

If after two days absorption the solution is replaced by tap water for three days, a large part of the absorbed vitamin C disappears; the content in stem and stalk falls to 45 mg (control, 30 mg) per cent g fresh weight: in the flat part of the blades, to 147 mg (control, 91 mg) per cent g fresh weight: the ratio to the control is thus about 1.5 for both. The distribution of the excess of vitamin C in the experiment is fairly uniform with the distribution of the vitamin in the control, in both cases.

In October, concentration in the stem after absorption for three days rose to 75 mg per cent g fresh weight (control, 26 mg) and in the whole leaves to 223 mg per cent g fresh weight (control, 44 mg). At the end of the experiment the concentration is 3 times the control in the stem, 5 times the control, and more than twice the concentration in the solution, in the whole leaves. Water is always a little more abundant in the experimental plants than in the controls, but this is of little consequence.

At the end of the last experiment, after absorption of tap water for three days, the concentration of vitamin C in the stem is still higher than in the control: this fact points to the incorporation of the excess of vitamin C in the tissues, the increase of concentration in the stem being not merely an appearance resulting from the presence of the solution moving in the vessels.

There is a very sharp difference between the composition of vitamin C in the two kinds of organs: in the leaves, specially in the leaf blades, all the vitamin C absorbed can be in the form of ascorbic acid; in mg per cent g fresh weight 273/292 (control, 68/87) and 217/223 (control, 31/44). In the stem the proportion of ascorbic acid in vitamin C is always much lower: 42/84 (control, 14/27) and 46/75 (control, 7/26). It seems that oxidation in the stem is followed by reduction in the leaves, most probably in the blades.

The absorption of a solution of ascorbic acid (0.5 per cent in tap water) can also be brought about by means of a wick set as a seton in a slot cut in the stem of a normally rooted tomato plant. The results are less regular; but sometimes there is an important increase of the vitamin C content in the stem and the concentration may be lower above the seton than below it.

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VETERINARY SCIENCE

Comparative Digestive Capacities of *Bos taurus* and *Bos indicus* Cattle as affected by Intake of Feed

A COMPARISON of the productivity and efficiency of *Bos taurus* and *Bos indicus* cattle in an environment intermediate to those in which the two species developed was carried out over a 3-year period and reported in 1963 by Howes *et al.*¹ Using these data it is possible to correlate and regress the apparent digestive coefficients with nutrient intakes (Table 1) for the two bovine species.

All correlation coefficients are highly significant and indicate that the coefficients of apparent digestibility are significantly correlated with the intake of dry matter, protein and gross energy for both species. However, the individual correlation coefficients for the 'Herefords' were consistently larger, although not significantly greater than those for the 'Brahmans', which may be interpreted to indicate that the digestibility of dry matter, protein and energy are more closely related to intake in 'Herefords' than 'Brahmans'. Compared with the 'Brahmans',

Table 1. CORRELATION COEFFICIENTS AND REGRESSION EQUATIONS FOR INTAKE AND DIGESTION OF DRY MATTER, CRUDE PROTEIN AND GROSS ENERGY

	Correlation coefficients	
	'Hereford'	'Brahman'
Dry matter	0.67*	0.62*
Crude protein	0.91*	0.89*
Gross energy	0.76*	0.59*
Regression equations (S.E. in brackets)		
Dry matter:		
'Hereford'	$X_1 = 46.2490 + 0.0028 X_2$ (0.0007)	
'Brahman'	$X_1 = 45.9667 + 0.0030 X_2$ (0.0009)	
Crude protein:		
'Hereford'	$X_1 = 19.4490 + 0.0498 X_2$ (0.0053)	
'Brahman'	$X_1 = 29.0271 + 0.0391 X_2$ (0.0047)	
Gross energy:		
'Hereford'	$X_1 = 40.3030 + 0.7805 X_2$ (0.1577)	
'Brahman'	$X_1 = 43.1136 + 0.6094 X_2$ (0.2175)	

* $P < 0.01$. X_1 , coefficient of apparent digestibility. X_2 , total daily intake.

'Herefords' over the past century have been subjected to much selection for growth and feed efficiency. This may be the reason for the closer association between intake and digestion for the 'Herefords'. If the correlation between intake and digestion for the 'Herefords' was truly superior, it would indicate a greater efficiency in beef production.

Based on these investigations the regression equations reveal that the interrelationships for the dry matter and energy measures are similar for both species. However, the relationship for protein is markedly different for the two species ($P < 0.05$). The superior ability of 'Brahman' females to digest crude protein has been discussed in detail elsewhere¹. Ashton² has recently indicated that 'Brahman' steers have a superior coefficient of apparent digestibility for nitrogen. It is appreciated that the faecal nitrogen involved in these investigations included undigested feed residues, unabsorbed but digested nitrogen, nitrogen secreted from various sources into the alimentary tract, nitrogen from cellular debris from the tract wall and nitrogen from undigested bacteria. No satisfactory system for separating these components has been developed.

Attempts to classify the origins of faecal nitrogen usually involve more assumptions and errors than they eliminate.

Bos indicus cattle developed in the tropics appeared to possess fundamental digestive and other advantages for tropical beef production³. Since crude protein is comparatively low in tropical forages, this may be the result of adaptation. With suitable management and selection, it is possible that tropical cattle production would eventually benefit more from the selection of indigenous types rather than attempts to adapt temperate species to environments for which they are not well suited.

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ENTOMOLOGY

Accelerating and Inhibiting Effects of Crowding on Sexual Maturation in Two Species of Locusts

ISOLATED pairs of *Locusta migratoria* (R. and F.) kept in optimum laboratory conditions may begin to copulate seven days from their emergence as adults, and the majority of females lay their first egg-pods before the 14th day of adult life¹. Isolated pairs of *Schistocerca gregaria*