which are as yet unpublished, found that in a bull dosed with labelled phosphate it required some 62 days for the sperm deoxyribonucleic acid to be ejaculated with maximal activity: a value which is in good agreement with the present results. The sperm deoxyribonucleic acid possesses some low activity before the appearance of the main activity peak; such a phenomenon did not occur in the ram and it is consequently difficult to assess its significance from an experiment on a single animal. In the ram it was suggested that the difference between the times of ejaculation of the main sperm phospholipid and deoxyribonucleic acid peaks was due to the fact that while the former would be added or turned over up to the end of spermatogenesis, no new deoxyribonucleic acid would be formed after the mitotic divisions forming the primary spermatocyte. If this explanation is correct, this would mean that in the present experiment the average time for the primary spermatocytes to be converted into the finished spermatozoa would be 39 days.

Bronsch and Leidl[5] have recently found that in bulls given labelled phosphate intramuscularly maximum activity was ejaculated in the semen 14 days after its administration: all the activity being found in the seminal plasma and none in the sperm. The present experiment agrees with these observations in that the seminal plasma total phosphorus reaches peak activity in the 11–14-day period after isotope administration, but shows in addition that at this time a small but significant part of the labelling is present in the sperm and cannot be removed from it by saline washing.

I am indebted to Miss N. Hemington and Mr. R. White for valuable laboratory assistance, and Messrs. Clarke and Wise for assistance in handling the bull.

R. M. C. Dawson

Biochemistry Department,
Agricultural Research Council
Institute of Animal Physiology,
Babraham, Cambridge. Jan. 23.

[1] Dawson, R. M. C., *Biochem. J.*, **68**, 512 (1958).
[2] Schmidt, G., and Thannhauser, S. J., *J. Biol. Chem.*, **161**, 83 (1945).
[3] Dawson, R. M. C., Mann, T., and White, I. G., *Biochem. J.*, **65**, 627 (1957).
[4] Bishop, D. W., and Weinstock, I., *Anat. Rec.*, **101**, 731 (1948).
[5] Bronsch, K., and Leidl, W., *Zbl. Veterinärmed.* **4**, 175 (1957).

Glycerol Metabolism of the Brown Rot Mould *Poria vaillantii*

The characterization of the chemically unchanged lignin of woody tissues requires the removal of the cellulose with which it is associated. The successful utilization of wood-destroying organisms for the isolation of large amounts of enzymically liberated lignin[1] and for the elucidation of the mechanism of the biogenesis of lignin building stones[2–5] prompted an attempt at the isolation of a cellulolytic enzyme from the wood-destroying mould *Poria vaillantii*[6]. During studies of the cultivation of the mould, an attempt was made to use a medium containing glycerol instead of glucose as the sole carbon source, since glucose interferes in the assay of the cellulolytic enzyme which is obtained from the filtrates.

After 4–6 weeks of growth on a glycerol medium, the culture filtrates were collected and found to contain reducing substances. Analysis of the concentrated filtrate revealed the presence of acetaldehyde, dihydroxyacetone, and glucose. Acetaldehyde was identified as its dimedone derivative. The product after three recrystallizations did not depress the melting point of an authentic sample prepared in the same manner. The concentrated filtrate gave positive Seliwanoff and phosphomolybdate tests, indicating the presence of dihydroxyacetone. Glucose was identified by extraction from a paper chromatogram as its 2,4-dinitrophenylhydrazone derivative. There was no depression of melting point of a mixture of this compound and an authentic hydrazone specimen.

A cyclic mechanism, by which glucose could arise from glycerol, was first postulated by Horecker[7].

The identification of the above intermediates in the metabolic filtrates of the mould *Poria vaillantii*, grown on glycerol as sole carbon source, suggests that this cycle may be operative in the metabolism of this organism.

This study was carried out within a programme sponsored by the National Science Foundation and the U.S. Public Health Service.

Bienvenido C. Sison, jun.
Walter J. Schubert

Department of Organic Chemistry
and Enzymology,
Fordham University,
New York 58.

[1] Schubert, W. J., and Nord, F. F., *J. Amer. Chem. Soc.*, **72**, 978 (1950).
[2] Eberhardt, G., and Nord, F. F., *Arch. Biochem. and Biophys.*, **55**, 578 (1955).
[3] Eberhardt, G., *J. Amer. Chem. Soc.*, **78**, 2832 (1956).
[4] Eberhardt, G., and Schubert, W. J., *J. Amer. Chem. Soc.*, **78**, 2835 (1956).
[5] Nord, F. F., Schubert, W. J., and Acerbo, S. N., *Naturwiss.*, **44**, 35 (1957).
[6] Sison, jun., B. C., Schubert, W. J., and Nord, F. F., *Arch. Biochem. Biophys.*, **68**, 502 (1957).
[7] Horecker, B. L., *Brewer's Digest*, **28**, 214 (1953).

Breeding of Dragonflies in Temporary Waters

Throughout Western Australia there are five or more consecutive months in which there is little or no rain. Over the greater part of the State the mean annual rainfall is less than 20 in., derived mainly from a few heavy falls. The surface-waters which result from these rains usually persist for a few months at the most; there are very few permanent, natural fresh waters. In the south-west (as at Perth), the rainfall exceeds 35 in. and is derived from more frequent lighter falls, but even here many of the surface-waters dry up from about November until April or May.

These temporary waters are colonized by many aquatic insects, and several species of both Zygoptera and Anisoptera, although not confined to such places, breed commonly in them. These include five species of *Austrolestes*, *Anax papuensis*, *Hemicordulia tau*, *Orthetrum caledonicum* and *Diplacodes haematodes*.

To breed successfully in temporary waters larvæ must either survive drying or complete their development in six months or less. Although Tillyard[1] found that larvæ of *Synthemis eustalacta* (a swamp species from south-eastern Australia) could withstand drying in sand for four months, there is no evidence that the common species of temporary ponds in Western Australia actually do so. Newly filled ponds have shown only young larvæ, and larvæ at all stages of development have been found dying in large numbers in pools from which the free water has evaporated. However, larvæ do complete development and emerge before the pools dry, and there can be little doubt that these have developed