Examples of the measured complexes, their colors, and λ_{max} of their fluorescence are given in Table 1. In the red-orange 1:2 cuprous iodide derivative of methyl isonicotinate, no fluorescence was observed. However, when exposed to UV radiation for a long time it changes to the yellow 1.1 complex and thereafter fluoresces. On the other hand, the complexes which are not fluorescent show intense M-L charge-transfer bands in the visible region (440-510 nm), while the vellow 1:1 complexes show weak absorption in the vicinity of 420 nm, in the solid state. It appears from Table 1 that the 1:1 complexes are fluorescent irrespective of the present anion.

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The Isolation of 6-Hydroxyhyocyamine from a Duboisia Hybrid

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6-Hydroxyhyoscyamine is an intermediate in the biosynthesis of scopolamine [1] and has been isolated in low yield (0.005%) from a hybrid of Datura terox and Datura stramonium [2]. Cultivation of Duboisia species as a major source of scopolamine has led to high yielding hybrids of Duboisia leich-hardtii and Duboisia myoporoides. Analysis of samples of the hybrid supplied by growers of Duboisia for scopolamine indicated the presence of another major alkaloid. This alkaloid was found to be 6-hydroxyhyoscyamine. A yield of 0.5% was recorded.

Powdered Duboisia hybrid leaves (7 kg) were extracted with 95% ethyl alcohol. The aqueous concentrate after neutralization was defatted by extraction with diethyl ether. The alkaloid bases, fractionally liberated by adding sub-equivalent amounts of alkali were extracted with chloroform. A crystalline base (mp 56 °C) was isolated from the strongly basic fractions (35 g). It gave (-)6-hydroxyhyoscyamine hydrobromide (mp 161°C, $\alpha_D^{25} = -7.0^\circ$). Found: C 52.7, H 6.1, N 3.6; C₁₇H₂₃O₄N HBr requires C 52.9, H 6.2, N 3.6%. An infra-red spectrum of the hydrobromide was identical with that of an authentic sample [3]. Mass spectral analysis gave a parent ion m/e 306. Hydrolysis of the base [4] gave tropic acid (mp 111 °C), which by mass spectral analysis had a parent ion m/e 166, and an alkamine 3,6-dihydroxytropane (mp 210 °C).

The alkamine, neutralized with 0.2 N sulphuric acid and treated with aqueous sodium picrate solution, gave 3,6dihydroxytropane picrate (mp 252 °C).

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Sodium N-(cyclopentylmethyl)-sulfamate: a New Synthetic Sweetener

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The removal of N-cyclohexylsulfamic acid salts (cyclamates) from the GRAS list of food additives of the Food and Drug

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Fig. 1. Iso-sweetness curves of sodium cyclopentylmethylsulfamate related to saccharose. (A) Sodium cyclopentylmethylsulfamate, (B) association of sodium cyclopentylmethylsulfamate with saccharin in a 10:1 ratio

Administration of the United States [1], following proof of carcinogenic effects in animals, has renewed interest in synthetic sweeteners

Although the replacement of the cyclohexyl group by its inferior and superior homologs causes sweetness in sulfamates to decrease or disappear [2], we attempted to replace the cyclohexyl group of cyclamates by a cyclopentylmethyl group, a close structural analog of the cyclohexyl group. Cyclopentylmethylsulfamates are unlikely to induce carcinogenic effects because, unlike cyclamates [3, 4], they cannot metabolically liberate a cyclic amine (amino group directly linked to a cycle).

Cyclopentylmethylsulfamic acid C₅H₉CH₂NHSO₃H (M P)210 °C) was obtained by sulfonation with CISO₃H [5] of cyclopentylmethylamine prepared by reduction of cyanocyclopentane [6]. Its sodium salt $C_5H_9CH_2NHSO_3Na$ (M.P. 265°C) and its calcium salt $(C_5H_9CH_2NHSO_3)_2Ca$ H_2O (M.P. 295°C) are soluble and stable in water and have, like the cyclamates, a sweetening property.

Their sweetening ability differs a great deal with concen-tration: for example, the sodium salt (Fig. 1, A) is at a concentration of 0.06 g/l (absolute threshold) 60 times sweeter than saccharose, but it is only 10 times sweeter at a concentration of 4 g/l. In addition, at concentrations above 4 g/l an off-taste appears, which partly masks the sweetness. Consequently, we prepared an association of the sodium salt with saccharine (in a 10:1 ratio), as is done with cyclamates [7]. Our association yields a sweetness equivalent to 110 g/l of saccharose (Fig. 1, B) without any off-taste or after-taste.

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Photosynthetische ¹⁴CO₂-Assimilation durch den Endosymbionten Platymonas convolutae

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Die Symbiose zwischen der einzelligen grünen Alge Platymonas convolutae Parke et Manton und dem marinen Plathelminthen Convoluta roscoffensis Graff (Plathelminthes: Turbellaria, Acoela) ist ein klassisches Beispiel für die Konsortien von endosymbiontischen einzelligen Algen und aquatischen Evertebraten [1]. Sie ist entwicklungsphysiologisch [2, 3] und fein-