

## WHY LISTENERS PAY ROYALTIES

### THE AUSTRALIAN POSITION.

"The writer was recently asked, 'What are these royalties we hear so much about in broadcasting circles?' It is possible that others are equally puzzled about the matter, and it will not be inopportune to discuss the subject," says Roy Dio, in referring to the position in Australia.

"A royalty, of course, is a payment made by the user to the owner of some device or work. The payment may be demanded in respect of the use of a book, a song, or some constituent part of a wireless set. It is the last-named item that interested my friend, and which we will consider for a while.

### EVERY LISTENER PAYS.

"Although he may not be aware of it, every listener pays royalty to the owners or agents of the owners of certain wireless patents, even if the listener's set is a simple crystal set, which contains no patented device or method; but it is actually the broadcasting company that pays the royalty finally, after the listeners' fees have been given to the company by the Government.

"The broadcasting company is obliged to make some payment to the patent owners—Amalgamated Wireless Company—for the right to broadcast. Because in the broadcasting station are some patented devices or systems, the wireless company claims tribute from the broadcasting company in the form of so much per listener every year, no matter whether the listener uses a crystal or a valve set.

"That is the point that puzzles many people: why pay on a crystal set? They can understand having to pay something for using a valve set, because valves are patented. The answer is that the listener when he tunes in B.O., Melbourne, or any other station, makes some use of, or receives some benefit, from the transmitting equipment at the station. And the broadcasting company owning or operating the station is required to hand over to Amalgamated Wireless Company, the owners of the patent covering transmission, a certain portion of the listeners' license fee.

### WIRELESS TRADERS ALSO PAY.

"Until the new agreement between the Government and Amalgamated

Wireless Company becomes law, every person or firm that sells valve receivers is liable to pay royalty to the wireless company; and, one supposes, the trader passes on the charge to the purchaser. Thus the listener who uses a valve receiver pays royalty twice.

"It is not certain if the traders did pay that royalty: some of them took the stand that their sets did not include devices or systems over which the wireless company had any valid patent rights. That contention is the subject of pending litigation, and was the subject of much comment and evidence before the Royal Commission.

"When the new agreement becomes law—this month, some time, one may imagine—the traders will no longer be required to pay this valve socket royalty. Amalgamated Wireless will get one payment every year only; that is, from every listener. Out of the license fee an amount of 3s. will be deducted by the Government and handed to Amalgamated Wireless; and as there are over 250,000 licenses now in existence, the 3s. per license amounts to over £37,500 per annum. The patents owned by the company have a limited life—generally for a few years—and as some of the most vital patents are near the end of their life, presumably there will be an alteration in the amount paid by listeners in a few years' time."

## BATTERY TREATMENT

### CORRECT CHARGING RATE.

With the increasing popularity of trickle chargers for charging radio storage A-batteries has come the question: What would happen to the battery if, for instance, the receiver is not used for several days and the trickle charger is left operating at the usual half ampere rate?

No harm will be done to the battery under such conditions. A storage battery (or "wet" battery) of not less than thirty ampere hour capacity can be charged continuously at a half ampere rate without damage to the battery even if the charge is kept up for long periods after the battery has attained a state of full charge. The extra current slowly decomposes the water in the battery solution.

### OVERCHARGING HARMFUL.

In fact, the actual harm that can be done to any battery by excessive charging is to heat it up and dislodge the active material from the plates through excessive gassing. However, these deleterious effects are produced only when the charging rate is relatively high; a prolonged charge at a five to ten ampere rate sent through an eighty ampere hour battery would eventually cause trouble.

On the other hand, thousands of radio batteries suffer from premature old age because they are not charged often enough and long enough. All storage batteries end up in the scrap pile at the end of five or six years, at the most, but constant undercharging will turn them into junk in a year or two.

The safest policy, therefore, is to keep your battery filled to half an inch above the plates with distilled water at all times and give it more charging than it actually needs.

## Radio for Wellington Hospital CONTRACT LET FOR INSTALLATION

The contract for the installation of radio equipment in the Wellington General Hospital was handed to the National Electrical and Engineering Company, Limited, last week, by the committee which has been responsible for the raising of money and settlement of details concerning the installation. The committee consists of Stuart Wilson, chairman; Ivan M. Levy, secretary; W. J. Roache, and J. H. Owen. Great credit is due to these gentlemen for their public spiritedness and enterprise because no small amount of work has been necessary to raise the money to enable this installation to be proceeded with. The hospital authorities, including Mr. Bland, the hospital electrical engineer, have also laid themselves out to give every possible assistance in the matter.

Some details of the actual installation will be of interest. The receiver will consist of a Fada 8-valve machine which has 4 stages of radio frequency amplification, a detector and 3 stages of audio amplification, each stage being shielded. Either aerial or loop may be used, and when the loop is in use it disappears into the interior of the receiver with a single action. For the major amount of work which the installation will be called upon to do the loop will be used for purposes of receiving signals from 2YA Wellington, and by means of an automatic switch the receiving installation will be brought into commission and switched off at the commencement and finish of 2YA's programmes, and in this way a minimum amount of attention will have to be paid to the installation.

### POWER AMPLIFIERS.

The final stages of amplification will be power stages so as to enable the receiver to cope with the heavy drain due to the long length of distribution cable and energy taken in driving the sound reproducers. Power will be supplied to the receiver by a Fada socket power which is so designed as to automatically come into operation when the Fada receiver is switched on.

The output from the receiver will be distributed throughout the hospital through lead-covered cable in order to prevent electrical interference from power mains, X-ray apparatus, etc., from causing interference from the reproducers. These distribution feeders will total an approximate length of a mile and a half, and they will radiate from a central distribution point.

At the present moment it is not intended to complete the whole of the hospital installation, owing to lack of funds, but the points which have been selected for connection under the first section of the contract are as follows:—Rye ward, ward 7, ward 7 annex, ward 6, nurses' sickroom, wards 4 and 5, children's hospital and the nurses' home, as well as an extension to the Superintendent's residence, in order that the working of the system may be observed. These distribution points will comprise a total of 164 pairs of headphones and ten speakers, the loudspeakers being used in the children's hospital and the nurses' home, as well as one which will be in operation alongside the receiver in order that the signal strength throughout the entire system may be kept at a standard volume.

### TECHNICAL DIFFICULTIES.

It is of interest to note some of the technical difficulties met with in making an installation of this sort. When musical frequencies are taken through a long cable distortion takes place in the shape of a loss of high tones owing to the cable having electrical "capacity" which allows the higher tones to be lost. The result of this is that orchestral music, for instance, will arrive at the sound reproducers minus the violins, whereas the bass tones will appear to be over-accentuated. In order to restore this musical balance it is necessary to insert filters which keep back lower tones and accentuate the higher ones. A curious phase of this type of distortion takes place when the

## A RADIO CURFEW

### RESTRICTIONS IN ITALY.

Ten o'clock curfew for radio broadcasting is the newest plan in Italy in an effort to stamp out imported vices such as jazz and dancing.

Its purpose is to prevent dancing in private homes which, made possible by broadcasting dance music, has increased greatly since the police closed nearly all popular dance halls. If the plan now being urged upon the Government by influential ecclesiastics, headed by Father Paoloni of the famous Montecassino monastery, is adopted, every radio station will be compelled to terminate its programme at an hour when dancing has scarcely begun.

At the same time, church reformers have pledged themselves to work for the adoption of a similar system for other countries. The 10 o'clock curfew is actually a compromise plan, since the reformers really want to prohibit broadcasting of all light or danceable music, restricting musical programmes to performances at celebrated theatres.

Ecclesiastics also would like to have programmes devoted exclusively to informative and educational material, but this scheme, it is understood, is considered excessive by civil reformers. Unprotesting churchmen maintain Italy should remain several steps ahead of other nations, in many of which the church crusade against postwar immorality is bearing fruit.

cable capacity is of such a value that all frequencies above 6000 periods per second become lost. Under these circumstances a speaker's voice is caused to hiss because the hiss in the letter "S" represents a frequency above 6000, and this will be dropped out of the speaker's tones.

It is not only necessary to preserve fidelity of tone, but also to maintain a constant signal strength and this must be done not only by balancing the volume from every sound reproducer, but also by adjusting the electrical arrangements in such a manner that even though only one pair of telephones is in use the volume will be the same in that pair of telephones as though the other 163 pairs and the loudspeakers were in operation also.

As before described, the loudspeakers in operation in the receiving room will indicate the volume available at each distribution point throughout the system.

### PILLOW-PHONES.

The National Electrical and Engineering Company Limited, have been responsible for various hospital installations in New Zealand, two of the most important being the Christchurch and Ashburton General Hospitals. Both of these hospitals are using Fada 8-valve receivers, and the sound reproducers in the former are loudspeakers and head telephones, whereas the latter are loudspeakers and what are known as pillow-phones. The Christchurch Hospital authorities installed headphones in one ward for experimental purposes, and as a result of their experience, are proposing to convert the loudspeakers into either headphones or pillow-phones as soon as funds are available. The Ashburton Hospital authorities are very satisfied with the pillow-phones, because where telephones are used breakages are inevitable, due to telephones being dropped off the beds on to the floors.

The main consideration in favour of the pillow-phone, however, is that as it consists of a sound reproducer sewn into the interior of a pillow, it can be dropped without impunity without breakage and from a sanitary point of view it is all that is desired, because a standard hospital pillow-slip may be pulled over it when it is in use by the patients. This slip may be washed according to ordinary hospital routine.

The efficiency of reception from the point of view of the listener is just as efficient as the head telephones, as the patient may either lie on it or recline against it. The Wellington Hospital authorities have not yet decided whether pillow-phones or head telephones will be used.

The sound reproducers are plugged into ordinary sockets which are available between the beds and in the case of the loudspeakers at some convenient place in the ward. To put the reproducers out of action it is only necessary to withdraw the plug from the wall.

The material to be used in this installation is to be practically British throughout, and a certain portion of the apparatus will be made up in New Zealand. The installation is due to come into operation on March 10.

## PROOF BY RADIO

### CONTINENTS NOT DRIFTING.

Continents and islands are not drifting, as some scientists suppose, or, at least, there has been no drift during the last fifty years.

About a year ago fifty-five radio stations in thirty countries participated with the United States Coast and Geodetic Survey in a world-wide check of longitude values. The above statement by William Bowie, chief of the division of geodesy of the survey, is one of the preliminary conclusions as a result of the observations.

According to Mr. Bowie, the longitude net also showed that there has been no spreading or contracting of the United States as a whole.

### RADIO MORE ACCURATE.

"Longitudes in the United States were discovered many years ago by the use of land wires," says Mr. Bowie. "Not very long ago a comparison was made through use of radio. It was found that there has been no change greater than might have been expected."

"It has been found that use of radio is more accurate in checking longitude values. Therefore, when we find a few slight differences in longitudes, as compared to fifty years ago, it does not necessarily mean that there has been a shifting about of places."

"The accuracy with which longitude may be determined by radio is .01 of

a second of time, corresponding to 15 degrees of arc, or corresponding in the latitude of New York to approximately 10 feet.

"Even with the most perfect instruments for observations on stars, it is scarcely possible to exceed this accuracy, for the light of stars coming through atmosphere is bent out of its true direction. While this bending is slight, it prevents absolute perfection in astronomical work."

## THE DRIFT THEORY.

"Wegener believed that North and South America have been drifting westward of Europe and Africa."

"This theory appeals to many students, especially those engaged in biological investigations. It is an easy explanation of the similarity of plant and animal life in countries thousands of miles separated."

"Officials of the coast and geodetic survey have never held that the Wegener hypothesis was tenable, but withheld comment until longitude determinations were made."

"There is a small force exerted on any Continental mass, tending to make it drift toward the Equator. This is due to the fact that Continents stand high, and have centres of gravity of equal masses of earth under the ocean. This tendency, together with the rotation of the earth, should make North and South America move south-west from Europe and Africa."

## EARTH IS SOLID.

"One of the great difficulties with the hypothesis is that the earth is solid to the core. This is proven by observations of ocean tides and the transmission of earthquake shocks through the earth to stations distant from the place where the earthquake occurred."

"If the interior of the earth were liquid there would be no ocean tides. The liquid material would rise and fall just as does the ocean tide, and seismic waves could not be transmitted through a liquid medium."

"The coast and geodetic survey has proved that the earth has a crust extending sixty miles below sea level."

## A SCIENTIFIC MARVEL

### PRODUCT OF RADIO LABORATORY

A piece of steel floating unsupported in the air is one of the scientific marvels produced in the radio laboratories of the Westinghouse Electric and Manufacturing Company. Only a thin wire serving as an anchor to keep the steel from escaping is attached. With that exception, the bar, which is six inches long, one-half inch wide and one-half inch thick, has absolutely no visible means of support.

The answer to the mystery is spelled by the word "magnetism." Below the floating bar is a companion piece, of steel of similar size and composition, and two bars, magnetised with like poles opposite, are held apart by the magnetic repulsion between them, which exceeds the force of gravity. The material used is cobalt steel alloyed with tungsten, which, according to Westinghouse engineers, forms the strongest permanent magnet known. The alloy was developed by Dr. P. H. Brace, Westinghouse research engineer, after months of experimentation.

The new alloy is so highly magnetised that, when used as horseshoe magnet, it will lift a bar thirty times its own weight, representing a strength five times that of the ordinary magnet, according to Dr. Brace. In addition, the alloy clings tenaciously to its magnetic power, and will not lose it. Cobalt steel, such as is used, is relatively expensive. It will be used only where performance is worth more than price, as in delicate meters, fine phonographs and such precise machines as the Westinghouse oscillograph or "Osico."

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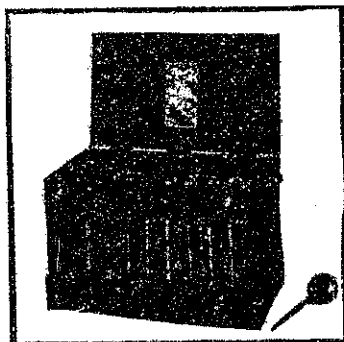
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