Growth potential of red deer stags during their second year of life. By J.M. SUTTIE. *Physiology Department, Rowett Research Institute, Bucksburn, Aberdeen AB2 9SB, Scotland.*

Red deer stags fed a restricted diet during their first winter of life fail to catch up on fully fed controls at 15 months of age, despite showing compensatory growth, when given unlimited access to feeding during the summer. They thus fail to realise their first year's genetic potential growth (Suttie *et al.*, 1983). The aim of the present study was to determine the growth potential during the second year of life in red deer stags fed a low plane of nutrition for 15 months (below their genetic potential size) and then fed a high plane of nutrition for 12 months.

In October 1979, from a group of 17 stags weighing 67.4 ± 1.7 (mean ± s.e.m.), 3 stags weighing 62.3 kg ± 0.4 were selected. They represented the lightest 25% of the population. The 3 were penned individually and fed to appetite a pelleted barley diet containing 160 g crude protein/kg DM. One of the 3 stags died of malignant catarrhal fever in February 1980. The remaining 14 were kept on hill pasture (mainly *Calluna-Vaccinum* (dwarf shrub) dominant with *Agrostis-Festuca* grassy patches) in large paddocks. In mid September 1980 all 16 stags were weighed live then slaughtered. Carcass weight, antler weight and specific gravity and perirenal fat weight (an index of fatness) were recorded. The results are presented in Table 1.

Table 1. Mean values for various parameters for stags fed a concentrate diet or hill pasture.

	Antler		Liveweight		Apparent liveweight		
	Weight (g)	Specific gravity (g/ml)	Oct. 1979 (kg)	Sept. 1980 (kg)	gain (g/d)	Carcass (kg)	Perirenal fat (g)
Concentrate diet	346	1.21	62.3	97.6	108	66.9	742
Hill pasture	166	0.95	69.0	91.8	67	53.1	223
t (unpaired 2 tailed t-test)	3.37	5.31	3.78	1.85	5.57	9.24	6.00

Although the concentrate fed stags were significantly smaller than average, aged 15 months, due to catch-up growth they were equal in liveweight aged 27 months. However, the carcass weights of the concentrate fed stags were significantly heavier and they were fatter than hill pasture stags. The antlers grown by the concentrate fed stags were heavier and denser than those that remained on the hill.

It seems that growth potential is considerable during the second year of life even in stags which are small in terms of weight for age at 15 months.

Suttie, J.M., Goodall, E.D., Pennie, K. and Kay, R.N.B. (1983). *British Journal of Nutrition. 50*, 737-747.