

EARTH

CHIEF CONSULTANT

Charles F. Gritzner

Charles F. "Fritz" Gritzner is Distinguished Professor of Geography at South Dakota State University in Brookings, South Dakota, USA. He is now in his fifth decade of college teaching and research. In addition to teaching, he enjoys research, travel, working with teachers, and writing to share his passion for geography with readers. As a contributor to this volume, he has a wonderful opportunity to combine each of these "hobbies." Professor Gritzner has served as both president and executive director of the National Council for Geographic Education and has received the Council's highest honor, the George J. Miller Award for Distinguished Service to Geographic Education, as well as numerous other honors for teaching and research from the NCGE, the Association of American Geographers, and other organizations.

CONTRIBUTORS

Maria Alzate

Born in Medellin, Colombia, Maria Alzate studied geology at the Colombian National University. She worked for some years in an engineering consultancy company, was involved in government research on geological hazards in the northwest of Colombia, and worked for the National University in Medellin in environmental impact. Maria emigrated to Australia in 1999, studied and worked in the gem industry, and has an interest in all geological matters. She has traveled extensively in the Americas, South Pacific, and Australasia.

Armen Asryan

Armen Asryan is an expert in Geographical Information Systems. He has a wide range of academic qualifications and skills in such diverse fields as business management and marketing, web content development, economics, information technology, knowledge management, natural resources, and environmental management and conservation, including climate change, biodiversity, forests, and anthropogenic impacts assessments. Throughout his ten-year professional career, Armen worked in a variety of international organizations including the United Nations and the World Bank projects, and in both public and private sectors and non-governmental organizations in different consulting capacities. Armen completed his MSc in Applied GIS at Kingston University in London with executive and leadership studies at University of Cambridge.

Ann Marie B. Bahr

Ann Marie B. Bahr is Professor of Religious Studies at South Dakota State University, USA. She served as academic editor of Chelsea House's eleven-volume *Religions of the World* series. She is the author of *Christianity* and *Indigenous Religions*. Her articles have appeared in *Encountering Faith in the Classroom* (Miriam R. Diamond, ed., Stylus Publishing); the *Chronicle of Higher Education*; McGraw-Hill's *Annual Editions: World Religions*; and the *Journal of Ecumenical Studies*. Bahr is a member of Phi Beta Kappa, the American Academy of Religion, and the Society of Biblical Literature. She is currently serving on the American Academy of Religion's Task Force on Religion in the Schools.

Donald J. Berg

Donald J. Berg is Professor of Geography at South Dakota State University, USA
He was born in Fargo, North Dakota, and received his BA (History) and MA (History), from North Dakota State University, and his MA (Geography) & PhD (Geography) from University of California at Berkeley. He served in the United States Army from 1966–69. Professor Berg has been teaching at South Dakota State University since 1990.

Vonnie Calemine

Vonnie Calemine graduated from the College of Charleston, South Carolina, USA, with a degree in Spanish and in History and a minor in Latin American and Caribbean Studies. During her years at Charleston, she studied for two semesters in Santiago, Chile, and spent a summer session in Havana, Cuba. She later pursued her Masters in Latin American Studies at San Diego State University with an emphasis in political science and US–Latin American relations. After attaining her Masters, she returned to her hometown and now teaches Latin American and World Politics at Coastal Carolina University.

Craig S. Campbell

Craig S. Campbell is Professor and Chair of the Department of Geography at Youngstown State University in Youngstown, Ohio, USA. He is a native of Indiana and received his undergraduate degree in geography and Spanish from Indiana University–Purdue University at Indianapolis. His MA in Geography is from the University of Kentucky, and he received his PhD in Geography from the University of Kansas. His interests are in the cultural geography of the United States, the Latter Day Saint movement, general and thematic cartography, the automobile in American culture, and the regional geography of Europe and South America. He is author of *Images of the New Jerusalem: Latter Day Saint Faction Interpretations of Independence, Missouri*, published by the University of Tennessee Press.

Dr Robert R. Coenraads

Dr Robert Coenraads is a consultant geoscientist, and author of four books and over 30 scientific publications. He has led archaeology, natural history, and geology field trips to various corners of the globe—including the magnificent Olmec, Maya, and Aztec sites of Mexico, active volcanoes of the Pacific region, and a number of fabulous gem mines. During his 30-year exploration career, he has traveled to some of the world's poorest regions, which has sparked a strong humanitarian interest. Dr Coenraads is currently President of FreeSchools World Literacy (Australia), and has established a support network to provide free education for underprivileged children in Bihar State, India. It is his firm belief that a solid education for all, not just a privileged few, is the key to solving the world's major problems such as overpopulation, hunger, and poverty. The privilege of helping produce quality educational books, such as *EARTH*, is a step in this direction.

Dr Lawrence W. Crissman

Dr Lawrence W. Crissman is an anthropologist who has had an academic career spanning five decades during which he has concentrated his research on Chinese society, both traditional and modern. For the past twenty years he has been involved with GIS applications, having established the Australian Centre of the Asian Spatial Information and Analysis Network (ACASIAN) at Griffith University, in Queensland, Australia. He has been involved with the Electronic Cultural Atlas Initiative since its inception, and has produced digital versions of the Language Atlas of the Pacific Region and the Language Atlas of China for ECAI. He has also had a major role in the China Historical GIS Project (<http://www.fas.harvard.edu/~chgis/>).

Nilson Crocia de Barros

Nilson Crocia de Barros is a lecturer at the Departamento de Geografia of the Universidade Federal de Pernambuco. He received Bachelor's and Master's degrees in geography at the Universidade Federal de Pernambuco and a PhD in geography at the Universidade de São Paulo, Brazil. He pursued post-doctoral studies at the University of Durham, UK and was visiting lecturer at Radford University, Virginia, and visiting researcher at Durham University. In 2004 he obtained the title of Free Lecturer (Livre Docente) from the University of São Paulo. He has conducted research on urbanization in Northeast, its historical roots and present patterns; human settlement, rural colonization and migration in Brazilian Amazon (Roraima), and studied the spatial patterns of tourism in coastal Northeast Brazil. Recently his efforts have been concentrated in the history of geographical thought and regional development in Northeast. He has published 3 books, several articles in journals and presented several papers on national and international academic meetings.

Dr Julie Cupples

Julie Cupples is a Senior Lecturer in Human Geography at the University of Canterbury in New Zealand. She has been conducting research in Central America since the early 1990s. Her work has covered a number of themes, including development and postdevelopment, neoliberalism, gender and single motherhood, disasters, elections and development fieldwork. It has been published in a number of key edited collections and in leading geographical journals such as the *Annals of the Association of American Geographers*, *Political Geography*, *Environment and Planning A*, and the *Singapore Journal of Tropical Geography*. Current research projects include the construction of citizenship, electoral geographies, the aftermath of Hurricane Felix, the struggle for electricity, and resistance to the Central American Free Trade Agreement (CAFTA). Much of this scholarship is a result of collaborative interaction with the Instituto de Investigaciones y Gestión Social (INGES), based in Managua, Nicaragua.

Christopher Cusack

Christopher Cusack is an Associate Professor of Geography at Keene State College in New Hampshire, USA. His teaching responsibilities include courses on urban geography, Geographic Information Systems (GIS), and the geography of Africa. His previous research includes, among others, publications on comparative urbanization, as well as urbanization in India, development in Nunavut, and the garden city movement in the United States. Currently, Cusack's research interests are focused on urban sustainability in the developing world, with particular concentration on East Africa. Cusack serves as the New England Regional Councilor of Gamma Theta Upsilon: The International Geographical Honor Society, and is past-president of the Regional Development and Planning Specialty group of the Association of American Geographers.

Roman Cybriwsky

Roman Cybriwsky is Professor of Geography and Urban Studies at Temple University, Philadelphia, USA. He has also taught for many years at Temple University's campus in Tokyo, Japan, where until recently he was Associate Dean and Director of the Undergraduate Program. His principal teaching subjects are the geography of Asia and the social geography of great cities around the world, courses for which he travels widely in Pacific Asia, Latin America, Europe, and elsewhere. He is the author of *Tokyo: The Shogun's City at the 21st Century* (Wiley, 1998), and several other books about urban or Asian topics, as well as numerous journal articles, book chapters, and other publications. His current book project is about the social aspects of global economic interactions in Roppongi, Tokyo's premier international nightclub district.

Paul Deans

For many years Paul Deans wrote, produced, and directed multimedia shows for star theatres in Edmonton, Toronto, and Vancouver, Canada. In 2000 he switched careers and became an editor at Sky Publishing in Cambridge, Massachusetts, USA. Here he was an associate editor for *Sky & Telescope* and *Night Sky* magazines and the editor of *SkyWatch* magazine before ending up as Sky Publishing's book editor. Now based in Edmonton, Paul is currently a freelance science writer/editor and the editor of two digital magazines: *Mercury* and *Travel Quest*. He also specializes in science-themed travel, and particularly enjoys his annual aurora-watching trips to Iceland and his journeys to out-of-the-way locations to witness total solar eclipses.

Alan Dixon

Alan Dixon is a human geographer with broad research interests in environment and development, but particularly the contribution of local knowledge and community institutions to sustainable livelihoods, and natural resource management in developing countries. He has worked extensively in East Africa on various research projects examining the ways in which people interact with wetland environments, and in collaboration with NGOs, he has been involved with the development of guidelines and strategies for the sustainable management of wetland benefits. Before taking up his position at the University of Worcester, UK, Alan was a Research Fellow at the University of Otago, New Zealand, and a Lecturer in Geography at the University of Huddersfield, UK.

Alasdair Drysdale

Alasdair Drysdale spent much of his childhood in the Middle East. He is the co-author of *The Middle East and North Africa: A Political Geography* (Oxford University Press) and *Syria and the Middle East Peace Process* (Council on Foreign Relations). He has written articles for the *International Journal of Middle East Studies*, *Middle Eastern Studies*, *Middle East Report*, and *Middle East Journal* and has contributed numerous entries on Middle East topics to encyclopedias, yearbooks, and atlases. His current research focuses on the demography of Oman. He graduated with a BA in Modern Middle Eastern Studies at the University of Durham, UK, and earned his PhD in geography from the University of Michigan, USA.

Bart Goins

Bart Goins, a native of Muscle Shoals, Alabama, USA, is an undergraduate student at the University of North Alabama, USA. He is majoring in Geography with a specialization in Geographic Information Systems.

David Hamper

David Hamper is an experienced author and educator. He is currently Director of Staff Services at the International Grammar School in Sydney, Australia. For a number of years David has been involved in curriculum development in geography, and has considerable experience in the education and professional development of geography teachers. David has authored and co-authored 15 texts on a diverse range of topics including physical and human geography, human rights, ecosystem management, and international relations and agreements. He has also contributed to several atlas projects and has had numerous articles published in professional journals. David is a passionate traveler and amateur photographer.

Reuel Hanks

Dr Reuel Hanks is Associate Professor of Geography at Oklahoma State University, USA, and serves as the editor of the *Journal of Central Asian Studies*. Dr Hanks was a Fulbright Scholar in Tashkent, Uzbekistan in 1995 and has published more than a dozen articles and book chapters on Central Asia, Islam, nationalism and identity, political geography, and ethnic geography. He is the author of *Uzbekistan*, an annotated bibliography in the World Bibliographical Series, and *Central Asia: A Global Studies Handbook*, both published by ABC-CLIO, Ltd. He is currently writing the *Historical Dictionary of Uzbekistan*.

Edward Patrick Hogan

Edward Hogan is Professor Emeritus of Geography at South Dakota State University, USA, and State Geographer for South Dakota. He holds a PhD from Saint Louis University. Married to Joan Ford Hogan, they are the parents of five children and 13 grandchildren. He has written over 70 articles, as well as authored and co-authored books on the geography of South Dakota (three editions), Ireland, Sweden, and Norway.

Peter Holland

Peter Holland is a geography graduate of the University of New Zealand (BSc 1961) and the University of Canterbury (MSc 1963). He completed the PhD in Biogeography at the Australian National University, Canberra in 1967 then joined the staff of the Department of Geography at McGill University in Montreal, Canada before returning to the University of Canterbury, Christchurch in 1979. He was appointed Professor of Geography at the University of Otago, Dunedin in 1982 and was made an Emeritus Professor 20 years later. He has lived and worked in Australia, Canada, Kenya, and South Africa, and was Associate Editor of the *Journal of Biogeography* from 1982 to 2004. In 2002 he was elected President of the New Zealand Geographical Society, and served until the end of 2006. His current research interests are landscape change and environmental learning in colonial New Zealand.

Ritva Kivikkokangas-Sandgren PHD

Ritva Kivikkokangas-Sandgren is Senior Lecturer of Development geography at the University of Helsinki, Finland, and is an active member for the Association of Academics and the Faculty of Science. She specializes in development issues of South East Asia, Africa, and Latin America, particularly spatial, ecological, human and cultural change and the complexity and conflicts of *globalisation* and its sustainability. She has led geography students' excursions to the Philippines (forest use and reforestation, ethnic groups in Palawan and Mindanao); Cambodia and Vietnam (floods of Ton le Sap, Doi moi economy); Indonesia (ecology and culture); Senegal (urban ecology, women's "tontine-loans"); Kenya (land use changes of Taita Hills); Namibia (forest fire control); South Africa (city after apartheid); Bolivia (urbanization by Indians); Peru (electricity of Cuzco); Guatemala (ecotourism in the Maya mountains); and the Middle East (culture and tourism in Palestine).

Marijan M. Klemenčič

Marijan M. Klemenčič is Associate Professor of Geography at University of Ljubljana, Slovenia, where he earned his PhD in 1981. His research fields are focused mainly on spatial and socio-economic problems of rural areas, typology of rural areas, and rural development. His areas of interest are theoretical issues of geography, especially regionalization and space as geographical category. In 1990 he organized the symposium of the IGU Commission on Changing Rural Systems and Subcommission on Highlands and High-latitude Zones, and an international conference in 2001 on challenges and problems of rural areas. The results of his research work were represented in many European countries.

Dale Lightfoot

Dale Lightfoot is Professor and Head of the Department of Geography and is active in the School of International Studies at Oklahoma State University, USA. He received his PhD in geography in 1990 at the University of Colorado-Boulder. Dr Lightfoot's research maintains a strong fieldwork and geospatial technologies focus, oriented around historic landscapes, agriculture and water technology, and themes which emphasize human-environment relationships (landscape change, resource management, and environment-development conflict). He has authored or co-authored over 40 publications. Funded research has taken him to southwest USA, Central Asia (Uzbekistan and Kazakhstan), Morocco, Tunisia, Cyprus, and the Middle East (Jordan, Syria, Yemen, and Iraq). He has also led field courses or engaged in professional outreach activities (workshops, facilities development) in Iraq, Azerbaijan, Vietnam, and several Central American countries. He has worked in or traveled through more than 100 countries. Dr Lightfoot lives in Stillwater, Oklahoma with his wife, Victoria and son, Adam.

David McGonigal

David McGonigal is an award-winning travel author and photographer who has been to Antarctica more than 80 times. He has spent the last 15 years exploring the polar regions, most recently as an expedition leader on ships in Antarctica. The only person to ride a motorcycle on all seven continents, his most recent world ride took three years and included all 24 time zones. After completing degrees in geography and law, his first world ride was for four years in the 1970s along the "hippy trail" from Singapore to London and onward to North America. He is the author of more than a dozen books, mainly about Australia and Antarctica, and has contributed to many more. When he is not on the road—or on the ocean—he lives in Sydney, Australia, and spends as much time as possible flying his motorglider and planning his next trip.

Bruce V. Millett

Dr Millett specializes in climatology, wetland ecology, Geographic Information Systems (GIS), and remote sensing. He is an Assistant Professor in the Department of Geography at South Dakota State University, USA. He teaches courses in Atmospheric Science, Climate Change, Physical Geography, GIS, and Aerial Photo Interpretation. Dr Millett's research is focused on ecological modeling of northern prairie wetlands in North America. There are three aspects to his work. He reconstructs historic climate data sets, conducts field surveys, and constructs digital elevation models for use in wetland model simulations. In addition, Dr Millett uses aerial photographs and satellite imagery to map and delineate the physical features of northern prairie wetlands on local and regional scales.

Francis Carleonet Nieves

Francis Carleonet Nieves was born in Caicara del Orinoco, Venezuela. She spent much of her early life in the rainforests bordering the Orinoco River, gaining an in-depth knowledge of the country's native lore, food, medicinal plants, and animals, as well as practicing wilderness survival skills. Francis trained as a primary school teacher at the Universidad Nacional Abierta in Puerto Ayacucho in Amazon State, and taught at Morichote village in Cedeño District, Bolivar State.

Joseph R. Oppong

Joseph R. Oppong is Associate Professor of Geography at the University of North Texas in Denton, Texas, USA, and a native of Ghana. He has an MA (1986) and PhD (1992) in geography from the University of Alberta, Canada, and a BA (1982) in geography and sociology from the University of Ghana. He has nearly two decades of university teaching experience in Ghana, Canada, and the United States. His research focuses on medical geography, the geography of disease and health care. Professor Oppong has written on HIV/AIDS in Africa and authored several books for the Chelsea House Modern World Nations and Major World Cultures series. He also has served as chairperson of the Association of American Geographers Special Interest Groups on both Africa and medical geography.

Dr Tom Paradise

Dr Tom Paradise is a Geography Professor and Director of the King Fahd Center for Middle East and Islamic Studies at the University of Arkansas, USA. He comes from a diverse background in the environmental sciences, architecture, Middle Eastern and North African geography, and cartography. In addition to his training and education, his expertise in stone architectural deterioration has been sought by countries across the Mediterranean and Middle East. Having researched the unique decaying architecture of Petra, Jordan since the 1980s, he has published more than 40 articles, chapters, and books on the subject and continues to advise foreign agencies on cultural heritage management, stone architectural deterioration, and Middle Eastern and North African architecture. Professor Paradise has also taught at universities in Rome, Venice, Amman, as well as in Georgia, Hawaii, Arizona, and California, USA.

Zoran Pavlović

Zoran "Zok" Pavlović is a geographer who resides and works in Eagan, Minnesota, USA. His area of professional interest and research is traditional cultural geography, primarily the landscape change in geography of viticulture, the evolution of geographic thought, and geographic education. He completed his Bachelor's and Master's degrees at South Dakota State University and is currently pursuing a doctorate in geography at the University of Minnesota. Since 2001 he has worked as a contributing author to Chelsea House Publishers/Facts on File's series Modern World Nations, Modern World Cultures, and Global Connections. Most recently he served on a selected panel that created the *Why Geography is Important* brochure sponsored by the National Geographic Society and Gilbert M. Grosvenor Center for Geographic Education.

Douglas A. Phillips

Douglas A. Phillips is a life-long educator who worked in public education for 26 years and has provided over 3,500 trainings and presentations at the local, state, national and international levels. His specializations are in civic education, geography, history, the other social sciences, and in curriculum development. As a curriculum developer he has facilitated and helped to write over 100 curricula including post-war national efforts in Macedonia and Bosnia and Herzegovina. Doug has worked in education at a variety of levels including the elementary and secondary levels, college and university and at the state department of education level. He started as a classroom teacher and has served in many administrative and leadership positions. He has been President of the National Council for Geographic Education and is the founder of the South Dakota and Alaska Councils for the Social Studies in the United States. Among the many awards he has received is the Outstanding Service Award from the National Council for the Social Studies. He has also received numerous awards in geography, economics, civics, social studies, and American History and has been recognized by the U.S. Congress for his contributions. Doug was also designated as Mr Social Studies by the Alaska Council for the Social Studies.

Michael Pretes

Michael Pretes, a native of San Francisco, California, USA, is Assistant Professor of Geography at the University of North Alabama, USA. He holds a BA from the University of California—Berkeley, an MA from Northwestern University, and a PhD from The Australian National University. He has held research and teaching positions at the University of Calgary in Canada, Stanford University, the University of Lapland in Finland, the University of New Mexico, and the University of Hawaii—Hilo, among other places. He specializes in the development problems of remote regions, the geography of finance, and in tourism.

Noor Abdul Rahman

Noor Abdul Rahman is a Visiting Fellow at the Department of Geography at the National University of Singapore. She specializes in teaching a Singapore Studies module called “Changing Landscapes of Singapore.” The module uses various landscapes in Singapore as a lens to understand various aspects of Singaporean society. Her research interests include migration and Asian transnational domestic workers. She has co-edited a book entitled *Asian Women as Transnational Domestic Workers* and has presented at numerous conferences and workshops on the subject. She is also an activist on migrant workers’ issues in Singapore.

Roger Sandall

Born in New Zealand, Roger Sandall originally worked in an architectural studio specializing in town planning and urban design. At the University of Auckland he studied anthropology, going on to do postgraduate work in anthropology and fine arts at Columbia University in New York. He has written on literature, philosophy, and the arts in *Art International*, *Commentary*, *The New Criterion*, the German cultural journal *Merkur*, *Social Science and Modern Society*, and the former UK publication *Encounter*. His book *The Culture Cult* was published in 2001. Recently he has participated in radio broadcasts on the Australian discussion programs *The Philosopher’s Zone* and *Counterpoint*.

Marianna Shahinyan

Marianna Shahinyan is a qualified management consulting professional with a particular expertise in the public utilities in countries with economies in transition. Throughout her career Marianna worked in the development sector of the former Soviet Union republics on projects targeting the socially vital utilities such as water supply and sanitation, providing management consulting services to the World Bank and other major financial institutions as well as large international companies working in Armenia and Georgia in the water supply industry. Marianna completed her Bachelor’s degree in political science and holds an MA in business management from the Kingston University in London.

Dr R. B. Singh

Dr R. B. Singh is reader and deputy coordinator in the Department of Geography at the Delhi School of Economics, University of Delhi, India. He is currently Secretary General of the National Association of Geographers, India (NAGI). Dr Singh has specialized in land and water management, mountain studies, land use/cover change, disaster management, remote sensing and GIS technology, and has served on many committees and research programs. He has to his credit 31 research volumes and books and more than 150 research papers published in national and international journals. In the course of his career, Dr Singh has supervised 18 PhD and 50 M.Phil students, and participated in exchange programs and international seminars in more than 28 countries.

Barry Stone

Barry Stone is an author and travel writer and has been a contributor to reference books on topics ranging from history and an anthology of the world's greatest inventions to geology and cutting-edge residential architecture. He has traveled to more than 30 countries and written on the natural and built environment for some of Australia's largest daily newspapers including the *Brisbane Sunday Mail* and *Sydney's Sun-Herald*. A graduate of the Australian College of Journalism, he lives in the Southern Highlands south of Sydney with his wife and two children and is currently in the midst of his latest project: a definitive list and treatise on 80 of Australia's most historic hotels.

Daniel Wagner

Daniel Wagner, a native of Boston, Massachusetts, USA, is an undergraduate student at the University of North Alabama, USA. He is majoring in Geography and Geology, and has traveled extensively in Europe, Africa, and South America.

Pornsawat Wathanakul

Pornsawat Wathanakul received her Dr. rer. nat. (Mineralogy and Geology of Mineral Deposits) from RWTH Aachen, Germany in 1989. She is now head of the Department of Earth Sciences at Kasetsart University, Bangkok, Thailand. She also serves at the Gem and Jewelry Institute of Thailand as an academic adviser. Her research concentrates on mineral sciences and gem resources such as Thai diamond from Phuket-PhangNga, southern Thailand, and characteristics and geographic origins of gem minerals, i.e. ruby, sapphire, emerald, and alexandrite. Besides the gem fields in Thailand, she has visited the major gem fields of the world such as Ilakaka-Anarantzoa (Madagascar), Ratnapura (Srilanka), Luc Yen and Than Huang (northern Vietnam), Mogok (Myanmar), Montana (USA), Changle in Shandong (China), and Pailin (Cambodia). In order to understand the finest nature of gemstones, she is now moving into a very advanced level of gem science with part of her current research on nano-sized inclusions in corundum samples from those vast gem fields.

Alexander Wearing

Alexander Wearing was born in Great Britain and raised in New Zealand. He is a geography graduate of the University of Canterbury (BSc Hons in 1982 and MSc in 1983). He graduated MSc in natural environments and plant growth at Birkbeck College, University of London in 1989, and PhD in geography at the University of Otago in 1998. He has undertaken contracted research for the former New Zealand Forest Service, the Department of Lands and Survey and, more recently, the Agricultural Research Group on Sustainability, all of which involved mixtures of ecological and geomorphological surveys. Since 1999, he has been employed as a sessional lecturer in the Department of Geography at the University of Otago. His current research interests span the domains of plant ecology, changing landscapes, and environmental history.

Colonel (Ret.) Quintin Wight

With a background in science and English, Quintin spent 37 years as an engineering officer in the Royal Canadian Air Force and Canadian Forces. He has had a lifelong interest in minerals, particularly as seen through the microscope, and lectures and writes extensively on the subject. The mineral quintinite was named for him in 1992, and his book, *The Complete Book of Micromounting* was published in 1993.

Willow Wight

After graduation from the University of Toronto as an organic chemist, Willow worked in research before switching careers to gemmology. Still preferring research to commerce, she worked for three years with the gem collections of the Smithsonian Institution and for 32 years at the Canadian Museum of Nature in Ottawa. She was the editor of the quarterly journal *Canadian Gemmologist* for 25 years, and has just semi-retired to become Editor Emeritus.

George Wingfield

George Wingfield was born in 1942 and is British. He lives in Somerset in the UK, and also in Iowa, USA. He has a BA Hons Degree in Natural Sciences from Trinity College, Dublin. George worked briefly as an astronomer at the Royal Greenwich Observatory in Herstmonceux and after that for many years with IBM UK Ltd. He has written about and lectured on a number of subjects, such as prehistory and the ancient sites, astronomy, ufology, and crop circles. Recent titles have been *Prehistoric Sacred Sites of Wessex* (Wessex Books, 2007), *Glastonbury* (Wooden Books, 2007), and *Belgium* in the Modern World Nations series (Chelsea House Publishers, 2008). During recent years he has acted as a guide conducting groups on tours of the ancient sites of England, Scotland, and Ireland. He has traveled extensively and spoken on radio and TV in Britain and the US.

Gamini G. Zoysa

Gamini Zoysa attained a MSc in geology in Moscow in 1977 and a Post Graduate Diploma in mineral exploration from ITC, Delft, The Netherlands in 1980. He received a Diploma in Gemmology from FGA in London, and became a Graduate Gemologist at the Gemological Institute of America (GIA) in 2001. Mr Zoysa is a Fellow of the Gemmological Association of Great Britain, and a member of the Gemological Institute of America and the Institute of Mining and Metallurgy in London. He has been involved in the gemstone industry in Sri Lanka for many years and has lectured in gemology in Sri Lankan universities. Mr Zoysa has contributed to a variety of gemological books and journals.

Hanco Zwaan

Dr Hanco Zwaan, FGA, joined the National Museum of Natural History Naturalis, Leiden, Netherlands, in 1995, as curator of minerals and gems and director of the Netherlands Gemmological Laboratory. Issuing gem and pearl identification reports, diamond grading reports, and teaching gemmology, is part of his daily work, as well as studying processes in the Earth's crust that have led to the formation of gemstones. Collection management and research for educational purposes and new exhibitions are also important tasks. After studying geology and mineralogy at university and before joining the natural history museum, Zwaan gained his first experience in gemmology and diamond grading, while working for CISGEM in Milan, Italy, and for the Gemmological Association in London, UK. Dr Zwaan has a PhD in geology from Free University of Amsterdam, specializing in the gemmology, geology, and origin of the Sandawana emerald deposits, Zimbabwe.