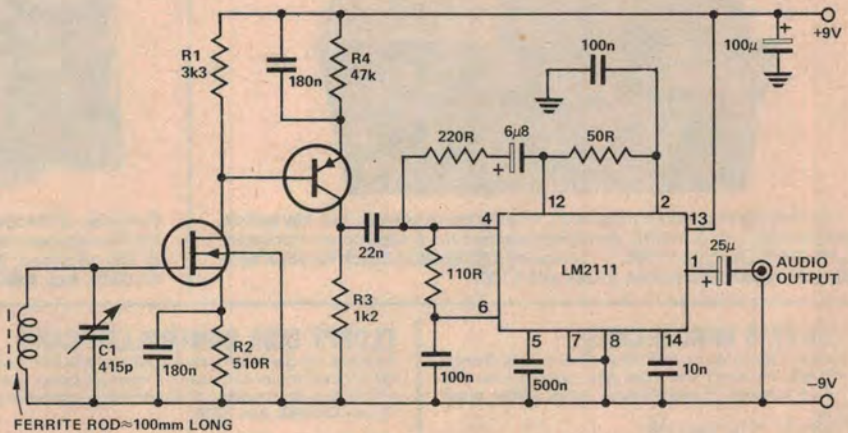


# Ideas for Experimenters

These pages are intended primarily as a source of ideas. As far as reasonably possible all material has been checked for feasibility, component availability etc, but the circuits have not necessarily been built and tested in our laboratory. Because of the nature of the information in this section we cannot enter into any correspondence about any of the circuits, nor can we produce constructional details.

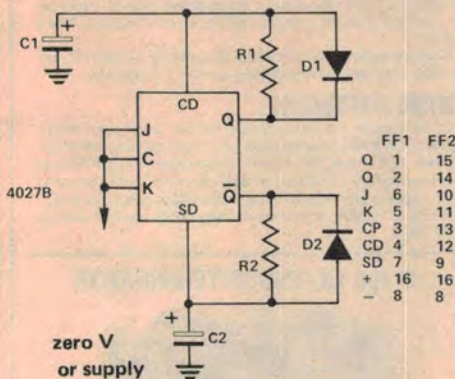
## Synchrodyne tuner

The main component of this design, from H. Lee of Vacluse NSW, is the integrated circuit which can be any of the many types of FM detector and limiter chips such as LM 1351, MC 1351, LM 1841, ULN 2136A, LM 2111, ULN 2111A, LM 2113 and ULN 2113A. There is very little difference among these ICs, except the pin connections. The detection of the AM signal takes place when two synchronous signals are fed into the balanced product detector (or multiplier) section of the chip. The two signals are obtained from the same RF amplifier, MOSFET-PNP combination, Q1 and Q2 (hence the name synchrodyne). The de-emphasising capacitor, C2 at pin 14 of the LM 2111 IC smooths the audio output at pin 1. The author does not find it necessary to incorporate a 10 kHz whistle filter.



The selectivity is rated fair for the high frequency end of the AM band but stations like 2FC Sydney on the lower end are entirely satisfactory. However at a small increase in cost and a little effort of alignment, selectivity can be increased greatly if R3 is replaced by

another LC tuned circuit similar to L1 C1. This was not used since the author is a 2FC fan most of the listening time! If a replacement is used for Q2 then it must be a high fT variety and R4 can be trimmed for the required gain of the RF stage.



## Oscillator has variable mark/space ratio

This oscillator allows the period of each half-cycle of the output wave form to be independently set by the RC networks R1C1 and R2C2. D1 is only

necessary if  $t_2 < 5t_1$  while D2 is necessary if  $t_1 < 5t_2$  approximately. This is to speed the discharge of the associated capacitors. R1 may be any value in the range 1k to 22M, while C1 should be between 10p and 100µ.

The circuit may latch up with both outputs high if the power supply rises slowly at power-up or if the outputs are shorted to the positive supply, according to its designer, Barry Wilkinson, of Nebula Electronics.

## Sound-modulated light source

This circuit, submitted by Michael Thong of Crawley WA, modulates a light beam with voice or music from the output of an amplifier. If the 10k pot is adjusted to slightly less than the Vbe

of the transistor, the circuit forms a peak detector.

This drives the gate of the SCR, lighting the globe, the brightness of which will vary as the sound level varies. C2 may be removed for a faster response.

Michael used his original circuit for a low cost colour organ from his amplifier.

