test lead into the Analyst jack that is marked 3 volts on the power supply of the Analyst. Notice that under each voltage jack there is drawn the symbol for a battery. The 3 volt point is two cells less than the full battery voltage. The panel is marked in this manner to correspond with the way in which batteries are drawn on schematic diagrams.

Note: The Model 960 develops its voltages from the AC power line. If your line voltage is higher or lower than the nominal reading of 117V, the DC output voltage on the Model 960 will vary by the same percentage. Obviously the current drawn by the transistor radio will likewise increase or decrease by a similar percentage. A slightly higher or lower radio current can be attributable, therefore, to this line voltage increase or decrease. This should be kept in mind when measuring the total radio current.

IN CKT — DYNA TRACE

The next position of the SELECTOR switch is the test marked "IN CKT". This is perhaps the most useful test employed in the Analyst. Since only a single probe is needed when this test is used for signal tracing or, in circuit testing of transistors, it is a very rapid method of locating a defective stage or transistor. To use this test the radio must be connected to the Analyst power supply and not to an external battery.

Turn the SELECTOR switch to the IN CKT test position and connect the radio to the power supply. When switching from the 150 ma, thru the 15 ma, to the IN CKT test position you may go beyond full scale on the 15 ma position. This should be of no concern since the meter is fully protected against overload. Insert the Dyna Trace into the IN CIRCUIT TEST signal jack. This jack is

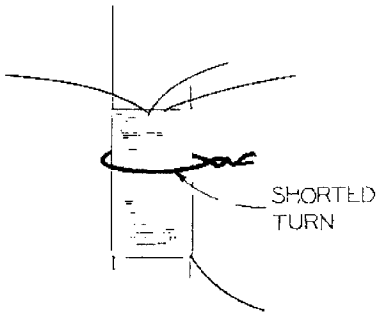

Fig. 4—Antenna Disabling by Shorted Turn.

located just below and to the right of the meter. Whenever using the Dyna Trace test turn the volume control on the radio to minimum. Take a piece of bare copper wire and wrap it around the loopstick of the radio and short the ends together. This is shown in Fig. 4.

The purpose of this shorted turn is to load the antenna circuit thereby keeping the radio from picking up a broadcast station and disturbing the test. In the case of a dead radio this would not be necessary. The control marked IN CIRCUIT

METER SET, located just to the right of the IN CIRCUIT TEST signal jack is adjusted until the pointer on the meter rests inside the green area of the meter scale marked IN CKT SET. See Fig. 5.

Rotate the PNP NPN switch to the proper position for the transistor being tested. Take the DYNA TRACE and touch it to the base of the output transistor. The pointer on the meter will now swing out of the GREEN area and read up the scale. This indicates that the transistor is working and can amplify a signal. It further indicates that the DC circuitry of the stage is working properly. Repeat this test on the remaining transistors in the radio. Each time the DYNA TRACE

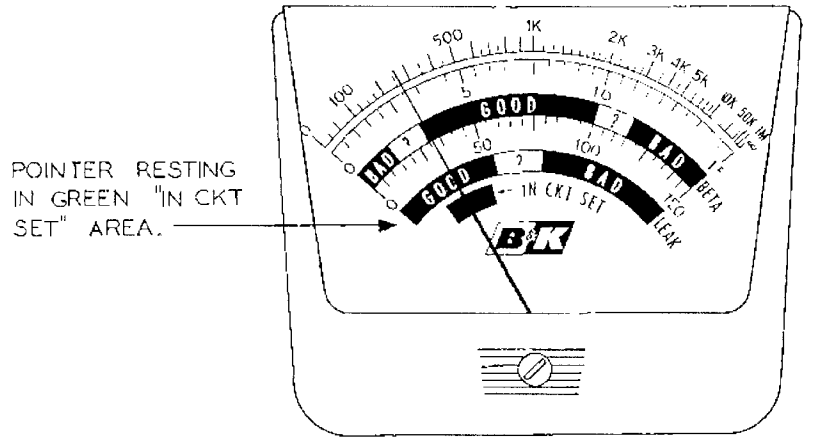

Fig. 5—In Ckt Set.

is touched to the base of a transistor the pointer will swing up scale and out of the GREEN area. Some stages will cause the pointer to go off scale while others may just barely move the pointer out of the GREEN area. As long as the pointer moves up scale this indicates that the stage is operating and that the DC circuitry is O.K. When a stage is reached that does not make the pointer read up the meter scale, a defective stage or transistor has been located. A few simple voltage readings will quickly isolate the defect to the component or to the transistor itself. This will be explained more completely under the section entitled TROUBLE SHOOTING.

OUT CKT TEST — TRANSISTOR TESTING

Following the IN CKT position of the SELECTOR switch is the OUT CKT (out of circuit) test for transistors. This test should be used to confirm whether or not a transistor is defective. The test should be made with the transistor out of the circuit. A test for both Leakage and Beta (H_{FE}) is made and both tests can be read on a GOOD-BAD scale. In addition the true value of Beta can be read on the 0-150 scale. The Leakage test is the Iceo test which is the leakage between collector and emitter. High leakage between base and collector will show up on the Beta test as a high Beta reading and will probably read in the bad area of the meter scale.

The Beta test is a DC test where a fixed amount of current is applied to the base of the transistor and the resultant collector current read on the meter. The