Communiqué

SOCIÉTÉ CANADIENNE D'HISTOIRE ET DE PHILOSOPHIE DES SCIENCES

CANADIAN SOCIETY FOR THE HISTORY AND PHILOSOPHY OF SCIENCE

Nº 80 Autumn/Automne 2011

The Organism Issue

The saga of Simmons draba: how one plant specimen crossed the Atlantic and back again in search of a name

by Paul C. Sokoloff and Lynn J. Gillespie

Simmons draba (or as a botanist might write: Draba simmonsii Elven & Al-Shebaz) is a diminutive member of the Mustard family – the Brassicaceae –native to the Canadian Arctic. Distinguished by yellow cross-shaped flowers and a small, slender stature, it has proliferated steadfastly on the tundra since it speciated (split from its closest relative), botanists have only recognized it as a distinct species since 2008.

The type specimen of Simmons draba (that single sample which best represents a species) was collected by its namesake, Herman Georg Simmons, during the second expedition of the "Fram" - a Norwegian research vessel. Captain Otto Sverdrup led Simmons and 16 other intrepid explorers in a four-year journey of exploration into the Canadian Arctic Islands. Pulling anchor in June 1898, the Fram would not return to Norwegian waters until 1902.

During this time the Fram circumnavigated Axel Heiberg and Ellef Ringnes Islands (which still retain the Norwegian names given to them by Sverdrup), and much of the coast of Ellesmere Island, Canada's northernmost landmass. Simmons dutifully collected and pressed thousands of plants specimens from this "Elles

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Cancer cells: All dressed up and nowhere to go

by Tricia Close-Koenig

Cancer cells are organisms that divide and grow uncontrollably, forming malignant tumours and infiltrate the body. Like other cells, they are invisible to the naked eye and are translucent through the microscope. They were identified in the mid nineteenth century. However, until the early twentieth century, diagnosis and treatment of cancer was largely under the jurisdiction of surgeons, the principal therapeutic being the extirpation of growths and tumours. Other practitioners and medical institutions were interested neither in cancer, which was incurable, nor in cancer cells. Albeit, cancer was identified as

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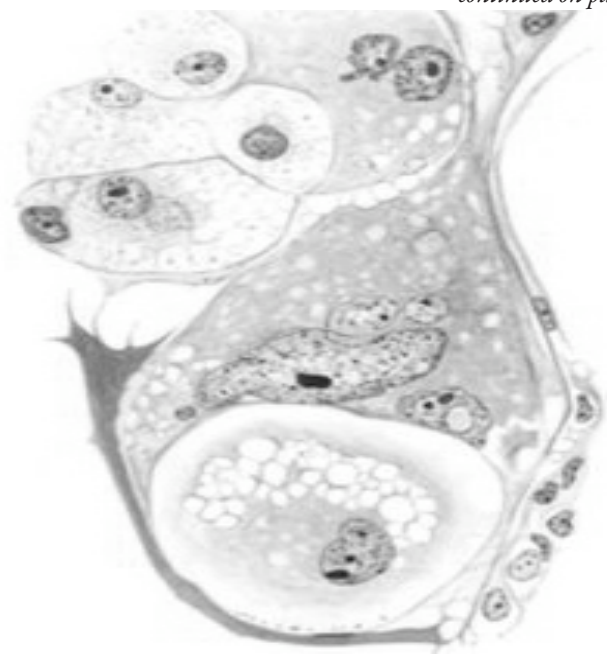

Communiqué

Newsletter of the
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www.cshps.ca www.schps.ca

Please direct submissions and inquiries to Sofie Lachapelle or Aryn Martin, preferably by email (details below). Please note that submissions should be sent in both official languages. The editors are grateful to York University for assistance in printing and mailing costs, and to the University of Guelph for providing the necessary software.

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The Organism Issue

Continuing the tradition begun last autumn, we've organized this issue around a theme - Organisms - and invited members to contribute stories about the critters they encounter in their work. Thank you to all those who responded to our call for organism-centred stories. We plan for short thematic articles to be an ongoing feature of our Autumn newsletter.

--The editors

Musing on Moss (see page 20)

Issue contents

CSHPS ANNUAL MEETING
WATERLOO, ON

Call for Papers

English follows
La Société canadienne d'histoire et de philosophie des sciences (SCHPS) tiendra son congrès annuel dans le cadre du Congrès des sciences humaines (FCSH) qui se déroulera sur les campus des universités Wilfrid Laurier et Waterloo du 27 au 29 mai 2012. Le comité de programme invite les soumissions de communications individuelles et les propositions de séance en histoire et philosophie des sciences pour le congrès.

Soumissions: Afin de préserver l'anonymat des présentateurs, aucune coordonnée personnelle ne doit être incluse dans le fichier contenant une proposition de communication. Les propositions de communication individuelle doivent comprendre un titre, un résumé (entre 150 et 250 mots) et, dans le courriel les accompagnant, les coordonnées de l'auteur. Les propositions de séance doivent comprendre le titre de la séance, les titres et résumés (entre 150 et 250 mots) de chaque contribution et, dans le courriel les accompagnant, les noms et coordonnées des participants et de l'organisateur de la séance. Les propositions doivent être soumises dans des fichiers de format MS Word, pdf, of rtf. Date limite de soumission: **1er février 2012** Courriel pour les soumissions: program.cshps@gmail.com Nombre de soumissions : Une personne ne peut soumettre qu'un résumé de communication (c.-à-d. soit pour une communication individuelle soit pour une communication faisant partie d'une séance).
Langues du congrès : La SCHPS est une société bilingue. Les communications individuelles peuvent être en français ou en anglais mais les efforts pour faciliter une participation diversifiée sont encouragés (par exemple, une communication en français accompagnée d'une présentation PowerPoint en anglais, ou vice-versa). De façon similaire, les séances peuvent être en anglais ou en français, mais les sessions bilingues (avec certaines présentations en français et d'autres en anglais) sont particulièrement appréciées.

Séances conjointes : Le congrès de la SCHPS se déroule en même temps que ceux de plusieurs autres sociétés membres de la FCSH, comme par exemple la Société historique du Canada, l'Association canadienne de philosophie, Société canadienne de sociologie, l'Association canadienne des études sur les femmes, et l'Association canadienne d'études environnementales. Nous encourageons les propositions de séances conjointes avec ces sociétés ou d'autres sociétés de la FCSH. Cependant, aucune communication ne peut être présentée à plus d'une société. Adhésion : Tous les présentateurs doivent être membres de la SCHPS au moment du congrès. Pour plus d'information sur l'adhésion à la SCHPS, consulter le site : http://www.yorku.ca/cshps1/index_fr.html Prix étudiant: La SCHPS décerne le prix Richard Hadden, un livre pour le meilleur texte étudiant présenté lors du congrès. Les candidats au concours devront envoyer par courriel une copie de leur article au moins 5 semaines avant le début du congrès (c.-à.-d. le 22 avril 2012). Les détails du concours sont disponibles à l'adresse suivante : http://www.yorku.ca/cshps1/HaddenPrize_fr.html FCSH : Les informations concernant l'inscription et les possibilities d'hébergement pour le congrès se trouveront sur le site web de la FCSH: http://www.fedcan.ca/. Comité de programme (2011-2012): Mélanie Frappier (Présidente) (University of King's College) melanie.frappier@ukings.ns.ca Elizabeth Neswald (Brock University) eneswald@brocku.ca Robert Hudson (University of Saskatchewan) robert.hudson@usask.ca

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The Canadian Society for the History and Philosophy of Science (CSHPS) is holding its annual conference as part of the Congress of the Humanities and Social Sciences (CFHSS) at Wilfrid Laurier University and the University of Waterloo, May 27-29, 2012. The program committee invites historians and philosophers of science to submit abstracts for individual papers or proposals for sessions.

Submissions: In order to preserve the anonymity of presenters, it is important that contact information and other identifying information be excluded from the file containing the abstract. Individual paper submissions should consist of a title, a brief abstract (150-250 words), and—in the accompanying email—the presenter's name and contact information. Session proposals should consist of a session title, titles and abstracts (150-250 words) for each paper, and—in the accom-

panying email—the names and contact information of the presenters and session organizer. Proposals should be in MS Word, pdf, or rtf files. Deadline: **February 1st, 2012**. Submission email address: program.cshps@gmail.com Number of submissions: Individuals can only submit one abstract for the CSHPS meeting (i.e. either an abstract for an individual communication and/or abstract part of a session proposal).

Meeting languages: The CSHPS is a bilingual society. Individual communications may be done in English or French, but efforts to broaden participation are appreciated (e.g. a presentation in English could be accompanied by a PowerPoint in French, and vice versa). Similarly, sessions can be presented in either English or French, but bilingual sessions (with some papers in French and others in English) are especially welcome.

Joint sessions: The CSHPS meeting overlaps with the meeting dates of a number of other member societies of the CFHSS, including the Canadian Historical Association, the Canadian Philosophical Association, the Canadian Sociological Association, the Canadian Women Studies Association, and the Environmental Studies Association of Canada. We welcome proposals for joint sessions with these and other CFHSS societies. However, no submission will be accepted for presentation at more than one society. Membership: All presenters must be members of the CSHPS at the time of the meeting. For more information about CSHPS membership, consult: http://www.yorku.ca/cshps1/. Student Prize: The CSHPS offers the Richard Hadden Award, a book prize for the best student paper presented at the meeting. To be considered for the award, students should submit a copy of their paper by e-mail five weeks prior to the congress (i.e., April 22, 2012) Details of this prize can be found at: http://www.yorku.ca/cshps1/HaddenPrize.htm

CFHSS: Information about Congress registration and accommodation will be available at the CFHSS website: http://www.fedcan.ca/. Programme Committee (2011-2012) Melanie Frappier, Chair (University of King's College) melanie.frappier@ukings.ns.ca Elizabeth Neswald (Brock University) eneswald@brocku.ca Robert Hudson (University of Saskatchewan) robert.hudson@usask.ca

UPDATES ON STS-HPS IN CANADA

1) INSTITUTIONAL UPDATES

Situating Science Strategic Knowledge Cluster of scholars in the Humanist and Social Studies of Science (www.situsci.ca)
Now past the midpoint of the seven-year mandate, Situating Science is looking forward to building upon the foundations of sustainable partnerships and projects. We encourage CSHPS members to utilize the searchable Cluster "Network Directory" on our website (www.situsci.ca) to find potential collaborators for future projects. The Cluster plans to apply for further funding to support long term partnerships including research and collaboration between Canadian, Indian, Southeast Asian and Australian experts beyond the December workshop in Manipal, India "Sciences and Narratives of Nature: East and West".

2012-13 will mark the last set of Cluster workshops supported by an annual Call by the Cluster. In addition to the "The Politics of Care in Technoscience" (York University, April 2012), two workshops this coming year include: "Where is the Laboratory Now? 'Representation', 'Intervention' and 'Realism' in 19th and 20th Century Biomedical Sciences" (University of Calgary) and "Translating Early Modern Science" (UBC)

This year also saw the initiation of student blogs by attendees of various Cluster events. These are available at: www.situsci/blog. Many other events in each Node are announced via our Twitter and Facebook feeds as well as online at www.situsci.ca.

The Atlantic Node of Situating Science
The Atlantic node of Situating Science has welcomed two new Node managers, Dr. Kregg Hetherington and Dr. Brian Noble, both of the Sociology and Social Anthropology department at Dalhousie University.

The Node is currently devoting much of its energies to organizing the next meeting of the International Society for the History of Philosophy of Science, to be held June 21-24, 2012 in Halifax. This is a very exciting opportunity for the History and Philosophy of Science

community in the Atlantic region. Keynote speakers include Ian Hacking, Penelope Maddy, and Heinrich von Staden. Details on the conference can be found at http://hopos2012.philosophy.dal.ca/

The Node's Works in Progress (WIP) sessions will begin again shortly. Last year's sessions were well-received, allowing nearly a dozen Node members to present their current projects and receive invaluable feedback from knowledgeable interdisciplinary audiences.

The Node's newsletter, a compilation of local, national, and international events, calls for papers, and professional opportunities, continues to be distributed biweekly. Past newsletters can be found at http://www.situsci.ca/situsci-events-listing. The Node has also created a Facebook group in an effort to cultivate discussion and networking between members. To check it out or join visit https://www.facebook.com/groups/164591426937229/

University of British Columbia
An exciting development in HPS/STS in Canada is the start of the new Graduate Program in STS at UBC. The program comprises a dedicated MA in STS and STS research streams in the PhD programs of the Departments of English, History, and Philosophy. The programs feature over two dozen faculty from across the Faculty of Arts and begin in September 2012. Please encourage interested students to visit our website at http://sts.arts.ubc.ca.

2) MEMBER UPDATES

AARHUS UNIVERSITY
Brian Hepburn is currently at Aarhus University, Denmark on a two-year postdoc (Philosophy of Contemporary Science in Practice, PI: Hanne Andersen, funded by the Danish Research Council for the Humanities.) He is working on interdisciplinarity, explanation and problem solving - case studies in semiclassical quantum mechanics and sustainability science. His recent publications include a review of Alisa Bokulich's Reexamining the Quantum Classical Relation; and co-authored (with Hanne Andersen) "Scientific Change", forthcoming in the Internet Encyclopedia of Philosophy.

BROCK UNIVERSITY
Derek Webster's research passion is two-fold: In a general sense, the creation-evolution debate including (1) the "naturalistic" presuppositions that pervades much of the evolutionary writing today, and (2) creationism's attempt to prove "God" through "science". In specific senses, he is enthralled with teleology. Primarily the references and questions that are raised within Dr. Étienne Gilson's conversation within his excellent book From Aristotle to Darwin and Back Again: A Journey in Final Causality, Species and Evolution. He is currently absorbing the works of Darwin, Spencer, Bergson and most especially Paul Janet. His focus is to explore the teleological implications within the context of current scientific thought. A rough topic would be: can design legitimately be identified within the nature and its study in the natural sciences. Secondarily, he is very interested in the commentary (and interpretation) of nineteenth century writers of Darwin's writing. Dr. Gilson's book provides a very interesting starting point for this quest.

Of course on one hand, these are not popular topics with many scientists and researchers today, but ones that have haunted him for many years. His concern is that "science" has thrown the design baby out with the religion bath water. On the other hand, one has to respect the context of science and its research by limiting its argumentation to legitimate tools, structures and frameworks. In some very real ways, the "that's religion and not science argument" has been overused in his humble opinion. He loves design - its principals, tools and concepts. He too loves science and its philosophical study. To him, nature is the very pinnacle of design. He will and must struggle with these topics regardless of the outcome - regardless of their positive or negative acceptation. The words of Theoden to Eowyn in the LOTR movie strike a haunting epitaph as he projects to the end of his life... " I can only hope that when my body is broken and I go to my fathers, in whose exalted company, I hope not to be ashamed."

CANADA SCIENCE AND TECHNOLOGY MUSEUM

David Pantalony (Curator, Physical Sciences and Medicine.) The Canada Science and Technology Museum is continuing to encourage researchers and teachers to use its collection as a resource. This past summer, Pantalony was the lead organizer for the third annual Reading Artifacts Summer Institute that brought together graduate students and faculty from across the country and disciplines to engage the collection in new ways. It was an intense and creative week. For the Spring semester of 2011, he taught a 4th year history seminar for the University of Ottawa in the collection storage facility, "Atomic Nation: Science, Technology and Cold War Culture in Canada." This experimental teaching format, high-lighted during the museum's RASI week, continues to evolve and surprise. On the exhibition front, the museum is planning an exhibition on the subject of Medicine and the Five Senses, past and present. Please contact Pantalony if you have any ideas, contacts and artifact suggestions. In 2011, he had a few articles published in *Arc Poetry*, *Canadian Medical Association Journal*, and one forthcoming in *Scientia Canadensis*.

CAPE BRETON UNIVERSITY

Andrew Reynolds has been researching the history and philosophy of cell communication and cell signalling research. In May 2011 he was a participant in the History of Cell Biology and the Informatics in HPS workshops at Woods Hole co-organized by Arizona State University and the Marine Biological Laboratory. In July 2011 he co-organized with Hannah Landecker (Dept. of Anthropology UCLA) a special session (with nine papers/presentations) on cell communication and cell signalling at the University of Utah meeting of the International Society for History, Philosophy, and Social Studies of Biology (Ishkabibble) in Salt Lake City. In Sept. 2011 he spent two weeks as a visiting scholar at the Max Planck Institute for History of Science and gave the opening colloquium of the 2011-2012 year.

DALHOUSIE UNIVERSITY

Letitia Meynell was promoted to Associate Professor last summer. She continues her research on images in science and feminist critiques of biology with "The Politics of Pictured Reality: Locating the Object from Nowhere in fMRI," forthcoming in the collection *Neurofeminism: Issues at the Intersection of Feminist Theory and Cognitive Neuroscience* and "Evolutionary Psychology, Ethology, and Essentialism (Because What They Don't Know Can Hurt Us)," forthcoming in *Hypatia*. She is currently completing an edited collection with Jim Brown and Melanie Frappier, *Thought Experiments in Philosophy, Science and the Arts*. She is also co-manager of the Situating Science Atlantic Node.

INDEPENDENT SCHOLARS

Allan Olley recently completed his doctoral work at University of Toronto's IHPST. His thesis is entitled "Just a Beginning: Computers and Celestial Mechanics in the work of Wallace J. Eckert." He is continuing his thesis research on the role of computers in 20th century celestial mechanics and has shifted his focus to the role of the Jet Propulsion Laboratory. He also continues research in other issues of the early history of electronic computers and scientific computation.

David Orenstein has been delving into the University of Toronto Archives. Over the summer it meant sifting through the Irvine Glass papers. Irvine Glass was a professor of Aerospace Studies at the University of Toronto and a leader in the movement to free Soviet Jews, thus combining Orenstein's interests in the history of Canadian science and Jewish studies. Fascinating as

the collection was, he couldn't get the topic to gel for a paper. So, starting this September, he switched back to the Helen Sawyer Hogg Fonds, all 15 running metres of it. He is working on Helen Hogg's strong personal and professional partnership with her husband Frank Scott Hogg, both astronomers at the University of Toronto, from 1935 until Frank's tragic early death January 1, 1951. Helen continued in the department and was still active through her retirement years. This might give Orenstein his first CSHPS paper, at the 2012 Learneds. An ongoing project for Orenstein is figuring out how to connect his own studies and networking in the Canadian HPS community to the highly resistant public education system.

Sara Scharf is currently working for a medical market research company as researcher/trainer/reference librarian.

MCGILL UNIVERSITY

Leslie Tomory has started a Mellon postdoctoral fellowship at McGill University. He will hold this position until 2013. In 2011, he published two articles: "Building the first gas network, 1812-1820" in *Technology and Culture*, and "Gaslight, distillation, and the Industrial Revolution" in *History of Science*. His first book, *Progressive Enlightenment: the Origins of the Gaslight Industry, 1780-1820*, in is press with MIT Press.

MCMASTER UNIVERSITY

Ric Arthur is continuing work on 17th century natural philosophy and the philosophy of physics. He has written three articles on Leibniz: "Leibniz's Actual Infinite in Relation to his Analysis of Matter" (forthcoming in *The Interrelations between Philosophy and Mathematics in Leibniz*, ed. Goethe, Beeley and Rabouin), "Presupposition, Aggregation, and Leibniz's Argument for a Plurality of Substances" (forthcoming in *The Leibniz Review*), and "The Labyrinth of the Continuum" (forthcoming in *The Oxford Handbook of Leibniz*); two articles on Descartes, "Atoms" (forthcoming in the **Cambridge Descartes Lexicon**, ed. Larry Nolan), "Beeckman's Discrete Moments and Descartes's Disdain", (forthcoming in *Intellectual History Review*, ed. Slowik and Gorham); and two articles in the philosophy of physics, "Can thought experiments be resolved by experiment? The case of 'Aristotle's Wheel'" (forthcoming in *Philosophical Thought Experiments*, ed. Meynell, Brown and Frappier), and "Virtual Processes and Quantum Tunnelling as Fictions" (submitted for a special issue of *Science & Education*, ed. David Blitz). He also gave the first of these papers as a talk at the Fifth Annual Conference of the North American Leibniz Society in San Diego. Also in 2011 Arthur's introductory logic text, *Natural Deduction: An introduction to logic with real arguments, a little history and some humour*, was published by Broadview Press (May 2011).

QUEEN'S UNIVERSITY

Donald Forsdyke (Department of Biomedical and Molecular Sciences, Queen's University) is adapting the approach of Salman Khan's "Khan Academy" (see http://www.khanacademy.org/) to prepare sets of You Tube videos for High School and College students on (i) Evolutionary Principles in Everyday Language, (ii) Natural Selection from a Historical Perspective, and (iii) Blending Inheritance from a Historical Perspective. Each set consists of twelve videos (circa 15 minutes each), for a total of 3 hours viewing. They may be accessed by way of: http://post.queensu.ca/~forsdyke/videolectures.htm . Forsdyke also continues to serve on the organizing committee of the John Austin Society which, for several decades, has hosted evening seminars on various aspects of the history and philosophy of medicine and science. Despite its forbidding title, a second edition of his textbook on *Evolutionary Bioinformatics* (Springer 2011) contains much to interest historians and philosophers.

SAINT MARY'S UNIVERSITY

Lisa Gannett continues to do research on group concepts (population, race, ethnicity, etc.) in genetics and genomics, including their historical inceptions in the work of Theodosius Dobzhansky. Lisa had her first sabbatical last year, during which she spent time as a visiting scholar in Veronika Lipphardt's research group on "Producing Knowledge About Human Biological Diversity" at the Max Planck Institute for the History of Science in Berlin. Lisa gave invited talks at the "First European Advanced Seminar in Philosophy of the Life Sciences: Causation and Disease in the Postgenomic Era" in Geneva, the Holtz Center for Science and Technology Studies at the University of Madison--Wisconsin, Mount Allison University, the University of

Belgrade, the annual philosophy of science conference in Dubrovnik, the Bay Area Biosystematists' conference on race in evolutionary biology at the University of San Francisco, and the "Natural Kinds in Philosophy and in the Life Sciences" workshop at the University of Granada (co-hosted by the Konrad Lorenz Institute). Many thanks to everyone who made these opportunities possible and offered such wonderful hospitality!

UNIVERSITY OF ALBERTA

As part of his SSHRC grant project "Integrating Different Biological Approaches: A Philosophical Contribution" (2008-2012), **Ingo Brigandt** is currently editing a special issue of the *Journal of Experimental Zoology* (Molecular and Developmental Evolution). The papers grow out of two past workshops on integration in the context of evolutionary developmental biology and explanations of evolutionary novelty, which brought together philosophers and biologists. In September 2011 Ingo organized the workshop "Integration in Contemporary Biology: Philosophical Perspectives on the Dynamics of Interdisciplinarity," where philosophers discussed integration in different areas of biology (from cancer genetics to neuroscience and paleontology). In 2012 he will edit the papers of this third workshop as a special issue of *Studies in History and Philosophy of Biological and Biomedical Sciences*.

Robert Smith was chosen as one of the University of Alberta's Killam Annual Professors for 2011/12. A revised and updated version of his *Hubble: Imaging Space and Time* (co-authored with David DeVorkin and first published in 2008) will appear in paperback in November 2011. He is currently completing a chapter on scientific naturalism and the origins of astrophysics for a forthcoming volume on Evolutionary Naturalism that is being edited by Gowan Dawson and Bernie Lightman. Robert is also continuing to follow the development and construction of the James Webb Space Telescope, the total cost of which is now expected to be close to $10 Billion.

UNIVERSITY OF BRITISH COLUMBIA

In January of this year **James Hull** became the Editor-in-Chief of *Scientia Canadensis*, the journal of the Canadian Science and Technology Association. In May he chaired two sessions at the BC Studies Conference in Kelowna, one that he organized, on local history and one dealing with engineering infrastructure. His paper "Let Freeness Ring: The Canadian Standard Freeness Tester as Hegemonic Engine" appeared in the journal *Spontaneous Generations*. 4, no. 1.

Margaret Schabas has recently published (co-authored with Carl Wennerlind), "Hume on Money, Trade, and the Science of Economics," *Journal of Economic Perspectives* (Summer 2011) 25.3: 217-30. She is currently working on selected topics in the history and philosophy of bioeconomics.

UNIVERSITY OF CALGARY

Martin S. Staum's book *Nature and Nurture in French Social Sciences, 1859-1914 and Beyond* has been released by McGill-Queen's University Press in mid-October. The topics include ethnography and anthropology, psychology, and sociology with an epilogue on the Vichy era.

UNIVERSITY OF GUELPH

Tara Abraham has an article in press for *Studies in History and Philosophy of Biological and Biomedical Sciences*, entitled "Transcending Disciplines: Scientific Styles in Studies of the Brain in Mid-Twentieth Century America". She also is guest editor for a forthcoming issue of *Interdisciplinary Science Reviews* that focuses on Warren S. McCulloch, and is contributing a paper to that issue entitled ""The Materials of Science, the Ideas of Science, and the Poetry of Science": Warren McCulloch and Jerry Lettvin".

In 2011, **Sofie Lachapelle** published *Investigating the Supernatural: From spiritism and occultism to psychical research and metapsychics in France, 1853-1931*(Johns Hopkins University Press, 2011) and presented several papers including one on scientific toys at the Society for the History of Children and Youth. She is presently working on a book-length manuscript on science, magic and entertainment in modern France and an article on the aquarium of the 1931 French colonial exposition (with student Heena Mistry.) She continues to be co-editor of Communiqué.

Brooke Struck has given several guest lectures and conference presentations in 2011, mainly on the topics

of scientific explanation and the metaphysics of personal identity. He is also organizing an inter-disciplinary conference, Philopolis Guelph, for March 2012. He is currently working towards his PhD in Philosophy at the University of Guelph.

UNIVERSITY OF KING'S COLLEGE

Mélanie Frappier is working on the role of thought experiments in the development of quantum mechanics; the notion of interpretation in 20th-century physics; and Poincaré's views on atomism and quantum physics. She is also working hard to make HOPOS 2012 (Halifax) a huge success! Her recent publications include (with Katharine Anderson, Elizabeth and Neswald, Trim Henry) "Reading Instruments: Objects, Texts and Museums." Science and Education. Her books in progress include Brown, Derek, Robert, James, Frappier, Mélanie, and Meynell, Letitia, eds. *Thought Experiments in Science, Philosophy, and the Arts*, London: Routledge; and Frappier, Mélanie, Brown, Derek, and DiSalle, Robert eds. *Analysis and Interpretation in the Exact Sciences: Essays in Honour of William Demopoulos*. (Dordrecht: Springer).

Georgy Levit is currently overseeing, with Brian Hall (Dalhousie) a monograph and English translation of key works of the hugely influential (but little studied) Estonian naturalist and philosopher of biology, Karl Ernst von Baer (1792-1876). This project is funded by the University of King's College Centre for Interdisciplinary Research. Recent publications include his coeditorship and contributions to *Ivan Schmalhausen: Die Evolutionsfaktoren* (Franz Steiner Verlag, 2010); "Evolutionary Developmental Biology: Its Concepts and History with a Focus on Russian and German Contributions", *Naturwissenschaften*, 97 (2010); and an invited book chapter, "Looking at Russian Ecology through the Biosphere Theory", *Revisiting ecology: Reflecting concepts, advancing science.* (Springer, 2011). Invited conference presentations include "Can Darwinism Be 'Generalized' and of What Use Would This Be?" EAEPE Conference, 28-30 October 2010. Bordeaux (France); "Warum ist der 'generalisierter Darwinismus' weder darwinistisch noch nutzbar?" XIX Jahrestagung der Deutschen Gesellschaft für Geschichte und Theorie der Biologie (DGGTB), Lübeck, 24.-27.06.10 (Germany); "Ludwig Plate and Evolutionary Biology". Conference: "100th Anniversary of K.M. Zavadsky". 13.05.10. St. Petersburg Branch of S.I. Vavilov Institute for the History of Science (Russia). He also published Levit, Georgy and Hossfeld, Uwe, "Darwin without borders? Looking at 'generalized Darwinism through the prism of the 'hourglass model'", in *Theory in Biosciences* (138) (DOI). This article is part of a major reinterpretation of Darwinism that Dr. Levit and others are working on to disprove the so-called 'generalized Darwinism' that sought to include socio-economic evolution within strictly Darwinian terms.

Gordon McOuat continues to Direct the 7-year SSHRC project: "Situating Science: National Cluster for the Humanities and Social Studies of Science". For more information on the Cluster activities, see: www.SituSci.ca. He is co-editing, with Bernie Lightman and Larry Stewart, the papers from the 2010 international conference, "Circulating Knowledge: East and West" (Brill, forthcoming), and is co-organising the follow-up SSHRC-funded conference, "Narratives of Nature: East and West", Manipal, India, December 12-14 (a partnership collaboration between the STS/HPS communities in Canada and India).

Stephen Snobelen recently published an examination of the theological contexts of Isaac Newton's *Principia* ("The theology of Isaac Newton's Principia mathematica: a preliminary survey". *Neue Zeitschrift für Systematische Theologie und Religionsphilosophie* 52 (2010): 377-412) and has a forthcoming study demonstrating that, contrary to popular conceptions, Newton did not believe in a clockwork universe ("The myth of the clockwork universe: Newton, Newtonianism and the Enlightenment", in *The persistence of the sacred in modern thought*, ed. Chris L. Firestone and Nathan Jacobs, University of Notre Dame Press). He has also contributed to *The Newton Guidebook*, ed. Douglas Leckie (The Faraday Institute, forthcoming 2011). Stephen continues to direct the Newton Project Canada and currently is supervising three transcribers who are rendering a Newton prophetic manuscript into XML code for the Newton Project website (www.newtonproject.sussex.ac.uk).

Ian Stewart has contributed two papers this year at international symposia in Bucharest and London (UK)

as part of the 5-year research project, *Francis Bacon and the Medicine of the Mind* funded by the European Research Council (principles: Guido Giglioni, Warburg Institute; Dana Jalobeanu, ERC, Bucharest). His paper, ""Res, veluti per machinas, conficiatur": Natural History and the 'Mechanical' Reform of Natural Philosophy", Early Science and Medicine (forthcoming, 2012). He is Director of the UKC Centre for Interdisciplinary Research.

UNIVERSITY OF LETHBRIDGE

Kent A. Peacock, in collaboration with Kevin deLaplante (Iowa State) and Bryson Brown (Lethbridge), has just published *Philosophy of Ecology* (Elsevier, 2011). This is a collection of research papers on current frontiers in the philosophy of the science of ecology. It is Vol. 11 in *Handbook of the Philosophy of Science*, under the general editorship of D. M. Gabbay, P. Thagard, and J. Woods. It contains papers by the editors and J. Baird Callicott, John Collier, Mark Colyvan, Graeme S. Cumming, Christopher Eliot, James Justus, Brendon M. H. Larson, Greg Mikkelson, Bryan Norton, Jay Odenbaugh, Valentin D. Picasso, Sahotra Sarkar, Katie Steele, and Arnold van der Valk. Kent is now turning his attention to some of his favourite puzzles in foundations of physics, including nonlocality and its implications for our understanding of time.

UNIVERSITY OF MANITOBA

Martin Clutton-Brock recently published jointly with David Topper a paper, "The Plausibility of Galileo's Tidal Theory" in *Centaurus*, vol 53, #3, August 2011, pp. 221-235. He is now working on a paper "Fruitful Errors in Astronomy," in which he attempts to show that the major ideas of Copernicus, Tycho Brahe, Kepler, Galileo and Newton had their origin in erroneous concepts. He is looking forward to reading Derek Webster's work.

UNIVERSITÉ DE MONTRÉAL

"Hilbert Programme and Applied Proof Theory" de **Yvon Gauthier** est paru dans *Logique et Analyse*, 213 (2011), 49-68. Cet article a fait l'objet d'une conférence invitée au colloque européen de l'Association for Symbolic Logic à Barcelone en juillet dernier et l'Abstract sous le même titre paraîtra dans un prochain numéro de le *Bulletin of Symbolic Logic*. Un autre article "Kronecker in Contemporary Mathematics. General Arithmetic as a foundational Programme" est à paraître. Enfin Gauthier a participé en octobre à un colloque international organisé par les soins de François Lepage du département de philosophie à l'Université de Montréal "La crise des fondements: quelle crise?". Sa contribution devrait paraître en 2012 dans les Actes du colloque sous le titre "De Kronecker à Gödel via Hilbert: l'idée de fonctionnelle polynomiale".

Jean-Pierre Marquis has been recently looking at the categorical foundations of mathematics, categorical logic and the nature of (mathematical) identity, homotopy theory and the conception of space in 20th century mathematics, the nature and rise of abstraction in modern mathematics and, finally, mathematical cognition and philosophy of mathematics. He has recently published a paper in *Synthese* entitled "Mathematical Forms and Forms of Mathematics: Leaving the Shores of Extensionality" and his paper "Bunge's Philosophy of Mathematics: An Appraisal" will appear in *Science and Education*.

UNIVERSITÉ DE STRASBOURG

Tricia Close-Koenig recently completed her PhD in History and Epistemology of Science at the Université de Strasbourg. Her thesis, titled "Betwixt and between. Production and commodification of knowledge in a medical school pathological anatomy laboratory, Strasbourg (mid-19th century to 1939)," is an intersection of history of science and economics reflections of science, laboratories and medicine. She presently has a short-term postdoctoral position in Strasbourg working on a comparative study of pharmaceutical marketing and advertisements in France and Germany.

UNIVERSITY OF TORONTO

In 2011, **Joseph Berkovitz** worked on the foundations of probability, causal explanation in physics, Hume on induction and supernatural miracles and science. His paper on de Finetti's subjective theory of probability and its application to the interpretation of quantum mechanics is now in press in Y. Ben Menahem and M. Hemmo (eds.), *Probability in Physics*, Springer, The Frontiers Collection; and his entry on the Ergodic Hierarchy and its relevance for classical statistical physics (co-authored with Roman Frigg and Fred Kronz) was published in April in the *Stanford Encyclopedia*

of Philosophy. He is now completing a paper on the propensity interpretation of probability. He presented a paper on Hume on induction at the 38 Dubrovnik Philosophy of Science conference in April and at the Philosophy of Science Pizza Seminar, University of Toronto, in October; a paper on causal explanation in physics at the Causality, Inference and Science workshop, Complutense Universitat de Madrid; and a paper on de Finetti's philosophy of probability in March at the GRECC colloquium, Universitat Autònoma de Barcelona.

Anjan Chakravartty continued to bob and weave through University bureaucracy as Director of the IHPST while stealing moments for a number of other projects. Of the latter, his proudest achievement is the publication of a special issue of *Studies in History and Philosophy of Science* dedicated to the work and memory of the late, great, Peter Lipton, entitled "Explanation, Inference, Testimony, and Truth". Another milestone was the publication of a new entry on "Scientific Realism" for *The Stanford Encyclopedia of Philosophy*, replacing Richard Boyd's longstanding contribution. Other papers were published in *The Monist* (on scientific kinds), *Synthese* (on epistemic voluntarism), and *Studies* (on scientific perspectivism). (See http://individual.utoronto.ca/anjan for downloads.) Highlights of travel included a good old-fashioned debate with Stathis Psillos on the topic of laws of nature at the Université Catholique de Louvain, and a workshop on causal powers at St. Louis University. Looking ahead with excitement and trepidation, Anjan will take over the editorship of *Studies in HPS* from Cambridge's Nicholas Jardine and Marina Frasca-Spada as of January 2012.

In 2011, **Lucia Dacome** completed her essay "Balancing Acts: Picturing Perspiration in the Long Eighteenth Century", which is now in press in *Studies in History and Philosophy of Science*, and worked on her project on mid-eighteenth-century anatomical models. She presented her paper "Swinging on the Scale: The Life of a Scientific Image in Early Modern Europe", at the Centre for Reformation and Renaissance Studies, University of Toronto; and her paper "Dazzled to the Point of Confusion: Anatomy and Midwifery in Eighteenth-Century Italy", at the Science, Technology, and Medicine Colloquium Series, Johns Hopkins University.

Yiftach Fehige enjoyed a week long stay in Germany to complete a second doctorate in theology at the University of Tuebingen. He is happy to report on progress in his research on thought experiments, some of which is reflected in his entry on thought experiments in the *Stanford Encyclopedia of Philosophy* (co-authored with Jim Brown). In addition, he published: "Gedankenexperimente in der Offenbarungstheologie/ Thought Experiments in Revealed Theology", *Deutsche Zeitschrift für Philosophie* 59 (2011): 109-129. "Transsexuality: Reconciling Christianity and Science", *Toronto Journal of Theology* 27 (2011): 51-72. "The Negation of Nonsense is Nonsense: Hilary Putnam on Science and Religion", *Neue Zeitschrift für Systematische Theologie und Religionsphilosophie* 52 (2010): 350-376. "The »art of dialogue« and the Jewish-Christian encounter", *Jahrbuch für Religionsphilosophie* 9 (2010): 67-93. Forthcoming is: *Das Offenbarungsparadox. Auf dem Weg zu einem christlich-jüdischen Dialog/ The paradox of revelation: On the way to a Christian-Jewish Dialogue*, Paderborn: Schöningh (volume 34 of the series Studies in Judaism and Christianity), and Bodies, Thought Experiments, and Phenomenology, in: *Thought Experiments in Philosophy, Science, and the Arts*, edited by James R. Brown, Melanie Frappier, Letitia Meynell. New York; London: Routledge (co-authored with Harald Wiltsche).

Curtis Forbes' dissertation aims to develop scientific realism as a resource for social criticism about the role of science in society as a way of responding to the critical capacities of anti-realist account of science. He recently finished editing a focussed discussion in *Spontaneous Generations* on "Science and Public Controversy."

Paul Greenham is currently a 3rd year PhD student at the IHPST in Toronto. He is interested in Early Modern Science and Religion, particularly 17th century England. His current project involves alchemy or "chymistry" and spirituality in Isaac Newton. He is interested in 17th century matter theory and concepts of the aether and the interaction between an immaterial God or soul and the material world. Additionally, he is fully involved in the University of Toronto Scientific Instruments Collection (UTSIC), preserving and cataloging old scientific instruments from the various departments at the University of Toronto, making them available online

for research and displays. He is currently leading the initiative to prepare an exhibit and symposium on the past and present value of the Transit of Venus with the Astronomy Department and the Royal Astronomical Society of Canada.

Bruce J. Petrie, a PhD candidate at the IHPST, is continuing to write his dissertation "The Roots of Transcendental Numbers: A Historical Perspective of the Development of Transcendental Number Theory 1737-1844." His article "Leonhard Euler's Use and Understanding of Mathematical Transcendence" is being submitted for publication and he has recently presented "Johann Lambert's Use and Understanding of Mathematical Transcendence" at the Joint Mathematics Meetings in New Orleans and "Following your Gut and Following the Rules: The Function of Intuition and Algorithm in 18th Century Analysis" at the joint meeting of the British and Canadian history of mathematics societies in Dublin. He will be presenting at the winter meeting of CSHPM this December in Toronto and in the special session on the relations between history and pedagogy of mathematics at the Eastern Sectional AMS conference this March in Washington.

Mark Solovey has a one-year fellowship (2011-12) at Harvard's Charles Warren Center for Studies in American History. The Center's history of science-related theme this year is "The Politics of Knowledge in Universities and the State," and Mark's project is "The Politics-Patronage-Social Science Nexus, from the War in Vietnam to the War on Terror." Mark is also the lead co-editor for a forthcoming book of essays called *Cold War Social Science: Knowledge Production, Liberal Democracy and Human Nature* (Palgrave Macmillan, Jan. 2012). This book emerged from a SSHRC-sponsored workshop held at the UofT in May 2011. Contributing authors include Marga Vicedo (UofT IHPST), Edward Jones-Imhotep (York U. STS) and two UofT IHPST graduates, Janet Martin-Nielsen (postdoctoral fellowship at Aarhus U. in Denmark) and Michael Bycroft (phd program, Cambridge U. in England)

Paul Thompson had *Agro-Technology: A Philosophical Introduction* published by Cambridge University Press (released in August). Its contents are: Introduction, 1: Scientific Background, 2: Application of Genetics in Agriculture, 3:Philosophical and Conceptual Background, 4: The Controversy: Ideological and Theological Objections, 5: The Controversy: Purported Benefits, 6: The Controversy: Purported Harms, 7: The Organic Alternative, 8: Impact on Low and Middle Income Countries: Poverty, Farming and Colonial Legacies, Concluding Remarks. Also, two articles have appeared since the last issue of Communiqué: "Theories and Models in Medicine" and "Causality, Theories and Medicine." He has given three invited lectures: "Randomized Controlled Trials: Gold Standard or Methodological Chaos?" "In Defense of Genetically Modified Food," and "Evolutionary Ethics: The Strong Programme"

Marga Vicedo published "The Social Nature of The Mother's Tie To The Child: John Bowlby's Theory of Attachment In Post-War America," in the *British Journal for the History of Science*, and gave talks at the GTA History and Philosophy of Science Annual Meeting at Guelph University, and at the American Historical Association Annual Conference held in Boston. In addition, she had a great time at the CSHPS annual meeting in New Brunswick. She was also happy to be promoted to associate professor with tenure at the IHPST at the University of Toronto.

UNIVERSITY OF WESTERN ONTARIO

Michael Cuffaro is a PhD Candidate whose research interests are primarily in the areas of philosophy of physics (in particular the philosophy of quantum mechanics) and Kant studies. His article "The Kantian Framework of Complementarity" appeared in the November 2010 issue of *Studies in History and Philosophy of Modern Physics*. His current research focuses on the philosophical implications of quantum information theory (in particular, quantum computation), and he has presented versions of his paper in progress entitled "Many Worlds, the Cluster State Quantum Computer, and the Problem of the Preferred Basis," at the CSHPS annual meeting in Fredericton in May 2011 and at the CLMPS (Congress of Logic, Methodology, and Philosophy of Science) meeting in Nancy, France in July 2011.

YORK UNIVERSITY

Kean Birch is a new appointment to York's Graduate Program in STS. His primary interests are in the political

economy of technoscience especially in relation to biofuels, biotechnology and the emerging bioeconomy. He has broader interests in research and innovation policy along with the position of open science in knowledge economies. He currently teaches in York's Business & Society undergraduate program, and is associate editor of Science as Culture.

Over the past year or two **Darrin Durant** has been focusing on the issue of the place of expertise in democracies (*Social Studies of Science* 41(5) 2011), on the vexed problem of normativity within STS (*Perspectives on Science* 18(2) 2010), and on bigger questions about the problem with oil and nuclear being in our energy futures (with talks in Seoul and Cleveland, and two forthcoming book chapters).

Edward Fenner is an MA candidate in STS under the guidance of Richard Jarrell and supervision of Katherine Anderson. He is researching the previously unknown papers of late American experimental atomic physicist Robert J. Van de Graaff, which include over 9,000 pages of documentation, photographs, and artifacts. His research has also uncovered a previously-unknown audio recording of Robert as well as his Oxford University notes where he first theorized his eponymous generator. Edward's post-MA goal is to write a biography of Van de Graaff and his pioneering contributions to physics, medicine, and Allied defense efforts during World War II.

Christopher Green continues to work on a book tentatively titled "Psychology and Its Cities," which examines how events in New York, Boston, Baltimore, and Chicago affected the development of these cities' respective schools of psychology. He has also assembled a working group of eight colleagues and students to conduct digital analyses of databases related to psychology's past. His most recent publications include "How to find refutations of the Golden Section without really trying" (*Empirical Studies of the Arts*, 2012), "John Wallace Baird: The first Canadian president of the American Psychological Association" (with D. Lahham, *Canadian Psychology*, 2012), and "Baseball's first power surge: Home runs in the late 19th-century major leagues" (*Baseball Research Journal*, 2011).

Leslie Korrick is Associate Professor in the Department of Visual Arts and holds graduate appointments in Art History & Visual Culture and STS. Her work focusses on intersections between the arts; constructions of culture through art forms, urban spaces, collecting, and display; art-science relations; and sound studies. She is leader of the soundseminar, an inter-university, multi-disciplinary research group exploring sound as both a medium of practice and cultural marker, and member of the editorial collective for *InTensions* (www.yorku.ca/intent), an e-journal on the theatricality of power and sensory regimes.

Kenton Kroker is Director of York's STS graduate program. He presented his analysis of epidemic encephalitis as an early construct of 20th-century biomedical management at the American and Canadian medical history societies. He also presented a paper on "Epidemic Encephalitis, an inversion of influenza" at a conference on the history & politics of influenza after 1918, in Rennes last August. He is currently working (with Francesc Rodriguez) on a quantitative analysis of epidemic encephalitis medical bibliographies.

Bernie Lightman was elected a Fellow of the Royal Society of Canada this past summer. He continues his post as Director of York's Institute for STS. He was also a member of the keynote panel for the Northeast Victorian Studies Association, where he spoke about "Victorian Systems and Creeds," and he gave the Stillman Drake Lecture at the 2011 CSHPS-SCHPS meeting in Fredericton on "Science at the Metaphysical Society." His recent publications include "Science and the Public," in *Wrestling with Nature: From Omens to Science* (eds. P. Harrison, R. Numbers & M. Shank, UChicago 2011), and "Refashioning the Spaces of London Science: Elite Epistemes in the Nineteenth Century," in *Geographies of Nineteenth-Century Science* (eds. D. N. Livingstone & C. W. J. Withers, UChicago 2011). He has also co-edited (with G. Dawson) the first four volumes of an eight-volume series on Victorian Science and Literature.

Eleanor Louson is a new doctoral student in STS. With a background in biochemistry and philosophy (Bishop's), and an MA in the history & philosophy of biology (IHPST), her current research deals with the production and theoretical content wildlife films, as

well as the ways in which animal behaviour is presented to and interpreted by audiences. She recently taught a course in the History of Evolutionary Biology at the University of Toronto.

In the past year, **Aryn Martin** published articles on maternal/fetal microchimerism in *Body & Society (*16(3): 23-50) and in *Resources for Feminist Research (*33 (3&4):31-46). Two book chapters also appeared: "Science as Culture" in a new Sociology textbook, *Power and Everyday Practices* (eds. Brock, Thomas and Raby) and "Labelling Lisbeth" in *The Girl With the Dragon Tattoo and Philosophy* (ed. Bronson). She delivered papers at the 4th Annual GTA Symposium in Guelph (on the conceptual history of the placental barrier) and at The Berkshire Conference on the History of Women (on infant sleeping, SIDS and statistical thinking). She also delivered her second child, Max, in September.

Cameron Murray (PhD III) has a broad range of interdisciplinary research interests that combine methodological approaches to media studies, STS, and the anthropology of science. These interests include: large-scale genomics and proteomics research projects in Canada; the use of virtual reality technologies in biomedical research; and the social and ethical implications of Canada's biomedical research funding infrastructures. His dissertation research will be a multi-sited ethnography that explores the social, cultural, political and economic contexts in which human bodies, biomedical databases, visualization technologies, and clinical environments are being reimagined and reconfigured by bioinformaticians working in the emerging cross-disciplinary field of translational science.

Francesc Rodriguez is a graduate student (PhD I) and holder of a Trillium Award. His main area of study is the relationship between science and society with a particular interest in the field of science communication. He focusses on international comparaisons of mechanisms for engaging citizens in scientific decision-making processes. His other areas of interest are Niklas Luhmann's systems theory and his dialogue with second-order cybernetians; social network analysis; and communicative research methodologies.

Thomas Teo is Professor of Psychology and editor of the *Journal of Theoretical and Philosophical Psychology*. At the moment he is editing an *Encyclopedia of Critical Psychology*. His research has focused on the role of critique in the history of psychology, the history and theory of philosophical psychology, and scientific racism. He analyzes the historical and theoretical foundations of the social sciences, the human sciences, and psychology, as well as the ontological, epistemological, and ethical-political challenges to these fields.

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ANNOUNCEMENTS

CALLS FOR PAPERS

Seventh Joint Meeting of the BSHS, CSHPS, and HSS

The seventh joint meeting of the British Society for the History of Science, the Canadian Society for the History and Philosophy of Science, and the History of Science Society will take place in Philadelphia, Pennsylvania, USA from July 11-14th, 2012. Previous successful meetings were in Oxford, England (2008); Halifax, Nova Scotia (2004); St Louis, Missouri (2000); Edinburgh, Scotland (1996); Toronto, Canada (1992); and Manchester, England (1988). Unlike some three-society meetings in the past, the 2012 conference has no stated theme; papers on all topics in the history of science are welcome. As 2012 marks the centennial of *Isis*, papers related to the history of both *Isis* and/or the discipline would be timely.

The Philadelphia Area Center for the History of Science (PACHS) is helping with the arrangements. Dorm room accommodations will be available at the University of Pennsylvania, and a small number of hotel rooms will be reserved for the conference (individuals will need to call the hotel directly or visit the HSS website, hssonline.org, for reservations). The program will include parallel themed sessions, plenary lectures, education and outreach activities, and events at the American Philosophical Society, the Chemical Heritage Foundation, and the University of Pennsylvania. A more extensive social program is being developed by the local organizers. The conference schedule will offer delegates the opportunity to

explore the many attractions to be found in the "City of Brotherly Love," including Philadelphia's extensive links to the history of science. The Program Committee welcomes proposals for sessions or individual papers from researchers at all stages of their careers. Participation is in no way limited to members of the three organizing societies, but there will be a registration discount for members. Intending participants should also note that the usual HSS rules concerning presenting at successive conferences do not apply to this meeting. Full details of how to submit your session or abstract will be available shortly on the HSS website at hssonline.org. Inquiries concerning this conference should be directed to info@hssonline.org. The deadline for submitting a session or abstract is December 5th, 2011.

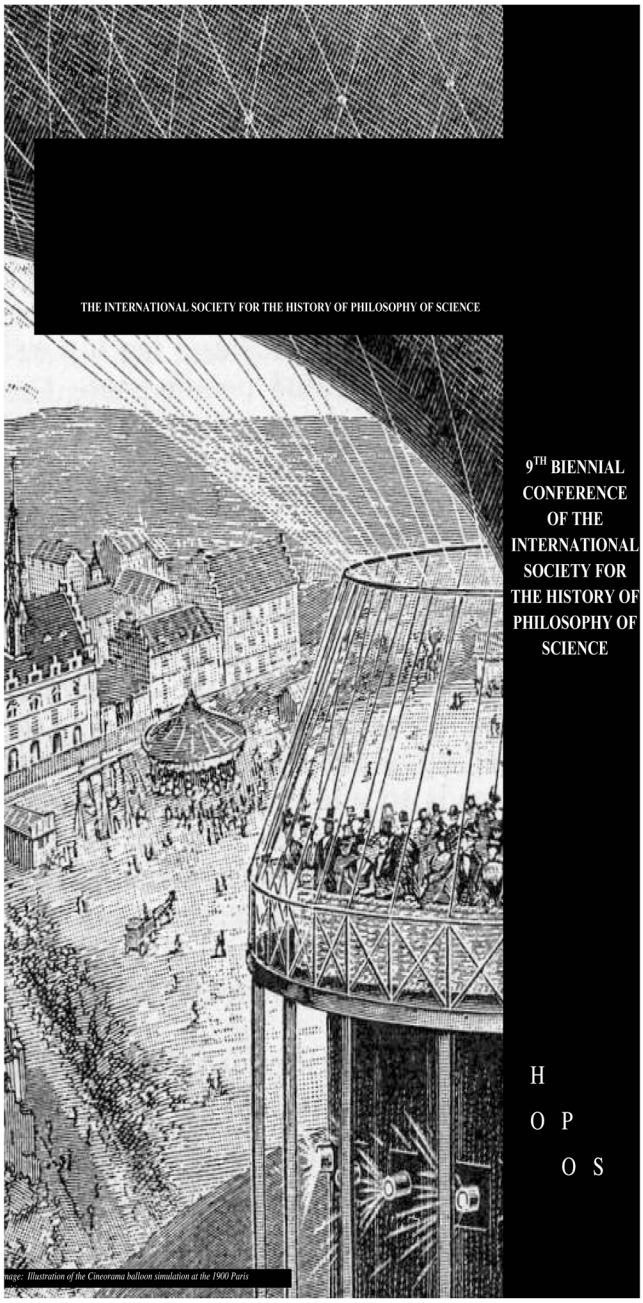
HOPOS 2012

The program committees for the International Society for the History and Philosophy of science (HOPOS) 2012 invites scholars to submit paper and symposium proposals for its ninth meeting which will be held in Halifax, June 21-24, 2012 with keynote speakers: Ian Hacking (University of Toronto), Penelope Maddy (University of California, Irvine), Heinrich von Staden (Institute for Advanced Study). In order to encourage scholarly exchange across the temporal reach of HOPOS, the program committee especially encourages submissions that take up philosophical themes that cross time periods. Submissions should be sent as an email attachment directly, either as a Word document or PDF file, to the following email address: hopos2012.submissions@gmail.com. For more information visit: http://hopos2012.philosophy.dal.ca/ or email us at: hopos@dal.ca. Deadline: January 15, 2012.

24th International Congress of History of Science, Technology and Medicine

July 22 - 28, 2013 Manchester, United Kingdom

The International Congress of History of Science, Technology and Medicine is the largest event in the field, and takes place every four years. Recent meetings have been held in Mexico City (2001), Beijing (2005) and Budapest (2009). In 2013, the Congress will take place in Manchester, the chief city of Northwest England, and the original "shock city" of the Industrial Revolution.



mage: Illustration of the Cineorama balloon simulation at the 1900 Paris

Congress facilities will be provided by The University of Manchester, with tours and displays on local scientific, technological and medical heritage co-ordinated by members of the University's Centre for the History of Science, Technology and Medicine. The Congress requires that each Symposium is organised by two or more individuals from different countries. Organisers may be representatives of institutions, or act together as individuals. We encourage organisers to ensure that the composition of their panels reflects a range of different national backgrounds and perspectives.

The theme of the 24th Congress is 'Knowledge at Work.' All proposals must indicate how the Symposium fits into this theme, broadly considered. Each Commission of the Division of the History of Science and Technology of the International Union for the History and Philosophy of Science is expected to organise at least one Symposium in its area. Language: Papers may be presented in any of the following languages: English, French, Spanish, German, Italian, Chinese, Portuguese, Russian and Arabic. Descriptions of Symposia may be submitted in any of these languages, but must be followed by a French or English translation. Unfortunately, we are unable to provide facilities for translation at the Congress. Summary of key dates: First circular 31 October 2011; Deadline for submission of symposia proposals 30 April 2012; Second circular and call for individual papers 1 May 2012; Decisions on accepted symposia announced 30 June 2012; Deadline for submission of individual papers 30 November 2012. Decisions on individual papers announced 1 February 2013; Early registration opens 31 March 2013; Third circular and full programme 1 April 2013; Deadline for accommodation reservations 21 May 2013; Final date for registration 1 July 2013; Congress opens 22 July 2013; Congress closes 28 July 2013.

Canadian Bulletin of Medical History/Bulletin canadien d'histoire de la médecine

The CBHM/BCHM is looking for submissions for its fall 2012 and fall 2013 issues. The journal is interested in any submission that deals broadly with history of health and medicine. We accept manuscripts in English and French. For further information please contact Dr. Kristin Burnett at kburnett@lakeheadu.ca Author guidelines are available at the following url:
http://www.cbmh.ca/index.php/cbmh/about/submissions#authorGuidelines

The Canadian Bulletin of Medical History/Bulletin canadien d'histoire de la médecine is one of the leading journals in the history of medicine. It is published twice a year by Wilfrid Laurier University Press for the Canadian Society for the History of Medicine. The Canadian Bulletin of Medical History presents refereed articles and other information on all aspects of the history of medicine, health care, and related disciplines.

Philopolis

Daily life is full of interesting philosophical issues (How ethical are my eating practices? Why do I believe what I believe? What does it mean to be sexed or gendered?). However, academic philosophers these days could be doing a better job of engaging in dialogue with members of the broader public, who are also interested in these questions. Philopolis is an event that aims to facilitate just such an exchange through panel discussions, workshops, and activities of many kinds. Philopolis welcomes and actively encourages the curious of mind from all backgrounds to take part, drawing on this diversity to enrich the whole. The event is generously supported by the University of Guelph, and offers free admission as well as light snacks and drinks throughout the weekend.

The Philopolis conference series will come to Guelph for the first time March 2-4, 2012. We're anticipating about 60 activities throughout the course of the weekend, all taking place at the University of Guelph. If you would be interested in presenting an activity, please fill out this form (submission deadline is January 6th, 2012). We are also looking for volunteers to help run the event, so if you'd be interested in lending a hand, please fill out this form. More information can be found on our website and our Facebook page. The schedule of Philopolis Montreal 2011 can be found online, if you'd like to see what the event has looked like in the past. You can also get in touch with the Philopolis organizers via email: <guelph@philopolis.net>.

PRIZES

International Committee for the History of Technology Prize for Young Scholars

The ICOHTEC Prize is sponsored by the Juanelo Turriano Foundation and consists of 3,000 Euro. The prize winning book will be presented and discussed at a special session of the next ICOHTEC symposium, July 2012 in Barcelona. ICOHTEC, the International Committee for the History of Technology, is interested in the history of technology, focusing on technological development as well as its relationship to science, society, economy, culture and the environment. The history of technology covers all periods of human history and all populated areas. There is no limitation as to theoretical or methodological approaches. Eligible for the prize are original book-length works in any of the official

ICOHTEC languages (English, French, German, Russian or Spanish) in the history of technology: published or unpublished Ph.D. theses or other monographs written by scholars who, when applying for the prize, are not older than 37 years. Articles and edited anthologies are not eligible. For the ICOHTEC Prize 2012, please send a copy of the work you wish to be considered for the prize to each of the three Prize Committee members. Your submissions must be postmarked no later than 23 January 2012.

The Organism Issue continued...

Simmons draba cont'd from p. 1
mereland" – preserving them for scientific study by drying them out using a plant press, creating a permanent, two-dimensional sample. Placed in the hold (maybe alongside some decent provisions – by many accounts the members of this expedition lived well onboard), Simmons' collection accumulated greatly until their return to Oslo.

Upon returning to their home shore – no doubt a steady, welcome relief from the rolling North Atlantic - Simmons set about examining his extensive holdings as a prelude to publishing the first flora of Ellesmere. Out of the 115 species he reported for the island, the plant we now know as Draba simmonsii caught his eye as something a bit different. This plant, which he originally thought was Draba alpina, was too different in stature and flower size to be completely referable to the plain old Alpine draba. Therefore, he described it as a new variety – then the standard botanical way of enumerating physical variation within a species. This Draba alpina var. gracilescens was the first name for this largish arctic mustard. Simmons' specimens thereof, and those of the remaining Ellesmere species, were entrusted to the University of Oslo herbarium. They remain there today.

In many disciplines this may be the end of the story: we've answered the question as to the name of the species, filed the specimen for posterity and published the results. Done and dusted. However, the discipline of taxonomy (the naming of living organisms) would be downright unscientific if it failed to re-evaluate the concept of a species or variety in light of new evidence. All of the names given to a taxonomic group are in fact only hypotheses; inferences as to their evolutionary relationships with themselves and other organisms. As exploration of the Arctic intensified, new material became available to test these hypotheses, and Draba, one of the most taxonomically challenging arctic groups was tested extensively.

Alf Erling Porsild, in his Illustrated Flora of the Canadian Arctic Archipelago, published a comprehensive description of the entity that was Simmons' variety. Unfortunately, he did so using a different - misapplied name - Draba oblongata. This is a valid name within the Canadian Arctic flora, but it refers to a distantly related member of the Draba genus possessing white flowers. Ultimately this had led to the misapplication of both names (you cannot have two names for a single group) for over 50 years.

Only in the early years of the 21st century, when Reidar Elven from the University of Oslo examined the Canadian Arctic Drabas for the Flora of the Canadian Arctic Archipelago, did he realise that much of the Draba oblongata material offered up by the Canadian Museum of Nature's National Herbarium of Canada did not fit the name of the label. When he consulted Simmons' collection from his home herbarium (still in good shape after 100 years) with Brassicaceae expert Ihsan Al-Shebaz, they realized that Simmons was on to something when he recognized Draba alpina var. gracilescens.

With a suite of morphological characters worthy of species-level recognition, and intending to honour Simmons's work, they named this new species, based on Simmons' previous type, Draba simmonsii Elven & Al-Shebaz (their names tie the hypothesis to their concepts). Re-examinations of herbarium holdings in Norway and Canada and new collections since have revealed this species as not only common, but widespread throughout the Canadian Arctic.

Simmons draba is just one example of the taxonomic names evaluated during the process of writing a floristic treatment. Currently, researchers from the Canadian Museum of Nature, the University of Oslo, the University of Alaska and many other institutions are developing a new Arctic Flora of Alaska and Canada. As we begin to examine the specimens, we can only image the number of nomenclatural hypotheses we will find in need of testing. No doubt we'll be surprised that, in many cases, botanists working in very different conditions and very long ago, were indeed onto something.

To learn more about the Canadian Museum of Nature's Arctic Flora of Alaska and Canada project, please visit our website at: http://nature.ca/en/about-us/museum-news/news/five-year-project-record-arctics-botanical-bounty.

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Paul C. Sokoloff and Lynn J. Gillespie are both research scientists at the Canadian Museum of Nature.

Draba simmonsii (photo credit Lynn Gillespie © Canadian Museum of Nature)

Cancer cells ...cont'd from p. 1

a pathologists' disease. Histo-pathologists had been interested in cancer since the coining of the cellular theory. Rudolf Virchow had emphasized the principles of biopsy and its value in the diagnosis of malignant tumours, but he himself did not promote it for diagnosis of patients. In the nineteenth century, it was a pathologists' disease in fundamental research only. Histo-pathologists had the only tools and knowledge to "see" cancer cells and the cellular structure of cancerous tissue. By fixing, embedding and sectioning, histology physically and chemically transformed tissue samples from three-dimensional pieces into (almost) two-dimensional slices of cancer cells on slides. Staining subsequently transformed the colourless slices into something differentiable. Staining rendered some types of tissue and cells, and therefore their structure, visible. They were not only visible, they were colourful and even beautiful. They were all dressed up and as long as interest was confined to the production of fundamental knowledge, they remained within research laboratories, decorating research publications and medical school lectures.

Pierre Masson, the chair of pathological anatomy at the Université de Strasbourg and director of pathology at the Université de Montréal, argued for the recognition and use of histo-pathologists expertise in diagnosing cancers: "Histology is the surest method of medical diagnosis. Regarding cancer in particular, it is like no other." In 1923, different types of cancers could be recognized by their cellular structure, but surgeons and practitioners did not generally submit their clinical judgement to the consideration of cells cellular structure to establish or confirm a diagnosis. In what conditions would cancer cells enter the medical practice arena, for diagnosis and treatment of cancers and not just fundamental research of disease? In the interwar period, radiotherapists increasingly crouched on cancer treatment, which had been dominated by surgeons, not just as a last resort but as a therapeutic alternative, notably with the creation of specialized cancer treatment centres. On the international horizon cancer institutions were led by the French Centres Anti-Cancéreux (CAC). This organisational framework placed histo-pathologists and cancer cells on the stage, alongside surgeons and blades, and radiotherapists and radiation.

In establishing disease identities, there is a scheme of informing stained cancer cells with what they revealed or represented. As such, there was a double embedding of cells: they were embedded in paraffin and preserved for transformation into histo-pathology slides, but they were also embedded intellectually and transformed into histo-pathology knowledge. They were visualized, collected, accumulated, classified and finally articulated as words or names. Pathological anatomy had long catalogued and categorized gross specimens according to descriptive names based on anatomical system and tissue. This was no longer sufficient; a new language had to be established to describe and identify cell morphologies with disease. Histo-pathology disease identification and classification was based on a visual process, and although pathologists included images in communicating amongst themselves, these were meaningless to practitioners, surgeons or radiotherapists. In addition to producing fundamental knowledge, it had to be communicated, and pathologists had to additionally codify knowledge or make it talk.

Classifications standardize biomedical entities, like cancer cells, as systems encode knowledge and coordinate practice. Histo-pathology classification systems such as the (early) classification of cancer cell structures appear fully embedded in the laboratory, but actually went beyond the laboratory to form, and be formed by, therapeutic decisions and patient identities. Already half a century earlier, Virchow had pointed out that a classification of tumours into malignant and benign was as unscientific as would be classification of plants into poisonous and edible. He did, however, recognize that both procedures would be useful in practice. Considering cancer cells and where they were visualized in medical institutions identifies and characterizes the gap between medical research and practice at the beginning of the twentieth century. Detailing the breaching of this gap, when and how cancer cells were revealed physically, chemically and pictorially, is revealing of practices in knowledge production and appropriation. Further, diagnostic techniques produce specific ways of thinking about disease. The (re)definition of cancer as a disease of cells and tissues modified diagnostic categories. The stained and dressed up cancer cells only moved out of the research laboratory, however, when they could bask, albeit to their detriment, in the limelight of cancer treatments, notably radiation therapies.

Tricia Close-Koenig is a postdoc at the Université de Strasbourg working on a comparative study of pharmaceutical marketing and advertisements in France and Germany.

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Hawaiian Bobtail Squid-Vibrio fisheri
by Frédéric Bouchard

[Excerpts from Frédéric Bouchard (2010)"Symbiosis, Lateral Function Transfer and the (many) saplings of life", Biology and Philosophy Vol 25 (4) pp.623-641 www.fredericbouchard.org/publications]

We need to realize that whereas all organisms are individuals, not all individuals are organisms. One way of avoiding a strictly genetic account of biological individuality while providing an account tractable in evolutionary terms has been suggested by Wilson DS and Sober (1989). Arguing for a richer multi-level selection approach to evolution, they come up with an intuitive but sophisticated definition of what it means to be a biological individual (my paraphrase).
A biological individual is to be a functionally integrated entity whose integration is linked to the common fate of the system when faced to selective pressures of the environment.

Defining individuality as such allows us to consider the biological individuality of ecological communities (for our purposes here symbiotic communities) in a novel and fruitful fashion. Symbioses often lead to 'temporary' coalition of organisms that could arguably be qualified as emergent individuals. We will focus on the oft-referenced symbiotic association between squid and bacteria. The Hawaiian Bobtail squid (Euprymna scolopes) possesses light organs (called photophores) that contain about 109 bacteria (Vibrio fischeri, related to V. cholera). V. fischeri form a symbiosis with the Bobtail squid (McFall-Ngai 1994): the squid provides nutrients to the bacteria, while the bacteria allow for bioluminescence in the squid's mantle. The bioluminescence occurs through quorum sensing on the part of V. fischeri: when the V. fischeri are in high enough densities (when 'quorum' is attained) the chemical cascade leading to biolumi-

nescence is initiated. These threshold densities are possible outside of the interactions with other organisms (the squid in this case) but in fact they do not obtain in 'free living' bacteria because these densities are not advantageous in the marine habitat. These densities are easily achieved within the squid's mantle. So, to adopt the usual teleological adaptationist framing of the issue, what purpose does this bioluminescence serve? It is believed that this bioluminescence allows the squid to avoid its predators. The squid's potential predators hunt by identifying the shadows of the preys above them. The squid forages at dusk, and the light emitted by the bacteria creates 'countershading', making it invisible to predators when they are located underneath the squid. It is a horizontally transmitted symbiosis involving a bacterial symbiont colonizing extracellular apical surfaces of epithelial cells at each generation (the squid 'let's itself be' colonized after birth and maintains the same bacterial colony throughout its lifecycle even though it flushes out about 80% of the bacteria everyday, most likely to reduce the possibility that the symbiont would evolve a pathogenic response as many other Vibrio have done). The colonization triggers deep developmental change for the squid. It develops a lens type surface that allows it to direct the light generated by the bacteria. The developmental changes are triggered by the presence of these specific bacteria. Symbiosis of this sort highlights the interplay between genetic and non-genetic means of inheritance. The developmental pathways are genetically coded in the genome of the host, and triggered by a specific phenotype of its symbiont. The symbionts' phenotype is also genetically determined. So one should not downplay how much genetic inheritance affects how symbionts interact through generations. But since the symbionts are in interactions only in specific ecological circumstances, and since those ecological circumstances are 'passed' on as well from one generation to the next (by merely staying in the same environment, the squid pass on the 'possibility' of being colonized), one also gets the type of non-genetic inheritance that many biologists and philosophers have tried to make sense of (see Sterelny 2004 and Mameli 2004 for a better appreciation of issues related to non-genetic inheritance and development).

The squid itself is not bioluminescent or to be more precise, the squid's genome doesn't code for bioluminescence, but for traits that may take advantage of another species' bioluminescence. So if the bacteria alone don't often glow (because the high densitites are not achieved), and the squid alone cannot, who or what is bioluminescent and what benefits by being bioluminescent? Let's assume for a moment that we have an emergent trait (i.e. not reducible to single genome), what is the bearer of that trait? What is the biological individual bearing that trait if not the system comprising both squid and bacteria? Cases such as the Bobtail squid are numerous in the natural world and test our best intuitions about biological individuality. Symbiotic associations obviously impose an inclusive notion of biological individuality. *E Pluribus Unum...*

Frédéric Bouchard is Associate Professor in the Department of Philosophy at the Université de Montréal.

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Musing on Moss
by Jennifer Doubt

Picture yourself in an iconic Canadian landscape: You're hiking in the boreal forest, relishing the sharp aroma of spruce. You're admiring the silhouettes of songbirds as they dart between subalpine canopy trees against a clear Rocky Mountain blue sky. You're hauling your kayak up for a shore lunch on the coast. Or tramping through a bog. Or hunting on the arctic tundra. Are you there?

Now look down to your feet, where a few of the world's 12 000 species of moss discreetly cushion your footfalls. If you're lucky, you're also seeing the rarer cousins of moss – liverworts and hornworts – that also form part of that essential and fascinating group of organisms known, somewhat forgettably, as 'bryophytes' or 'non-vascular plants'.

Mosses are everywhere, and help to define our Canadian wilderness. At the same time, they're not exactly in-your-face. The challenge of getting to know them is one of the features that entice amateur and professional bryologists to take a closer look. What they find is something impressively important, extraordinarily unique, and stunningly beautiful.

Important? Well mosses are plants, after all. They're green, and although it might take a magnifying glass to see it, they even have that classic stem-and-leaves plant anatomy. Like all plants, they make the world a place to live. Through photosynthesis, they consume carbon dioxide - a greenhouse gas - and release oxygen, without which we animals could not exist. Everyday plant business of growth and death moves nutrients and moisture through ecosystems, sustaining them. Without plants like moss, animals like birds, rodents, insects, and muskox would be without shelter, nesting material or an important food source.

Very much unlike most familiar plants, however, mosses lack roots and sophisticated vasculature (tubing) for carrying water and nutrients. Instead, these are sponged up directly through their stems and leaves. Without access to underground moisture, mosses have little control over their internal humidity, and despite various water-saving measures, those in dry habitats quickly dry to a crisp. Thanks to remarkable cellular repair mechanisms, they can resume growth with the next fog or rainfall – an enviable maneuver if you're a neglected houseplant. It's actually a pretty fun activity for a sunny hike or picnic: sprinkle some water on dry, rock-dwelling moss, and see it spread its leaves and develop vibrant colour within seconds, right before your eyes. Under a 10x jeweller's loupe, it's ten times as dazzling.

Also in contrast with many other plants, small stature allows mosses to live in very small ('micro') habitats. By squeezing into rock crevices and the openings of animal burrows, mosses avoid many of the climatic stresses that limit the growth of larger vegetation. Their ability to dry out without dying permits them to live in some of the harshest climates on earth. On bare rock or sand left after a fire or flood, their pioneering growth facilitates the development of full plant communities by stabilizing the substrate, moderating its temperature and accumulating organic matter, ultimately raising the ecological and economic value of the site.

Some moss species are beguilingly rare. These are singled out by organizations such as Conservation Data Centres, which tally the occurrences of each species within a given province or state based on information from plant collections (museum or university herbaria, for example) and other sources, and rank their rarity accordingly. With fewer enthusiasts stalking moss than, say, birds or wildflowers, there are some moss species with artificially high conservation ranks. Other species are undeniably unusual: the Macoun's Shining Moss housed at the Museum of Nature's Canadian National Herbarium, for instance, was collected twice, in Ontario, in the 1850's... and never anywhere, ever, before or since.

As more people pause to examine the mosses at their feet and document their findings by contributing specimens to their local herbaria, the rare will become distinguishable from the undercollected. Better understanding of the moss flora may also contribute to broad recognition of mosses among the other emblematic and valuable plants of Canada.

It can only be good for bryologists as well: as things stand, between stacked odds of discovering specimens that develop knowledge of species rarity and distribution, and the satisfaction of knowing a rich beauty that most people obliviously bypass every day, they risk becoming kind of smug.

Jennifer Doubt is the Chief Collections Manager, Botany Section of the Canadian Museum of Nature

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Algae and the Microscopic World
by Paul B. Hamilton

In the global picture of natural history, microorganisms are the least understood, and are rarely documented in biological collections. Why? The simple answer is, if we can't see it we are not compelled to understand it. Indeed, many individuals are "afraid of microorganisms" based on negative information consistently presented in the news. The minor exceptions to this paradigm are research in fermentation technology, food spoilage disease and pollution. In reality without microorganisms we cannot survive, period! It is therefore extremely important that natural history museums recognize the significance of documenting and disseminating information about the biodiversity, richness and importance of these life forms to our existence.

Exert from a recent scientific article on the chrysophytes (golden-brown algae) at the Canadian Museum of Nature states "In science, the importance of providing verifiable information (e.g. raw data, methods of analysis, specimens) is paramount for the validation of scientific results with timely challenges. Permanent fixation, preservation and conservation of microscopic life for the validation of published findings has long posed a technical problem for researchers within the biological sciences. As a result, destroyed or lost biological collections significantly limit our ability to verify or challenge research results in the scientific fields of microbial taxonomy and ecology. Further, technological development has allowed massive data compilations, modeling and enhanced analyses to challenge and validate past research. However, the ability to re-evaluate or validate the basic building blocks (i. e. microscopic life forms) is still constrained by the absence of verifiable voucher collections. Hamilton & Edgar (2008) define the problem with the statement: Although taxonomic claims can indeed be vouchered by drawings and photographs, specimens-themselves-as-vouchers provide a relatively unfiltered exposure to the organisms and a greater access to their features."

The world of vouchering biological life is evolving like life itself. We now have genetic databanks, living culture collections and cryopreserved collections to add to our natural history museum toolbox of knowledge. There is wide support for the idea that traditional museums should be investing in genetic and cryopreservation technology. Museums around the world are exploring this new direction, although progress in adopting the new technology is slow. However, these technologies will be part of future standard protocols in the museological conservation of species and understanding of global biodiversity. The current challenge is to find the resources to incorporate these collections and the future challenge will be related to the costs required to maintain these collections and databases.

The Canadian Museum of Nature maintains an algal (Phycology) collection which contains both macroscopic and microscopic forms (http://www.nature-cana.ca/databases/). The collection contains representative species from all the traditional algae groups, with the dominance of diatoms (Bacillariophyta). Diatoms are a fascinating group of microorganisms that build a silica "glass" house around themselves (Fig. 1). These living organisms can be found anywhere from sea ice to hot springs. The basic requirements are water and nutrients. Since diatoms build their own "glass" houses the detail in form and symmetry is amazing and inspiring. The Canadian collection has specimens dating back to the 1830s. The collection is composed of specimens conserved with the traditional drying techniques of being mounted on herbarium sheets, or with small pieces of dried material on paper, or dried material on mica. The collection also contains a large assortment of microscope slides and original material that has been freeze-dried. At present there are >85,000 sample lots with over 200,000 algae identifications in the national collection. In Canada, two other traditional collections, the University of British Columbia (http://www.beatymuseum.ubc.ca/collections/herbarium) and the Nova Scotia Museum (http://www.http://museum.gov.ns.ca/) available to study. There are also algae culture collections at the University of British Columbia (CCCM: Canadian Center for the Culture of Microorganisms, http://www.botany.ubc.ca/cccm/) and The University of Waterloo (CPCC: Canadian Phycological Culture Collection, http://www.phycol.ca/). The species documented in these collections represent but a small fraction of the microscopic world waiting to be discovered. Specimens without additional information have a limited amount of knowledge to pass on. In the national algae collection, we are attempting to add additional information of value and relevance. The importance of water quality is relevant to Canadians and the algae collection contains a wealth of water quality and water chemistry information waiting to be explored. Welcome to the amazing world of microscopic life.

Paul B. Hamilton is a Senior Research Assistant at the Canadian Museum of Nature.

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Fernald's milkvetch – conservation of native plants and the need for taxonomy
by Paul C. Sokoloff and Lynn J. Gillespie

Canada stretches over 9.9 million square kilometers across many North American ecosystems. And though popular thought tends to say: "we've got rock and trees and

trees and rocks", the sheer number of unique and varied environmental niches is stunning. From the deserts and rainforests of British Columbia to the limestone-based barrens in Newfoundland vastly different evolutionary pressures have given rise to many organisms uniquely suited to their lot in life. The plant species that evolve in these habitats – rooted there, as it were – can become so specialized to a niche that they become narrowly endemic: restricted exclusively to that environment. Often they are found nowhere else on the planet.

Fernald's milkvetch (Astragalus robbinsii var. fernaldii) was just such a plant. A member of the pea family, it was found only in the region around Blanc Sablon, a town on the border of Québec and Labrador. In fact it is currently listed by the governments of Canada, Newfoundland and Labrador, and Québec as s species of conservation concern. However, new research carried out at the Canadian Museum of Nature may just change that.
Our taxonomic concept (its name and how a species relates to other plants) of Fernald's milkvetch has changed significantly through time. The type specimen defining the species (collected by the eminent Harvard botanist M.L. Fernald himself) was originally identified as Elegant milkvetch - Astragalus eucosmus. Twenty years later, Per Axel Rydberg, a taxonomic splitter (he preferred to treat physical variants of a species as distinct entities, rather than one) described the new plant species Atelophragma fernaldii, based on Fernald's specimen. Flash forward another 30 years, and Rupert C. Barneby -whose seminal Atlas of North American Astragalus is still the authoritative work on the genus- addressed this species. Seeking to correct the "dismemberment" inflicted on the genus Astragalus by Rydberg - formally presented Fernald's milkvetch in its most recent state.
Based on the fruit and physical stature of the fernaldii entity, Barneby appended it to Robbins' milkvetch (Astragalus robbinsii) as a variety – a locally adapted form of the species on an evolutionary trajectory towards speciation. This tied Fernald's milkvetch to the complex of species that included Robbins' milkvetch and elegant milkvetch, but emphasized its unique growth form and narrowly endemic range.

However, even after the species publication in Barneby's Atlas of North American Astragalus, questions about it true relationship to Robbins' milkvetch and elegant milkvetch persisted. The key physical traits that defined Fernald's milkvetch were often found in the former two species. So the Canadian Museum of Nature, the Wildlife Division of the Government of Newfoundland and Labrador, and the University of Ottawa undertook a joint venture to definitively assess the taxonomic status of Fernald's milkvetch.

Previously the Fernald's milkvetch concept has previously been based on a few representative specimens. For this project, the author used DNA sequences and statistical analysis of 20 physical traits in over 300 specimens to test the hypothesis that Astragalus robbinsii var. fernaldii is in fact a valid entity. Our results, currently in press, would be unsurprising to the original identifier. Our data indicates that Fernald's milkvetch is more closely related to Elegant milkvetch than Robbins' milkvetch.

So now we've clarified the taxonomic status of Fernald's milkvetch. But this isn't just a question of properly labeling specimens filed away in a museum. These names are functional, and the basis of all biological inquiry. From physiologists to ecologists, a scientists working without a standardized classification of the species they are studying would be unable to produce meaningful or comparable results. In the case of many of these narrowly endemic species (and in Fernald's milkvetch), these species

names define taxonomic concepts that are conservation targets. Proper classification of these organisms is critical to defining their range, accurately identifying populations, and assessing their true conservation status.

This taxonomic alteration to Fernald's milkvetch will not only affect how we treat the specimens in our collection, but will have far ranging effects on the management of the environmental niches within the Blanc Sablon community, and our understanding of the elegant milkvetch concept throughout the continent. Science does not take place in a vacuum, and the science of taxonomy ultimately affects how our civilization interacts with the organisms it encompasses. That's why it's critically important to get it right.

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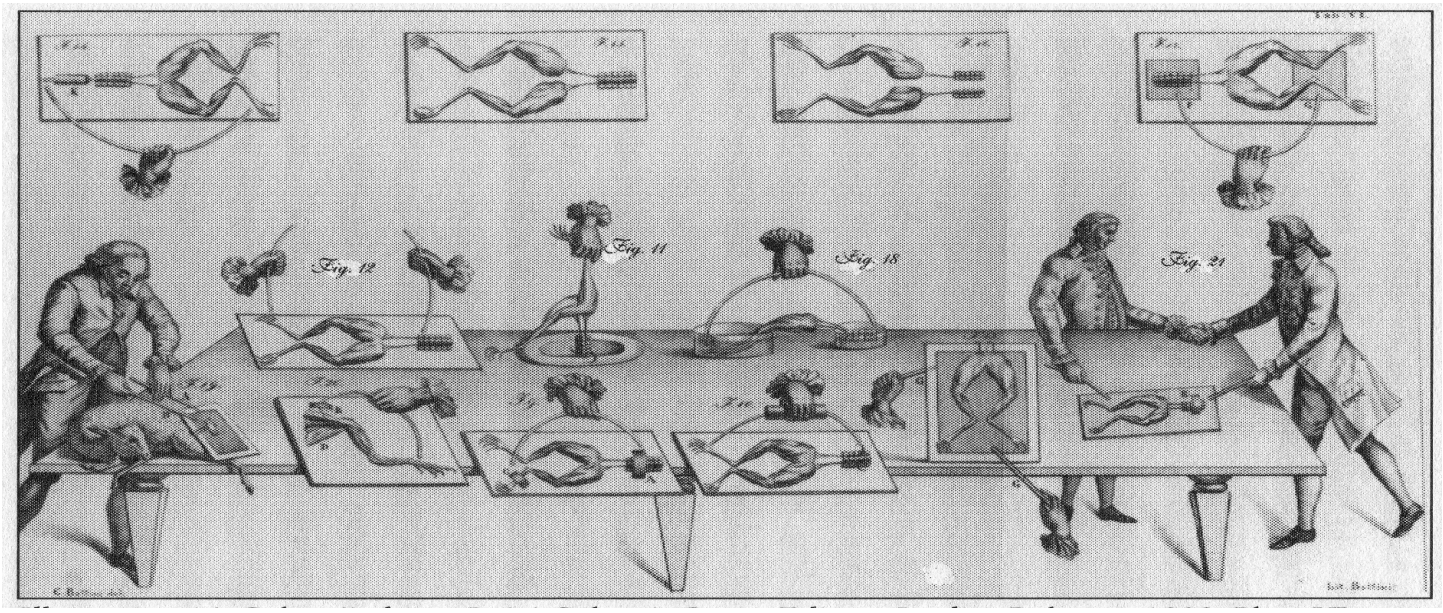
Paul C. Sokoloff and Lynn J. Gillespie are both research scientists at the Canadian Museum of Nature.

Organisms as Instruments @ York
by Joan Steigerwald

In the winter semester at York I will be teaching a new course in the Graduate Program in Science and Technology Studies at York University — Organisms as Instruments. The idea for the course was initially stimulated by my own research into experiments with frogs in the latter eighteenth century. I was interested in how severed frog legs were first used in experiments investigating irritability and muscular contraction, then used as sensitive instruments to detect weak electrical phenomena, and then proposed as generative of animal electricity in galvanic experiments. I found these moves between the phenomena being investigated, the instruments reading the phenomena, and the apparatus generative of phenomena suggestive of complex entanglements of organisms and instruments. The use of human subjects and self-experiments alongside animal subjects in experiments on excitability, electricity and galvanism increased these entanglements, and lead me to a rethinking of common critiques of instrumental reasoning in the eighteenth century. I was able to enlist a series of others in these preoccupations through organizing sessions



Source: Humboldt, Alexander von. Versuche über die gereizte Muskel- und Nervenfaser, nebst Vermuthungen über den chemischen Prozess des Lebens in der Thier- und Pflanzenwelt. 2 Volumes. Berlin: Rottman, 1797, vol. I.

on Entanglements of Instruments and Media in Investigating Organic Worlds at the CSHPS annual meeting in Ottawa and the International Congress of History of Science and Technology in Budapest in 2009, and at the HSS annual meeting in Montreal in 2010. Wanting to teach a course on the topic for some time, I will finally have the opportunity this winter.

The course will be framed by cool critters and boundary objects — opening with hydra and termite colonies, and ending with astrobiology and synthetic biology — that have challenged us to rethink our conceptions of organisms. We will also examine how particular organisms and organic materials have been enlisted as tools or media for the study of living processes, and the ways in which specific model organisms have shaped the development of the biomedical sciences. We will explore how various models of organisms and of iving processes have informed the conceptualization of particular phenomena. We will consider how lab rats and other organisms have been utilized as mirrors for our own behaviours and subjectivities. We will also interrogate how organisms have been capitalized on during the development of the life sciences. In all of these enquiries, the concern will be with the blurring of boundaries between organisms and instruments in the investigation of organic worlds.

I am quite excited finally to be able to teach the course, and delighted to have at York an excellent group of students interested in the topic. I have found the subject matter a productive one for a course in Science and Technology Studies because of the broad range of approaches to the study of science and technology it enlists. If focused upon the life sciences, the course draws upon materials written by historians, philosophers, anthropologists, social scientists and scientists, and indeed many of the course materials confuse those categories. I have found an abundance of excellent readings, and many colleagues have been generous with suggestions from their particular areas of expertise. The course syllabus is still not absolutely finalized, and I plan to teach it again, so I welcome further suggestions for topics and readings, and openly confess that part of the motivation for this contribution is to solicit suggestions.

Joan Steigerwald (steiger@yorku.ca) is Associate Professor in STS and Humanities atYork University.

Garth Wilson, 1960-2010

On 13 November 2010 the museum world lost a passionate advocate with the untimely death of Garth Wilson, curator of transportation at the Canada Science and Technology Museum, after a two year battle with cancer.

Garth Wilson cared deeply about museums and their collections. He knew that collections were the heart and soul of the museum and devoted much of his life to studying, understanding, and explaining artifacts. He knew how much they mattered and, through his work, sought to persuade others of their importance. It was a constant struggle but one he refused to abandon.

Garth combined his interest in material culture studies with a love of the history of technology, especially transportation. In his creative hands, these two fields became one and the results were truly remarkable. As curator first of marine transportation (1989) and then of marine and ground transportation (2003) at the Canada Science and Technology Museum, Garth set out to enhance the national collections, to study and interpret them, and to produce exhibitions and publications that challenged audiences (and some museum colleagues) to see technology in new and surprising ways.

Garth brought imagination, intelligence, and discipline to collecting. He carefully assessed the merits of any object before acquiring it and resisted pressure to take something for purely expedient reasons. As a result of his efforts the transportation collection grew to include more examples of working vehicles (the pointer boat, the Shelburne dory, the salmon skiff), more Canadian content (CCM bicycles, Mercury Montcalm) and more critical infrastructure (Precise Integrated Navigational System). He was particularly proud of his acquisition of the Rice Lake Canoe Company collection.

In exhibitions, Garth's work was equally distinguished. Whether producing a small temporary display or a major installation, he took the challenge seriously and brought all his skills to bear on it. His exhibitions were notable for their meticulous selection of objects, meaningful text and captions, and thematic coherence. His two most important efforts were his most recent: Canoes: The

Shape of Success (2000) and In Search of the Canadian Car (2010). In both of these exhibitions, Garth explored questions of identity and, in doing so, confounded our preconceptions of what a transportation exhibition could be.

Garth's publications were also innovative and challenging and always focused on objects and their meanings. Whether writing for the public in a Curator's Choice pamphlet or for a professional audience in Material History Review, he invariably found a new and interesting way to pose a question and a fresh approach to answering it. His last published article is a fine example of how his mind worked. In "Designing Meaning: Streamlining, National Identity and the Case of CN 6400," Garth once again explored issues of identity by focussing his attention on a locomotive that has long been a fixture, albeit a somewhat silent one, on the museum floor. His research brought to light the fascinating story behind this remarkable piece of engineering.

The museum community benefited enormously from Garth's commitment to museology, material culture studies, transportation history and public history. During his career he contributed to scholarship in these fields through a wide variety of journals. He acted as English review editor for Material History Review from 1991 to 2006 and, in that role, helped to enhance and extend the reach and reputation of the journal around the world. Garth also taught courses and arranged seminars and workshops in material culture studies for various groups. In 2004-5 he played a leading role in organizing the Canadian Museum Association's Museum Research Summit which brought together museum-based researchers from across the country to address the challenges facing collections-related research. It was a huge success. Garth also organized conferences at the Canada Science and Technology Museum including Technology and the Body (2004) and Transportation and the Environment (2008), the annual meeting of the International Association for the History of Transport, Traffic and Mobility (T2M).

During his career, Garth was active in a number of organizations, all of which benefited from his intelligence, creativity, dedication, and forthrightness. He was a Councillor of the Canadian Nautical Research Society (CNRS) and served on the boards of the Museum Small Craft Association and the Atlantic Challenge Canada Foundation. He acted as an external advisor to the Adirondack Museum. In recent years, he had become deeply involved in T2M, an organization that he thought could bring a much needed broadening of perspective to transportation collections. At the time of his death, he was a vice-president of the organization.

Garth's unwavering commitment to museums and their collections was shared by many but his particular combination of skills and interests was unique and it will be sorely missed. His honesty, integrity, creativity, and intelligence are irreplaceable. His enduring legacy will be his example, which will serve to inspire many and to remind us all of what can be accomplished through dedication to the highest standards of museum scholarship.

Sharon Babaian is a historian in the Collection and Research Division of the Canada Science and Technology Museum

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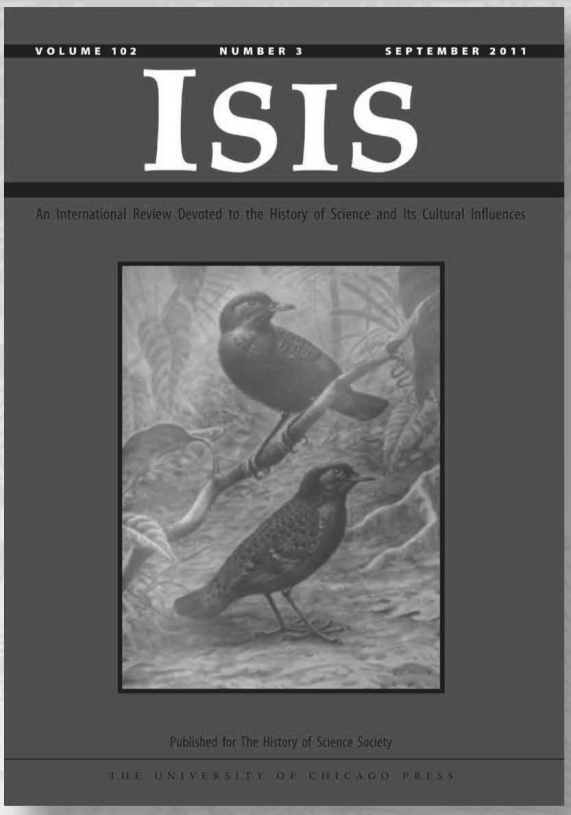

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