CHAPTER III

# TIME STANDARDISATION

1. The timing of pulses in Pegasus is standardised by means of the waveforms 'clock' and 'reset', which are synchronised with the rate of rotation of the drum. This in turn is servo-controlled with reference to a 1/3 Mc/s crystal oscillator. The packages concerned with 'clock' and 'reset' and the drum-speed control are described in detail in Chapter III of Volume 5. Fig. 3.1 of Volume 3a shows the scheme used in Pegasus.

## DRUM SERVO

2. The drum motor is driven from a 1 KVA, 145.5 c/s three-phase alternator, which is mounted on, or belt-driven from, the same shaft as the main alternator, and therefore starts to rotate as soon as one of the 'M/A on' push-buttons is pressed. The field of the 1 KVA alternator is fed from the rectifier that supplies field current for the exciter (see fig. 2.5), and the supply is regulated by a series unit similar to the one used for the exciter field (Fig. 2.11/2). Field current is normally applied when contactor CH4 in the power-supply cabinet closes, i.e. when the 'heaters on' button has been operated and the motorised potentiometer controlling the heater power has reached its top limit. Field power for the alternator, and hence driving power for the drum-motor, can however be cut off completely with a toggle switch in bay 1 of the computing cabinet just behind the rear baffle plate.

3. The grids of the field-regulator valves are supplied from the discriminator (package 27H). The output of this, normally about -20V, controls the drum speed so that the frequency of the sine wave derived from the drum clock track is about 250 c/s below that of the 1/3 Mc/s crystal oscillator (package 27J). The sine wave from the drum is amplified (and symmetrically limited) in the clock amplifier, package 27C, which is mounted at the end of the row so that the spindles of the trimming capacitors are accessible from the drum cavity when the baffle plate has been removed.

## 'CLOCK' AND 'RESET'

4. The 'clock' and 'reset' shaper packages (10C, 10L and 10S) are normally fed from the clock amplifier. A switch is provided on the engineer's panel however, which, by energising relay RL11 in bay 2, causes the crystal oscillator to become the main timing control. A second pair of contacts on relay RL11 operates the 'inhibit drum write' relay (see Chapter IV) to prevent asynchronous digital information from being written on the drum. Key-switch 6 on the engineer's panel has additional contacts that cause the commutator to become free-running and prevent the parity checks from operating on the drum-address track (see Volume 2a Figs. 10-6 5-1) when the machine is controlled by the crystal clock.