Gray Literature & Geology

James St. John (School of Earth Sciences, Ohio State University at Newark, Newark, Ohio)
(stjohn.2@osu.edu) (http://www1.newark.ohio-state.edu/Professional/OSU/Faculty/jstjohn/)
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Basic Terminology

White literature: publications that are well known; widely distributely; readily accessible.

Black literature: printed items that are secret or proprietary; their existence is usually not known to the general public; not accessible.

Gray literature: publications known to very few; have limited distributions; difficult to purchase or acquire from issuing entity; are rarely cited; are rarely listed in bibliographic databases; are rarely housed in libraries.

Examples of Geologic White Literature

- Gould (1989) - *Wonderful Life, the Burgess Shale and the Nature of History.* [book]
- *Journal of Paleontology* [journal]
- *Mineralogical Record* [journal]

Examples of Geologic Black Literature

- 1940s - any geologic maps of the Norilsk Mining District, Siberia
- 2000s - cobalt & nickel ore reserves and production numbers for the Norilsk Mining District, Siberia
- 3-D seismic results from an oil/gas company's exploration geology team
- reports having locality details of current bat hibernacula in Mammoth Cave National Park, Kentucky
- Chinese provincial geologic maps showing locations of diamondiferous kimberlites

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Examples of Geologic Gray Literature

Most geologic field trip guidebooks; self-published books and journals; abstracts volumes of many conferences, symposia, and meetings; many Ph.D. dissertations & M.S. theses; ~all undergraduate theses (B.S., B.A.); many open-file reports of state/provincial/national geologic surveys; geologic reports prepared for the military; most specialist newsletters; many geologic maps; well logs; aerial photographs; core decriptions; unpublished reports; some foreign literature.

Field Trip Guidebooks

Value: usually have specific locality details and the most up-to-date interpretations of the local geology of a given area; often have good maps, decent explanatory sketches of outcrops, and photographs.

Problems: most have distributions limited to original field trip attendees; trip leaders may or may not retain spare copies or deposit copies in libraries; many are not listed in standard reference databases.

Examples:

Excursion Guide to the Aldan and Lena Rivers, International Excursion on the Problem of the Precambrian-Cambrian Boundary (1973)

27th International Geological Congress (Moscow, USSR, 1984), Yakutsk ASSR, Siberian Platform Guidebook (1984)

Third International Symposium on the Cambrian System (Novosibirsk, 1990), Guidebook for Excursion on the Aldan and Lena Rivers, Siberian Platform (1990)

Wisconsin Section of the American Institute of Professional Geologists, Annual Fall Geology Field Conference, Guidebook to the Problems Associated with Artesian Systems and Land-Usage in Southeastern Wisconsin (1994)

Cambrian Explosion Symposium (China, 1995) Excursion Guide (1995)

American Association of Petroleum Geologists, Eastern Section Meeting, 1998, Field Trip, Fossil Collecting in the Silica Formation at Sylvania, Ohio (1998)

South Australia 2006, XI International Conference of the Cambrian Stage Subdivision Working Group, Field Guide (2006)

Geology of Central Eleuthera, Bahamas: a Field Trip Guide (2010)

A Guide to the Paleontology of the Upper Jurassic Morrison Formation of Morrison, Colorado: New Interpretations and Discoveries (2010)

Partial Solutions: geology libraries with field trip guidebook collections; Geologic Guidebooks of North America Database; publishers produce higher-print runs; field trip attendees deposit their copies or high-quality reproductions in libraries; librarians regularly visit their science departments and suggest deposition of new guidebooks.

How JSJ obtained copies: attended the field trips; obtained photocopies from colleagues who attended field trips; ILL.

Abstracts Volumes for Conferences, Symposia, Field Conferences

Problems: usually low print runs; usually limited distributions (often just conference attendees); low perceived scientific or citational values of abstracts; follow-up proceedings volumes perceived to "trump" abstracts volumes.

Value: many abstracts are the only published record of many studies (no follow-up publications); may have significant lag time between conference itself and publication of proceedings volume, so the abstracts volumes remain the most current published results of contained studies.

Examples:

First Keck Research Symposium in Geology (Abstracts Volume) (1988)

Sino-Swedish Geoscience Symposium, Sept. 20-25, 1995, Beijing (1995)

International Symposium, the Origins of Animal Body Plans and Their Fossil Records (1999)

The 13th Symposium on the Geology of the Bahamas and Other Carbonate Regions, Abstracts and Program (2006)

13th International Field Conference of the Cambrian Stage Subdivision Working Group, Siberian Platform, Western Yakutia, Yakutsk, 20 July-1 August 2008

How JSJ obtained copies: attended the conferences; obtained photocopies from colleagues who attended conferences; ILL; some apparently inaccessible.

Proceedings Volumes for Conferences, Symposia, Field Conferences

Problem: even some of these can be obscure, rarely cited, and hard-to-get.

Example: *First Circum-Pacific and Circum-Atlantic Terrane Conference Proceedings, 5-22 November 1993, Guanajuato, Mexico.*

Ph.D. Dissertations & M.S. Theses

Value: Many are very detailed case studies of the geology of specific localities or regions. As such, they often have the best information about most of the world's specific geologic sites.

Problems: University/college libraries typically have one copy only; some are missing; many won't lend; microform versions are usually awful (fossil/rock/outcrop photos turn out black).

Partial Solution: many graduate students are now required to submit digital versions for online posting.

Examples of published dissertations:

Roberg (1715) - *Dissertatio Academica de Fluviatili Astaco*. University of Upsala.

Emmrich (1839) - *De Trilobitis, Dissertatio Petrefactologica*. Berlin. 56 pp. 1 pl.

Examples of non-published dissertations/theses:

Campbell (1969) - *Stratigraphy and Paleontology of the Kinzers Formation, Southeastern Pennsylvania*. Franklin and Marshall College. M.S. thesis.

Zhan Ren-Bin (1989) - *A Preliminary Research on Early Cambrian Sponges from Chengjiang, Yunnan, China*. Nanjing Institute of Geology and Paleontology. M.S. thesis.

Budd (1994) - *Cambrian Arthropods from North Greenland and Their Evolutionary Significance*. University of Cambridge. Ph.D. dissertation.

Nedin (1995) - *The Paleontology and Paleoenvironment of the Early Cambrian Emu Bay Shale, Kangaroo Island, South Australia*. University of Adelaide. Ph.D. dissertation.

How JSJ obtained copies: visited colleges/universities and obtained photocopies from advisor copies contacted college/university geology department professors; ILL; International ILL; some apparently inaccessible.

Senior Theses (B.S., B.A.)

Value: about the same as Ph.D. & M.S. works, but the content quality and maturity is usually lower.

Problems: more difficult to obtain than Ph.D. or M.S. works; often not cataloged; usually 1 copy only; some not deposited in institutional libraries; almost always can't be borrowed; sometimes missing; some considered "class papers".

Examples:

Hilty (1954) - *Stratigraphy and Paleontology of the Washingtonville Shale, Pennsylvanian Age, in Wayne and Holmes Counties, Ohio.* College of Wooster (Wooster, Ohio).

Walker (1978) - *Paleontology and Paleoecology of the Cuyahoga and Logan Formations of Central Ohio.* Denison University (Granville, Ohio).

Borchers (1994) - *Phyllocarid Arthropdos and Associated Biota from a Carbonaceous Black Shale in the Breathitt Formation (Pennsylvanian), Northern Kentucky.* Ohio State University.

Milner (1995) - *Trilobites of the Middle Cambrian (Acadian) Manuels River Formation of the St. John area, New Brunswick.* Brock University (St. Catharines, Ontario, Canada).

Skinner (1997) - *Paleoecology of the Muddy Bottom Fauna of the Kinzers Formation, Lower Cambrian of Lancaster and York Counties, Pennsylvania.* Franklin and Marshall College (Lancaster, Pennsylvania).

How JSJ obtained copies: visited colleges/universities and obtained photocopies from advisor copies contacted college/university geology department professors; ILL; International ILL; some apparently inaccessible.

Specialist Newsletters

Value: latest information on the status of in-progess and completed projects in a specific discipline.

Problems: limited distribution; only known by those who care about the subject (specialists); unlikely to be deposited in libraries.

Example: *The Trilobite Papers*

How JSJ obtained copies: subscribed; ILL

Self-Published Books

Problems: usually poorly known; limited distribution; content often not edited or reviewed.

Examples:

Behrendt (1999) - *Fossils of the Maxville Limestone.*

McMenamin (2001) - *Paleontology Sonora: Lipalian and Cambrian.*

How JSJ obtained copies: purchased directly from authors.

Custom-Printed Books

Problems: often poorly known; can be very difficult to obtain; often not overtly listed by publishers.

Example: Babcock (2006) - *Gemstones and Precious Metals.*

Foreign Journal/Books

Problems: much foreign literature (especially non-European) may be hard-to-get or inaccessible in America, but ~easily obtainable abroad; library database searches hampered by diacritical marks, non-Latin letters, inconsistent transliteration spelling methods, and typos.

Mandarin Chinese transliteration: several methods used (Wade-Giles, modified Wade-Giles, Pinyin, etc.); none are "correct" or "official".

Capital city of modern mainland China: 北京 = Peking or Peiching or Beijing

Mainland Chinese provinces: - Guangdong vs. Kwangtung vs. Canton

- Guizhou vs. Kweichow - Xinjiang vs. Sinkiang - Sichuan vs. Szechuan

Author names: ideally, transliterate in the manner that individual authors prefer.

张文堂 = Zhang Wentang or Chang Wentang 朱兆玲 = Zhu Zhaoling or Chu Chaoling

钱义元 = Qian Yiyuan or Chien Yiyuan

Russian transliteration: some Cyrillic characters have inconsistent transliterations
Compare: Л = "L" П = "P" С = "S" versus Я = "ia" or "ya" Ю = "iu" or "yu" В = "V" or "U"
Compare: ГЕОЛОГИЯ = "Geologiya" or "Geologiia" КЕМБРИЯ = "Kembriya" or "Kembriia"
- JSJ prefers the former transliteration spellings of "geology" and "Cambrian here.
- OCLC/WorldCat usually prefers the latter transliteration spellings of "geology" and "Cambrian".
The "grayness" of Chinese and Russian literature is increased if foreign literature acquisition is hampered by transliteration spelling issues.

Examples of gray Chinese literature:

Egorova et al. (1963) - The Cambrian trilobite faunas from Guizhou and western Hunan. *Special Paper of the People's Republic of China Academy of Geological Sciences, Ministry of Geology, Series B, Stratigraphy and Paleontology* **3**(1). 117 pp.

Lu et al. (1963) - *Trilobites*. Beijing. Science Press. 186 pp. 45 pls.

Xiang (1963) - Trilobita. pp. 27-36, 138-141 in *Handbook of Fossils of Qinling*. Beijing. China Industrial Press. 255 pp.

Shu et al. (1992) - The Lower Cambrian KIN fauna of Chengjiang fossil lagerstätte from Yunnan, China. *Journal of Northwest University, Natural Science Edition* **22**(Supplement): 31-38, 3 pls.

Examples of gray Russian literature:

Zhuravleva et al. (1970) - *Information about the Lower Cambrian of the Southern Tian-Shan [Mountains]*. Tashkent, Uzbekistan. 53 pp. 35 pls.

Khayrullina (1973) - *Biostratigraphy and Trilobites of the Turkestan Range*. Tashkent, Uzbekistan. 112 pp. 13 pls.

Egorova et al. (1976) - Elansk and Kunamsk facies stratotypes of the lower boundary of the Middle Cambrian in Siberia. *Trudy Sibirskiy Nauchno-Issledovatelskiy Institut Geologii, Geofiziki i Mineralnogo Syrya (SNIIGGIMS)* **211a** [misprinted 211]. 167 pp. 59 pls.

Examples of gray Axis of Evil literature:

Kim (1980) - [unknown title of article on Cambrian-aged fossil trilobites from North Korea]. *Kim Il Sung Comprehensive University Journal (Geology)* **1980**(3): [unknown pagination].

Kim et al. (1987) - *Fossils of [North] Korea*. Pyongyang. 193 pp. 96 pls. [in Korean]

Hamdi (1995) - Precambrian-Cambrian deposits in Iran. *Treatise on the Geology of Iran* **20**. 353+11 pp. [in Persian]

How JSJ obtained copies: ILL, International ILL; photocopied from colleagues' libraries; contacted authors directly; some apparently inaccessible.

Well Logs

Wells are drilled principally for: 1) drinking water supplies; 2) petroleum (oil and natural gas); 3) scientific purposes. Mudlogs and geophysical logs (aka wireline logs; aka "e-logs") record geologic and engineering-related information about the rocks penetrated by the well.

Mudlogs: record during-drilling information, on-site geologic interpretations, occurrences of any petroleum encountered. Some available at state geological surveys.

Geophysical logs: record physical and geophysical properties of rocks lining the well hole, such as gamma ray readings, well diameter, bulk density, porosity, etc. This information allows geologists to interpret and identify rock types, stratigraphic positions, horizons with petroleum, etc. These are generally available at state geological surveys. "Tight holes" are wells and well information that the oil company wishes to keep secret/proprietary (black literature). Such well logs are deposited at state geological surveys after a certain number of years.

How JSJ obtained copies: personal copies from working as a well-site geologist; photocopies from originals in the Ohio Geological Survey's collection.

Geologic Reports Prepared for Industry

Most are black literature (proprietary).

Example: Palmer (1984) - *Report on Cambrian Fossils from the Holitna Basin Area, South-Central Alaska.* Prepared for Sohio Alaska Petroleum Company.
How JSJ obtained copies: photocopied from author's (= colleague's) copy

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Geologic Reports Prepared for the Military
Most are black literature (secret) or dark gray.
Example: Wilcox (1953) - *Preliminary Report of the Eruption of Mount Spurr Volcano, Alaska, July 9, 1953, and the Ashfall in the Anchorage Area.* Prepared for the Headquarters Alaskan Command, Elmendorf Air Force Base.
How JSJ obtained a copy: Freedom of Information Act (FOIA) request to the American Air Force.

Open-File Reports/Maps
Quickly published reports generated by geological surveys, but little (if any) in the way of editing/peer review). Open-file maps are master sheets that can be modified/added to from time to time.
Such items are available from issuing state/provincial/national geological surveys, sometimes requiring physical visits to the surveys (not an easy option for out-of-state/out-of-country individuals).

Unpublished Reports
Example: Stout (undated) - *Notes on Flint Ridge.* 15 pp.
This item is in the "files" of the Ohio Geological Survey (OGS). JSJ found out about it because an OGS geologist I knew mentioned it and photocopied it.

Unpublished Maps
Example: (~2001) - *Stillwater Mining Company Ventilation and Escapeway Schematic.* 1 sheet.
This map gives mine level information at the Stillwater Platinum Mine near Nye, Montana.
How JSJ obtained a copy: purchased from the mine geologist who rescued the map from the trash.

Example: Klausner (2009) - *Mammoth Cave, Mammoth Cave System, Historic Section, Mammoth Cave National Park, Kentucky.* Cave Research Foundation. 1 sheet.
This map gives incredible detail of the northwestern portion of the cave system under Mammoth Cave Ridge, Kentucky. A perception apparently exists that no one in the public would be interested in purchasing a published version of this.
How JSJ obtained a copy: took digital photographs of the master sheet, with permission from a member of the Western Kentucky University/Mammoth Cave Karst Field Studies Program staff.

Example: USSR General Staff of Army (1978) - *China, Yunnan Province, Yuchi.* 1:100,000 series, sheet **G-48-122.**
This is a Soviet military-grade topographic map of part of southwestern China. It is marked "secret", and was originally black literature. Conditions in post-Communist Russia have resulted in these formerly-secret military maps being made available for purchase (they're expensive, though).
How JSJ obtained a copy: purchased from an online map company.

The Take-Home Message
1) Awareness - an extensive gray literature exists, in all fields. It can have important information for researchers. Libraries and library workers need to be aware of the gray literature in their own collections and elsewhere. Gray literature is usually obtainable, although persistence, cleverness, creativity, and luck may be necessary.
2) Improving the Situation - Everyone's responsible for increasing access to gray literature, from issuing entities (deposit their products in >1 library), individuals/users (deposit their copies or high-quality reproduction in libraries), reference librarians (apply case studies as mentioned in this report), cataloging workers (gray literature backlogs), library leadership (loosen lending restrictions or provide other quality options), non-library custodians of gray literature (science departments and their dissertation/thesis collections, database providers (OCLC/WorldCat, GeoRef, etc.).