Disaccharides : utilised : saccharose, maltose, trehalose, melibiose, lactose ; not utilised : cellobiose.

Trisaccharides : utilised : raffinose, melecitose.

Pentoses : utilised : xylose ; not utilised : arabinose, rhamnose.

Glucosides : utilised : α-methyl-*d*-glucoside ; not utilised : β-methyl-*d*-glucoside, helicin, arbutin, salicin.

Polysaccharides : utilised : starch, glycogen ; not utilised : inulin.

Polyhydric alcohols : utilised : mannitol, sorbitol ; not utilised : erythritol, dulcitol, inositol.

All the substances are as effective as cane-sugar ; that is, the duration of adult life exceeded a month, except in the case of xylose, lactose, starch and glycogen, on which the flies live only one to two weeks.

These results differ considerably from those obtained by previous workers on the bee[3,4]. Bees utilise cellobiose, arabinose and xylose very well, but mannose, lactose and melibiose not at all. Galactose is utilised by them to a very small extent only.

These results concerning utilisation of sugars can easily be explained on Weidenhagen's[5] system of carbohydrases by assuming the presence of the following enzymes in the gut of the flies : α-glucosidase (substrate : α-methyl-*d*-glucoside, saccharose, maltose, trehalose, melecitose) ; α-galactosidase (substrate : melibiose, raffinose) ; very probably β-*h*-fructosidase (substrate : saccharose, raffinose) and a weak β-galactosidase (substrate : lactose). β-glucosidase (substrate : β-methyl-*d*-glucoside, cellobiose, phenolglucosides) is clearly not present.

I should like to express my thanks to Prof. W. N. Haworth for certain of the rare sugars used in these experiments.

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Points from Foregoing Letters

SIR J. J. THOMSON draws a picture of the quantum of light originating when an electron falls from one energy level within the atom to another. The electron would oscillate about the new level, emitting the energy due to its fall in the form of a photon, consisting of a train of circular lines of (electric) force. The centres of these circles would move along a straight line with the velocity of light and the circles themselves would move at right angles to their plane. The energy in the wave front would be concentrated round the axis and thus confined within a cylindrical pencil, without radial flow of energy extending throughout space.

Dr. B. Cavanagh and Prof. H. S. Raper describe the use of a fat containing deuterium for studying the destination of fatty acids after absorption in the body. They find that lipines of liver and kidney take up the deuterium-containing fatty acids and are therefore probably actively concerned in the metabolism of fats.

Photographs showing electron tracks (1½–3 million electron volts energy) which end abruptly in nitrogen gas (in a magnetic field of 500 gauss) are submitted by Prof. D. Skobeltzyn and E. Stepanowa. Similar results with argon have been described by L. Leprince-Ringuet. The value of the effective capture cross-section calculated cannot be readily explained on present data, and the authors raise the question whether the formation of neutrinos should be postulated in order to account for the apparent non-conservation of energy.

During the electro-deposition of copper, ridges are deposited on the cathode plates if they move at certain speeds through the electrolyte. Photographs of such ridges, giving a record of the stream lines in steady motion of the liquid around differently shaped obstacles, are submitted by Dr. E. P. Harrison and H. Gollop.

The sudden appearance and expansion of circular patches on fresh surfaces of some solutions of soaps or other substances which concentrate at the surface are described by Dr. D. A. Wilson and Dr. T. F. Ford. They explain this effect, first observed by Miss Pockels, as due to the formation of local centres of concentrated scum during the process of sweeping the surface. These bits of scum re-expand upon the fresh surface. Drastic sweeping eliminates this 'pockeling' effect.

The greater acidity of salicylic acid and derivatives over benzoic and other hydroxyacids is explained by Dr. W. Baker as due to chelation (formation of a ring by means of a co-ordinated valence, an atom sharing with another atom in the same molecule two of its electrons). Dr. W. Baker draws an analogy between such suggested linking in 2 : 6-dihydroxybenzoic acid and that admitted in 2-nitroresorcinol.

Two stages in prehistoric human development may belong to the same type without necessarily being simultaneous, writes T. P. O'Brien in answer to Prof. Dreyer's criticism that, if the East African Early Acheulean and Middle Stellenbosch belong to the same type, then human history began later in South than in East Africa. He suggests that flakes with the "Clacton angle" found in early handaxe industries at both places do not necessarily prove the presence of Clactonian or proto-Levalloisian.

The percentage of amino-acids (tryptophane, aspartic acid) in green plants (peas, clover) is found by Prof. A. I. Virtanen and T. Laine to vary at different stages of growth. This, they point out, may mean either that the ratio of various proteins changes during growth or that protein molecules grow continuously by addition of new amino-acid groups.

From the ability of blow-flies to live on different kinds of sugar and sugar compounds or derivatives, Dr. G. Fraenkel deduces the presence of several enzymes in the gut of the fly.

ERRATUM. The half-period of the short-lived radioactive component of silver, referred to in this column last week, should have been 22 sec. instead of 44 sec.