Wireless World

RADIO · ELECTRONICS · ELECTRO-ACOUSTICS

AUG. 1943

1/3

Vol. XLIX. No. 8

OHMMETER DESIGN ✧ CALIBRATING A-F OSCILLATORS

Wireless World Brains Trust

Broadcast Distribution : The Case for Wireless

More views on Question No. 12. Is wired broadcasting wanted, and would it be in the public interest to adopt it as the main means of distribution ?

[In last month's issue the case for distribution by wire was stated by P. P. Eckersley, a staunch advocate of that method. This month it is the turn of those taking opposing views.]

"RADIATOR" deals with the international aspects of post-war broadcasting, and considers that the benefits it might confer could not be obtained from a wire distribution system.

THE main argument in favour of wired broadcasting is that it would provide reception, *free from interference*, of a number of contrasting programmes. The arguments against it, and in favour of radio, seem to me to be so overwhelmingly strong that no real case for wired broadcasting can be made out. Let us consider only one or two of them.

Though the wired programmes might well contrast one with the other, they would all emanate from the one source—they would all be subject ultimately to Government control. We are to be entertained, educated and "propaganded" on the lines laid down by the Government, and we are to be precluded from hearing the numberless contrasting views on an infinite variety of topics put out by the rest of the nations of the world. We are to be prevented from listening to their music; from assimilating any of their culture; from hearing their views on religious, political and sociological questions—except in so far as the Government thinks it good for us. Such an arrangement seems to me to embody all the worst features of the system against which we are fighting, to uphold the principles underlying the production of the *Volksempfänger* and to be a direct negative to those of the Atlantic Charter. How is international understanding and good will to be fostered in the post-war world if such an "isolationist" broadcasting system is to be permitted? Think of the infinite variety of programme material which will emanate from all the world's medium- and short-wave broadcasting stations after the war, and then contrast this with the pitiful half-dozen programmes which are to be provided by the wired system—all of them subject to the same control. No; if the people of Britain are to play their part in the building of a better and war-free world, surely it is essential for them to be able to hear what the rest of the world is saying, and to do so in a manner free from the censorship of whatever political group happens to be in office.

One of the measures necessary for the promotion of better international understanding is the establishment of an international language (and this *will* come in the post-war world), so that "Nation shall speak Peace unto Nation." It will be useless for the people of Britain to be able to understand their fellow world-citizens if they are not permitted to listen to them. The rest of the nations, then—assuming them to retain the use of radio—will, to their great benefit, continuously be exchanging views on every sort of subject, while Britain—with its wired broadcasting system—like a windjammer becalmed in the Doldrums, be left to its own narrow world of ideas. Surely this cannot but react unfavourably upon the mentality of the Britisher, as well as upon his interests overseas.

This brings us to another important point. We want not only to listen to other nations but to talk to them as well. We want them to understand *us*—to be of good will towards Britain and things British. Our Government could, of course, talk to them without permitting its people to listen to them—it could use its medium- and short-wave radio stations for foreign broadcasting, whilst restricting its own citizens to the use of a wired system. Such a non-reciprocative system would not, however, work; at least, it is certain that it would not cultivate the desired good will.

So, from the international aspect alone, there seems to be a good case for the continuance of radio broadcasting. But this is only one aspect of the matter, and it is by no means certain that an equally good case could not be made out for it were the international aspect entirely ignored.

W. H. CAZALY deals with the dangers of wire broadcasting as an anti-democratic weapon in the hands of those who might use it for the regimentation of public opinion.

IT it a pity, in my opinion, that this discussion on "wired" and "open" systems of broadcasting has begun in *Wireless World*. The main issues involved are political, not technical, and political controversy is out of order in a purely technical journal. The technical issues are hardly worth controversy. It is as absurd to argue technically about which system is "better"

DESIGN OF OHMMETERS

(*Concluded from page* 226)

tious requirements for the highest range would allow of a meter of higher current consumption being used, the values given being modified to suit particular cases.

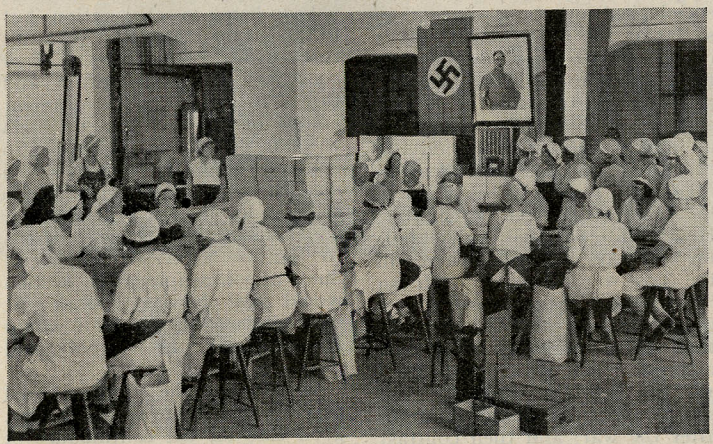
The overall accuracy of the instrument depends greatly on how accurately individual adjustments are made. If the correct gear is available, the whole job of adjustment need not take a couple of hours. If no accurate bridge is available, it is possible to use high-grade voltmeters and milliammeters of suitable ranges. The errors then to be expected are much more serious unless extreme precautions are taken. It is difficult to specify accuracies in a universally useful way, but the formulae given are sufficient for the probable errors to be calculated for any given set of resistances and accuracies of adjustment.

Wireless World Brains Trust—

as it is to argue about which of two very different types of building is "better." Choice is determined simply by the requirements of the user. From the technical point of view, all that is needed is a clear and impartial presentation of the *performance* of each system, without reservations or bias, so that individuals may make their own choice. Specious technological pleading in favour of one or the other is unscientific.

Unfortunately, Eckersley himself, although a professional engineer and scientist, neither confines himself to such an impartial presentation, nor deals adequately with the political implications. Reluctantly, one is obliged, therefore, to reply to him largely in political terms, since these are the main issues involved.

To put it bluntly, I, for one, as a politically conscious citizen as well as a technician, am dead against the supercession of even the present unsatisfactory "open" system of broadcasting by the "wired" system, which would, in my opinion, soon lead to the regimentation of public opinion in this country. I am quite certain that the owners of a wire distribution system would use the powers conferred by ownership to enforce policies in the choice of programme items. They would use both the blatant and the much more deadly concealed methods of propagating views favourable to their own interests. They would be neither impartial nor chiefly concerned with the progressive welfare of the people of this country. It is nonsense to pretend that it would not happen that way with "wired" broadcasting, when it is quite obvious it has happened in every other large, effective and costly medium for the dissemination, directly or indirectly, of ideas, news and opinions. It is no use saying that, because Eckersley himself would be scrupulously fair, everyone else would be. The plant required for a nation-wide system of "wired" broadcasting—and it is difficult to see how it could avoid being nation-wide and fairly soon reducing to negligible proportions the popular equipment for "open" broadcast listening—would be too expensive and permission to install it too difficult to obtain for anybody but corporations of great wealth or the Government itself to set it up. The former would insist that it was used to disseminate an overwhelming proportion of the notions of which they approved (as in the cases of the Press, the cinema and commercial sponsored broadcasting), while the latter would either be emasculated by officialdom or, since vested interests may be heavily represented in governments, is likely to be as bad as the former.



REGIMENTED LISTENING.—The idea of "piped" broadcasting for Britain clearly conjures up in the minds of most contributors to our Brains Trust a picture of what happened in Germany in the early days of the Hitler regime. Here are seen workers in a German chocolate factory listening to the Führer on a Telefunken "Kamerad," a set specially developed for "organised mass listening."

As things are, I can listen to news and views from a great many widely different sources *at my own choice*. In wartime, regimentation of my body may be inevitable, but as an individualist I look on wireless as a great safeguard against regimentation of my mind as well. This, to me, far outweighs any technical or aesthetic advantage of the "wired" system. If this country went over to the "wired" system, it would be a crushing blow to the "freedom to listen" which is, I presume, one of the things for which we are fighting.

D. A. BELL questions the claims of wire broadcasting on economic grounds, and contends that its very name brands it as "an illegitimate hybrid."

THERE are both political and economic objections to wire broadcasting, objections which P. P. Eckersley has glossed over by making two unsubstantiated assumptions. The political objection has been well stated in a *Wireless World* Editorial, where it was pleaded that a radiated broadcasting system is a necessary safeguard of democracy. It was urged that a wired or "closed" system would be so dangerous a weapon in the hands of a dictatorial or usurping power that it was unwise, in a post-war world likely to be troubled with many problems, to run the risk of presenting such a broadcasting system ready to the hand of a possible enemy of our liberties.

To put clearly the technical and economic objection, I deny P. P. Eckersley's statement that the wire system is one "by the use of which all the population could receive any number of transmissions completely free from interference at any time." There are still houses in this country which are not connected to any system of wires—neither electric light nor telephone—and no scheme has been proposed which would cover the very substantial cost of laying on wires to these houses, especially those in rural areas. This is an expenditure which the electric power companies will not undertake, although the revenue which they would obtain would be many times the present wireless licence fee of 10s. per annum. As regards choice of programme it is

true that a number of sound transmissions, possibly as large a number as could reasonably be desired, could be transmitted over a wire system, but I demand also freedom to receive any type of transmission, including television; I do not believe it is an economic proposition to distribute television by wires to any appreciable proportion of the population.

To sum up, open broadcasting is essential for (a) economic coverage of rural districts, (b) television, (c) foreign listening, (d) freedom from monopoly of programme control. On the other hand, "wire broadcasting" is an illegitimate hybrid, using a point-to-point communication method (wires) for a service which its very name (broadcasting) shows to be intended for universal and unrestricted distribution. We do not want it.

H. A. HARTLEY suggests that in this question of wired broadcasting the technician should subordinate his technical interests to his interests and duties as a citizen.

I should like to comment on the "wire *versus* wireless" controversy both as an engineer and as a citizen. As the events of the last tragic decade have so convincingly demonstrated, when citizens cease to take an interest in politics disaster inevitably follows; it therefore behoves engineers and citizens alike to consider very carefully just where they want to go.

If broadcasting is considered to be a matter of national news service, entertainment and instruction, then there can be no technical argument at all. Wired broadcasting, properly installed, will give a distortionless, interference-free service against which wireless cannot hope to compete. As an exponent of undistorted reproduction myself, therefore, I am solid for wired broadcasting, considering only the æsthetic side of the matter. Eckersley therefore presents an unanswerable case. To try and prove him wrong is simply a waste of time.

But *is* broadcasting just this and nothing more? As Sir Louis Sterling points out, broadcasting has been used for all sorts of purposes that were never envisaged when it first came into being. The dictators have used it to canalise what passes for intelligence in their listeners; and the Axis has done its best to de-etherise broadcasting by making it an offence punishable by death to listen to anything but their own propaganda. Had broadcasting always been wired it would have made things easier for the Axis, and we would have had no counter-propaganda weapon. Considered, therefore, as a social and political service, wired broadcasting is totalitarian and anti-democratic. Sir Louis Sterling's case is also unanswerable.

It is futile to say "it couldn't happen here." All governments, human nature being what it is, are fundamentally anti-democratic. A small body of men determine on a certain policy. If there is a parliament, the customary political strategy is used to push the policy through. If there isn't a parliament, it goes through, willy-nilly. But that policy is naturally determined by the vested interests which can influence the government, and it is regrettable that present-day vested interests tend to be anti-social. The fact that the Government of this, our own, country has for years been trying to insinuate a totalitarian technique into broadcasting is not without significance; and for the engineer, arguing on purely technical grounds, to press for wired broadcasting, to the exclusion of the other sort, is simply playing into the hands of the vested interests.

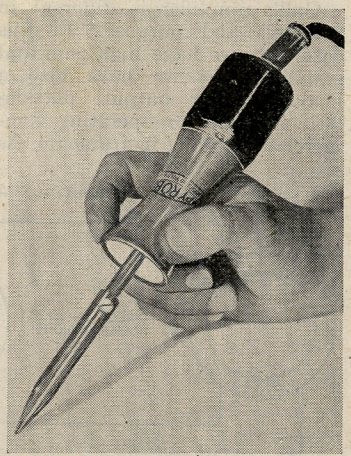
The engineer must, therefore, align himself with his fellow citizens as a political creature, and take care that he first gets the sort of government he wants. Then, and only then, can he proceed to deal with the technical problems associated with an instrument which, although highly technical, is also highly dangerous. The problem is much graver than is generally supposed.

THE "X-STOPPER" AGAIN ?

OUR contributor "Diallist" writes:—A recent news item in an important daily paper sets one thinking a bit. It records that the Goodyear Tyre Company demonstrated at Akron, Ohio, what they call a "radio station neutraliser," the invention of a research physicist, Mr. Gilbert Candrisen. How the device works is not clear, but if it does all that it claims it should make a wondrous difference to wireless reception. It is difficult to piece anything together from the lay reporter's description, but it appears to be some kind of limiter valve, which automatically adjusts itself to cope with interference of any intensity. It is stated that it deals faithfully with man-made interference: in one test a short-wave programme from Europe was received whilst the output of a car ignition system was being fed directly into the aerial. But I think that the reporter's imagination ran away with him when he described the neutraliser as being able to reduce to a bare whisper "man-made disturbances more powerful than the greatest storms of thunder and lightning." Anti-interference devices of the limiter type have been brought out before; they are in fact older than the thermionic valve. None so far has proved completely effective. Anyhow, I look forward to seeing a technical description of the device.

SOLDERING IRON DESIGN

FOR some types of work—particularly instrument work—the ordinary long-shanked soldering iron is unhandy; the user's hand is too far from the bit to permit of easy and precise control. To overcome this the makers of "Pyrobit" irons have recently introduced a model which can be held like a pencil. To protect the operator's hand from heat, most of the shank is covered by a bell-shaped extension of the handle.



Another point about the iron is that the Steatite-insulated heating element is housed "on the job" inside the copper bit itself, thus minimising thermal losses.

The makers of "Pyrobit" irons are The Acru Electric Tool Manufacturing Company, Ltd., 123, Hyde Road, Ardwick, Manchester, 12.

Wireless World

RADIO • ELECTRONICS • ELECTRO-ACOUSTICS

SEPT. 1943

1/3

Vol. XLIX. No. 9

"ASYMMETRICAL" CONTRAST EXPANSION

Letters to the Editor

In Support of the Wire • 10 kc/s Separation? Pick-up Filters

Wire versus Wireless

HAVING had some years' experience in broadcast relay over wires, which is akin to wired broadcast, besides in radio service and sales and, at present, radio manufacturing, perhaps I may be permitted to make a few observations on the subject?

First, neither your Brains Trust members nor your Editorial provide very solid arguments against P. P. Eckersley's proposals. You all seem concerned with the fact that wired broadcast will be controlled by the Government or other dictatorial body (surely this is true of open broadcast at present?) and, judging by some of your remarks, none of you seem to have much faith in the democratic Governments *you* will elect in this "new" world!

Secondly, much is made, by those in favour of open broadcasting, of the enormous number of programmes available on an all-wave set (with or without interference, fading, etc.!). (Yes, Madam, Timbuctoo easily on an indoor aerial!) Go into nine houses out of ten (ours included) on any day and what will you find grinding out of the loud-speaker? Either the Home or the Forces programme! As far as I can see, it makes little difference whether the Home or Forces is coming over the air or by wire—except that by wire the reception would, in many cases, be better.

Thirdly, I think I detect, in those who argue against wire broadcasting, a somewhat shaky feeling as to what would happen to the radio receiver market and their future positions, should wire broadcasting come to stay. Personally, I think anything would be better than the Awful Mess that was known as the "Radio Trade" in the latter pre-war years!

Fourthly, to summarise: in my opinion Eckersley has stated well the case for wire broadcasting, but there are, of course, difficulties in initiating the service and, for the immediate future, it seems to me the best thing is (as usual) compromise. Provide receivers which operate on either wired *or* open broadcast, also television, reducing, where possible, the number of radiating broadcast stations on the various wavebands. D. W. HEIGHTMAN.

Clacton-on-Sea, Essex.

I READ last month's Editorial, and also the views of your "Brains Trust" on that much mooted question "Wired Broadcasting—or Not"! In the first place I am disappointed that the Brains Trust feature should be used for political discussions, not because it was any the less interesting, but while I respect the technical opinions of your contributors, I feel that they are in no way qualified to talk politically. In fact, having read what they have to say, I am more than ever inclined to think favourably of the scheme as outlined by P. P. Eckersley.

Two red herrings would appear to have crossed the path of unbiased technical discussion on this subject, namely: (a) What effect will the introduction of wired wireless have on receiver sales? and secondly: (b) We shall be entertained, educated and "propagated" on the lines laid down by the Government, and that we are to be precluded from hearing the numberless contrasting views put out by the rest of the nations of the world.

With regard to (b)—what utter nonsense!

I cannot see why *both* systems should not exist side by side. I think, moreover, that if some of the programmes were transferred "underground," that more room would be available in those already overcrowded wavebands for that "infinite variety of programme material which will emanate . . . after the war." (And with a better chance of hearing it too!)

Perhaps your contributors would show how "the Government" does not now influence the matter radiated by that great monopoly, the British Broadcasting Corporation; or rather, which is perhaps more important, how we should be any the worse off politically if the B.B.C. did feed some of their programmes over wires instead of "over the air."

There has never been any question that ordinary radio broadcasting should be given up for wire broadcasting even less so that the household set should be "purged" and a ban placed on foreign listening. Coming back again to the first bogy, I believe that the system should be introduced and that manufacturers should produce a unit to detect the "wired" signals, employing the ordinary household set as an amplifier. In due course a set could be sold which would combine the detection and tuning unit with the normal all-wave receiver.

No! I cannot see any justification for the sombre views expressed on the outcome of the effects, both politically and technically, of the introduction of "wired wireless."

J. GIBBONS-PARTRIDGE.

Lower Castlereagh, Co. Down.

I CONSIDER your attack on the G.P.O. and your arguments against "wired wireless" entirely ill considered; your Editorial and "Brains Trust" contributions carry all the stamp of Left Wing hysteria. There is no connection between a Nazi workshop and a democratic home. In a democracy a person is free to buy the form of broadcasting receiver he fancies, and can subsequently switch off any programme he dislikes, so that if his receiver emits unwanted opinions or noises, he has the remedy!

Furthermore, to state that distance-getting is the greatest "magic" of broadcasting receiving is entirely to ignore the facts. My experience in hundreds of homes has proved to me that the public in general do not "listen-out." The station-getting facilities were entirely wasted. When Radio Normandie and Luxemburg were available, seven out of ten sets appeared to be permanently tuned to them; two of the other three listeners were con-

cerned mainly in not missing Henry Hall's programme, and the odd one was generally a quality fan who used Continental programmes only when there were no "Proms." Short waves were not understood, and in any case were too difficult for most people.

In conclusion, I affirm that the public can get all they want, including quality, from wired broadcasting without paying exorbitant prices for complicated competitive apparatus they cannot use, and I think it is this fact that is causing misgivings amongst those mainly concerned with unloading so-called "new" models year by year by means of the "hot salesmanship" of which you accuse the G.P.O.

H. F. LESLIE.

London, N.W.7.

Post-war Broadcasting

I WOULD like to put forward a suggestion which I have never seen mentioned so far. It is simply to standardise the spacing of transmitters in Europe at 10 kilocycles.

The advantages of this are many. First, perhaps most important, heterodyne interference is almost entirely eliminated—as anyone who has operated a receiver in the U.S.A. or Australasia can testify. Chance heterodynes between transmitter harmonics, etc., are never less than 10 kc/s. Secondly, the fidelity of the reception can be slightly improved. Thirdly (another important reason), it would bring Europe into line with the U.S.A., Canada, South and Latin America, Australia and New Zealand. About two-thirds of the world's transmitters are located in these countries, which all have 10-kc/s spacing. Fourthly, since we already think in decimal terms of kilocycles, megacycles, etc., it would be much more convenient if the stations were spaced decimally, and had frequencies such as 660, 1210, 9,340 kc/s. Fifthly, it would simplify the calibration of receivers and identification of transmitters. This may seem an unimportant point, but if a dial is divided by radial lines, each spaced 10 kc/s, as they often are, then a station will always be tuned in on one of these lines. Then, if an unknown transmission is received, its *exact* frequency can be read off even if the receiver is mis-calibrated by ±3 or even ±4 kc/s, since its frequency will be that of the nearest 10-kc/s mark. At present the dial must be calibrated accurately to ±0.4 k/c (or 400 cycles) at least, to find the exact frequency of a station.

Now, if ever, is the time to prepare for this change—a change which is essential if post-war broadcasting is to run smoothly.

P. D. THOMAS.

Ayr.

"Visual Frequency Comparison"

WE notice that the August issue of *Wireless World* contains an article describing the use of a "magic eye" tuning indicator as a frequency comparator. We would like to place on record that this method has been used in our GM2304 audio oscillator since early 1938.

A. W. RUSSELL,

The Mullard Wireless Service Co., Ltd., Measuring Apparatus Section. London, W.C.2.

[It should perhaps have been emphasised that the use of a magic eye for frequency comparison is in itself not novel. Implied claims for the novelty of the method described by our contributor rest on the inclusion of means for obtaining reliable indications up to the 12th harmonic. —ED.]

"Static Charges on Records"

MY note on this subject (p. 165, June *Wireless World*) has provoked a number of enquiries regarding the best method of overcoming the difficulty of the removed coating thread tending to fly up against the cutting-head, causing tangling with the stylus, etc. The recognised means of thread control are, of course (a) hand-brush, (b) automatic brush or chip-chaser, (c) suction device (see p. 137, May, 1941, *Wireless World*), and a method, used in some professional studios, of covering the blank about five minutes before being cut, with a solution consisting chiefly of distilled water, and leaving to dry. To facilitate coating the blank evenly, it is necessary to reduce the surface tension of the water, and to give it conducting properties, other ingredients have to