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Carl Wilhelm Scheele, of the Palm Genus *Scheelea*

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In the Middle Ages the European alchemists believed that the beating rays of the sun engendered veins of gold in the earth, and sought to duplicate the process by forging base metals into gold (Tiffany and Adams 1985). By the time C. W. Scheele appeared on the scene, however, the alchemists had since given up the search for a "philosopher's stone" to convert dross into gold, and a rudimentary science of chemistry had emerged, often joined as a handmaiden to medicine and pharmacy. Scheele (Fig. 1), a pharmacist and chemist, lived in an era when it was still possible to find drug emporia stocked with powdered sapphires, emeralds, garnets and pearls to be ingested for various maladies (Zekert 1931-1933).

It was an age when people were confusedly grappling with the actual meaning of fire, air, stone and water as the elemental components of the universe. Scheele sought to clarify the concepts of air, fire, light, and heat from a chemical standpoint, through experiments to determine whether air is a simple or compound gas, and which entity is the combustible part of the air (Zekert 1936). And, for his successful work, he is credited with the discovery of oxygen.

Scheele's family was of German stock, living in Stralsund at a time when it was the capital city of Swedish Pomerania. Stralsund is located on the Baltic Sea coast, and is today in the German Democratic Republic (East Germany). Carl Wilhelm Scheele was born in Stralsund on December 19, 1742 to Margaretha Eleonora Warnekross and her husband Johann Christian Scheele, a brewer and grain mer-

chant. He had a peaceful and rather uneventful childhood as the seventh-born child amidst his five brothers and five sisters. In 1757 at the age of fifteen he left Stralsund to learn pharmacy as an apprentice at the Apotheke "Zum Einhorn" in Gothenburg, where he stayed until 1765 doing basic chemical experiments.

Then, in 1765 he went to Malmo to work as a resident apothecary in the Apotheke "Zum Reichsadler," during which time he was influenced by the scholar J. A. Retzius, director of the Botanical Gardens in Lund. Always in search of more advanced surroundings, he migrated in 1768 from Malmo to Stockholm, where he worked at a shop known as the Apotheke "Zum Raben" until 1770. In 1769 he began his career as an independent chemical researcher, which resulted in the discovery of oxygen sometime between 1771 and 1773, and the discovery of chlorine in 1774. Even the non-chemist will appreciate the scope of his other discoveries, a few of which are hydrofluoric acid, citric acid, hydrogen sulfide, hydrogen cyanide—and he very materially contributed to the discovery of manganese, nitrogen, tungsten, barium and molybdenum (Smeaton 1986).

Scientific historians have established that Scheele's discovery of oxygen occurred at least one or two years prior to the more publicized, independently achieved preparation of oxygen by Joseph Priestly on August 1, 1774. To the public at large, the discovery by Priestly (1733-1804), an English chemist, has become the better known of the two events, because Priestly managed to publish his findings first. This



1. Carl Wilhelm Scheele. Source: Otto Zekert, 1931. *Carl Wilhelm Scheele: Sein Leben und Seine Werke*. Photo: Victor Krantz.

happened due to the negligence of Scheele's publisher, who caused a two-year delay in releasing his *Chemical Treatise on Air and Fire* (1777), which Scheele had submitted for printing in 1775. For years afterwards, Scheele glowed with indignation over the ungenerous priorities of fate, and, as luck would have it, another of his major discoveries, that of chlorine in 1774, was also pre-empted—in 1810 by Sir Humphrey Davy (1778–1829), the English chemist, who surpassed him by recognizing chlorine as a chemical element (Anonymous 1974).

Scheele left Stockholm in 1770 for Uppsala (the university city of Carl Linnaeus), where he became an apothecarial assistant at the Apotheke "Zum Wappen von Uppland," staying there until 1775. In that year he became a member of the Royal Swedish Academy of Sciences, and moved to the town of Kopping, where he purchased (in 1776) and managed his own pharmacy. He spent the remainder of his sadly foreshortened life, which spanned only 43 years, there in Kopping, Sweden, a victim of progressively worsening rheumatism and arthritis (Zekert 1963).

Scheele had seemed destined to be a lifelong bachelor, but fate intervened and on May 19, 1786, only three days before his death, he married Sara Pohl (1751–1793), the widow of H. P. Pohl from whom Scheele had purchased the Kopping pharmacy. Scheele succumbed to his illnesses and died on May 21, 1786, whereupon his wife inherited the pharmacy as he had planned. Two years later the twice-bereaved Mrs. Scheele married Mathias Georg Bolkau (1753–1804). In his last will and testament, Scheele had designated his assistant Bolkau to look after his affairs, though he scarcely could have imagined how completely Bolkau would rise to that occasion.

The New World monoecious feather palm genus *Scheelea*, comprising about 28 species (Glassman 1977), was named in 1857 by Hermann Karsten (1817–1908),

a German botanist who was born in Scheele's home town of Stralsund on November 4, 1817 and studied botany in the Stralsund pharmacy. Karsten was therefore an apprentice pharmacist as the great Scheele himself had once been, and Karsten published on the pharmaceutical-medicinal plants of Germany in the 1880's, after his earlier phase of writing on Latin American plants, such as the monumental *Florae Columbiae* of 1858–1869 (Tryon 1963).

A number of abundant *Scheelea* species having economic uses are discussed by Braun (1968, 1984), and the palms also have value as a primary wildlife food, especially for monkeys (Janson 1986). The cover photo for this issue depicts *Scheelea butyracea*, the spectacular "palma de vino" or "palma de puerco" of Colombia and Venezuela, originally designated *S. regia* by Karsten.

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