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This issue of *JEM* was edited by Dr George Sternbach, Associate Editor.

## J.- F.- B. CHARRIÈRE: THE MAN BEHIND THE "FRENCH" GAUGE

Kenneth V. Iserson, MD, FACEP

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□ **Abstract**—Joseph-Frédéric-Benoît Charrière, a 19th century Parisian maker of surgical instruments, has by virtue of his ingenuity and advanced thinking, continued to have his presence felt in medicine throughout the 20th century. His most significant accomplishment was the development of a uniform, standard gauge specifically designed for use in medical equipment such as catheters and probes. Unlike the gauge system adopted by the British for measurement of needles and intravenous catheters, Charrière's system has uniform increments between gauge sizes (1/3 of a millimeter), is easily calculated in terms of its metric equivalent, and has no arbitrary upper end point. Today, in the United States, this system is commonly referred to as French (Fr) sizing. In addition to the development of the French gauge, Charrière made significant advances in ether administration, urologic, and other surgical instruments, and the development of the modern syringe.

□ **Keywords**—Charrière; French gauge; medical equipment; surgical equipment; ether anesthesia; urology

In the first half of the 19th century, the British, in the throes of the industrial revolution, were still trying to adapt an arbitrary sizing system (the Stub's Gauge which was adapted to the manufacture of needles and catheters only in the 20th century) in order to standardize their manu-

facture of metal wires.<sup>1</sup> Meanwhile, the French had developed a uniform, standard gauge based on the metric system. This gauge was specifically designed for use in medical equipment, such as catheters and probes. The famous Parisian maker of surgical instruments, Joseph-Frédéric-Benoît Charrière (Figure 1), developed this measurement system. Today, in the United States, this system is commonly referred to as French (Fr) sizing.

Charrière was born in 1803 in Cerniat in Gruyere, Fribourg Canton, Switzerland. At the age of 13, he was sent to Paris and apprenticed as a cutler (a maker of cutting instruments, such as knives). Four years later he became both a master cutler and the owner of his own business after the untimely and mysterious drowning of his former teacher, whose business he acquired. Charrière quickly developed a reputation among Paris surgeons as a skilled and innovative maker of surgical instruments. Part of this reputation stemmed from an incident that occurred shortly after he opened his business.

Charrière was hammering the metal and sharpening the lancets and knives, when into his boutique flew a young man. By his white apron, his fine featured and intelligent face, and by his distinguished build he could recog-

**Medical Classics** — is an ongoing feature of *JEM*, focusing on "classic" contributions to emergency medicine. This section is routinely authored by *George Sternbach, MD* Stanford University Medical Center.

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