amylopectin impurity, the rates of reaction, as measured by the changes in the iodine-staining powers of the digests, were markedly different; in general, the higher the blue value[6] of the amylose the slower was the reaction-rate. Indeed, with amyloses having the highest blue value there was an appreciable time-lag in the initiation of the reaction and, thereafter, the rate of reaction increased progressively. The lag phase was reduced considerably and the subsequent reaction-rate increased by the introduction of potato amylopectin, the native amylopectin of *Polytomella cœca*, glycogen, dextrins, or commercial maltose, whereas inulin, xylan, dextran, cellobiose, lactose, sucrose, glucose, galactose or fructose did not show this effect. Thus it would seem that, for the display of optimum activity, samples of the *Q*-enzyme of *Polytomella cœca* require the presence of a carbohydrate primer containing glucose units mutually linked by 1 : 4-bonds in the α-configuration. The autocatalytic reaction observed with the purest amyloses in the absence of added primer may be attributed to the ability of the products of the reaction to function as primers.

That the observed effects were not due to the activation of possible traces of amylase impurities in the enzyme samples was shown by the fact that the small reducing powers developed during the course of the enzyme action were not influenced by the presence or absence of primer. Pending further work on this problem, we tentatively suggest that it is the *Q*-enzyme itself which requires the carbohydrate primer. If this be true, then the phenomenon is analogous to that obtaining in the phosphorylase-catalysed synthesis of linear chains, for it is already generally agreed that a 1 : 4-α-linked glucose polymer is required to initiate the synthesis of amylose from glucose-1-phosphate[9].

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S. A. Barker
A. Bebbington
E. J. Bourne

Chemistry Department,
University, Edgbaston,
Birmingham 15.
July 26.

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Pregnan-7-ol and Pregnan-12-ol

Ruff and Reichstein[1] have described a pregnan-7-ol and a pregnan-12-ol prepared by Wolff–Kishner reduction of acetoxypregnane ketones. They state that these two substances are probably the 7α- and 12α-hydroxy compounds; but since epimerization during Wolff–Kishner reduction is not excluded, they name them provisionally '7ξ' and '12ξ'[2]. The molecular rotations of pregnan-7ξ-ol and of pregnan-12ξ-ol and their derivatives show that the two new compounds are indeed 7α and 12α.

Barton and Klyne[3] have summarized the molecular rotation contributions of a large number of substituents in the steroids. The terms ΔO and ΔA have been used for the contributions of hydroxyl and acetoxyl groups, and Δ_1 (Barton[4]) for the molecular rotation difference on acetylation ($\Delta A - \Delta O$). The ΔO, ΔA and Δ_1 values for pregnan-7ξ-ol and -12ξ-ol are compared with the standard values in the accompanying table.

Molecular rotation difference	Compound	Δ Values for ξ compounds[1]	Standard Δ values[2] α	β
ΔO	Pregnan-7-ol	− 54	− 79	+95
ΔO	,, -12-ol	+ 43	+ 93	+50
ΔA	,, -12-ol acetate	+205	+280	+76
Δ_1	,, ,,	+162	+187	+26

The ΔO value for pregnan-7ξ-ol shows that it must have the 7α configuration. While no conclusions can be drawn from the ΔO value of pregnan-12ξ-ol, the ΔA and Δ_1 values for its acetate prove clearly that it must have the 12α configuration.

W. Klyne

Postgraduate Medical School,
London, W.12.

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Use of Nuclear Research Emulsions for Fast-Neutron Dosimetry

The use of nuclear research emulsion for the measurement of fast neutron doses has been described by Titterton[1]. The purpose of this communication is to describe an extension of this technique to the measurement of energy absorption in hydrogenous material irradiated by fast neutrons.

A unit of biological significance in irradiation of living material is the energy absorption of the material from primary or secondary ionizing particles. It has been shown theoretically by Mitchell[2] that in tissue irradiated by fast neutrons of energies between 0·5 and 5 MeV., 90 per cent of the energy deposition is due to elastically scattered protons. Such recoil protons may be observed and their ranges measured in nuclear research emulsions exposed to fast neutrons. On the assumption that the ratio of the energy deposition per unit volume of emulsion and tissue is equal to the ratio of the atomic density of hydrogen in the two materials, the energy deposition in tissue can thus be determined.

Ilford *C*.2 plates of 400 microns nominal thickness were exposed to a beam of D + D neutrons from the electrostatic generator at the Radiotherapeutic Research Unit, Hammersmith; the maximum spectral energy of the neutrons was 5 MeV. The energy deposition in a volume of emulsion defined by a rectangular parallelepiped was determined by measurement of the ranges of all proton tracks observed in