GOOD TIME AHEAD

IMPROVED RECEPTION.

From 1928 to 1933, radio reception conditions will improve, according to the sun spot interference theory. A well-known scientist states: "We must be patient for a short while now, and await better conditions rather than strive for distance at the expense of batteries and loss of sleep. There seems to be some effect of sun spots on radio reception."

Sun spots throw out enormous eruptions of electrons and other electrical particles, some of which reach the earth's atmosphere. When these sun spots are particularly intense, radio reception is apt to be disturbed. The sun spot cycle is eleven years; that is, there is a minimum of spots on the sun for a time, after which they gradually increase to a maximum, and return to a minimum—the whole period occupying a cycle of eleven years.

A Change This Year.

The last sun spot minimum was in 1922, and it would be inferred, therefore, that reception in 1932 would be progressively worse to 1928, and that in succeeding years, reception should improve and be at its best in 1933.

It will be interesting to see whether this occurs, and whether observations on sun spots will show a closer correlation with radio reception conditions.

There is no definite relation between radio transmission effects and the aurora or magnetic storms, the scientist points out, admitting, however, that these phenomena do affect wire telegraph services (not wireless telegraphy) frequently paralysing it entirely. The only effect on radio waves, is that in some instances it has been known to either diminish or increase the intensity of the received waves, thus causing fading of signals.

Weather Has Little Effect.

Strange as it may seen, and contrary to general belief, weather, in general, has very little effect on radio reception: the principal causes of these vagaries lie in the upper reaches of the air, whereas the weather is manufactured or changed in the lower levels of the atmosphere—below the clouds. Static, on the other hand, he advises, consists of waves which are identical in character with wireless waves, though they are caused by natural electrical discharges in the air. Lightning is another form of such discharge. Static, as is fairly well known, occurs most frequently in the torrid zones and storm areas, being worse in summer than in the winter months.

A Strange Theory.

The theory that static represents a system of communication is still upheld by some people who are of the opinion that the Martians are endeavouring to establish communication with the earth.

However, it is firmly believed that science will eventually overcome static, whether it be called interference or signals, and in the meantime, until 1933 at least, we may look forward to a period of good reception unmarred by the troublesome noises which we are all experiencing of late.

B BATTERY POINTS

TO EFFECT ECONOMY.

It sometimes happens that a B battery is not asked to provide its full voltage. For instance, its maximum reading may be 108 volts, while 90 or so volts suffice for the valve requiring the highest H.T. Thus, 18 volts are standing by idle. Nine or so of these will be useful to provide compensation for the drop in voltage which inevitably accompanies the latter day of a battery's life.

The remaining 9 volts can be used for grid bias purposes, thus saving the complication and additional expense of a separate grid bias battery.

The negative wander plug of the B battery should be moved up to '9 volts," and the positive plugs moved up correspondingly at the other end. The grid bias negative plug can then be inserted in any one of the B battery sockets between 0 and 9 volts.

VARYING THE LOAD.

It should always be remembered that the first group of cells in a B battery, used with a multi-valve set, has to do the most work. They have to provide current for the valve taking the least B battery voltage, as well as those which take most. For instance, supposing there are three valves, each with separate B battery, plus tappings, taking 45, 60, and 90 volts. The cells between 60 and 90 volts have to supply current for only one valve, those between 45 and 60 for two, and those between 0 and 45 have to supply current for all three.

The work can be evened up a little by shifting all the wander plugs up for periods, viz., that one in 90 up to 108, the 60 up to 78, the 45 up to 63, and the negative plug to 18. Then the probability is that if the battery is of the "dry" type, a cell or cells between 18 and 45 will be the first to "pack up." Such can be short-circuited, and the battery used until all the cells between 18 and 90 are hors-de-combat, shortages in voltage being made up by additional 12 or so volt units.

The cells between 90 and 108 should be the last to go. A 108-volt battery, so handled, has given 16 volts of useful energy after a period of nearly eighteen months' work. It provided the last 16 volts out of a total 88 necessary for a three-valve Det.-2 audio-frequency set, 72 in the form of a complete unit, used for the detector and first audio valve.

HOME-MADE CRYSTALS

A SIMPLE RECIPE.

Super-sensitive crystals at 2s. 6d. per gross! Here's how. Get some pure lead (Pb.), not solder or lead alloy. Also some flower of sulphur—ordinary powdered sulphur. Cut the lead in small pieces and mix with the sulphur in the ratio of seven parts by weight of lead to one part of sulphur. Place the mixture in a crucible, a tin cup, or some convenient container other than glass or porcelain. Heat over a Bunsen burner or over red coals in a stove. In a very short time the mixture will begin to glow and the lead and sulphur will fuse together. At this point, remove the mixture from the heat and place the container in a basin of cold water to cool.

Water to be Avoided.

Do not let any water get on the crystal, as it will ruin them. If you have had things just right, you will have a lump of material that is super-sensitive over its entire surface. If the lump is crumbly, you have "cooked" it too long, and if it is streaked with lead you did not cook it long enough, or else you used too much lead. Your crystal will then be sensitive only in spots, and not over the entire surface as it should. Use a very light contact. Some home-made crystals are as good or better than the best natural crystal ever used. Fine for reflex, too!

The above materials may be purchased at any chemists.

RESISTANCE CHANGES

TEMPERATURE EFFECTS.

Many listeners cannot understand why a certain length of wire possessing a known value of resistance will show a variation while current is flowing through it.

To comprehend this phenomena, certain actions must be visualised by the interested fan. First, the formation of molecules results in the wire possessing a certain value of resistance per inch, foot, or mile of wire, whichever dimensions suits the fan. If the molecular structure of the wire is altered, the resistance for that inch, foot or mile of wire is changed. The more the structure is varied, the greater the change in resistance. When current is caused to pass through wire the action of the current is to heat the wire, the heat generated being dependant upon the amount of current flow. The action of the current not only heats the wire, but in heating it changes its molecular formation, with the result that the resistance changes.

Molecular Structure.

It must be understood, however, that the molecular structure is not always altered by the heat generated in the wire. That is, the elements comprising the wire may have such molecular formation that within certain limits of heat, these formations will not change appreciably, with the result that the resistance of the wire does not change with increase in temperature. Such a wire is said to possess negligible temperature coefficient and the resistance remains practically constant over at certain range of applied watts. Such resistances are best suited in battery eliminators and electrified receivers where constant resistance is necessary under various loads.

THAT RUSSIAN STATION

RECEPTION IN AUSTRALIA.

A correspondent in New South Wales writes to the Sydney "Wireless Weekly":—"I have noticed various references in the Press and radio journals to the wavelength of the Russian station RFN, some of which are misleading. For the information of short-wave enthusiasts who may experience difficulty in locating this station, I might state that RFN's wavelength is exactly 60 metres. He may be picked up every night except Wednesday, and occasionally on that night also. The evening session opens about 8 o'clock with a talk, which is given in the Russian language. Invariably the station, on opening, announces in English. Likewise an announcement in English is made at about 9 o'clock. On a good low-loss set the station is as easy to tune in as 2FC, whilst the music transmitted is as clear as could be wished. Another short-wave station, situated in Java, transmits an excellent programme between 10 and 11.30 on Saturday nights. I heard the station, controlled by the Dutch East Indies Laboratory, transmit a special test programme on 31 metres on Monday morning, November 28, between 5.30 and 7.15 a.m. The volume was such that the music could be heard from the speaker 50 feet away. 2XAD is another Yank station heard easily every Sunday morning at about 7 o'clock, generally transmitting a sporting event."

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The Children's Corner

By "ARIEL"

Dear Radio Children,—

Who heard the elephants and lions at Wirth's Circus broadcasting their sweet melodious voices on Saturday night? I expect every one of you did, and got heaps of thrills from Jumbo's items. Don't you think it was very brave of Auntie Dot and Uncle Jasper to sit and talk to you from among all those wild beasts? I couldn't have done it for all the tea in China; but then, I never did like loud noises, such as thunder, doors banging, hooters and fireworks, and people shouting in my ear. Anyway, Auntie Dot had to admit once that her knees were knocking, which goes to show how brave she was to stay there, in spite of feeling shaky!

I expect most of you are still enjoying holidays at the beach or in the country, and I hope those of you who only get to the sea occasionally are making the very most of every minute. Do you look for sea anemones and starfish, and crabs, and pretty seaweed and shells, and watch the seagulls? If you come across a starfish it means that it has been left stranded by the tide, and it is best to throw it back into the water, as it cannot live for long on land. Do you know that a starfish can climb up rocks just about as quickly as a snail, and that it can wriggle itself along the sand at about the same rate? It manages this performance by means of its rows of little feet, which you will find running along its rays if you turn it on its back.

I wonder how many of you know how useful seaweed is? Once upon a time it was considered quite useless, but now we use it for such a lot of things. To begin with, it helps to break the force of the heavy seas, and makes a home for numerous sea creatures. Some kinds are used in the making of iodine, soap, varnish, and glass, while others are gathered by cartloads in tons and tons, and put on the fields to make the crops grow. The little blobs we so often see and tread on for the fun of popping them are little balloons filled with air to keep the seaweed afloat on the water.

Then there are many rarer and prettier kinds, like fairy trees, in red and pink and white, the which are most attractive when dried and pressed for a collection. Of course, you have to find out the correct names and label them all.

Shells, too, make a fascinating collection, and you can spend many long hours hunting for new ones. Some are so delicate and tiny that unless you are looking very carefully you will miss them altogether.

Anyway, I am sure you are all having the time of your lives, and will just hate leaving the out-of-doors when it's time to begin school again.

Love to everyone,

ARIEL.

CHILDREN'S HOUR AT 2YA

Uncle Ernest has been browsing under the shadows of Ngauruhoe at National Park. On January 6 he again resumed his arduous duties at 2YA. All Radioland welcomed him back.

Monday is Aunt Jo's night. A delightful hour will be spent with our cousins of Radioland.

Tuesday—Hurrah for Uncle Jasper! Good fun for one whole hour. He will be ably assisted by "Pat and Mike," musical medley artists.

On Thursday Uncle Sandy's hour is sure to prove instructive and entertaining. His birthday rhymes will be the feature of the evening. Uncle Sandy writes these specially for the little ones. He will be assisted by Aunt Dot.

On Friday Uncle Ernest and his bright little troupe of serenaders will provide ample fun for you all.

Aunts Gwen and Dot will have some treasures in the box for the kiddies on Saturday. The box to be opened at 6 p.m. sharp.

MRS. WREN—ARCHITECT

Such a fuss about houses!" exclaimed Jenny Wren. "If everybody did what I do the housing shortage would end itself. My husband and I generally start building in the spring; it is so pleasant to work in the sunshine, with a snatch of food now and then. The house is usually ready at the end of a fortnight. It is no mean, put-up thing, but large and comfortable enough to rear a good sized family in.

"I've built many houses in my time; I often had to do most of the building myself. My husband, as you know, is a professional singer, and I cannot always rely on his help. Of course, he tries to keep the building season free, but if we're hard-up he has to earn something to keep us going. He's such a dear.

"As I mentioned before, we build in the fine spring weather. I've found from long experience that one good model house that has proved itself reliable is the best to stick to, and so I don't go trying lots of new ways. There isn't time. I find for my purpose that a cosy, one-roomed cottage is the most convenient.

"For the site I like a little private place where we can get an equal amount of sunshine and shade. We do not usually have any bother with that, as there are so many pleasant places. When we've got our building materials we lay the foundation-stone (stick, my husband calls it), and then build up the walls, putting on the sweetest little roof you can imagine. We have just one entrance, and we do not make it too large, so that no cold draughts can come in. It is so cosy and warm inside.

"Having done my building, I bring up my babies. My husband says I have never had an ugly baby in my life, and that's a good deal for a man to say, isn't it? They really are darlings. When I come back from my shopping I find them all at the door, every mouth open! It is all I can do to get enough food for them. The only serious trouble I have is about steps. My husband prefers an elevated position, so that I am bound to have a flight of stens, and the children often fall down them when they are young. Now I must be getting back to them. Good-bye! Come to see me at the Privet, Lawnside."

MUCH TOO EARLY.

"Why is breakfast at six like a pig's tail?" "Because it's twirly!"

FROM THE WIRELESS ALPHABET

(By Eleanor Farjeon.)

E IS FOR ETHER.

Ether it is everywhere,
In the earth and in the air,
In the mountains white and green,
And in the spaces in between.

Ether's in the garden-walls,
In the cloud before it falls,
In the cliff and in the sea,
Ether is in you and me.

All the noises ever made
Are upon the Wavelengths laid,
All the Wavelengths ever known
Travel through the Ether's zone.

That is why the Wavelengths roll
Through the earth from Pole to Pole,
There and here, and here and there,
Through the Ether everywhere.

G IS FOR GOOD NIGHT, EVERYBODY!

Good night, everybody!
Young and old.
The play is over,
And the tale is told,
The dance is ended,
And the song is sped.
Good night, everybody,
Go to bed!

H IS FOR HOSPITALS.

O listen! in the Hospitals
The Voice across the Wireless calls
Forget your pain a little while,
Poor sufferers, and learn to smile.
We to your bedside music bring,
To you the golden voice shall sing,
To you the violin shall play
For a short while your pain away.
For you we'll fill the heavy hours
With fancy's unseen birds and flowers,
For you we'll range across the seas
To catch the sounds shall bring you ease.
Forget, forget! the Wireless calls
To listeners in Hospitals;
Forget why you have ceased to smile,
Forget your pain a little while!

RIDDLES

Why is G like plum cake? Because it makes a lad glad.

Why is H good for deafness? Because it makes ear hear.

Why is J like your nose? Because it is close to the eye (I).

Why is K like a pig's tail? Because it is at the end of pork.

WHAT A BLOW!

"That man can knock down a house with one blow of a hammer."

"Goodness! He must be very strong!"

"No, he's just an auctioneer.

AMERICA'S QUEST

YOUTHFUL GENIUS.

There has just arrived in Europe an emissary from the American League for Fostering Genius.

The object of the League is to give a good education to children who show unusual signs of talent at an early age and whose parents are very poor. The League is already playing fairy godmother to 300 American children, and now means to include other nationalities.

For this reason it has sent Miss Winifred Stoner to investigate the claims of French and English infant prodigies. She ought to be a good judge, for she wrote verses when she was five.

The greater part of the children's time is spent in cultivating their talents: budding Handels have music lessons and young Michael Angelos study painting. But all the children are taught to type before they learn to write, and they are all taught Esperanto.

The League for Fostering Genius has a noble aim, and the people who give their money to it are much to be admired. Yet we cannot help wondering whether they will produce a genius of the purest water, for it is a remarkable fact that nearly all geniuses have had to make their own way. We must wait twenty years for the results of the League's fostering care.

THE LOST ELEPHANT

AND THE STOLEN TRAIN

Some people are incredibly careless. The other day we heard of a man who mislaid an elephant; now we hear of someone who lost a whole railway train! Both these interesting items of lost property have been recovered.

The elephant had merely gone for a stroll down a lonely lane, but the train had been stolen by Polish railway officials. It was made up of 42 trucks of coal when it left Chorzaw in Upper Silesia, but the coal was delivered to accomplices at various towns, where it was sold. The engine and 42 trucks were not so easily disposed of, however, and after a police hunt the truth has just come out.

SAFETY DOWN IN THE SEA

AN IDEA FOR SUBMARINES

What may be quite an important invention has been devised to add to the safety of submarine crews.

It is a buoy filled with compressed air and attached by a cable to the conning tower. Should the craft get into difficulties while submerged the buoy is simply released, so that it will rise to the surface and attract the attention of passing vessels.

The cable contains a telephone wire, so that communication could be established with the imprisoned crew.

NEWS FROM EVERYWHERE

An Act of Goodwill

The Paris police have forbidden the use of the word Boche in kinemas; the word German is always to be used.

Robin's Nest in a Mackintosh.

A robin has laid five eggs in a nest built in the folds of a mackintosh hung in an apple tree in Cumberland.

A Link With Lincoln.

The widow of a man who made clothes for Abraham Lincoln has just celebrated her hundredth birthday.

The Penny-a-Day Man.

A Nottinghamshire man who started work ninety-six years ago at a penny a day has just retired at 103.

In the Porridge Pot.

At a training school in Belfast the other day a boy fell into a large pot from which he was ladling porridge.

Praise for Boy Cooks.

A lady who has been teaching cookery to boys in London says they learn more quickly than girls and make twice as much in a given time.

The Parrot's Revenge.

The wife of a Spalding councillor is recovering from blood-poisoning caused by being pecked by a parrot after she had accidentally prodded it with a fork.

The Scout in the Window.

A South African reader writes to tell us of two other Scouts in a stained-glass window. Both died in the war, and appear together in a window in St. Paul's Church, Durban.

Fishes Go by Car.

The River Trent has been restocked with 5000 roach and perch taken from the Birmingham Corporation's reservoirs and conveyed to Nottingham in basket-shaped tanks by motor car.

HAS THE RAINBOW REALLY AN END?

The rainbow is more or less than a semi-circle according to the height of the sun above the horizon and the height of the observer. If we were on a narrow peak of a high mountain and the rain were falling at a considerable distance we might see a circular rainbow, which would thus have no end.