

CUPJ debuts its new review section

A manual for success?

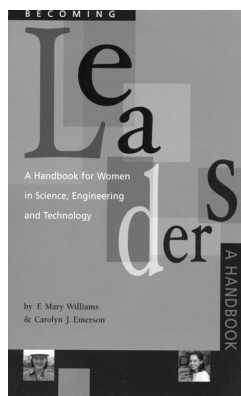
BY KRIS LUI

This handbook is introduced as a starting point for any woman (or man) wanting to learn the ins and outs of a successful career in science, technology, engineering and mathematics (STEM). As such, this book is immensely helpful and relevant. It is full of excellent advice you'd only otherwise find if you'd been through a career or if you'd talked to someone willing to be completely honest with you about her or his own career.

The handbook is divided into nearly 20 sections, each of which could stand alone. The introduction recommends sections for various groups, from undergraduate students to university faculty members to business managers. While the book is geared towards women, there are also excellent suggestions for men who want a successful career while maintaining a “work-life balance.” *Becoming Leaders* provides information in short paragraphs and point-form lists, and includes a wealth of resources for interested readers to learn more on any given topic. (These resources include scientific reports, web addresses, sociology reports and workplace books). This makes the handbook truly accessible to the busy person.

The authors begin with advice on achieving “work-life balance”: “park the guilt” that you have about pursuing priorities outside of your career development; “share the load” with family, friends and co-workers; and acquire the necessary “organization and workplace support.”

Strategies for career advancement are vital and need to be practised for them to become comfortable. This book includes sections on self-



**BECOMING LEADERS:
A HANDBOOK FOR
WOMEN IN SCIENCE,
ENGINEERING AND
TECHNOLOGY**

by F. Mary Williams and
Carolyn J. Emerson
NSERC/Petro-Canada
Chair for Women in
Science and
Engineering, and Women
in Science and Engineer-
ing (WISE), Newfound-
land and Labrador (2002)
ISBN 0-88901-359-4

COURTESY OF CAROLYN J. EMERSON

promotion, getting a mentor, and finding ways to challenge oneself. These things are especially important for fostering confidence in students; however, students are never told about them in the classroom. More concrete information such as the specific steps between graduate school and tenured professorship – usually a mystery for the incoming graduate student – is clearly laid out. I also liked the advice for radio and television appearances. Certainly not many of us have had much training in show business, but this is one of those “first impression moments” in which you want to be at your best.

I have a few minor complaints: less intrusive referencing with footnotes and the inclusion of photo captions would have been nice, and the underlying issue of how leaders for diversity in the workplace get hired from the “old boys’ club” pool of possible applicants is not adequately addressed. There are great ideas for managers to implement diversity practices and encourage equity, but if current managers do not see gender imbalance they will not be interested in the ideas presented in this handbook.

However, this handbook is certainly a useful resource for anyone in a STEM career. One of its strongest advantages is its basis in actual experiences from women in STEM. ❀

Trying to make sense of the uncertain and incomplete

BY DAVID ZEIBIN

In *Physics Foibles*, Melvin Goldstein valiantly weaves his way through the statistical quagmire of modern physics with a single goal in mind: with the help of some easily digestible programming, you are to think a little more carefully about the scientific paradigms you’ve grown to know – and love – so well.

The book focuses on three rather impressive subjects: those of entropy, Gödel incompleteness

and Heisenberg uncertainty, and attempts to elucidate the seemingly hidden links between them.

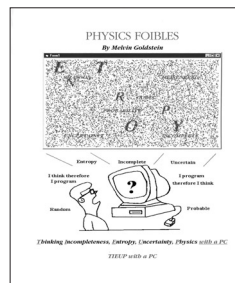
As a brief refresher, entropy is basically the amount of energy in a system unavailable for doing work, and is also deemed a measure of disorder or degradation in various fields. Goldstein begins by introducing the concept of randomness and its intimate relationship with entropy, describing countless physical situations ruled by the whims of entropy and statistical mechanics.

Entropy is somewhat overemphasized, though, as attention shifts to the much more intriguing Gödel and Heisenberg only near the two-thirds mark. Most undergraduates will be familiar with Heisenberg and his uncertainty principle (a consequence of quantum mechanics resulting in the fact that we cannot know an object or particle’s momentum and position both with arbitrary precision). But most have not experienced the pain/pleasure of Gödel’s incompleteness theorem.

In 1931, Kurt Gödel completed a monumental proof of the existence of statements within a self-consistent formal axiomatic system that are neither provable nor unprovable. His work demolished the 2000-year-old hopes of mathematicians to create a fully defined, consistent system and left some grappling with the reality that there are some things we simply cannot know. Ironically, the devastating work earned Gödel a place in the history books as arguably one of the greatest logicians of all time.

Considering volumes have been penned about each of these subjects, an attempt to boil everything down to one coherent single-volume stew is near impossible. While Goldstein’s writing is clear albeit abrupt and is often entertaining and engaging thanks to abundant examples and illustrations, the content’s magnitude forces him to offer a superficial treatment making the book unsuitable for those without a relatively strong background in physics and mathematics, not to mention computer science.

All is not lost, though. *Physics Foibles* accomplishes its goal – making you think – but is a little rough around the edges, employing far too much computer code and not enough from-the-bottom-up theory for this reviewer’s taste. As an introduction to the implications of entropy, unknowables and uncertainty, *Physics Foibles* will suffice, but for more in-depth analysis and philosophical insight into numbers and their inherent problems, try *Innumeracy: Mathematical Illiteracy and its Consequences* by John Allen Paulos or Andrew Hodges’ biographical sketch, *Alan Turing: the Enigma*. ❀



PHYSICS FOIBLES
by Melvin Goldstein
Trafford Publishing (2003)
ISBN 1-55395-776-8

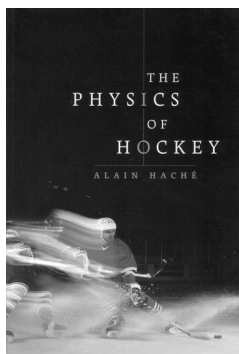
COURTESY OF MELVIN GOLDSTEIN

Exploring the science behind Canada's unifying force

BY MIKE GALLAMORE

There are few sports where the principles of physics are more evident than they are in hockey. From player collisions to ice properties and shooting, physics helps to explain many components of this great Canadian pastime.

The Physics of Hockey, recently released by Raincoast Books, is written by Alain Haché, a professor of physics at the University of Moncton and an amateur hockey player whose passion and knowledge of the sport is evident on every page of his book. His work is divided logically into chapters on ice, skating, shooting, collisions and



THE PHYSICS OF HOCKEY
by Alain Haché
Raincoast Books (2002)
ISBN 1-55192-590-7

COURTESY OF RAINCOAST BOOKS

protective equipment, and the game as a whole. Among other things, the book looks at the thermodynamics of ice, the angular momentum associated with a player's shot, and the probability of scoring a goal given the error in a shot's initial angle and velocity.

The book is written at a level that someone with a high school or first-year physics background could grasp, and it is written in a fun and lively way. When discussing collisions, for example, Haché uses the masses and typical skating velocities of real NHL players. Even though the chapters tend to be lengthy, often more than 30 pages, his energetic writing style keeps you reading long past the time you planned to stop.

In the book, Haché dispels the common myth that ice is slippery because of the pressure on the ice causing it to melt, or because of friction with the ice. He explains instead how a quasi-liquid layer on the surface of the ice is responsible for most of ice's slipperiness. He also rejects the myth that professional athletes have abilities that are incredibly greater than our own, and that these athletes' salaries are proportional to their abilities.

The book is a little pricey for a volume of its size. At 177 pages including appendices, the paperback sells for \$24.95. Still, the book is an enjoyable read and can be read and understood both by physicists and by those you know who

are hockey enthusiasts. It might just be the excuse you were looking for to push a little physics on them, and who knows, maybe it will help them understand why you're so excited by physics. ❁

CUPJ has a number of new titles in for review, including *How the Laser Happened: Adventures of a Scientist* by Charles H. Townes (Oxford University Press), *Hidden Worlds: Hunting for Quarks in Ordinary Matter* by Timothy Paul Smith (Cambridge University Press) and *A Shortcut Through Time: The Path to the Quantum Computer* by George Johnson (Alfred A. Knopf). If you are a student interested in reviewing any of these books or others listed on our regularly updated website at www.cupj.ca/reviews.html, e-mail the editorial board at cupj@cupj.ca. Books are mailed out on a first-come, first-served basis.

Le JCEP a reçu de nouveaux titres à évaluer, incluant *Un siècle de quanta* édité par Michel Crozon et Yves Sacquin (EDP Sciences) et *Physique de la vie quotidienne* par François Graner (Springer-Verlag). Si vous êtes un étudiant qui aimerait produire une critique à propos d'un de ces livres ou de d'autres qui se trouvent sur notre site Web, régulièrement mis à jour au www.cupj.ca/critiques.html, envoyez un courriel au Comité de rédaction à cupj@cupj.ca. Les livres sont envoyés selon le principe du «premier arrivé, premier servi.»

classifieds

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2003**

This year's CUPC will be held by McGill University in Montreal from 30 October to 1 November. It is an amazing opportunity for undergraduate students to experience a professional scientific presentation. If you're interested, your undergraduate physics student society will have all of the information you'll need. Additional details available at www.ugrad.physics.mcgill.ca/~cupc/. We hope you will consider applying!


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 CUPJ is seeking a student to serve as Managing Editor for the remainder of the 2003-2004 publishing cycle. Duties include fundraising, maintaining current and recruiting new sources of advertising, soliciting new subscriptions, proofreading in at least one of French or English, researching and writing at least one feature article, and compiling readers' survey results and statistics for potential advertisers. Interested students should visit the CUPJ website at www.cupj.ca for application details.

 Le JCEP est à la recherche d'un(e) étudiant(e) pour être son Rédacteur administratif pour le reste du cycle de publication 2003-2004. Les tâches comprennent le financement, le maintien et la recherche des sources de publicité, la recherche de nouvelles inscriptions, la révision dans au moins une des deux langues que sont le français et l'anglais, l'écriture d'au moins un article de fond et

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- Events

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