wise you would have to redesign the set completely.

2. Will you be publishing an a.c. version of the "Kestrel Three" in the near future?

A.: We cannot make any promises, but we hope to be able to do so.

"TRURO" (Auckland): I have a three-valve s.g. battery set, and have picked up 20 New Zealand stations and 17 Australians, but I cannot separate the stations that come in on the lower part of the dial. Could the set be made more selective.

A.: First try the effect of a .0003 variable condenser in the aerial lead, or better than this a formodenser, which is semi-variable. Next try a wavetrap.

2. When my wavetrap is on I find distant stations come in with greater volume. How is that?

A.: Because you are tuning the aerial. This sometimes happens.

3. Would it be possible to increase the length of the aerial?—Yes, but you may interfere with selectivity.

4. Is it possible to attach headphones to the set for short-wave stations that are coming through weakly on the speaker?

A.: Yes, see the article in last week's constructional columns.

5. Short-wave coils on the set are from 24-90 metres. Is there anything of interest outside this band?

A.: There are a few stations below it, but nothing worth worrying about.

6. Short-wave stations are listed in metres. How can I find the approximate position on my dial?

A.: See the reply to N.C. (Masterton) last week.

7. Is the DX Club for short-wavers or broadcasters?

A.: For both, although the DX Club primarily caters for broadcast listeners and the Short-wave Club for short-wavers. Still, there is a considerable amount of overlap in both clubs.

Super-Heterodyne Coils

Several correspondents have asked for coil data for the a.c. screen-grid super-heterodyne converter described in the 1931 "Radio Guide." We give them herewith:—

Band.	L	L^1	L^2	L^3	L^4
80-meter ...	7 (30)	37 (30)	30 (30)	20 (30)	5 (30)
40-meter ...	4 (30)	16 (24)	13 (24)	10 (30)	3 (30)
20-meter ...	2 (30)	7 (24)	6 (24)	6 (30)	2 (30)
10-meter ...	1 (28)	3 (22)	2½ (22)	3 (28)	1 (28)

The wire gauges are given in small figures, and it is assumed that coils of the same diameter as valve bases will be used. The windings will be approximately correct whether the coil covering is cotton or silk. The 10-meter coil should be spaced ⅛in. between turns. All coils have about ⅛in. between windings.

8. What are the qualifications needed before one can become a transmitter?

A.: Briefly they must understand the fundamentals of electricity and radio, and pass an examination set by the Government. They must know the Morse code and the laws pertaining to amateur transmitters. They must show the examiners that they have a thorough understanding of transmitters as applied to amateur radio transmitting.

9. Is transmitting an expensive hobby?

A.: Fairly, though a "ham" makes most of his own gear and for this reason it is not outrageously expensive. It is certainly a very interesting and instructive hobby.

D.C.D. (Auckland): Your query is really outside the scope of Questions and Answers. We do not undertake to design amplifiers or sets. You can work out the value of the main chain of resistances in the Loftin White Amplifier in this fashion. You know the current passed by the valves and this will of course, pass through the main chain of resistances. You know the voltage that the valve requires to operate it at maximum, and that a further 200 volts is necessary to provide bias and the plate voltage for the detector. That means a total of approximately 450 volts to work on, and subtracting the 250 from this (as this is dropped through the valve itself), we find that 200 volts are left. Now if these 200 volts are dropped through the resistances comprising the main chain of resistances and the plate current, taken by the valves represents the amount of current flow, you can easily find out the number of ohms the resistances must contain. So that R5, 6 and 7 can easily be arrived at. The bias also can be worked out, but this is a little more complicated, and the best plan is to try different grid leaks until you happen across the right one. The other resistances should be about right.

2. What output transformer will I need to match my American Ferrand Green Spot inductor dynamic?

A.: 1 to 1.

3. I find that no home-made scratch filter can approach the one used in the talkie theatres when playing records. Why is this?

A.: Because the people who made the talkies know more about radio and scratch filters than the people who make the home-built apparatus. A commercial product always attains a higher standard than amateur built, for the simple reason that they have more resources to draw upon.

JWAAC (Christchurch): Can the "Sparrow Hawk" differential adapter be used for an a.c. set?

A.: Yes, if you build up the one shown on page 111 of the 1931 "Guide," it will be satisfactory. However, for an a.c. set why not use the super heterodyne type also described in the "Guide"? If you use the ordinary type of adapter you plug in to the detector socket, but, of course, you must insulate the socket from the adapter as shown on the same page of the "Radio Guide."

G. B. BOY (Dunedin): We think there would be very little difference in the two makes of valve you mention. Certainly not worth making any changes if the valves have not lost their emission. If you wish to use Radiotron valves, use the new 221 type in preference to 201A.

F.J.D. (Albury): I have a rechargeable "B" battery which is about 3 years old and seems to be losing its capacity for holding its charge. What is the cause?

A.: The age of the battery. When an accumulator is three years old it is time it was discarded. However, if it is taken down, all the electrolyte drained off and refilled with sulphuric acid of the correct density (1.250) it may possibly hold out a little while longer. If you are anywhere near a battery-charging depot or a garage with a capable electrician, we advise you to take it along to them. If you do attempt to take down the battery yourself, see that you

(Concluded on page 28.)