

DYNAMIC (Waitomo): What do you recommend as a good system to build up my set so that I could add another stage later?

A.: See the differential series now running.

2. Should a three-valve all-wave set be capable of all stations on the loudspeaker and shortwave?

A.: Certainly not; you will be lucky to get more than the main New Zealand stations on the speaker.

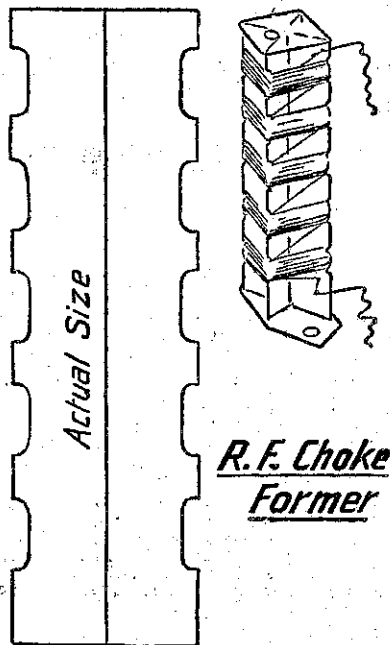
3. Is the Blue Spot cone a good speaker?

A.: Yes. A laboratory report has already appeared on it.

Winding Chokes

CELLULOID formers for radio-frequency chokes have previously been described in the "Radio Record," but slight alterations have been made in the dimensions, and as this type of broadcast choke has proved itself highly efficient, a brief description is given here.

Stout celluloid should be used, and may be marked out by placing over



the printed diagram, scratching the lines with a sharp steel point or strong needle. If the scratching is deep, much of the shape may be broken out of the sheet by bending the celluloid. Two pieces the size shown are required for each choke. One of these is then divided down the centre and one piece attached to each side of the full piece with celluloid cement.

End pieces are then put on, larger than required, and when all is set, they can be trimmed with scissors. A hole in one of the angles at each end will allow the insertion of a meccano spindle for winding, otherwise the winding may easily be done by hand. One thousand turns of 36 or 38 enamelled wire is put on, 200 turns in each set of notches. The ends are passed through two holes and fastened with cement, or holes may be drilled for the insertion of bolts to act as terminals. Two holes in the base provide for screwing to the baseboard.

The direct current resistance of these chokes is 40 ohms with 36 wire and 63 ohms with 38, so with only a few mils passing the drop is less than one volt.

Constructional Data for Short-Wave Coils

AS numerous inquiries for short-wave coil specifications reach us we have prepared the following table of various combinations. A slight departure from specifications in either coil or condenser should not affect efficiency greatly, but it will slightly alter tuning:—

Valve Base.	Tuning	Midget, 32mmfd.	Reaction, 32mmfd.
Band.	Secondary.	Wire.	Tickler.
19-25	7	24 d.c.c.	7
25-35	10	24 d.c.c.	10
35-45	15	24 d.c.c.	15
45-64	22	24 d.c.c.	22*
62-110	40	24 d.c.c.	40*

*Tickler wound double layer or band.

Valve Base.	Tuning	.00015	Reaction.	Wire.
Band.	Secondary.	Wire.	Tickler.	Wire.
9-15	2½	26 dsc.	3	30 dsc.
15-28	6½	26 dsc.	5½	30 dsc.
28-50	8½	26 dsc.	10½	30 dsc.
50-100	15½	28 dsc.	11½	30 dsc.
205-350	96	28 dsc.	30	36 dsc.
320-550	195	32 dsc.	50	36 dsc.

Valve Base.	Tuning	.00015	Reaction.	Resistance.
Band.	Secondary.	Wire.	Tickler.	Wire.
9-16	2½	26 dsc.	3½	36 dsc.
15-30	5½	26 dsc.	6½	36 dsc.
28-55	8½	26 dsc.	10½	36 dsc.
50-110	15½	28 dsc.	14½	36 dsc.
200-325*	80	30 e.	30	36 dsc.
320-500	148	30 e.	65	36 dsc.

*Tubes slipped over valve base.

Valve Base.	Tuning	.00025	Reaction.	Resistance controlled.
Band.	Secondary.	Wire.	Tickler.	Wire.
16-45	3½	24 e.**	4½	30 e.
40-90	13½	24 e.	7½	30 e.
250-540	110*	30 e.	33	34 e.

*Tube 3in. long slipped over valve to take winding.

**All enamelled wiring spaced by own diameter.

Diameter, 1½in.	Tuning	.0001.	Reaction	.00035.
Band.	Primary.	Wire.	Secondary.	Wire.
10-20	3	18 dsc.	3	18 dsc.
18-30	5	20 dsc.	5	20 dsc.
28-38	8	24 dsc.	12	24 dsc.
34-60	10	26 dsc.	22	26 dsc.
56-100	12	30 dsc.	45	30 dsc.

Diameter, 1½in.	Tuning	.00015.	Reaction	.00025.
Band.	Secondary.	Wire.	Tickler.	Wire.
16-30	5	18 e.	5	26 e.
29-58	12	20 e.	9	26 e.
54-110	22	20 e.	15	26 e.
103-225	45	26 e.	24	26 e.
220-350	115	30 e.	12	34 e.
300-550	195	32 e.	50	36 e.

Diameter, 1½in.	Condenser	.00015.	Reaction	.00035.
Band.	Secondary.	Wire.	Tickler.	Wire.
14-32	6½	22 e.	5½	34 d.c.c.
30-65	13½	22 e.	5½	34 d.c.c.
50-110	25	24 e.	9½	34 d.c.c.
100-220	50	24 e.	15½	34 d.c.c.

Diameter, 2in.	Tuning	.000125.	Reaction	.00015.
Band.	Primary.	Wire.	Secondary.	Wire.
15-25	4	26 e.	4	14 e.
24-40	6	26 e.	7	14 e.
37.5-65	13	26 e.	14	14 e.
64-115	24	26 e.	24	16 e.

3-inch Former.	Condenser	.0001	Reaction	.00025.
Band.	Secondary.	Wire.	Tickler.	Wire.
15-30	3	18 e.	4	22 e.
30-45	6	18 e.	5	22 e.
45-65	11	18 e.	5	22 e.
65-110	20	18 e.	7	22 e.

Diameter, 3in.	Tuning	.00015.	Reaction	.00025.
Band.	Primary.	Wire.	Secondary.	Wire.
15-35	7	26 e.	3	24 e.
30-70	7	26 e.	9	24 e.
60-130	7	26 e.	19	24 e.

A Short-wave Choke

HERE is a description of a good shortwave radio-frequency choke. It is ½in. in diameter, wound with 150 turns of 40 s.w.g. double silk-covered (or enamelled) wire, unspaced, occupying 1 1-5in. length. A piece of glass



tubing 2in. long is a convenient former. A piece of 24 wire is twisted round each end, and to this is soldered the 40 gauge. The one or two ends of the 24 will serve as leads.

Exploring Space

With Infra-Red Rays

ACCORDING to an eminent American radio engineer, recent research in connection with infra-red radiation and high frequency radio waves has indicated that communication with the various planets is theoretically possible. Ordinary radio waves cannot be employed for this purpose, as the ionised air (the Kenelly-Heaviside layer) in the upper atmosphere reflects them back to the earth.

Radio waves only a few inches long can now be generated, and these easily penetrate the Kenelly-Heaviside layer. The infra-red rays can also penetrate the atmosphere of the earth and other planets without scattering. The receiving apparatus for infra-red rays consists principally of a sensitive cell, so sensitive, in fact, that a high-powered searchlight operating on the moon could be recorded on the earth.

SO effective is the potentiometer control of grid bias in the detector of a short-wave set that it is now usually regarded as a necessary modification of such a circuit.

The Add-A-Phone, The Wonderful

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His Majesty The King's speech
—Prime Minister's speech—All great and stirring events are given to the world by Short-Wave.

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