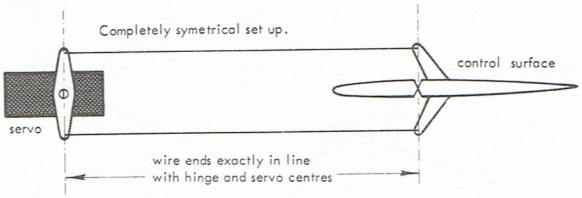
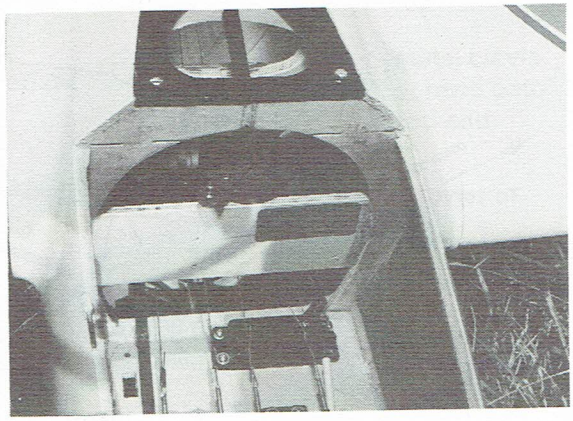


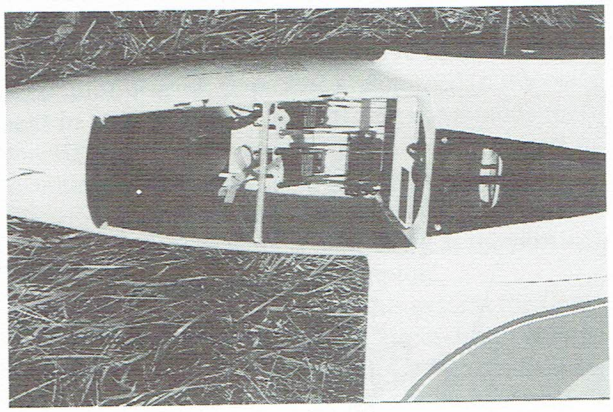
Fig. 10.4: Closed loop linkage.

employed, in a truly scale manner, to models of such prototypes as Nieuport biplanes from WW1.

(d) Closed loop cable control system. I make no apologies, I rate this as the best system for remote – but direct – linkages. The alternative, with equal control accuracy potential, is when the servo is installed immediately adjacent to the control surface. Closed loop is, as the name suggests, a double cable system operating in both rotational directions with connecting points (control horns) on either side of the control surface. One beauty of this system is that the control surface deflection is always a result of a 'pull' from the servo to the horn. In this way there can be no 'slop' in the linkage, assuming that the cable was tight in the first place. By comparison, a single pushrod always has one direction for moving the control surface as pushing – and this is the way that is likely to cause bowing of the rod (in extreme cases causing blow-back of the surface). Another important factor with closed loop systems is their low inertia. The cables weigh so little that even vibration is unlikely to cause



Closed loop controls are ideally suited to scale sailpanes, including ailerons (these may also have adjacent servo control).



Slight differential will guarantee no binding at extremes of travel:-

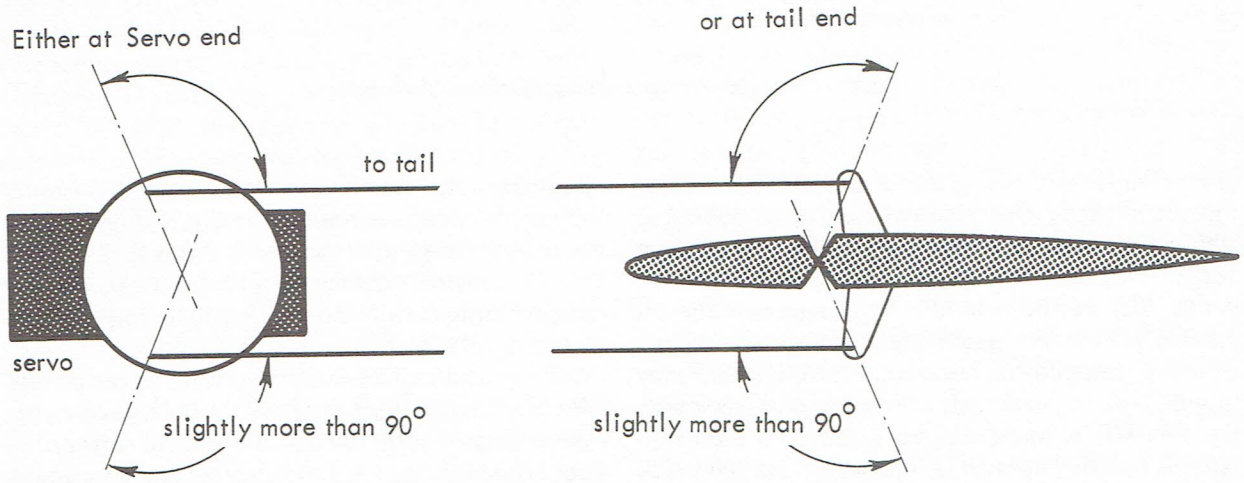


Fig. 10.5: Avoiding bonding of control surfaces.