

in assumptions will tend to direct his calculations to the desired solution. The process is always tedious and time-consuming, and in particularly difficult cases can be very protracted. This situation can easily result in stopping with a design just barely "good enough" when viewed with the charity born of many frustrating trial calculations. A quick and easy way of performing the necessary calculations can not only save time and effort but should raise the level of "accepted" designs nearer the optimum.

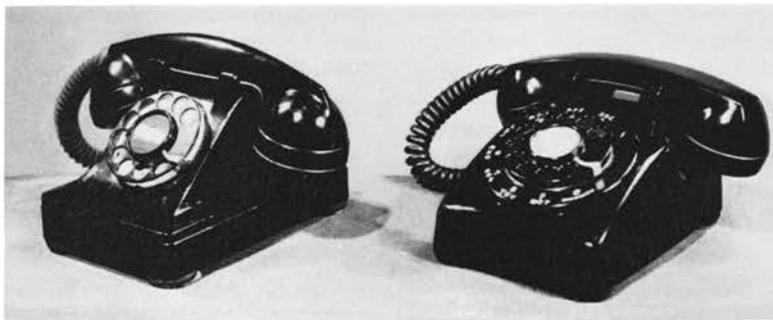
Some time ago, charts were developed by which the proper dynamic relationships could be graphically determined. They were complicated charts and had to be rather large to cover the required range of possible design with the necessary accuracy. The operations of two graphic charts were then condensed to a special desk-model slide rule, shown in the illustrations on the opposite page. It is

15 inches wide by 20 inches long and is in two sections. The upper or left section, which does the damping calculations described, has six sliding scales and two stationary scales. The lower or right section has four sliding scales and four stationary scales. This section performs supplementary design calculations necessary to determine the numerical value of the spring torque. This value is obtained from the design constants chosen on the basis of the damping calculations. It also calculates the weight of coil for different wire sizes and checks the ratio of torque to the total weight of the moving system, which is a design criterion held within certain broad limits.

By the use of this slide rule, the meter designer can make individual calculations of dynamic design in seconds and work out a final design in minutes.

W. W. WERRING

Switching Systems Development



Laboratories Introduces 5300-Type Telephone

Although many of the new 500-type telephone sets have been installed in the field, there are still more than twenty-seven and one-half million 300-type sets in use. These telephones, which have an engineered life of twenty years, represent a considerable investment in the Bell System plant. To preserve this investment and still provide many telephone customers with the improved appearance and operating characteristics of the new set, the Laboratories' Station Apparatus Development Department has introduced the 5300-type telephone.

To make this new telephone, a 300-type set is stripped of its old housing and enclosed in a new one that resembles the 500-type in all respects, in-

cluding a dial with numbers outside the finger wheel. In addition, the base of the 5300 set can be modified to provide for adjusting the volume of the ringer, just as in the 500 set. Transmission characteristics can also be modified according to the conditions of use. The cradle of the 5300-type set has been designed so that it can hold either the "F-type" handset normally used with the "300" telephone or the newer "G-type" handset used with the "500" telephone.

At present, the modified housing produced at the Western Electric Indianapolis Works is available only in black. They may be furnished in color at a later date if customer demand warrants.