case, an electrical "center-tap" can be obtained by connecting a 50-to-100-ohm adjustable wire-wound resistor across the filament winding, as shown in Fig. 5. The adjustable tap is centered on the resistor.

It is not necessary to use all the windings available on a multi-winding power transformer. For example, suppose you need a general-purpose power transformer, and find one with secondary specifications which match those of the needed unit but with an "extra" 6.3-volt filament winding. Simply ignore the extra winding, taping its leads to one side (taking care that they do not short together).

Mechanical specifications are important only when the substitute unit is used as a servicing replacement or in the construction of equipment where the component's physical size and shape are important. These specifications include over-all dimensions, weight, and type of construction or mounting. —30—

Answers to Electronic Sticklers

on page 106

1. Two ohms. Redraw the network schematic in the form of a bridge circuit. You will find that the resistance values of the bridge legs result in a balanced bridge. Hence the 3-ohm resistor is an inactive component and can be omitted from the circuit. All that remains are two series resistance circuits in parallel.

2. A short circuit. The current remains the same since the two dry cells provide not only twice the voltage but also twice the internal resistance.

3. Since there is no surge resistor, the charging current of the capacitor would pull too much current through the rectifier. Without the surge resistor (20 cents), there's a good chance the rectifier ($1.00) would burn out.

4. About 282 volts! How come? On one half-cycle, when the diode's plate is positive, the capacitor charges to *peak* line voltage . . . or about 141 volts (1.41 multiplied by line voltage). On the next half cycle, the capacitor's voltage is *in series* with the peak line voltage and thus adds to it . . . and 141 plus 141 equals 282! This arrangement, incidentally, is basic to voltage-doubler power supply design.

If you know of a tricky Electronic Stickler, send it with the solution to the editors of POPULAR ELECTRONICS. If it is accepted, we will send you a $5 check. Write each Stickler you would like to submit on the *back of a postcard*. Submit as many postcards as you like but, please, just one Stickler per postcard. Send to: POPULAR ELECTRONICS STICKLERS, One Park Ave., New York 16, N. Y. Sorry, but we will not be able to return unused Sticklers.