To advance the clock forward in time, operate the FAST ADVANCE switch. The clock will advance one hour for each blink of the pilot lamp. Operating the SLOW ADVANCE switch will advance the clock one minute for each blink of the pilot lamp. Because of contact bounce in the switches, they can be operated or released only when the clock is sending out cw. The procedure then is:

1) Briefly ground the start lead.
2) While the time is being sent, turn on FAST ADVANCE.
3) Count the lamp blinks.
4) When desired count is reached, again briefly ground start lead.
5) Turn off FAST ADVANCE.

If one wishes to set seconds as well as minu and hours, the clock can be stopped by switchi pin 5 of U9 to ground. Opening or grounding lea at other points will not work because conta bounce in the switch will cause incorrect readin

Operations

Operation is initiated by grounding the STAR input momentarily, pin 5 of U25. This grou need be present for only a few microseconds start a message, but may be of longer duration. T presence of a continuous ground at the STAR input will activate a time message only once, at t initial grounding of the input. It is not feasible include here the control circuits that may be us for initiating a time message, as each repeater w probably have its own individual requirements.

A SOLID-STATE CONTROL CIRCUIT

A very important consideration when planning a repeater is reliability in the control circuitry. Relays have been doing an admirable job for a long time, but even the best relay will fail sooner or later. It is almost a truism that the more remote the location, the greater the inclination for a relay to fail. Added to the need for maintenance of relays is that of tube replacement.

The tube problem has been solved by the availability of solid-state transmitters. Applying the same technique to the control circuit should result in a repeater installation that requires little in the way of maintenance. This theory has been proven by the operators of the WR2ABB repeater on Mt. Beacon, N.Y. The filtering of supply and control leads for their solid-state equipment has been covered elsewhere. The control circuit, by WA2-DHA, is shown in Fig. 8-44. It eliminates all relays in the system, save one. A "panic-relay" is connected in the main power feed to the repeater so that if all else fails, the system can be shut down by means of wire line control — a desirable safety feature.

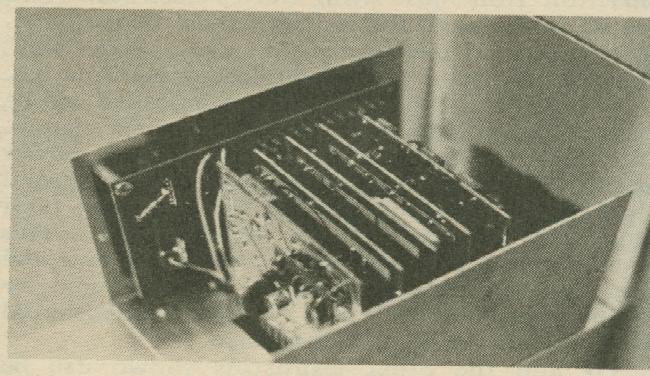

Fig. 8-44 — A solid-state control system con structed by the WR2ABB repeater technical com mittee. Each card has edge connectors that plu into matching connectors on the main chassis. A Minibox provides shielding from noise and r energy. Reliability is enhanced by eliminatin relays in the transmitter- and receiver-switchin circuits.

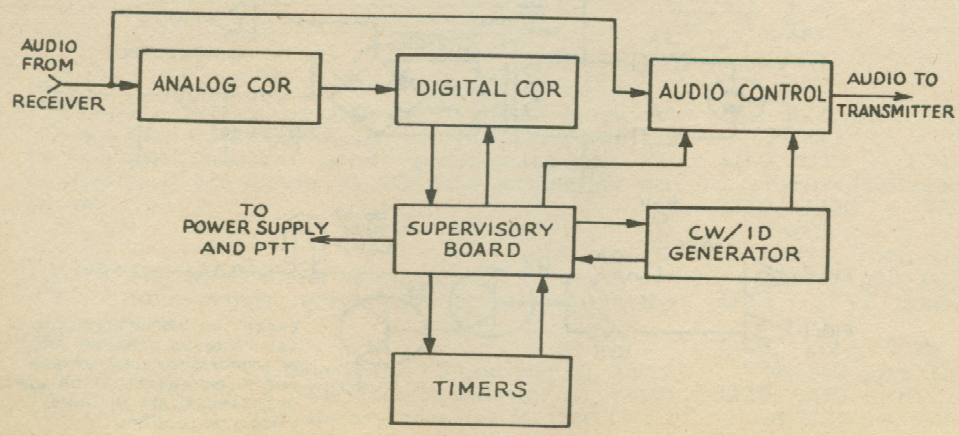

Fig. 8-45 — Block diagram of the repeater control system. Many of the currently available Morse code generators can be used for identification, although the one selected by the WR2ABB committee was designed by the Seattle repeater group and described by W7PUG in *73* for September, 1970.