or the other station was audible over the entire twenty-four hours during which the tests were conducted.

During the daylight hours Mr. Daughtin recorded better reception from 2XAD, while 2XAF operated on 32.77 metres, was received best during the hours of total darkness. When it was dark at the receiving end and light at the transmitting end, 2XAD was received best. When it was light at the receiving end and dark at the transmitting end the 2XAF signals were most reliable.

3LO ON SHORT WAVE

MELBOURNE STATION'S EQUIPMENT.

The well known broadcast station, 3LO, Melbourne, has now commenced transmitting concerts on a short wavelength. This is a big enterprise and calls for a lot of technical skill and special equipment.

The programmes are being given in the city studio in the ordinary way, and passed on to Braybrook (eight miles from Melbourne) by land line.

The wave-length is 29.8 metres, and the power drawn from the mains will be 15,000 watts. At Braybrook the output from the studio is applied through a line amplifier and sub-modulator unit to the grids of the modulator proper, which in turn is coupled to the plate of the special short-wave oscillating valves. These valves are of unique design, and are enclosed in metal screens in order to distribute the high frequency losses over the whole of the glass envelope and thus reduce the risk of puncture at the high potentials used. The oscillator is worked on the amplifying drive system through the stages of magnification—modulation taking place on the last stage. The output from this is then fed through a specially designed coupling circuit through a "lecher" feed to the distant aerial. The lecher lines consist of two highly insulated, tightly stretched wires supported on miniature telegraph poles. The energy from the transmitter is fed into the base of the aerial system by means of a special coupling. Steps are taken to prevent radiation from the lecher system and to eliminate reflection so as to ensure the maximum transfer of energy from the oscillating apparatus to the aerial. The advantages of this system are that the aerial may be kept free from interference likely to be caused by conflicting electric fields in and around the actual generating apparatus, buildings, and other factors likely to cause absorption due to the enormous intensity of the electro-magnetic fields set up at fre-

quencies of the magnitude of those to be used for these tests.

Electrical Screening.

The various units of the transmitting equipment are electrically screened from each other, and the frames and panels made of brass. The circuits are so balanced that all fields induced in the frames are neutralised. All high frequency portions of the equipment are supported on plate glass strips to eliminate dielectric losses.

The potential on the plates of the main transmitting valves will be 8000 volts, supplied by a specially constructed three-phase double wave rectifier and associated smoothing unit. With this equipment 3LO Melbourne will have the most modern and most powerful short-wave broadcasting station in the southern hemisphere, which should be capable of being heard in any part of the world.

All the apparatus was designed and built in Australia by Amalgamated Wireless (Australasia), Ltd.

100,000 WATTS

WGY'S GIANT TEST.

For the first time in the history of radio broadcasting, 100 kilowatts of electrical energy was modulated with the vibrations of the human voice and instruments for the radio public a few weeks ago. A special transmitter at WGY, Schenectady, U.S.A., was successfully tested with that amount of power in the antenna between the hours of 1 and 2 a.m., Eastern daylight saving time.

"This was the first occasion in the history of broadcast service in this or any other country," said Mr. Meenam, of the General Electric Company, "that such a great amount of power has been modulated and delivered to the antenna. The Federal Radio Commission granted permission to operate this high-power transmitter for thirty days between the specified hours."

"Two of the 100-kilowatt type of transmitting tubes recently developed by the General Electric Company are being utilised in the amplifier, and three tubes of the same rating in the modulator. The experimental set is crystal controlled, which assures very close adherence to the station's transmitting frequency of 760 kilocycles."

The amount of power placed on the air by the Schenectady test transmitter was more than three times the power utilised in the regular programme broadcasts of WGY, which is 30 kilowatts, or 30,000 watts. The 100,000 watts of the General Electric experimental station transformed into power usable in ordinary house lighting bulbs would illuminate 2000 lamps of the 50-watt household type.

WORLD CONFERENCE

WHAT ABOUT BROADCASTING?

DR. DE FOREST'S COMMENTS.

Looking forward to broadcasting on an international scale, Dr. Lee De Forest, inventor of the three-element radio valve, urged recently that the International Radio Telegraph Conference to be held in Washington, U.S.A., beginning October 4 consider various phases of radio broadcasting as well as wireless telegraphy. Twenty-three nations have appointed delegates to the conference.

"A perusal of the names of the delegates fails to reveal many that have been especially linked with the broadcasting field of radio," said Dr. De Forest. "I firmly believe that before the next succeeding conference will be held international broadcasting will have attained a stable development which will call for careful and harmonious regulation on the part of the various Governments, in order that the greatest possible benefit to the largest number of people may be obtained. This condition doubtless exists to-day in Europe, where nightly programmes from various European capitals are heard all over the Continent."

Radio a Peacemaker.

"For years I have been convinced that one of the greatest possible factors making toward international peace and amity will be the interchange of radio programmes between nations. To this extent, therefore, the problem of international broadcasting is really of equal import to that of exchanging commercial telegrams without interference. I will welcome the time when some 'Geneva Conference' is regularly convened, not for the mere limitation of cruiser tonnage among rival nations, but to secure the greatest possible good for the greatest number of inhabitants, which can be bestowed by regulating radio broadcasting channels of international acquaintanceship."

Arthur Batcheller, Federal Radio Supervisor in New York, who has

RECORD YOUR DIALINGS

A correspondent writes:

Might I make a suggestion. If you have room to print the following diagram, it would save listeners fishing round the dials for station. If they

were only to dot down the readings of the dials once they had found the station, it would stop some of the howling. If they just chance to luck to pick up a station instead of keeping a record of their dialing it could be cut out and pasted to a piece of cardboard and would be handy at all times.

Call Letter.	STATION	Wave Length.	DIALS.			REMARKS
			1	2	3	
1YA	Auckland					
2YA	Wellington					
3YA	Christchurch					
4YA	Dunedin					

just been notified of his appointment as a technical adviser to the American delegation of the international conference, said: "I do not know just what will be done in regard to radio broadcasting problems that have arisen in the United States. I have some ideas of my own that I hope to be able to present, however, during the preliminaries to the conference, which I will attend in Washington soon after the first of August. During my absence, which I expect will extend well into the winter, Henry L. Bogardus will act as Radio Supervisor in this district."

To Include Broadcasting.

Latest news from Washington states that among the subjects to be discussed at the conference are the revision of the International Radio Telegraph Convention and regulations signed at London on July 6, 1912, measures for the international supervision of radio communication between large fixed stations, broadcasting and the handling of Press messages, radio telephony, measures for the elimination of interference, distress messages so as to take cognisance of increased uses and classes of service, radio aids to navigation and other purposes for which radio has been used as a result of its development since 1912. Secretary Hoover is chairman of the American delegation.

RADIO SUPREME

WINNING THE WORLD.

Radio will capture the world. Civilisation and advancement is divided into ages. In the nineteenth century the steam age took the spotlight. This was the period which saw the advancement from the old sailing ship on the seas to the steam propelled craft, and from the ox carts which trekked across the plains to the railroad.

At the beginning of the twentieth century the automobile age came in. To-day we have the radio age and this new science has gripped public imagination to such an extent that

nothing else in science or commerce can compare with it for supremacy.

The peculiar thing about the various ages is that all of them at their inception had as many doubters as believers.

Prejudices Removed.

Few believed that ships could be successfully propelled by steam engines. It was thought the engines would be too heavy to allow the ship to stay afloat.

The familiar cry at the beginning of the automobile age was "get a horse." And now in the radio age one sometimes used to hear the protest: "I wouldn't have one of the things in the house." However, it may be said to the credit of radio that this science is winning the doubters with greater celerity than the other milestones of progress.

Those who "wouldn't have one of the things in the house" are now getting them in as soon as possible. They are fascinated by radio even more than our forefathers were by the advent of steam travel and with the introduction of the automobile.

CAUTION WITH BATTERIES

A wire placed from one terminal of a battery to the other gives the current a path without resistance and is what is called a short circuit. This is harmful to any battery, and if the wire is left on for more than a fraction of a second it may ruin the battery. Such heavy current discharging from a storage battery may cause enough heat to warp the plates, which practically means the end of the battery.

In taking dry cells home for the shop be careful not to let any metal connect the two terminals. If you are careless in this matter you may think the dealer has cheated you, for any metal will ruin a battery in a moment.

When using tools inside your radio set do not let them rest anywhere near the battery wires. The B battery will usually make enough of a spark when short-circuited to let you know what has happened, but the A battery may not.

ESPERANTO

As no doubt many of our local readers are already aware, an Esperanto Club was founded in Wellington on August 31. It is a very significant fact that a great many of the membership are interested in radio, and that all of the club's office-bearers, without exception, are listeners. The spread of the language is the chief aim of the club. Students of the Radio Esperanto course who are resident in Wellington are thus afforded an additional opportunity to improve their knowledge of and to practice Esperanto. Full particulars are obtainable from the instructor, who also invites enquiries relative to Esperanto. Address all communications to "The Esperanto Instructor," N.Z. Broadcasting Co., Wellington, or care of "Radio Record." To ensure a reply enclose a stamped addressed envelope.

LESSON VIII.

(To be broadcast from 2YA on September 22, from 7.39 to 7.54 p.m.)

Bonan vesperon, studentoj!

THE VERB (continued).—PASSIVE PARTICIPLES: The passive is formed by the auxiliary verb *ESTI* and the passive participles of which there are three:—

Pres: ata, amATA, loved, being loved.
Past: ita, amITA, having been loved.
Fut: ota, amOTA, about to be loved.
Primarily adjectives, they may become nouns in the same way as active participles, and receive the adverbial ending *E*, as mentioned in Lesson VII.

TABLE OF PASSIVE TENSES.—INFINITIVES: esti amATA, to be loved; esti amITA, to have been loved; esti amOTA, to be about to be loved.
Mi estAS amATA, I am being loved.
ni estAS amITA, I have been loved.
mi estAS amOTA, I am about to be loved.

mi estIS amATA, I was being loved.
mi estIS amITA, I had been loved.
mi estOS amOTA, I was about to be loved.
mi estOS amATA, shall be loved.
mi estOS amITA, I shall have been loved.

mi estUS amOTA, I shall be about to be loved.
mi estUS amATA, I should be loved.
mi estUS amITA, I should have been loved.
mi estUS amOTA, I should be about to be loved.

EstU amATA, be loved.
EstU amOTA, be loved (at some future date).

The English proposition following the passive verb is expressed by *de* for the agent, and by *per* for the instrument.—*Li estas batita de la patro PER bastono.* He has been struck by the father with (by means of) a stick.

Lesson IV. will comprise examples of the use of active and passive participles.
Bonan nokton!

NO CENSORSHIP IN U.S.A.

It was reported from Washington, U.S.A., on July 21, that the Government Radio Commission has no authority to impose censorship on broadcasting programmes, and any abuse in that regard must be dealt with through other agencies. Admiral Bullard, chairman of the commission, on the above date, informed W. R. Keagan, of St. Louis, who complained of the use of abusive and profane language by some announcers in the Middle West.

Replying to Mr. Keagan, Admiral Bullard said there is no authority in the law of 1927 empowering the Radio Commission to deal with the offences described, and that relief must be sought elsewhere.

at last! A Rechargeable Dry Cell Radio Battery

26 years' of intensive study, research and experiment, now finds fitting culmination with this presentation of TAB, a perfected and practical RECHARGEABLE dry "B" Battery, which will mean more to the advancement of radio reception at a reduced operating cost than any previous invention, for there is no substitute for a good "B" Battery in Radio, as it insures perfect reception under all conditions.

TAB Batteries, while costing but a trifle more, differ from ordinary "B" Batteries in that they can be simply and fully recharged from 6 to 8 times, thus ensuring a life of at least 18 months to two years' service when used with the average radio set. So economical and reliable are TAB Batteries that it would be a conservative estimate to say they ultimately cost about one-sixth of the cost of any other "B" Battery.

As Sole New Zealand distributors, we have just received a shipment of TAB Batteries, and your immediate inquiries are invited.

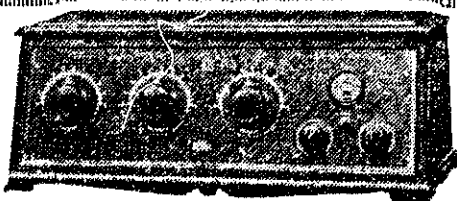
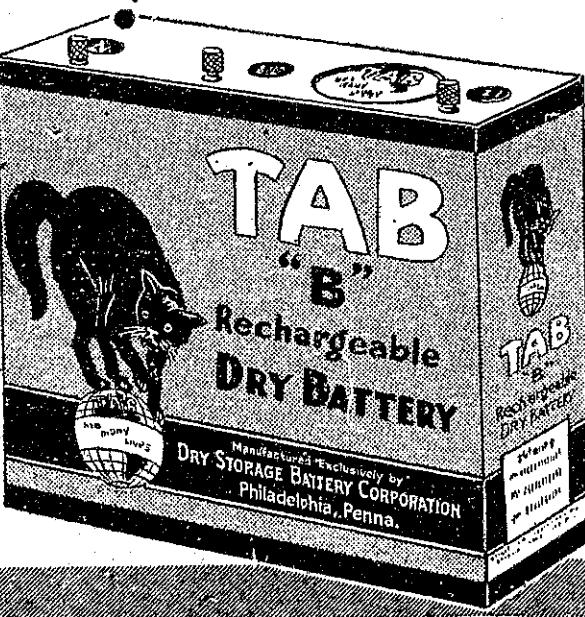
TO THE TRADE—

A limited number of territories are available throughout New Zealand to Radio Dealers of established reputation, who are desirous of handling this unique and profitable line.

ALL ENQUIRIES TO BE ADDRESSED TO SOLE N.Z. AGENTS.

The Rodger Importing Co.

159 Manchester Street, CHRISTCHURCH.



King in Radio

Browning Drake Sets, made up to order.
From £8/5/-.

NEW ZEALAND CIRCUIT SETS From £5
KING 5-VALVE NEUTRODYNE £36/10/-
Nothing Else to Buy.
CRYSTAL SETS, 10/6 One-valve Amplifier, including Batteries, Loud Speaker and Crystal Set £1/19/6
RADIO HOUSE, PHONE 41-446.

F. J. W. Fear & Co. 63 Willis Street, Wellington.