and g-value symmetry of the new derivative. In this way it can be shown that the g value of the azide derivative varies from a maximum $g_{\perp}$ of $2 \cdot 8 \pm 0 \cdot 05$ to a $g_{\parallel}$ of $1 \cdot 70 \pm 0 \cdot 05$, with considerable distortion of axial symmetry. The occurrence of a single electronic transition with g values spread across the free-spin value indicates that the binding is of the d^2sp^3 type, leaving one unpaired spin with some orbital admixture, similar to the case of potassium ferricyanide[5].

Further measurements are in progress on other derivatives and with hæmoglobin and myoglobin of different species, to obtain as much detailed information as possible on the binding of the iron atom and the orientation of the hæm planes. We would like to thank Dr. J. C. Kendrew for supplying the single crystals.

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Spectrophotometric Method for the Estimation of Vitamin K_3

Reddy and Srinivasan[1] have described a method for the estimation of vitamin K and vitamin K_3 which is slightly different from that of Novelli[2]. During the course of our investigation on the biosynthesis of vitamin K in moulds, we found that the method of Reddy and Srinivasan was not suitable for determining microquantities of vitamin K. It was observed that, on standing, the intensity of the colour at the junction of the two layers increases, with the result that the intensity of colour is not uniform throughout the layer. In the present communication, we wish to describe a modified method which can be used to estimate vitamin K in the range 2–30 μgm.

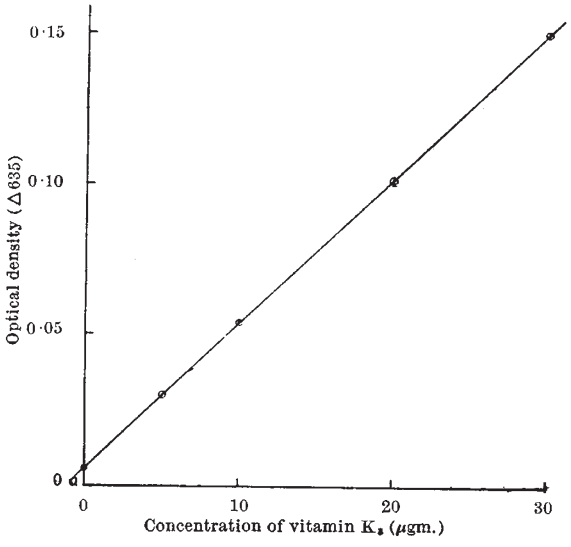

Fig. 1. Effect of concentration of vitamin K_3 on colour development

Vitamin K_3 solution (2–30 μgm.; 2-methyl-1,4-naphthoquinone) was shaken with 0·5 ml. of ethyl alcohol and to this was added 0·1 ml. of a saturated solution of 2 : 4-dinitrophenyl hydrazine in 2 *N* hydrochloric acid. After 10 min., 0·25 ml. of 20 per cent sodium carbonate was added and shaken well until the green colour appeared. 3 ml. of amyl alcohol, 1 ml. of ethyl alcohol and 1 ml. of water were added, shaken thoroughly and kept for 5 min. for the salts to go down. The amyl alcohol layer was taken and the density read at 635 mμ in a Beckman model *DU* spectrophotometer (1 cm. light-path). The colour obtained in this method is stable for 10 hr. Distilled ethyl and amyl alcohol were used throughout this investigation. Fig. 1 gives the relation between the optical density (Δ 635 and the concentration of vitamin K_3).

Details of the application of this method to estimate microquantities of vitamin K in moulds will be described elsewhere.

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The 'Queen-Substance' of Honeybees and the Ovary-inhibiting Hormone of Crustaceans

In the course of work on the social organization of honeybee communities[1], it has been found that worker honeybees obtain a substance ('queen-substance') from their queens which, if obtained in sufficient quantity, inhibits development of their ovaries and the production of further queens. It will also, under experimental conditions, inhibit ovary development in worker ants (*Formica fusca*) (unpublished work, C. G. B.). A similar hormone has been shown to inhibit ovary development in decapod crustaceans[2]. These substances appear to be similar in several respects. Thus both are stable to heat and to acids but less so to alkalis, soluble in acetone and alcohol, both are active, at least under certain conditions, when taken orally, and both serve to inhibit development of the ovary and related phenomena.

We decided, therefore, that it might prove of interest to administer honeybee queen-substance to prawns and also the ovary-inhibiting hormone of prawns to bees. The results of preliminary experiments are now available.

The queen-substance from a single mated queen honeybee (*Apis mellifera* L.) was extracted in alcohol. This extract was mixed with water, a little palmitic acid added, the *p*H adjusted to 6·2 and the alcohol and excess water distilled off. A control emulsion was prepared in the same way starting with alcohol alone.

Three groups, each consisting of twelve female prawns, were used. The prawns in group I remained intact and received no injections. The eye-stalks of the prawns in group II were severed, thus removing