of action of the spirolactones might represent competition with mineralocorticoid at a site not yet elucidated. Final acceptance of the thesis of a competitive inhibition must await further study.

This study shows that synthetic steroids do not exert their effect by increasing the filtered load of sodium. The data indicate that sodium diuresis is effected independently of changes in the glomerular filtration rate or effective renal plasma flow.

Summary. Five normal, male, human subjects have been studied by the classical clearance technics during salt deprivation before and after therapy with the steroid-17-spirolactone, SC 8109. No change in the glomerular filtration rate or effective renal plasma flow could be demonstrated but a definite sodium diuresis and potassium retention occurred in response to the spirolactone. A small increase in free water clearance was seen in 4 of 5 subjects studied. These observations localize the effect of spirolactone to the renal tubule.

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Reduction of Post-Occlusive Hyperemia in Cold Subjects.* (24722)

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Hyperemia that occurs in the forearm following arterial occlusion has been ascribed to anoxia of tissues and accumulation of metabolites(1). This view is supported by experiments of Goldschmidt & McGlone(2) and Jepson(3). However, Folkow(4) found the effect of vasodilator metabolites is slight in cats and suggested that reduction of stretch in the vascular walls during occlusion, resulting in reduction of vascular tone, is the major factor in vasodilation occuring in the first stage of reactive hyperemia. More recently, Patterson(5), in studies of reactive hyperemia in human forearms, has come to similar conclusions. The present experiments were performed to determine the effect of increased vasomotor tone on reactive hyperemia. For this purpose it is assumed that exposure to cold and performance of the cold-pressor test increase peripheral vascular tone.

Methods. Experiments were performed on 2 male subjects in room at about 20°C. The subjects were warm (covered with blanket) or cold (nude). Reactive hyperemia was produced by inflating to 220 mm Hg, a sphygmomanometer cuff wrapped around arm and maintaining pressure for 5 or 10 min. A point on upper forearm, free from veins, was marked and skin temperature recorded every 30 sec. with Stoll-Hardy radiometer accurate to 0.1°C. The results were divided into 4 groups: (W10) subjects warm, occlusion time 10 min.; (W5) subjects warm, occlusion time 5 min.; (C10) subjects cold, occlusion time

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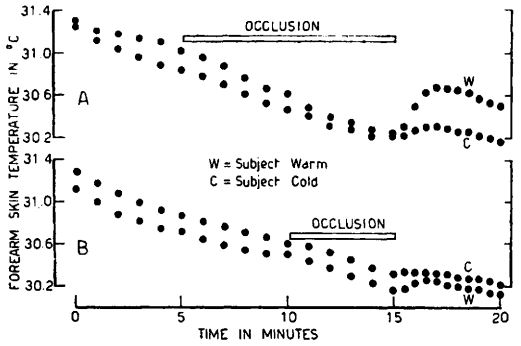

FIG. 1. Forearm skin temperatures before, during and after arterial occlusion. Room temperature, 20°C. Each point is mean of 42 experiments performed on 2 subjects.

10 min.; (C5) subjects cold, occlusion time 5 min. In a few experiments subjects were kept warm and occlusion maintained 10 min. but just before release of cuff pressure, blood flow to contralateral hand was occluded and the hand immersed in water at 4°C.

Results. Temperatures of skin of forearm at time of release of cuff pressure were not significantly different in the 4 groups (Fig. 1). Reactive hyperemia, as measured by change in skin temperature, was greatest in the W10 group, smaller in W5 and C10 groups and insignificant in C5 group (Table I). The difference between temperature responses in W5 and C10 groups was not significant.

TABLE I. Change in Forearm Skin Temperature (°C) 2 Min. after Release of Cuff Pressure.

Occlusion time (min.)	Thermal state of subject	
	Warm	Cold
10	+.48 ($p < .001$)	+.12 ($p < .01$)
5	+.08 ($p < .01$)	+.002 (n.s.)

Each entry is mean of 42 experiments performed on 2 subjects.

When the cold-pressor test was performed on the contralateral hand, temperature response to occlusion was not significant.

Discussion. It is generally known that for a given skin temperature, degree of reactive hyperemia is dependent upon period of occlusion, being greater the longer occlusion is maintained. This has been taken to illustrate the importance of accumulation of metabolites in genesis of reactive hyperemia. Freeman(6) and Freeman and Zeller(7) give evidence suggesting that metabolic needs of tissues determine blood flow through sympathectomized limbs. However, in normal forearms, blood flow is not usually related to need of muscles for oxygen(8). Our observations that the hyperemic response to occlusion can be reduced or even abolished by procedures which increase vasomotor tone strongly suggest that the action of vasodilator metabolites is weak and that centrally controlled vasomotor tone plays an important part in modifying the degree of post-occlusive hyperemia.

Summary. For a given skin temperature and occlusion time, reactive hyperemia in the forearm was reduced or abolished by procedures which increase vasomotor tone.

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