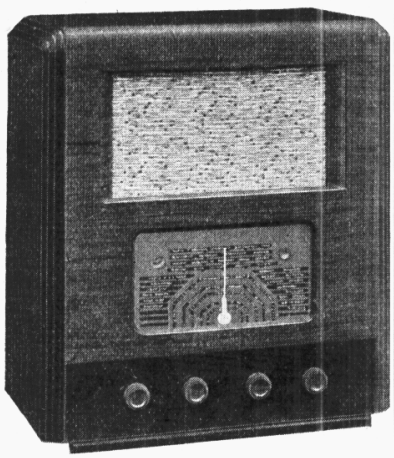
Supplement to The Wireless & Electrical Trader, Feb. 17, 1940.

"TRADER" SERVICE SHEET

451

ALBA 830 AND 730 RADIOGRAM



The Alba 830 table receiver.

THE Alba 830 is a table model 4-band AC superhet, using four receiving valves, plus a valve rectifier and a tuning indicator. The SW bands covered are: SW1, 12-38m; SW2, 30-90m. Provision is made for switching to gram. on the fifth position of the waveband switch.

The receiver is suitable for 190-250V, 40-100 C/S AC mains.

Model 730 is the corresponding radiogram, which only differs from the 830 table model in that a 10in. speaker is used in place of an 8in., and the machine is suitable for 50-60 C/S AC mains only.

Release date: July, 1939 (both models).

CIRCUIT DESCRIPTION

Aerial input via series condenser **C1** and coupling coils **L1** (SW1), **L2** (SW2) and **L3** (MW and LW) with "top" coupling by **C2** (MW) to single tuned circuits **L4, C33** (SW1), **L5, C33** (SW2), **L6, C33** (MW) and **L7, C33** (LW).

First valve **(V1, Mullard ECH3)** is a triode heptode operating as frequency changer with internal coupling. Triode oscillator grid coils **L8** (SW1), **L9** (SW2), **L10** (MW) and **L11** (LW) are tuned by **C34**; parallel trimming by **C35** (SW1), **C36** (SW2), **C37** (MW) and **C38** (LW); series tracking by **C7** (SW1), **C8** (SW2), **C39** (MW) and **C40** (LW). Reaction from anode by coils **L12** (via damping resistance **R6**, SW1), **L13** (via damping resistance **R7**, SW2), **L14** (MW) and **L15** (LW).

Second valve **(V2, Mullard EF9)** is a variable-mu RF pentode operating as intermediate frequency amplifier with tuned primary, tuned-secondary iron-cored transformer couplings **C41, L16, L17, C42** and **C43, L18, L19, C44.**

Intermediate frequency 470 KC/S.

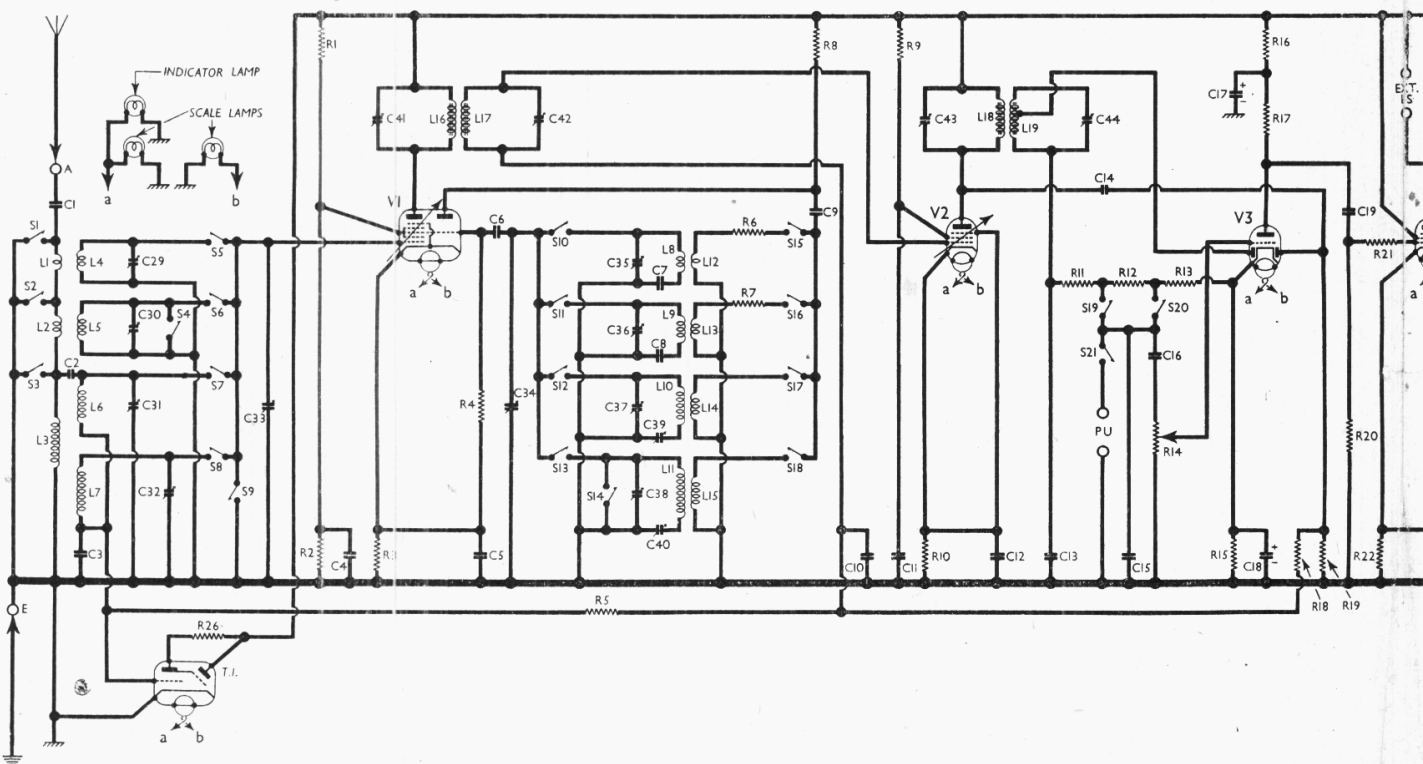
Diode second detector is part of double diode triode valve **(V3, Mullard EBC3).** Audio frequency component in rectified output is developed across load comprising resistances **R12** and **R13** and passed via switch **S19** (except on MW, when that across **R13** is passed via switch **S20),** AF coupling condenser **C16** and manual volume control **R14** to CG of triode section, which operates as AF amplifier. IF filtering by **C13, R11** and **C15.**

Provision for connection of gramophone pick-up via **S21,** which closes when the waveband control is turned to the gram. position, across **C16, R14.**

Second diode of **V3,** fed from **V2** anode via **C14,** provides DC potential which is developed across load resistance **R19** and fed back through decoupling circuits as GB to FC (except on SW bands) and IF valves, giving automatic volume control. Delay voltage, together with GB for triode section, is obtained from drop along **R15** in cathode lead to chassis.

AVC line potential at the junction of **C3** and **R5** is also used as control voltage to operate the cathode ray tuning indicator **(T. I., Mullard EM1).**

Resistance-capacity coupling by **R17, C19** and **R20,** via grid stopper **R21,** between **V3** triode and pentode output valve **(V4, Mullard EL6).** Fixed tone correction by **C20** in anode circuit; variable tone control by **C22** and **R23,** also in anode circuit. Provision for connection

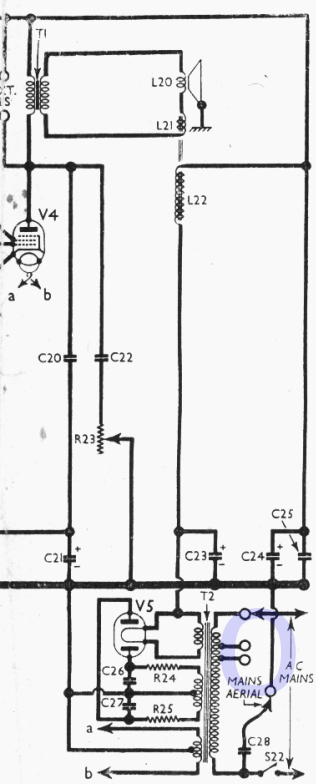


of high impedance external speaker by terminals connected to the ends of the primary winding of the speaker input transformer **T1.**

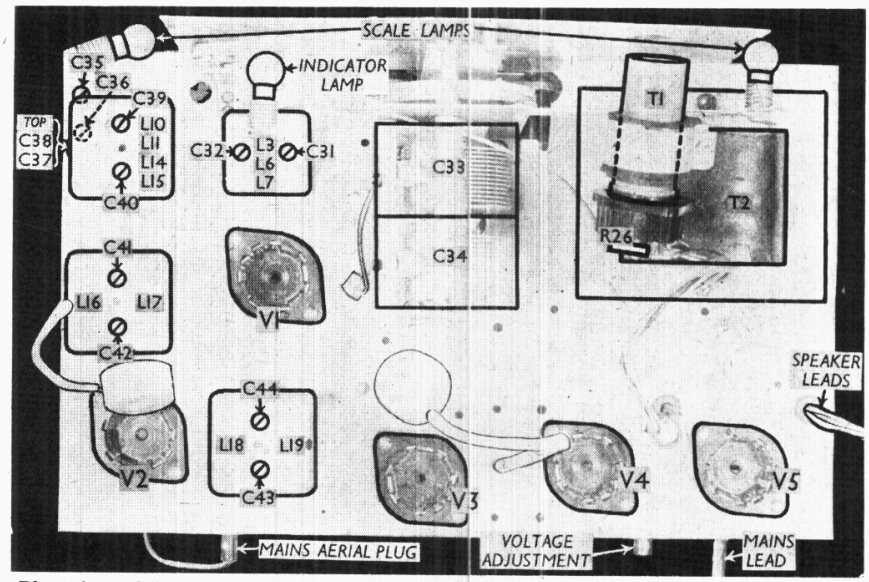
HT current is supplied by full-wave rectifying valve **(V5, Mullard AZ2).** Smoothing by speaker field **L22** and dry electrolytic condensers **C23** and **C24.** RF filtering by **C25** in HT circuit, **R24, R25** and **C26, C27** in rectifier anodes circuit, and the mains aerial coupling condenser **C28** (which, when not used for aerial coupling, is plugged into a second earth socket specially provided), in the mains circuit.

COMPONENTS AND VALUES

	CONDENSERS	Values (μF)
C1	Aerial series condenser ...	0·0002
C2	Aerial MW top coupling ...	0·000005
C3	V1 hex. and T.I. CG's decoupling	0·05
C4	V1 SG decoupling	0·1
C5	V1 cathode by-pass	0·1
C6	V1 osc. CG condenser ...	0·0001
C7	Osc. circ. SW1 tracker ...	0·01
C8	Osc. circ. SW2 tracker ...	0·00365
C9	V1 osc. anode coupling ...	0·0005
C10	V2 CG decoupling	0·05
C11	V2 SG decoupling	0·1
C12	V2 cathode by-pass	0·1
C13	IF by-pass	0·0001
C14	Coupling to V3 AVC diode	0·000075
C15	IF by-pass	0·0001
C16	AF coupling to V3 triode ...	0·005
C17*	V3 triode anode decoupling	8·0
C18*	V3 cathode by-pass	25·0
C19	V3 triode to V4 AF coupling	0·01
C20	Fixed tone corrector ...	0·005
C21*	V4 cathode by-pass	25·0
C22	Part of variable tone control	0·02
C23*	HT smoothing condensers	16·0
C24*	HT smoothing condensers	16·0
C25	HT circuit RF by-pass ...	0·1
C26	Parts of rectifier circuit RF filter	0·01
C27	Parts of rectifier circuit RF filter	0·01
C28	Mains aerial coupling ...	0·0001



Circuit diagram of the Alba 830 4-band AC superhet. The model 730 radiogram has an identical circuit. Pick-up switching is incorporated, a fifth position of the waveband switch being provided for this purpose.



Plan view of the chassis. **C37, C38** are reached through holes in the side of the MW and LW oscillator coil can, while **C35** and **C36** are reached through holes in the chassis deck.

	CONDENSERS (*Continued*)	Values (μF)
C29‡	Aerial SW1 trimmer ...	0.00003
C30‡	Aerial SW2 trimmer ...	0·00003
C31‡	Aerial MW trimmer ...	0·00003
C32‡	Aerial LW trimmer ...	0·00003
C33†	Aerial circuit tuning ...	0·0005
C34†	Oscillator circuit tuning ...	0·0065
C35‡	Osc. circuit SW1 trimmer ...	0·00003
C36‡	Osc. circuit SW2 trimmer ...	0·00003
C37‡	Osc. circuit MW trimmer ...	0·00003
C38‡	Osc. circuit LW trimmer ...	0·00003
C39‡	Osc. circuit MW tracker ...	0·0006
C40‡	Osc. circuit LW tracker ...	0·0003
C41‡	1st IF trans. pri. tuning ...	0·00025
C42‡	1st IF trans. sec. tuning ...	0·00025
C43‡	2nd IF trans. pri. tuning ...	0·00025
C44‡	2nd IF trans. sec. tuning ...	0·00025

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial SW1 coupling coil ...	0·2
L2	Aerial SW2 coupling coil ...	0·2
L3	Aerial MW and LW coupling coil	38·0
L4	Aerial SW1 tuning coil ...	Very low
L5	Aerial SW2 tuning coil ...	0·2
L6	Aerial MW tuning coil ...	1·4
L7	Aerial LW tuning coil ...	14·0
L8	Osc. circuit SW1 tuning coil	Very low
L9	Osc. circuit SW2 tuning coil	0·2
L10	Osc. circuit MW tuning coil	3·0
L11	Osc. circuit LW tuning coil	9·5
L12	Oscillator SW1 reaction ...	18·0
L13	Oscillator SW2 reaction ...	0·4
L14	Oscillator MW reaction ...	30·0
L15	Oscillator LW reaction ...	50·0
L16	1st IF trans. Pri.	4·5
L17	1st IF trans. Sec.	4·5
L18	2nd IF trans. Pri.	4·5
L19	2nd IF trans. Sec., total ...	4·5
L20	Speaker speech coil	1·5
L21	Hum neutralising coil ...	0·2
L22	Speaker field coil	700·0
T1	Speaker input trans. Pri. ...	350·0
	Speaker input trans. Sec. ...	0·3
T2	Mains trans. Pri., total ...	15·0
T2	Mains trans. Heater sec.	0·05
T2	Mains trans. Rect. heat sec.	0·1
T2	Mains trans. HT sec., total	130·0
S1-S20	Waveband switches ...	—
S21	Gram. pick-up switch ...	—
S22	Mains switch, ganged R23 ...	—

	RESISTANCES	Values (ohms)
R1	V1 SG potential divider resistances	25,000
R2	V1 SG potential divider resistances	40,000
R3	V1 fixed GB resistance ...	200
R4	V1 osc. CG resistance ...	50,000
R5	V1 and T.I. CG's decoupling	250,000
R6	Osc. SW1 reaction damping	40
R7	Osc. SW2 reaction damping	200
R8	V1 osc. anode HT feed ...	25,000
R9	V2 SG HT feed	90,000
R10	V2 fixed GB resistance ...	300
R11	IF stopper	50,000
R12	V3 signal diode load resistances	250,000
R13	V3 signal diode load resistances	250,000
R14	Manual volume control ...	500,000
R15	V3 triode GB; AVC delay	1,500
R16	V3 triode anode decoupling	2,500
R17	V3 triode anode load ...	15,000
R18	AVC line decoupling ...	500,000
R19	V3 AVC diode load	750,000
R20	V4 CG resistance	250,000
R21	V4 grid stopper	50,000
R22	V4 GB resistance	82
R23	Variable tone control ...	50,000
R24	Parts of rectifier circuit RF filter	75
R25	Parts of rectifier circuit RF filter	75
R26	T.I. anode HT feed	2,000,000

DISMANTLING THE SET

The bottom of the cabinet is fitted with a detachable cover, upon removal of which (four counter-sunk head wood screws) access can be gained to the components beneath the chassis.

Removing Chassis. — Remove the four control knobs (recessed grub screws);

remove the four screws (with washers) holding the chassis to the bottom of the cabinet.

The chassis can now be withdrawn to the extent of the speaker leads and stood on one end, which is sufficient for most purposes.

To free chassis entirely, unsolder the speaker leads from the tags on the speaker transformer, and one from the transformer casing.

When replacing, connect the speaker leads as follows, numbering the tags from top to bottom:

1, blue (with blue from speaker field);

2, white;

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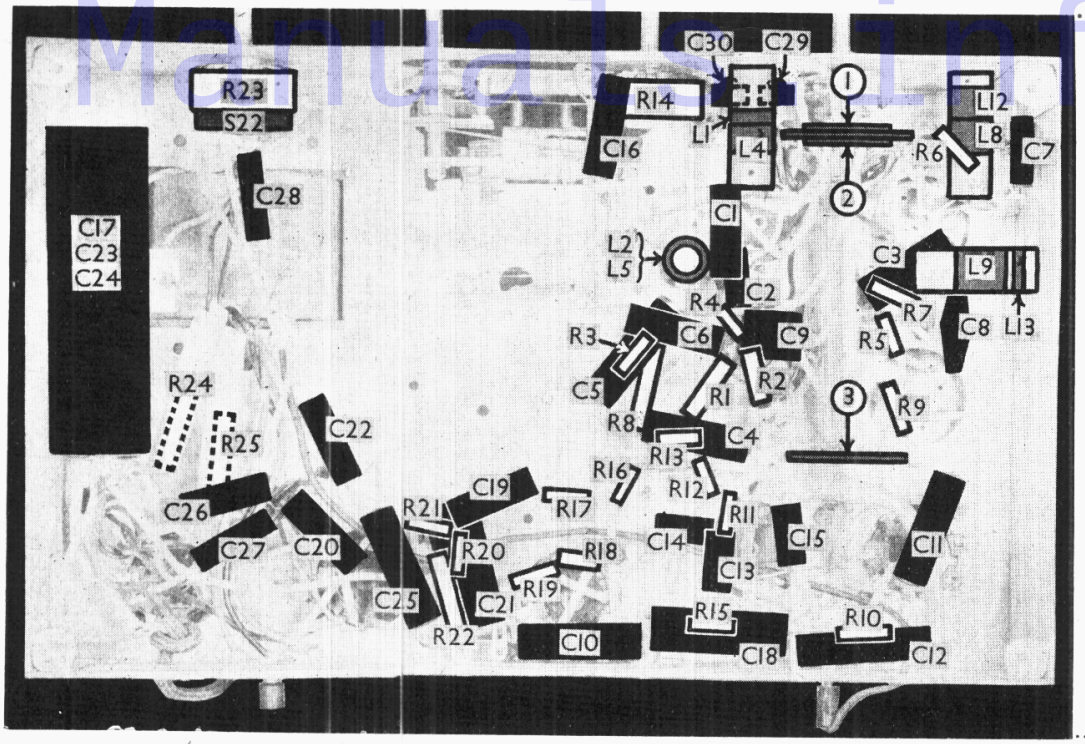


Under - chassis view. Note that the front switch unit is double-sided, and two views (marked 1 and 2) are given in the diagram below. **C29** and **C30** are adjustable through holes in the front chassis member. All the SW1 and SW2 coils are in four tubular units seen in this view

3, blank;
4 and 5, joined together, red (with red from speaker field).

The black lead is soldered to the transformer casing.

A rubber washer should be fitted to each chassis fixing bolt, between the chassis and the bottom of the cabinet.

A felt washer should be fitted on each control spindle, between the control knob and the cabinet.

Removing Speaker. — Unsolder the speaker leads;
remove the four nuts (with metal washers) holding the speaker to the sub-baffle, taking care not to lose the rubber washers as the speaker is withdrawn.

When replacing, fit a rubber washer to each of the fixing screws on the sub-baffle before placing the speaker in position;
so place the speaker that the transformer is on the right;
connect the leads from chassis as indicated above.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 225 V using the 210-230 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the MW band, and the volume control was at maximum, but there was no signal input.

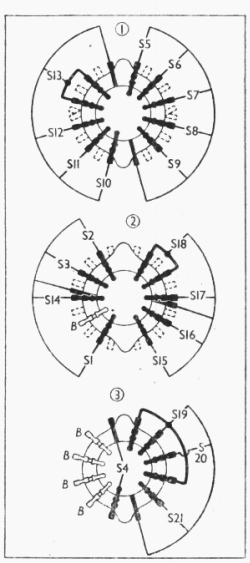
Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH3	216 (Oscillator) 100	2·2 4·7	99	2·0
V2 EF9	216	4·8	82	1·5
V3 EBC3	158	2·6	—	—
V4 EL6	191	65·0	216	7·3
V5 AZ2	288†	—	—	—
T.I. EM1	17 (Target) 216	0·1 0·37	—	—

†Each anode, AC.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

GENERAL NOTES

Switches.—**S1-S20** are the waveband switches, and **S21** the gram. pick-up switch, ganged in two rotary units beneath the chassis. The unit nearest the front of the chassis is double-sided, and two views of it, the first from the front of the underside of the chassis, and the second, from the rear, are given in the diagrams below. The second unit is drawn as seen from the front of the underside of the chassis.



Diagrams of the switch units. The upper two are views of the front unit from the front and back of the chassis respectively, while the bottom one is a view of the rear unit from the front of the chassis

The table below gives the switch positions for the five control settings, starting from fully anti-clockwise. A dash indicates open, and **C**, closed.

S22 is the QMB mains switch, ganged with the tone control, **R23.**

Coils.—L1, L4; L2, L5; L8, L12 and **L9, L13** are in four unscreened tubular units beneath the chassis. **L3, L6, L7; L10, L11, L14, L15;** and the IF transformers **L16, L17** and **L18, L19** are in four screened units on the chassis deck. Three of these units contain two trimmers each, while the remaining one contains four trimmers, two at the side and two at the top.

External Speaker.—Two terminals are provided on the internal speaker connection panel for a high impedance (about 5,000Ω) external speaker.

Indicator and Scale Lamps.—These are three Osram MES types, rated at 4·5V, 0·3A. Each one is connected across

SWITCH TABLE

Switch	SW1	SW2	MW	LW	Gram
S1	—	—	—	—	C
S2	C	—	—	—	—
S3	—	C	—	—	—
S4	C	—	—	—	—
S5	C	—	—	—	—
S6	—	C	—	—	—
S7	—	—	C	—	—
S8	—	—	—	C	—
S9	—	—	—	—	C
S10	C	—	—	—	—
S11	—	C	—	—	—
S12	—	—	C	—	—
S13	—	—	—	C	C
S14	—	—	C	—	—
S15	C	—	—	—	—
S16	—	C	—	—	—
S17	—	—	C	—	—
S18	—	—	—	C	C
S19	C	C	—	C	—
S20	—	—	C	—	—
S21	—	—	—	—	C

half the heater secondary, as shown at the top left hand corner of the circuit diagram.

Condensers C17, C23, C24.—These are three 500V working dry electrolytics in a single tubular metal can beneath the chassis, the can being the common negative connection. The yellow coded tag is the positive of **C17** (8μF); the red coded tag is the positive of **C23** (16μF); and the plain tag is the positive of **C24** (16μF).

Trimmers.—Apart from the ten trimmers in the screened coil units, there are two reached through holes in the chassis deck, and two reached through holes in the front member of the chassis. The latter are indicated in our under-chassis view, all the others being shown in the plan chassis view.

Chassis Divergencies.—The makers' diagram shows **R23, C22** connected in series across the primary of **T1**, and not from anode of **V4** to chassis. **R3** may be 150Ω; **R24, R25** may be 100Ω each; **R26** may be 1MΩ; **C1** may be 0·0001μF; there may be a 25μμF fixed condenser across **C32**; **S4** is not shown in the makers' diagram; **C13** may be returned to cathode of **V3**, not to chassis.

CIRCUIT ALIGNMENT

IF Stages.—Short-circuit **C34**, and connect signal generator, via a 0·1μF condenser, to control grid (top cap) of **V1** and chassis. Feed in a 470 KC/S signal, and adjust **C44, C43, C42** and **C41** in turn for maximum output. Recheck these settings, then remove short from **C34**.

RF and Oscillator Stages.—With gang at maximum, pointer should be horizontal. Connect signal generator, via a suitable dummy aerial, to **A** and **E** sockets.

MW.—Switch set to MW, tune to 250m on scale, feed in a 250m (1,200 KC/S) signal, and adjust **C37**, then **C31**, for maximum output. Feed in a 500m (600 KC/S) signal, tune it in, and adjust **C39** for maximum output, while rocking the gang for optimum results. Repeat the 250m adjustments.

LW.—Switch set to LW, tune to 1,300m on scale, feed in a 1,300m (233 KC/S) signal, and adjust **C38**, then **C32**, for maximum output. Feed in a 1,900m (158 KC/S) signal, tune it in, and adjust **C40** for maximum output, while rocking the gang for optimum results. Repeat the 1,300m adjustments.

SW1.—Switch set to SW1, tune to 25m on scale, feed in a 25m (12 MC/S) signal, and adjust **C35**, then **C29**, for maximum output. Tracking is fixed.

SW2.—Switch set to SW2, tune to 50m on scale, feed in a 50m (6 MC/S) signal, and adjust **C36**, then **C30**, for maximum output. Tracking is fixed.

The Radio Trade in Eire

In these notes THE TRADER'S *own correspondent reviews radio trade conditions in Eire, with special reference to the need for organisation—a need, incidentally, by no means confined to Eire—and the hire-purchase position.*

The position that develops in Eire will be of special interest to English traders because Eire is the nearest country to the United Kingdom which is not in a state of war.

THE need of improving trade organisation in Eire is generally recognised: such is the impression one gathers from conversations in both wholesale and retail circles. The idea of associations of manufacturers, wholesalers and retailers, each individually occupied with its own particular questions, but regulating matters of common interest through the intermediary of a suitable interunion organisation, is favoured in existing groups and seems even to gain ground.

It is quite possible that the obstacles which have prevented the realisation of this or a similar reform will be overcome before long.

Business Development

The accounts given by traders in Dublin of trade conditions and those brought back from the provinces by travellers agree as to the fact that business since the commencement of the war has been, on the whole, satisfactory.

A representative of an important company tells me that up to a fortnight before Christmas it had been remarkably good, but immediately after became much less active. But there is no reason to anticipate that this relative slack is more than momentary.

My informants confirm the experience of other well-informed sources with respect to the difficulties of satisfying demands with normal promptness and keeping sets and other stocks neck to neck with orders. One manager of a radio department said: "So far as we are concerned there is no shortage of receivers. Most of our lines have very good deliveries. We have practically everything except cheap battery models, of which supplies are now in transit."

They had, indeed (he added) no complaint to make as regards their supplies. The factories in England are treating them very fairly and they appreciate the effort made to respond to their requirements. Naturally the famine in torch batteries in Great Britain and elsewhere is such as to render any adequate supply of them out of the question.

In this connection I have heard certain curious stories concerning alleged strenuous searching for the purpose of obtaining batteries "at any price" for exportation, especially bijou two-cell types.

But independent investigation of my own fails to obtain any tangible testimony to the truth of these reports, and the only thing that one can register as a certainty is that enterprising outsiders are credited with having expended as much energy as petrol rationing permits in a vain effort to obtain supplies which money is incapable of procuring.

But it does not at all follow that these stories have any real foundation in fact.

With regard to the question of hire-purchase, one of my interlocutors recognised that it had made considerable progress, but denied that the cash system, as a result of this, had lost ground here "as seriously as elsewhere."

One well-informed source surmised that about 40 per cent. of the sets placed were not for cash "strictly speaking," but admitted that there was no statistical basis to justify this (acknowledged) guess.

Other informants, when asked for an approximative estimate of the proportion of orders absorbed by hire-purchase, categorically affirmed that that was impossible, taking into account the number of firms here that have been and are working systems of their own, financed by themselves or by separate credit establishments.

The principle of hire-purchase—the thing as distinguished from the current *word*—has existed for a very long time here—deferred payments being facilitated by diverse schemes, *not* necessarily working on a fixed, rigorous instalment basis, but by the play of confidence—by the informal co-operation existing in the staple industry between buyers or consumers, sellers and bankers.

In the agricultural sphere (remarked one of the heads of a prosperous Dublin radio firm) it is the advances of the bankers that have always enabled agriculturists to enjoy the fertile credit that the shopkeeper has extended to them from time immemorial.

Analogously, hire purchase in principle exists in the arrangements between certain wireless firms and their customers, so that it would be extremely difficult, indeed impossible, to judge the relative positions of hire-purchase and cash purchase in this country by any arbitrary approximative percentage.

Absence of Data

Any useful and informative estimate could not be based on the progress of the latest and best known innovations, for this would not and could not take into account independent, individual enterprises enabling sets to be placed successfully and with full security. In the absence of such complete data any estimates have no informative value whatsoever.

Such was the view emanating from a firm particularly well placed to "size up" the situation both in the capital and in the provinces.

W. W. O'M.

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