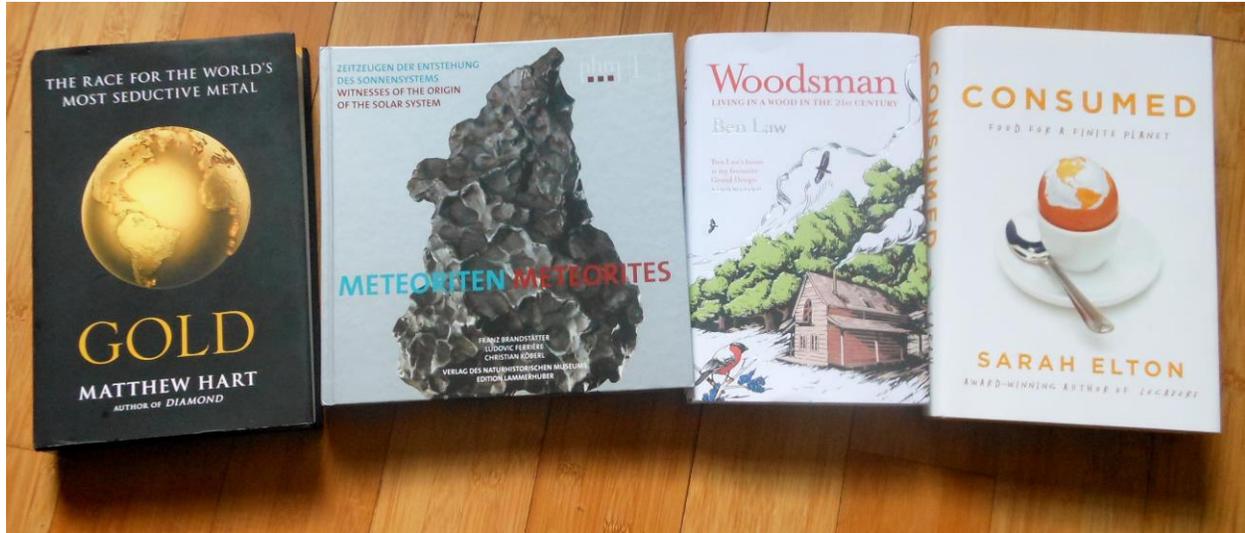


THE BOOKS of 2013

4 very good reads



... are described in the form of longer entries in the MINLIB keyword-driven, searchable bibliographic database. From left to right, and down the following eight pages, these books concern the following topics:

Gold by Matthew Hart: the history of the human obsession with this metal. Mining, trade, finance, theft, and the curse of resource wars old and new.

Meteoriten / Meteorites by Brandstatter *et al.*: beautifully illustrated introduction to “rocks from the sky”, featuring the great Vienna collection.

Woodsman by Ben Law: a brass-tacks view of woodland ecology and sustainable woodlot management. Thanks, Jill and Phil!

Consumed by Sarah Elton: continues the small-is-beautiful theme, but with a worldwide viewpoint, concerning small farms and sustainable agriculture.

No more than 1% of the 80,000-plus titles in MINLIB have received more than one 30-line record of keywords: these four books each merit 3-record coverage. MINLIB is a geoscience information tool: see www.turnstone.ca – the references in the 150-plus “rocks of the month” are almost all MINLIB selections.

Happy reading in 2014! --- Graham Wilson

Hart,M

Gold: The Race for the World's Most Seductive Metal.

Simon & Schuster, 290pp. (2013).

Matthew Hart's latest book is an arresting review of gold in human history, with emphasis on the darker side of the geopolitics, economics and criminal activity that has accompanied or driven centuries of gold exploration and mining - 12 chapters, acknowledgements, extensive endnotes and a detailed index –

1) this tale of Au mines and miners begins at the deep Mponeng mine in the Witwatersrand of ** S.Africa - the Vaal Reefs - Johannesburg - gold theft in S.African Au mines - illegal mining - at the Aurora mine, rich crown pillars in the black reef ore are a target for knowledgeable thieves (pp.12-16) - loss to the S.African economy –

2) the brutal and rapacious Spanish conquests of the Aztec and Inca empires are revisited, with emphasis on the conquistadors' frenzied pursuit of gold, especially in the Inca case - Mexico - Peru, S.America –

3) gold in foreign affairs - Au pouring into Europe via Spain to other countries - monetary policy - gold standard and silver standard - Au and Ag as precious metals - the 1848 gold rush on the Mother Lode (California, USA) began the modern gold era, which in volume soon dwarfed the Spanish colonial spoils - the 1890 financial crisis in American banking, and J.P. Morgan's solution (Morgan banking dynasty: pp.51-54) –

4) the 20th century, Bretton Woods, and Nixon's dropping of the gold standard in 1971 –

5) recognition of Carlin-style, sediment-hosted disseminated Au deposits in Nevada, USA (pp.77-93) - Ralph Roberts (who wrote an autobiography, *A Passion for Gold*, 2002) - invisible gold - the Gold Acres and Maggie Creek areas - John Sealy Livermore - Newmont - late 1961 discovery at Popovich Hill in the Tuscarora Range –

6) the Goldstrike mine and the rise of Barrick Gold (pp.95-114) - history of mining - the Carlin mine began operation in 1965, but much of the Carlin-type mineralization was then uneconomic at a gold price of \$35/ounce - the 1971 `Nixon shock' - wild ride in the deregulated gold price - short notes on Peter Munk (1927-) who, after 3 failed business ventures, launched Barrick in 1983 to buy Au resources (simpler than finding them) - Mercur mine in Utah - Goldstrike - Carlin Trend -

7) history of mining for Au in China - the country is today thought to mine at least 300 T/year from thousands of small-scale mines and medium-sized mines, with no really large Au mines - history of the Linglong mines on the Shandong peninsula - mixed attitudes of Chinese leadership to gold mining through time - the cultural revolution stopped the gold industry, and much else besides - after Mao's death in 1976, Au could again be considered of value –

8) frustration for foreign firms seeking to mine in China, 1993 onwards - Maoling (Cat Hill) Au deposit - issues of land title - legal issues - corruption - in 2008 China said to become the top Au producing country in the world - Chang Shan Hao mine in Inner Mongolia - illegal mining, and resultant pollution from Hg and other reagents - epidemic of unregulated small-scale mining in China –

9) world gold trade (pp.153-168) - the London gold market - the 2011 world Au production is estimated at 2700 tonnes (pp.153-154, 263-264) - ETF (exchange-traded funds) for commodities, such as 'the spider', SPDR Gold Shares - price volatility - the World Gold Council - bullion trading - in 150 years the total gold supply has risen from 10,000 tonnes to 170,000 tonnes (p.168) –

10) fixing the world gold price (pp.169-186) - history of the London Gold Fixing - the 1983 Brink's-Mat bullion robbery in Heathrow, England (UK, Europe) - crime - the difficulty of selling bullion - BIS (Bank of International Settlements, Basel, Switzerland) - BIS caused the gold price to shake in July 2010 when it was found that the bank had loaned 349 tonnes of gold to one or more banks in exchange for a cash loan (pp.175-182) - market uncertainty - W alloy fake gold bullion, and another variant with 51% Au and a core of Os Ir Ru Rh Cu Ni Fe giving a specific gravity similar to gold (p.181) - PGE - large gold investors, e.g., hedge fund manager John Paulson –

11) European colonial accounts of west African gold empires - Wagadu empire and later Ashanti state (later colonial Ghana) - 1817 expedition of Thomas Bowdich - Au mining and exploration in Senegal and Mali - west Africa - the Kedougou-Kenieba inlier straddles the border of the two countries - there are 3 large Au mines to the east, in Mali, and the Sabodala mine in Senegal - exploration in Senegal - a rare error (p.198) is the definition of an inlier (it is an area of older rock surrounded by younger formations) - local history - Mansa Musa and the Mali empire - Mark Nathanson and the rediscovery of the historic Sadiola mine in Mali (pp.200-204) - the Teranga Au exploration project in Senegal - artisanal mining –

12) the Kibali Au deposit in northeast Congo (Democratic Republic of Congo, former Zaire) - the mineralization was first discovered by an Australian prospector in 1903, in the Kilo-Moto greenstone belt - the curse of resource wars - United Nations intervention and peacekeeping - the Randgold mine as a bulwark against the thievery of gold and other minerals which funds armed groups in the region - final thoughts on gold.

Brandstatter,F, Ferriere,L and Koeberl,C
Meteoriten - Meteorites: Zeitzegen der Entstehung des Sonnensystems /
Witnesses of the Origin of the Solar System.
Verlag des Naturhistorisches Museum, Vienna, 270pp. (in Engl. and in
Ger.) (2013).

A bilingual guide to meteorites, serving also as a thematic meteorite catalogue for the great collection of the **Natural History Museum in Vienna** (Austria, Europe) - history of science - historic falls - history of the meteorite collection, and biographic notes on the curators - detailed coverage of the classes of meteorites in the collection - stony meteorites - iron meteorites - SNC achondrites - martian meteorites - with a 30-page introduction to impact craters (see book critique by Tim Jull in *Meteoritics & Planetary Science* 48 no.10, 2071-2072, October 2013) - this book makes a superbly illustrated yet detailed popular introduction to meteorites, with a minimum of text (German above, English below, in italics) and a maximum of high-quality images of meteorite localities, hand specimens and photomicrographs (an index would be helpful) - petrography and mineralogy –

early reports of falls in Europe and elsewhere, and biographic notes and portraits of some early meteorite researchers - Stannern, Hraschina and Sylacauga - the Vienna collection (pp.28-43), which today has 2,400 finds and falls - Cabin Creek - asteroid belt (pp.44-45) - fall statistics (p.51) - meteorite recovery from cold deserts of Antarctica, hot deserts, etc (pp.46-63) - fireball cameras and recovery, as of Grimsby (Ontario, Canada, 2009, pp.54-55) - Hoba –

composition and nature of meteorites (pp.64-83) - Tieschitz, Johnstown (diogenite) - Y791493 (lodranite) - Stannern, Millbillillie - Mount Joy, Willamette, Glorieta Mountain, Youdeggin, Silver Crown - CAI in Allende - Mezo-Madaras - fusion crust in Mocs - chondrules - halite in Zag - shock metamorphism in Tenham - presolar grains - SiC and diamond (pp.80-81) - comparison of the elemental compositions of the solar atmosphere and carbonaceous chondrites (p.83) –

meteorite classification, with many examples (pp.84-203) - stones, stony irons and irons (Ausson, Eagle Station, Canyon Diablo, pp.86-87) - summary of the classes (pp.88-91) - Tabor - carbonaceous chondrites - Orgueil, Nogoya, Ornans and Allende - Karoonda, Renazzo, Acfer 214 and Gujba - H, L and LL chondrites such as Menow, Bruderheim and Dhurmsala (pp.100-103) - Mocs, Allegan and Pultusk - Ragland, Sahara 97210 and Mezo-Madaras - photomicrographs of chondrules in NWA 5731 (pp.106-107) - brecciation in Peekskill (p.108), NWA 820, Naryilco and Portales Valley - Rumuruti - enstatite chondrites such as Hvittis, Pillistfer and Indarch –

achondrites - the acapulcoite Dhofar 125 - Lodran (type lodranite) - Winona (winonaite) - Novo-Urei (ureilite) - the D'Orbigny angrite - the Aubres enstatite breccia (aubrite) - asteroid Vesta is the inferred parent body of the HED clan of achondrites - the eucrites Stannern and Millbillillie - the diogenites Shalka and Johnstown - the howardites Zmenj and (p.131) DaG 779 –

stony irons - the Fukang, Esquel, Eagle Station and Ahumada pallasites - the mesosiderites Mincy, Dong Ujimqin Qi and NWA 2924 –

iron meteorites such as Youndegin and Cabin Creek, Carlton and Lamesa - Lenarto and Campo del Cielo - metallography - troilite nodules in Mount Edith - Mundrabilla and its abundant troilite - the silicated iron Miles - large troilite inclusion in Muonionalusta (pp.156-157) - Nantan and Canyon Diablo - Sikhote Alin - Paneth's Iron (p.159) - Gebel Kamil (p.160) - Lime Creek - Coahuila - Avce –

with a section on Austrian meteorites (pp.166-175), of which 7 are known, 4 falls and 3 finds, all ordinary chondrites - location map (p.168) - Ischgl - Muhlau - Mauerkirchen - Prambachkirchen - Ybbsitz - Lanzenkirchen - Minnichhof - recovery of fossil meteorites in Ordovician strata in Sweden, Scandinavia (pp.178-179) –

SNC achondrites - the martian meteorites Chassigny, Shergotty and Nakhla (pp.184-185, note the superb fusion crust on the Nakhla sample) - Zagami - Tissint - DaG 670 - iron meteorites on the surface of Mars (pp.190-191) - lunar meteorites (pp.192-203) - the Apollo space missions - planetary science - Moon rocks - DaG 400 –

meteorite showers (pp.204-211) as represented by Mocs and L'Aigle - Sikhote-Alin - Homestead - strewnfield maps –

introduction to impact structures (pp.212-241) - the cratering process - Bosumtwi, Ghana, west Africa - Gosses Bluff, Australia - the Amguid crater in the Sahara of Algeria, near Tamanrasset, north Africa - remote sensing images of other craters, such as Manicouagan (Quebec, Canada) - the Monturaqui crater in the Atacama desert of Chile - S.America (pp.226-227) - the New Quebec crater - drill core of impact breccia from Bosumtwi - a large outcrop veined by pseudotachylite in the Vredefort structure of ** S.Africa (pp.232-233) - tektites and impact glasses - shock lamellae (planar deformation lamellae, PDF) in quartz from the Manson crater, Iowa, USA –

the book concludes with an overview of some highlights of the solar system and its origins, as seen through meteorites and astronomy - formation of the solar nebula - structure of the Earth - primitive meteorites, such as the carbonaceous chondrites Orgueil and Allende - 'we all are stardust' (pp.256-257) - nucleosynthesis, the origin of the chemical elements, and the periodic table - presolar grains, such as SiC in Murchison (pp.262-263) - photograph sources (p.267) and credits plus date (2013, p.268) - **this book is excellent value and should be in the libraries of all meteorite enthusiasts, whether modest collectors or lifelong researchers, as a reminder of the wonder of meteorites** - the majority of the illustrations are not available elsewhere.

Law,B

Woodsman: Living in a Wood in the 21st Century.

HarperCollins, London, 248pp. (2013).

Popular account of life in a woodland area of southern England, UK, Europe - woodland ecology - sustainable woodlot use in modern times - **Ben Law** decides, after spending some time in forests around the world, to examine and then attempt to live in a woodlot in west Sussex - the 8 acre (3.2 ha) lot, Prickly Nut Wood, is located on the northeast side of a hill, near the village of Lodsworth, some 20 and 25 km S.S.W. of Godalming and Guildford, respectively, underlain by a Cretaceous local geology of greensand above Weald clay - the drainage system leads south via the Lod, Rother and Arun rivers to the sea at Littlehampton, west of Brighton - the area is situated on the anticlinal structure of the Weald, the strata younging southward to the Chalk trace of the South Downs, within 10 km to the south, and north to the North Downs, further to the north - the wood is 400 years or more old, with remnants of old embankments and sandstone walls - the area has much sweet chestnut coppice - other trees include beech, yew and walnut, the wildlife including roe deer, squirrel, and birds like tawny owl and nightjar - smaller and understory tree and shrub species include hazel, birch and rhododendron - Prickly Nut Wood is part of a larger (100-acre, 40.5-ha) woodland owned and managed by the author - the wood is only 8 miles (13 km) from a busy commuter railway station to central London - with its hillside location it largely survived the winds of the Great Storm of 1987 - the largest tree is a mature old oak on a ridge - the land is a mixture of woodlands, fields and trails, bordered by a stream, pond (which the author saves from derelict state) and old stone quarry - tree planting - laying hedgerows (pleaching, the partial cutting of stems to allow them to be bent and woven - p.31) - selection of species (p.35) for hedges - domestic species and their agricultural produce: apple and plum, gage and cobnuts - heritage apples - crabapples - orchard planning - selection of rootstocks for apple, pear and plum - the little river Lod - edible mushrooms - giant puffball, black trumpet and chicken of the woods - mushroom cultivation (pp.51-54) –

foraging fresh roadkill (pp.57-58 - perhaps taking food for free to extremes?) - berry picking and sweet chestnut collecting - Ben Law begins his long relationship with Prickly Nut Wood by spending a year in observation of natural cycles - coppicing, a way of sustainable timber harvesting (see pp.69-88, et seq.) - horse logging - leaving some standing deadwood to encourage biodiversity (p.80) - sweet chestnut coppice - plantation forestry versus continuous cover forestry (pp.88-92) - minimizing soil erosion - European larch - restoration of derelict coppice (pp.92-98) - conservation - timber harvest - cleaving sweet chestnut (Spanish chestnut) for its wood - sweet chestnut was brought by the Romans and some 180 km² of land is planted with coppice of this useful wood, most of it in Sussex, Surrey and Kent counties (p.104) - besides the production of sticks, posts, timber sales, production of rustic wood furniture offers further woodsman income - charcoal production in a kiln (pp.113-129) offers further income, plus biochar production from the leftovers of the kiln - woodland housing - building a 42-rib wood-frame yurt - steaming and bending of wood - at length, Law opts to build a house based on a sweet chestnut barn frame - house design - planning permission and building codes - raising a roundwood timber frame, and lining straw bale walls with lime - clear-

fell 4-part plantation management (pp.166-169) - other trees in the woodland, besides sweet chestnut (pp.173-198) - uses of woods for carpentry, etc - English oak (pp.175-181) - diversity of insect and lichen species in oak (p.181) - hazel, ash and silver birch - alder - goat willow (which provides the earliest tree pollen for pollinators like bees - ivy offers the last pollen of the year) - field maple, hornbeam and hawthorn - rowan, crab apple and wild service trees - just 32 tree species are native to Britain (p.201) -

tree succession in a period of warming climate - pros and cons of introduction of exotic species (pp.204-207) - predictions of changing rural and urban land use patterns in the 21st century (pp.208-216) - futuristic vision of a largely post-oil world, nominally in the year 2037 (pp.211-237) - postscript on local sustainability, noting new local ventures such as a community centre / store and a microbrewery in Lodsworth village - - the book ends with a poem, glossary of woodland terms, and index - it is enlivened by numerous line drawings by Jane Bottomley - there is no formal reading list at the end, but a few key books are mentioned (e.g., pp.74,116,127), such as Oliver Rackham's 'Ancient Woodland' - Law himself has produced 4 other books, including 'The Woodland Year' and two works on house construction.

Elton,S

Consumed: Food for a Finite Planet.

HarperCollins Publishers Ltd, Toronto, 348pp. (2013).

Popular, detailed overview of the global food supply, at the level of the farmer - this book is critical of the overbearing presence and influence of the large agribusiness firms, and their reliance on fossil fuels, pesticides and herbicides - the role of the small farmer - organic farming - agriculture around the globe - a solid review with introduction, 14 chapters in 3 sections (entitled soil, seeds and culture), conclusion, acknowledgements, endnotes, references and index - the introduction notes the forecast average global warming of 1.5-2°C, and growth of human population to 9 billion, by 2050 - the globe may warm as much as 6°C by 2100 - a warmer climate will favour weeds over crops and is not friendly to agribusiness monocultures - **Sarah Elton** argues that sustainable small-scale farming is the future, and is attainable - nominal decadal targets to 2050 are presented in turn - the prescription is to break up giant farms, cease use of chemical pesticides and fertilizers, and abandon harmful monocultures like oil palm - seed biodiversity must be protected - the first section ("soil", chapters 1-6) sets the scene - small farms in Maharashtra, west India - water resources (90% of Indian water supply is used by agriculture) - organic farms - development of agribusiness in Canada (there were 600,000 farms in 1951, only about 200,000 by 2011 - pp.32-33) - industrialization of agriculture and rising predominance of relatively few crops - Norman Borlaug and the Green Revolution, in which output rose rapidly with larger farms, new seed strains and use of artificial N fertilizers - this was successful, at the cost of small farmers, leaving fewer, larger and richer farms and firms - organic farming does however have some advantages (p.38 *et seq.*) - Cuba in the Caribbean (pp.40-41) - the role of N (nitrogen, pp.43-45) - just under 40% of food grown in N.America is wasted, and up to 70% of grains grown in the USA feed livestock rather than humans directly (pp.46-47) - the Aurangabad area (Bidkin, Dhangaon) in Maharashtra (pp.48-53) - culpability of global finance in the 2008 food price crisis (pp.53-56) -

large-scale farming, the WTO and trade (pp.56-62) - co-operatives of small farms in India with short chains to market (pp.63-67) - bogus economics of long-chain industrial agribusiness and need for green economic outlook - imported versus local food supply - value of agriculture to local economics in particular - value of the food industry in Maine, USA (p.78) - urban agriculture in Nairobi (Kenya, east Africa) and elsewhere (pp.79-83) - modern small-scale farms, e.g., beef farming in Norfolk county, southwest Ontario, Canada (anecdote of 5-year time frame to switch from tobacco monoculture to beef) - La Via Campesina and other organizations supporting food sovereignty - shepherd school in the Pyrenees of Catalonia, Spain, Europe - China and India - challenges of attracting farm labour (pp.102-113) - co-operative farms in Italy - pressure on agricultural lands (pp.115-137) and rise of insidious land grabs: land speculation and use of land to grow export crops, not supplying local markets - >40% of farm land in Laos is controlled by foreigners (p.119) - investors have moved into the food markets since 2000 - pressure of farmland in France - case of Magadi area near Bangalore, Karnataka, south India (pp.131-133) - greenbelts around cities, as in UK and Canada

(pp.133-135) - section 2 concerns seed stock (pp.139-213) - rice terrace farming in Yuanyang, Yunnan, south China - hybrid seeds replace local seed stock (pp.141-152) and cause disruption, needing agrichemical inputs - loss of biodiversity in apples and other crops - 75% of world crop diversity said to have been lost during the 20th century - old hybrid stock modification and modern genetic science in agribusiness - rice in Yunnan, south China - rise of favoured plant breeds - grasses and grains - the development of modern maize from teosinte - local varieties (landraces) - seed breeding - Gregor Mendel - plant genetics - Nikolai Vavilov, pioneer in genetic seed banks - *in situ* (habitat) and *ex situ* (seed bank, e.g., Svalbard / Spitzbergen, Norway, Scandinavia) conservation -

rapid consolidation of the seed industry in the past 30 years - big business evidently puts profits well ahead of biodiversity (pp.169-171) - research in rice engineering to grow the crop at higher temperatures in the near future (pp.172-176) - C3 and C4 photosynthesis and the quest for C4 rice which can use solar energy more efficiently - current debate over GM (genetically modified) foods - about 10% of world farmland is now sown with GM crops (mostly soy, corn, canola and cotton, p.183) - legal aspects - threat of agribusiness patents - the development of resistance in weeds treated with herbicides tolerated by glyphosphate-resistant GM seeds - Bt (insect-repelling) seeds may soon see similar problems in pest mutations (pp.189-191) - limited success of GM breeds, and need for "open source" research and development in genetics (pp.192-197) - traditional versus high-yield but chemical- dependent rice strains in China - the traditional Heier sticky rice (pp.205-209) - the Middle Hills district around Hetauda, Nepal (pp.209-212), where a 2008 corn failure persuaded many farmers of the need to retain heritage seeds - section 3 (culture, as in food preference, pp.215-311) - the dairy cows, milk and cheese terroir of the Aubrac region of southwest France, Europe, where traditional practices persist (pp.217-225, 238 et seq.) - the growth in the market for convenience foods - the concept of terroir - the Aubrac again, and the success of the AOC designation system in France (pp.256-262, et seq.) - French AOC cheeses - GIAHS farming systems (p.254) - Canadienne heritage cattle in Charlevoix county, Quebec, Canada - terroir and foods in the Lebanon, Middle East - the Kampot pepper of Cambodia - food in Ethiopia, east Africa - Afghan bread in Toronto, Ontario - local spices and health - milking in the Aubrac region - educating children - school meals in France and Italy - urban agriculture - gardens in Detroit, Michigan, USA - food for free, grown in parks instead of decorative species - a hopeful tale of struggle against wealthy entrenched interests.