OLD DEAD GUY TRADING CARDS

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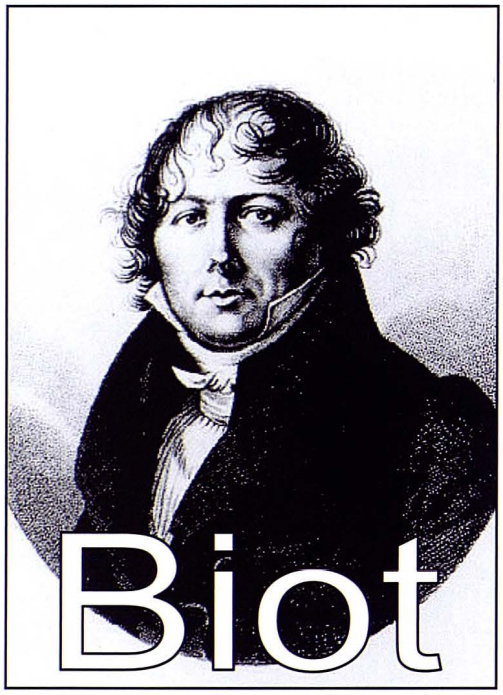
I planned to play for the Chicago Cubs. I was making great progress toward that goal at the age of seven when my baseball team won the championship in the summer of 1969. I was never on another championship team and my plans of a pro baseball career ended in high school. All that remained of my dream were hoarded shoeboxes of baseball cards. Today, the hall-of-famers whose cards I collected are becoming a collection of old dead guys.

As Holles[1] pointed out, "Old Dead Guys" make great subject matter for activity breaks in the classroom. While teaching Heat and Mass Transfer, I combined Holles' "Old Dead Guys" with my former hobby of card collecting to create a set of trading cards commemorating the scientists behind the dimensionless groups of transport phenomena, immortalizing the names that permeate chemical engineering texts: Reynolds, Nusselt, Fourier, Prandlt, Rayleigh, Peclet, Grashof, Sherwood, and Schmidt to name a few.



Jean Baptiste Biot
Born: April 21, 1774; Paris, France
Died: February 3, 1862; Paris, France

French physicist, best known for his work in polarization of light. In 1800 he became professor of physics at the College de France, through the influence of LaPlace, from whom he had sought and obtained the favor of reading the proof sheets of the "Mecanique Celeste".

J. B. Biot, although younger than Fourier, worked on the anâlysis of heat conduction even earlier - in 1802 or 1803. He attempted, unsuccessfully, to deal with the problem of incorporating external convection effects in heat conduction analysis in 1804. Fourier read Biot's work and by 1807 had determined how to solve the problem.

In 1804 he accompanied Gay Lusac on the first balloon ascent undertaken for scientific purposes, in 1820, with Felix Savart, he discovered the law known as "Biot and Savart's Law". He was especially interested in questions relating to the polarization of light, and for his achievements in this field he was awarded the Rumford Medal of the Royal Society in 1840.

$$Bi = \frac{hL}{k_s} = \frac{\text{internal thermal resistance}}{\text{boundary layer thermal resistance}}$$

Series 2
7 of 48

A pack of these old dead guy cards could not be purchased at the Five-&-Dime, rather they had to be earned, one card at a time. The card containing a photographic image of Jean Baptiste Biot on the front and his biography on the back could only be acquired by correctly noting on an exam that the Biot Number is the ratio of internal thermal resistance to boundary layer thermal resistance, quantified as the quotient of the film coefficient to the thermal conductivity of the body. In a similar manner, the Osborne Reynolds card could only be owned by correctly identifying that the Reynolds Number was the ratio of inertial to viscous forces, quantified as the product of mean velocity and hydraulic diameter, divided by the kinematic viscosity. The Biot was the first card awarded in the Fall 2002 semester when I first employed these cards as a motivational teaching tool. Only a handful of students came to class prepared to be the recipient of a J.B. Biot card, consequently there are only a few in circulation, making this card as rare as a T206 Honus Wagner baseball card.

Although I no longer teach Heat and Mass Transfer, the nerd cards (as lovingly named by the students) phenomenon continues among New Mexico State University chemical engineering students through the student chapter of AICHE. The deck has been expanded to 48 cards to include the "father" of chemical engineering George Davis[2] and other names common to the discipline such as Norton, Solvay, Haber, Bosch, Langmuir, and Arrhenius. The Series 2 deck also includes some old living guys well known within the profession for their textbooks. Only about a dozen of the Series 2 decks remain within the student chapter's coffers; most have been sold to current students, were made available to department alumni through Facebook and eBay, awarded as door prizes at chapter meetings, or given as gifts to alumni and dignitaries who give of their time to speak at a meeting of the NMSU AICHE Student Chapter. A planned Series 3 deck will further increase the list of names familiar to those in the discipline.

REFERENCES

1. Holles, J.H., "Old Dead Guys," in *Chem. Eng. Ed.*, **43**(2), 150 (2009)
2. Cohen, C., "The Early History of Chemical Engineering: A Reassessment," in *The British J. for the History of Science*, **29**(2), 171 (1996) ❐