I AM obliged to Prof. Heslop Harrison and his colleagues for correcting errors in my list of chromosome numbers and in his own. Dr. Melville and Dr. Pyke, however, now make it clear that the principle of vitamin–chromosome correlation, being founded on observations of roses throughout their range of distribution and throughout their range of chromosome numbers, is indeed a valid inference. They also make it clear that the existence of one correlation with vitamin content does not exclude the possibility of several others.

A more difficult question now remains to be settled, namely, how increase in vitamin content comes to be related to increase in chromosome number. Is the effect due to a direct and inherent correlation as it appears to be in apples ? Or does it arise from the historical accident that the higher polyploids have followed the retreating ice farther north and in doing so have adapted themselves to setting seed during a longer day, so that it is with the length of day that vitamin content is directly and inherently correlated ? A number of experiments are suggested by these questions apart from the one I mentioned.

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Oct. 27.

Formation of Urea in the Mammalian Body without Participation of Arginase

THE synthesis of urea as the main end-product in protein metabolism in the mammalian body has been the subject of investigation since the early days of biochemical studies. The discovery by Kossel and Dakin of arginase, the enzyme splitting arginine into urea and ornithine, appeared to provide a solution for the problem, the more so since the enzyme was found to be abundant in mammalian tissue. The insufficient endogenous and exogenous supply of arginine, however, presented a difficulty since the quantities of arginine available for urea production were found to represent only a small fraction of what was necessary to account for the comparatively large excretion of urea in the urine. So early workers supported the view that urea could not possibly be produced by hydrolysis of arginine only, but that the bulk of urea was oxidatively synthesized from ammonia or ammonia sources such as amino acids. The role of arginase was thus considered of minor importance until Krebs and Henseleit[1] published their attractive theory in 1932, according to which the ammonia was used in the synthesis of arginine from

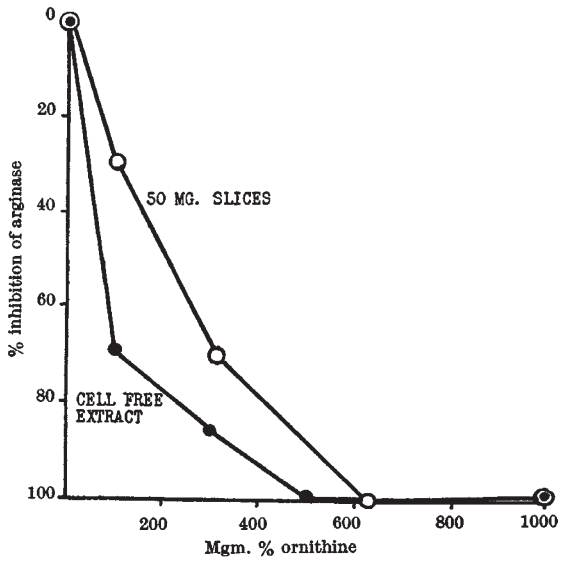

Fig. 1.
Arginine, 62 mgm. %. Time of incubation, 20 min.

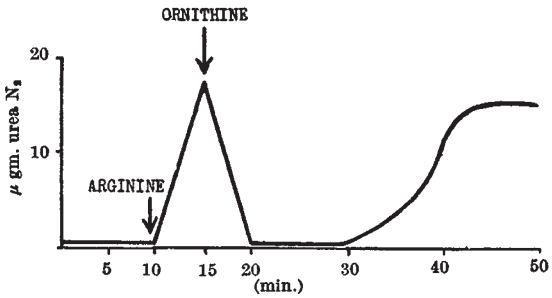

Fig. 2.
50 mgm. slices. Arginine 12·4 mgm. %. Ornithine 1·6 %.

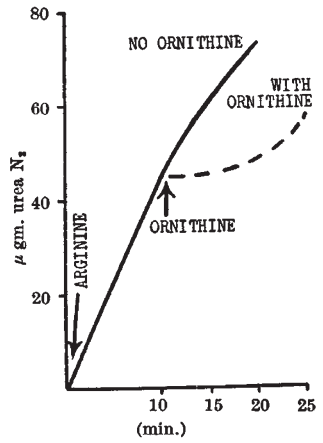

Fig. 3.
200 mgm. slices. Arginine 12·4 mgm. %. Ornithine 1·6%.

TABLE 1. INHIBITION OF ARGINASE IN LIVER EXTRACT AND LIVER SLICES BY EXCESS ORNITHINE

	Ornithine %	Time of incubation min.	Inhibition %
Effect of period of incubation :			
Slices	1·2	120	28
,,	1·2	45	77
,,	2·0	45	100
Extract	0·14	90	63
,,	0·14	20	64

TABLE 2. EFFECT OF TIME AND TEMPERATURE OF PRE-INCUBATION

Time of pre-incubation	Ornithine %	Inhibition %
0	1	76
30 min. (18°)	1	57
30 min. (18°)	0·7	51
30 ,, (37°)	0·7	24

NOTE : Arginine was added after pre-incubation of ornithine with liver slices.