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Ceryl Alcohol from the Grass, *Agrostis*.

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Bondzynski and Humnicki¹ isolated from horse dung an unsaponifiable substance which they named hippocoprosterol. It was assumed to be a reduced sterol, analogous to coprosterol, but representing a greater degree of reduction. It was later obtained, impure, by Wilenko.² Dorée and Gardner³ observed that hippocoprosterol from the horse, cow, sheep, and rabbit is not a product of sterol metabolism, but is merely an unaltered constituent of the grass ingested by these herbivora. Considering its origin, they renamed it chortosterol.

Collison and MacLean⁴ observed recently that the alcoholic constituent of spinach leaves is identical with the ceryl alcohol of Chinese insect wax. Similarity in physical properties and percentage composition suggested to us that all these products are essentially one and the same substance. Experiments were begun with the grass known as bent, but they were discontinued after we saw the comprehensive report by Pollard, Chibnall and Piper.⁵ These workers indicated that hippocoprosterol is ceryl alcohol, the latter being defined as a fatty alcohol mixture having a mean carbon content of about C₂₇ and a melting point of about 80°. In cocksfoot and perennial ryegrass they found the ceryl alcohol to consist predominantly of *n*-hexacosanol.

Our limited experiments with a third species of grass confirm this work. The bent, *Agrostis* (Sp.), was obtained as clippings from a putting green almost free of other vegetation. Air-dried, it was extracted with hexane, and the crude wax was boiled with alcoholic KOH. The solution was treated with alcoholic CaCl₂, filtered hot, and cooled to 20°. The crude ceryl alcohol was treated with charcoal in hexane, and again in benzene. The yield, after losses, was about 1% of the dry grass.

This ceryl alcohol melted at 80.3°. Ceryl alcohol from Chinese insect wax was similarly prepared, except for no charcoal treat-

¹ Bondzynski, S., and Humnicki, V., *Z. physiol. Chem.*, 1896, **22**, 396.

² Wilenko, M. G. G., *Bull. internat. Acad. Sci. Cracovie*, 1906, 20.

³ Dorée, C., and Gardner, J. A., *Proc. Roy. Soc. London, ser. B*, 1908, **80**, 212.

⁴ Collison, D. L., and MacLean, I. S., *Biochem. J.*, 1931, **25**, 606.

⁵ Pollard, A., Chibnall, A. C., and Piper, S. H., *Biochem. J.*, 1931, **25**, 2111.

ment. It also melted at 80.3°. The 2 in admixture gave no depression of melting point. These melting points disregard the persistence of a "ghost" which, in the grass alcohol lasted for nearly 3°, and in the insect wax alcohol for about 2° above the figures given. The alcohol from grass solidified at a slightly lower temperature than that from insect wax, and it was also slightly less soluble in ether. Both specimens showed only general absorption in the ultraviolet region, that from grass being somewhat the more opaque. In other respects the 2 were indistinguishable. It appears that the ceryl alcohol from *Agrostis* is essentially the same substance, perhaps with a slightly higher mean carbon content, as that from the 2 grasses first investigated.

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Inhibition of Hypoglycemic Perspiration by Spinal Anesthesia.

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When the blood sugar falls to a critical level, many manifestations of sympathetic excitation present themselves in the so called hypoglycemic syndrome. The investigations of Cannon, McIver and Bliss¹ with the denervated heart, of Abe² with the denervated iris, of Houssay, Lewis and Molinelli³ with their cross-circulation preparations, and others,⁴ indicate that insulin hypoglycemia is associated with a discharge of epinephrine from the adrenal medulla. Inhibition of the sympathetic adrenal mechanism by any means (sympathectomy, splanchenectomy adrenal medulla ablation, ergotamine poisoning) prolongs the hypoglycemia. This indicates that epinephrine plays an important rôle in the regulation of and in compensation for any abnormal diminution of the blood sugar.

In man, we have no direct evidence that the phenomena observed during hypoglycemia are the result of excitation of the sympathetico-adrenal mechanism; our evidence is only inferred from the animal experimentation. During the course of studies on hypo-

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¹ Cannon, McIver and Bliss, *Am. J. Physical*, 1924, **69**, 46.

² Abe, *Arch. Exp. Path. Pharm.*, 1924, **103**, 73.

³ Houssay, Lewis and Molinelli, *Compt. rend. Soc. Biol.*, 1924, **91**, 1011.

⁴ MacLeod, *Carbohydrate Metabolism and Insulin*.