spectrum of the latter on reacting with alkaline acetyl acetone and the *p*-dimethylaminobenzaldehyde reagent⁴ was identical with those given by glucosamine and galactosamine.

Although the amino-sugar when deacetylated could be distinguished from glucosamine and galactosamine using columns of 'Zeo-Karb 225', this was not possible on paper chromatograms developed in butanol/pyridine/water or *s*-collidine, where it occupied a position identical with that of glucosamine. When phenol/ammonia was employed as solvent, the sugar could not be distinguished from galactosamine, and in butanol/acetic acid/water (4:1:5) it did not separate from the glucosamine-galactosamine position.

Examination by paper chromatography of the products of its oxidative deamination with ninhydrin⁵ revealed the presence of a pentose which was neither arabinose nor ribose but which occupied a position close to that of lyxose or xylose. Since lyxose and xylose are not widely separated in the solvent systems employed, that area of the chromatogram corresponding to the lyxose-xylose region was eluted and the eluate examined by paper electrophoresis using a 0.05 *M* borate buffer (pH 9.6). Under these conditions, lyxose and xylose separated completely and the pentose formed by the amino-sugar occupied a position identical with that of lyxose. It is therefore concluded that the sugar is the epimer of galactosamine, namely, 2-amino-2-deoxy talose, and that the preparation of *N*-acetyl galactosamine used contained some *N*-acetyl talosamine. Since talosamine has not been detected in certain other samples of galactosamine isolated from sheep tracheal cartilage and which had not been *N*-acetylated, it cannot be assumed that the sugar occurs naturally.

The behaviour of talosamine on paper chromatograms using a variety of solvent systems indicates that a spot in the position of glucosamine or galactosamine is insufficient evidence for the identification of these sugars. A satisfactory method of analysis is the use of columns of 'Zeo-Karb 225' resin with 0.33 *N* hydrochloric acid as eluant, combined with a chromatographic examination of the *N*-acetylated amino-sugars on paper.

Since this work was completed, Muir⁶ has described the presence of talosamine in acid hydrolysates of chondroitin sulphate isolated from hyaline cartilage. The unexpectedly low *R*(glucose) value recorded by Muir⁶ for this sugar in butanol/acetic acid/water (4:1:5) disagrees with the present results, since talosamine obtained from its *N*-acetylated derivative failed to separate from glucosamine and galactosamine in this solvent system.

I wish to thank Prof. W. T. J. Morgan for gifts of galactosamine and *N*-acetyl galactosamine. The technical assistance of Miss Joan Pleasants is acknowledged.

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Isolation of 3:4:9:10-Dibenzopyrene from Coal-Tar

By fractionation of coal-tar on alumina, Berenblum and Schoental¹ demonstrated that the fraction preceding and that following the one containing 3:4-benzpyrene were carcinogenic to rodents though free from spectrographically detectable amounts of 3:4-benzpyrene. Fractional crystallization of picrates from the fraction following the one containing 3:4-benzpyrene gave, among others, reddish-brown needles melting at 160–189° C. These picrates were decomposed by chromatography on alumina, and after repeated crystallizations from various solvents yielded yellow glistening scales, melting with some softening at 280° C.

This compound, giving with concentrated sulphuric acid a green solution with red fluorescence, has recently been re-examined and identified as 3:4:9:10-dibenzopyrene by its fluorescence spectrum showing main bands at 432 and 460 mμ in cyclohexane, identical with those of an authentic specimen, and by the absence of depression of its melting point when mixed with 3:4:9:10-dibenzopyrene^{2,3}.

I am indebted to Dr. E. Clar, Chemistry Department, University of Glasgow, for a specimen of authentic 3:4:9:10-dibenzopyrene and to Mr. M. J. Lyons, Department of Cancer Research, Royal Beatson Memorial Hospital, Glasgow, for the fluorescence spectra.

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Conversion of Glycogen to Sorbitol and Glycerol in the Diapause Egg of the Bombyx Silkworm

In the course of biochemical studies¹ on the embryonic diapause of the *Bombyx* silkworm, it has been shown that the glycogen content of the egg decreases markedly at the onset of diapause and reaches the lowest level at about thirty days after oviposition. When diapause is broken by cold treatment, glycogen increases progressively even at low temperature and regains the initial level almost completely. Pursuing the fate of glycogen during the diapause period, I have found that it is not consumed as an energy source, but it is converted to other substances including the following: sugars and their polymers, fat, lactic acid, gluconic acid and other organic acids such as Krebs cycle members, phosphoric esters and amino-acids.

It has been found that the main bulk of glycogen is converted into two kinds of polyhydric alcohols, namely, sorbitol and glycerol. Fig. 1 shows the chromatogram of the polyhydric alcohols extracted from the diapause eggs and Table 1 gives the *R_F* values of these alcohols in various solvents. It is apparent from the chromatogram reproduced as Fig. 1 that the marked decline of glycogen at the onset of dia-