

The 231 is an output valve designed for use as a last stage audio amplifier. It draws 13 amp. filament current and, with a negative grid bias of 22.5 volts, 8 m.amps. plate current. It has an amplification factor of 3.5, and delivers 170 milliwatts undistorted power output.

The 232 is a screen-grid valve suitable for use as a radio frequency amplifier, detector, or intermediate audio-frequency amplifier, though it is recommended particularly for use as an r.f. stage valve. Its filament current is rated as .06 amp. and total "B" current is approximately 2 m.amps. It possesses an amplification factor of 440.

Though designed primarily for operation in conjunction with the new Air Cell "A" battery, all these valves may be operated from dry cells, but a filament voltmeter should be constantly used, for if the voltage rating is exceeded the lives of the valves will be shortened.

A Radiotron valve which has become very popular with constructors during the short period it has been on the market is the 221, a six-volt valve which, like the new series mentioned above, is exceedingly light on both plate and filament current. It is thus quite suitable for operation from dry cells as well as from storage batteries. It functions equally well as a detector and an amplifier—both radio and audio. Constructors will be pleased to learn that the price of this valve has been reduced from 20/- to 13/6.

### Kolster Brandes Speaker

WE have received from International Radio a Kolster Brandes Speaker, and have just completed a test when used with a Loftin-White Amplifier. The speaker is of the permanent magnetic type, using a matching transformer, the inductance of which can be varied to suit the amplifier employed. In our amplifier we found the best results were obtained when the ratio was 23-1.

As far as sensitivity was concerned, it was equal to the average cone speaker. It would just respond when coupled with a good crystal set, connected up with a big aerial. It would handle sufficient volume for the average home without any trace of distortion. We would estimate that the undistorted output would be approximately two watts.

Upon testing it with the recording of various instruments we found that the speaking and singing voices left little to be desired. The orchestra came through well, whilst instruments in the extremes, such as the trombone and the piccolo,

could be picked out. The range which gave best results was that extending from about 200 up to 4000 cycles. There was a marked falling off after 100.

## Book Review

"The Principles of Radio Communication"—by Moorecroft.

FOR those who wish to gain a real understanding of radio communication there are few books better than Moorecroft's "Principles." It is a book which starts with the fundamental laws of electricity, explaining the full nature of electricity, electrons and magnetic fields. It introduces calculus by easy stages, so that the student may obtain a thorough grounding in the subject.

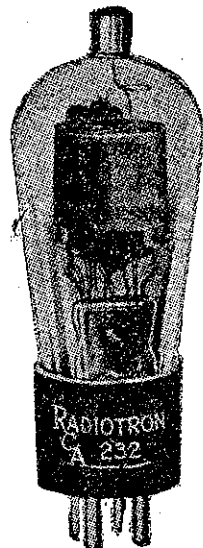
The book then takes its reader through such topics as resistance, in-

ductance, capacity and shielding, the laws of oscillating circuits, the elements of radio communication, spark telephony, valves, c.w. telephony, radio telephony, aeriels and radio and amplifiers. It is well illustrated with diagrams and charts, and is complete with a very large number of tables. Indeed there is hardly a page that in some way does not carry an illustration. Some are photographs and depict even electric current. The book is one that can be thoroughly recommended for anyone who wishes to take radio past the hobby stage.

The publishers are John Wiley and Sons, and the price is 40/6. Our review copy was sent by the Te Aro Book Depot, Wellington.

The 1931 "Radio Guide" is now available.

Price 2/6. All Booksellers and Dealers. (See advertisement on back cover.)



# RADIO

MANUFACTURED BY ONE OF THE LARGEST RADIO ORGANISATIONS OF AMERICA.

A SUPER QUALITY PRODUCT

A Model to Suit Your Own Requirements and Match the Furnishings in Your Home

The Beauty of Tone in Airline is Unexcelled

Our decision to distribute AIRLINE is due to remarkable results obtained over a long period.

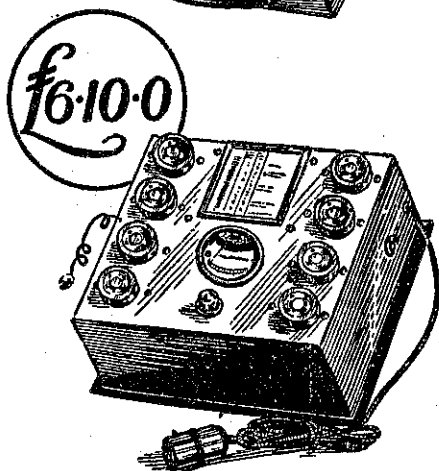
For Selectivity, Sensitivity and Natural Tone these Receivers stand alone.

Experts have been engaged and complete servicing is assured.

WE WILL BE PLEASED TO DEMONSTRATE IN YOUR OWN HOME

The New Zealand Express Co.,

DISTRIBUTORS Ltd. ALL CHIEF TOWNS



EVERY  
Radio Dealer  
needs this  
SET  
TESTER

and this new style  
VALVE  
TESTER

(Takes all makes)

Made and Guaranteed  
by

STEWART HARDWARE

Limited.

COURTENAY PLACE, WELLINGTON.