Brief Notes and Comments

The Posthumous Misfortune of Captain Bligh of the "Bounty"

Hypoglycemia from Blighia

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The career of William Bligh (1754-1817) was beset by some difficulty in troubled times. He is chiefly remembered for a mutiny on his ship, the *Bounty*, in the South Seas in 1789. This story is too well known, at least to those who have seen the movies, to require an anecdote. It is less well known that, in 1791, he set out again for Tahiti with another ship and crew and eventually succeeded in landing a cargo of bread-fruit trees, *Artocarpus*, in the West Indies. As captain of the *Director* in 1797, he was put ashore when his ship's crew joined the mutiny at the Nore; however, he commanded that ship with distinction at the battle of Camperdown that year, as he did the *Glatton* at Copenhagen (1801).

In 1782, Botany Bay in Australia was suggested as a possible residence for the United Empire Loyalists who left the United States for Canada after the War of Independence. These settlers went instead to Nova Scotia and Botany Bay, near the present city of Sydney, Australia, became a penal colony. Captain Bligh was sent out on the recommendation of Sir Joseph Banks (1743-1820) to become the fourth Governor of this settlement. History repeated itself for Bligh in that there was an insurrection; the Governor was arrested and imprisoned by a group led by an army officer, Major George Johnston. Johnston was brought home to be court-martialled and was duly "cashiered"; Bligh was promoted to Rear-Admiral and later to Vice-Admiral.

He enjoyed the continuing patronage of Banks who was President of the Royal Society for forty years. After a voyage with Captain James Cook (1728-1779), Banks formed a habit of sending out explorers to various parts of the world, often in the dual roles of surgeon and botanist, to bring back plants to Kew Gardens. During the reign of George III, seven thousand exotic plants and shrubs were introduced into England and by far the greater part of these were sent home by his plant collectors.[1]

Akee or Ackee is a colloquial name for an African tree, *Blighia sapida*, which grows to forty feet or more in height. It is very common on the island of Jamaica and has become popular as a curiosity in South Florida.[2] The fruits, which are up to four inches long, contain large black seeds each attached to a whitish aril, botanically an appendage or an outer covering of the seed.[3]

Eating of the unripe arils or use of the water in which unripe arils have been boiled to make stew, can result in the 'vomiting sickness' of Jamaica. This disease of undernourished human beings, especially children, has been more or less conclusively linked with ingestion of akee.[4] Vomiting sickness appears epidemically among children and sometimes adults in family groups during winter months. The principal findings are marked to severe hypoglycemia and fatty change with glycogen depletion from the liver cells. Chemical compounds of crystalline polypeptide nature known as hypoglycins A and B have been isolated from the seeds; the more potent hypoglycin A was found in the arils of unripe fruit.[5] About 5,000 deaths in Jamaica between 1886 and 1950 have been attributed to akee poisoning.[2]

The plant *Blighia sapida* Konig belongs to the *Sapindaceae*, or Soapberry, family so named because the berries of *Sapindus saponaria* contain saponin, form a lather with water, and may be used as soap.[6] The edible litchi nut comes from *Litchi* of this family. Seven species of the genus *Blighia* Konig are known in tropical Africa.[6] *Blighia sapida* Konig was known as *Cupania sapida* Voigt but the former name has precedence from Koenig and Sims (1806).[7] Johann Voigt (1798-1843) was a botanist in Calcutta, India; Charles Konig (Carl Dietrich Eberhard Koenig) lived from 1774-1851 and John Sims (1792-1838) was for many years editor of Curtis' *Botanical Magazine* in England.[3] Under the rules of botanical nomenclature, which sometimes appear mysterious and perplexing to the nonbotanist, the names of Bligh and Konig are now linked in this West African tree.

In another context, those gardeners who are disturbed that their geranium is actually *Pelargonium* or that their nasturtium is *Tropaeolum* can feel sympathy for chemotherapists who now find that their familiar anticancer alkaloid, vincaleukoblastine, derived from *Vinca*, is recently and authoritatively confirmed as derived from *Catharanthus* of the *Apocynaceae* family; this genus has been referred to incorrectly as *Vinca*.[8]

It may be assumed that Admiral Bligh in his fifty-second year, in 1806, was not displeased that a plant should be named after him. He had outlasted Captain Cook, who was murdered in the Hawaiian (Sandwich) Islands in his fifty-first year, and another midshipman of Cook's, Captain George Vancouver (1857?-1779) was more or less disgraced and dead eight years past. William Bligh had eleven more years of his life remaining, and he was to see that arch-enemy of the British Navy, Napoleon Buonaparte, once and for all incarcerated on St. Helena (1815), albeit with a plant family, *Napoleoneaceae*, to be named for him by the French botanist, Ambroise Beauv (1775-1820).

After all the trouble Bligh had to get some bread-fruit to the West Indies as a source of food, it cannot have been displeasing for another food-plant to be introduced to the same colonies and named *Blighia* in his honor. Ironically, nearly a century later, his eponymous tree was to be outlawed in Trinidad (in 1900),[2] and implicated in tragic loss of life.

As in the case of Voltaire's Candide, (1759), some people's misfortunes seem to go on and on but William Bligh had the capacity of recouping his fortunes after adversity. His account of the mutiny on the *Bounty* is probably correct: The crew "had

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assured themselves of a more happy life among the Otaheitans than they could possibly have in England, which, joined to some female connections, has most likely been the leading cause of the whole business."

Further investigation of ackee has indicated that hypoglycin B is a peptide of hypoglycin A and glutamic acid; hypoglycin A, however, is not a peptide but an amino acid ($C_7H_{11}N_1O_2$) of a molecular weight of 141, which apparently represents the hypoglycemic principle.[9] If the emetic and hypoglycemic activity can indeed be separated, perhaps derivatives of *Blighia* will yet find usage in therapy.

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ABSTRACTS

Aloia, J. F. (Dept. of Med., Sect. of Endocrinology, Nassau County Med. Center, East Meadow, N.Y.): MONOSACCHARIDES AND POLYOLS IN DIABETES MELLITUS AND UREMIA. J. Lab. Clin. Med. *82*:809-17, 1973.

Recent evidence has suggested that the hyperglycemia of diabetes may cause increases in tissue and plasma concentrations of polyols, glucosamines and monosaccarides other than glucose. This publication describes the efficacy of gas-liquid chromatographic quantitation of serum and urine fructose, mannose, sorbitol and myo-inositol. The method involves deproteinization of serum or urine samples by ultrafiltration, lyophilization, passage through an anion exchange resin and injection into a gas chromatograph. Comparisons were made between thirty-two normals, thirty diabetics and twelve uremics. Normal patients had a mean glucose concentration of 80.8 mg. per cent; fructose was 0.56 mg. per cent and sorbitol was 0.27 mg. per cent. Diabetics had a mean glucose of 193 mg. per cent but their fructose was similar to normal patients and averaged 0.53 mg. per cent. Their sorbitol level was about twice the normal and averaged 0.59 mg. per cent. The uremic subjects had near normal glucose levels, but also had elevated sorbitol concentrations. There was correlation between glucose and sorbitol in the diabetics suggesting that the elevated serum sorbitol may have been derived from the polyol pathway. T.G.S.

Baber, J. C., Jr.; Hayden, W. F.; and Thompson, B. W. (Dept. of Surgery, Univ. of Arkansas Med. Center, and Surg. Svc., V.A. Hosp. and St. Vincent Infirmary, Little Rock, Ark.): INTESTINAL BYPASS OPERATIONS FOR OBESITY. Am. J. Surg. *126*:769-72, 1973.

Verbatim summary. Ninety jejunoileal bypass procedures were performed in eighty-six patients to control morbid obesity. The fifteen and ten-inch anastomosis does not assure adequate weight loss, but it is relatively free of complications. The fourteen and four-inch bypass produces better weight loss but has many complications. The fifteen and five-inch jejunoileal bypass seems to give adequate weight reduction and is relatively free of complications. Although diarrhea, electrolyte imbalance, progressive liver disease, and an occasional death are seen, end to side jejunoileal bypass produces adequate weight reduction and prevents death from the complications of morbid obesity.

Bagdade, J. D.; Porte, D., Jr.; Brunzell, J. D.; and Bierman, E. L. (Dept. of Med. and V.A. Hosp., Univ. Washington Sch. of Med., Seattle, Wash.): BASAL AND STIMULATED HYPERINSULINISM: REVERSIBLE METABOLIC SEQUELAE OF OBESITY. J. Lab. Clin. Med. *93*:563-69, 1974.

Ten ambulatory obese male subjects were studied by measuring basal and glucose-stimulated immunoreactive insulin (IRI) before and after weight reduction. Prior to weight reduction (obtained by feeding a 600 kcal/day diet) their mean weight was 174 per cent of ideal. After losing an average of 28.6 kg., their weight decreased to 137 per cent of ideal. Their preweight-loss basal IRI averaged 48 and fell to 29uU/ml. The IRI decrement was observed in each subject and suggests that basal hyperinsulinism is a reversible consequence and not a cause of obesity. Also, weight reduction was associated with nearly uniform improvement of glucose tolerance. Subjects with normal or mildly impaired glucose tolerance displayed improvement despite a reduced IRI response to glucose challenge. This suggests that improved peripheral resistance to insulin may be a consequence of weight reduction. In contrast, the more severely diabetic subjects improved their glucose tolerance in association with increased insulin secretion. This may have resulted from increasing the pool of insulin participating in basal secretion and making it available for response to glucose challenge. T.G.S.