β-cells. The β-cells synthesize and store insulin. It is therefore likely that the concentration of glucose in these cells will be lower than elsewhere in the body. A specifically low concentration of glucose in the β-cells may, in view of the above results, account for the selectivity of alloxan for these cells.

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The Attempted Dehydrogenation of 3,4-Disubstituted Thiolanes[1]

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We have subjected 3,4-thiolanediol and its diester and diethyl ether derivatives to dehydrogenation procedures in an attempt to prepare the corresponding thiophene analogs. Thiolane itself has been dehydrogenated to thiophene in 32% yield, using platinized charcoal at 400°, and in 18% yield with nickel sulfide on alumina at 350° (*1*); in each case the remainder of the material was converted to hydrogen, hydrogen sulfide, olefins, and alkanes. Passage of thiolane vapors through a "red-hot" glass tube is reported to give traces of thiophene (*2*). The syntheses of thiophene and its homologs from hydrocarbons and sulfur probably involve thiolane intermediates which subsequently undergo dehydrogenation (*3*), and sulfur and thiolane under pressure do give small yields of thiophene (*4*).

DL-1,4-Dichloro-2,3-dihydroxybutane (*5*) was cyclized to 3,4-dihydroxythiolane (*6*) with sodium sulfide. The latter was converted to the diacetate and dibenzoate esters. The diacetate was also prepared by cyclizing DL-1,4-dichloro-2,3-diacetoxybutane (*5*). 3,4-Diethoxythiolane was prepared by a slight modification of the method of Patterson and Karabinos (*7*).

The four substituted thiolanes were heated with sulfur under dehydrogenating conditions with and without solvents. When short reaction times were employed, most of the starting material was recovered unchanged. Under more vigorous conditions decomposition occurred, with the concomitant evolution of hydrogen sulfide. Similar results were obtained using platinum on charcoal as the dehydrogenating agent. Neither of the diesters was attacked by chloranil.

In a series of vapor phase runs, solutions of sulfur and the dibenzoate or the ether were passed under nitrogen pressure through a tube packed with "noncatalytic" fused alumina balls[4] and maintained at temperatures varying from 450° to 525°. Decomposition occurred in every case. Attempts to split out two molecules of acid from the diester by pyrolysis in the absence of sulfur (*8*) were also unsuccessful.

We believe that dehydrogenation took place during these various experiments, and that the substituted thiophenes then decomposed. The instability of 3,4-dihydroxythiophene has been mentioned by Fager (*9*) and by Turnbull (*10*). The ethoxy, benzoxy, and acetoxy substituents would tend to increase the susceptibility of the thiophene nucleus to degradative attack because of their action in increasing the electron density in the ring.

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The Response of Two Species of Pine to Various Levels of Nutrient Zinc[1]

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The effect of a lack of nutrient zinc on the growth of a number of forest tree species has been reported by several workers (*1–4*). In general, the symptoms of all the species studied have been quite similar, being subsumed under the heading of little-leaf or rosette disease. These names are quite descriptive, since the affected trees usually exhibit diminished bud growth, reduction of leaf size, and chlorosis of varying degrees of severity. The symptoms are also concordant with the known effect of a lack of zinc in reducing the auxin level of the deficient plants. Although naturally occurring zinc deficiencies have been

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