

66. (a) They are in parallel and the portions of  $A$  and  $B$  between the load and their respective sliding contacts have the same potential difference. It is clearly important not to “short” the system (particularly if the load turns out to have very little resistance) by having the sliding contacts too close to the load-ends of  $A$  and  $B$  to start with. Thus, we suggest putting the contacts roughly in the middle of each. Since  $R_1 > R_2$ , larger currents generally go through  $B$  (depending on the position of the sliding contact) than through  $A$ . Therefore,  $B$  is analogous to a “coarse” control, as  $A$  is to a “fine control.” Hence, we recommend adjusting the current roughly with  $B$ , and then making fine adjustments with  $A$ .
- (b) Relatively large percentage changes in  $A$  cause only small percentage changes in the resistance of the parallel combination, thus permitting fine adjustment; any change in  $A$  causes half as much change in this combination.