be probably $P4/mnm$; but Dickens, Douglas and Taylor[2] directed attention to the similarity of the sigma phase structure to that of beta-uranium investigated by Tucker[4], according to whom the space group is $P4mn$. We have compared observed structure factors with those calculated from the atomic parameters proposed by Kasper *et al.* and by Tucker up to the copper K_α limit. Owing to the considerable absorption error, this comparison was only approximate, but our results showed comparable values with those calculated from Tucker's structure for all but three reflexions, while there were a large number of reflexions which did not fit the other structure. We therefore conclude provisionally that for vanadium–nickel Tucker's parameters are approximately correct. We have also obtained structure factors from powder photographs of the vanadium–nickel alloy where an absorption correction could be applied, and here the correspondence was very good.

On several of the photographs a faint spot, apparently corresponding to the (001) reflexion, was observed. The result was repeated several times and the spot shape appeared satisfactory. A reflexion corresponding to (003) was also found on two occasions; but it was not reproducible, and still fainter spots corresponding to (061) and (201) were also observed. These results could not be confirmed definitely as no Weissenberg camera was available and longer exposures gave very heavy backgrounds; but they indicate a possible tendency to ordering in which the glide plane of symmetry is partially destroyed. A one-to-one atomic ratio would permit a fully ordered structure in which alternate layers (and sub-layers) are composed entirely of one kind of atom, and the strongest superlattice reflexions from this structure up to the chromium K_α-limit would be (001) and (003) followed by (021), (023) and (061), which include all the observed reflexions.

A fuller account of this work will be published elsewhere.

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Biological Synthesis of Lactose from Carbon-14 Glucose

The synthesis of lactose from glucose by tissue slices of active mammary glands has been successfully demonstrated by earlier workers[1,2], and arteriovenous blood-sampling experiments have made it highly probable on quantitative grounds that glucose is the only significant precursor of the disaccharide *in vivo*.

In the present study carbon-14 starch was prepared by photosynthesis and administered to lactating rabbits by stomach-tube. After six hours, milk was collected and its lactose isolated. The analytical results confirm the earlier conclusions on the derivation of lactose in a way less open to the objections which can be raised against results drawn from blood-sampling experiments (see Folley[3]); for it will be seen from the accompanying table that the specific activities of the carbon of the lactose samples, and of the glucose and galactose fractions prepared from them by acid hydrolysis, are all sensibly the same.

Specific Activity of Lactose, Glucose and Galactose Carbon (counts/min./infinite thickness sample, with standard error of count)

Exp. 1.	Lactose	224 ± 5·0
	Glucose (assayed as $BaCO_3$)*	210 ± 20·4
	Galactose	212 ± 5·1
Exp. 2.	Lactose	252 ± 5·0
	Glucose (assayed as $BaCO_3$)*	242 ± 13·5
	Galactose	245 ± 3·8
	Galactose (assayed as galactosazone)	237 ± 6·8

* The carbon dioxide obtained by yeast fermentation of acid hydrolysate of lactose was collected as barium carbonate.

We infer from this that both parts of the disaccharide molecule are formed in equal measure from the same source—glucose—and that, although other substances could be conceived as contributing to the synthesis, their role must be either quantitatively negligible, or involve their prior conversion to glucose itself; for, any precursor of galactose that was not equally a precursor of the glucose bound in the lactose molecule would necessarily have diluted the activity of the galactose formed in our experiments relative to the activity of the glucose with which it was combined.

While these experiments relate directly only to lactose formation in the rabbit, we feel that they lend support to the conclusion recently reached elsewhere[4] from entirely different premises, that even in the ruminant there is no need for postulating any precursor for lactose, other than glucose.

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Formation of a Ferric-Perchlorate Ion-Pair Complex

In the course of a spectrophotometric investigation of the hydrolysis of the ferric ion in solutions of ionic strength greater than unity, evidence was obtained that ferric ions entered into complex formation with perchlorate ions. Although it has hitherto been widely assumed that perchlorate anions form no complexes, such interaction might well be expected with the smallest (and most highly charged) cations. Further experiments carried out with approximately 10^{-4} M ferric perchlorate in 1–7 M perchloric acid solutions in the wave-length range 2600–3600 A. confirmed the preliminary observations and provided quantitative data for the process.

The existing results are best interpreted on the assumption that only one complex is formed according to the thermodynamic law:

$$K_c^0 = \frac{[Fe^{3+}ClO_4^-]\,[ClO_4^-]^2\,\gamma_c^3}{[Fe^{3+}]\,[ClO_4^-]^3\,\gamma^4} = \frac{[Fe^{3+}ClO_4^-]}{[Fe^{3+}]\,[ClO_4^-]\,F},$$