Revival of a historic bibliography for a modern bibliographic analysis

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Why a bibliographic analysis?

Analyzing the complete works of an individual can reveal patterns and themes that are otherwise obscured

A list of documents shifted to a spreadsheet for analysis and visualization

Questions that might be answered

- Trends in publication rate overtime
- Journals frequently published in
- Number of citations from the publications
- Common subject areas for journals published in
- Other surprises…

Contemporary and historic

Contemporary

- Publications likely all indexed
  - In several subject specific databases
- Publications likely have DOIs
- Author IDs
- Familiar modern publishing standards

Historic

- Publications not all indexed in the same database
  - History and subject specific databases
- Few, if any DOIs
- Past publishing standards
  - Eg. a single paper in several parts

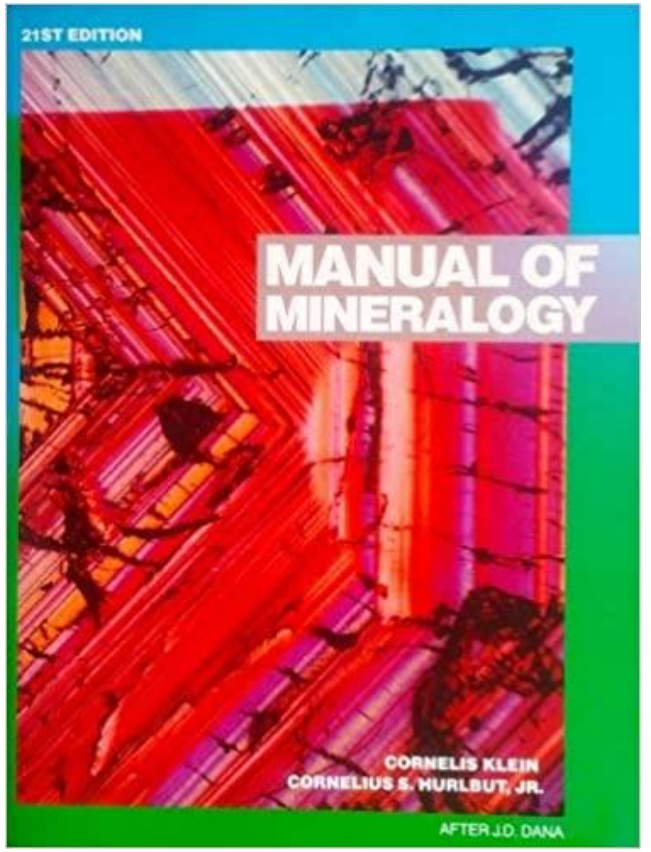
Current project

The works of James D. Dana

Historic mineralogist (1813-1895), who published between 1835 and 1871

Over 300 publications, including several book series, some of which are still updated today

These publications pre-date the content available in Web of Science Core Collection (1900-present), and Scopus was not available at the author's institution



21st Edition

After J.D. Dana

Workflow…

Collect the initial dataset

First step, for any bibliographic analysis, is to obtain an initial data set

Method will vary depending on the project

In this case, during the literature review, a bibliography of the works was published in 1919, was discovered

Pirsson, L. V. Biographical Memoir of James Dwight Dana 1813-1895. in Biographical Memoirs vol. IX 41–92 (National Academy of Sciences, 1919).

On the drawing of figures of crystals. Ibid., vol. 33, pp. 32-50.
Crystallographic examination of eremite. Ibid., pp. 70-75.
1838. Description of a crustaceous animal belonging to the genus Caligus. Ibid., vol. 34, pp. 225-266.
1843. The analogies between the modern igneous rocks and the so-called primary formations. Ibid., vol. 45, pp. 104-129.
On the temperature limiting the distribution of corals. Ibid., pp. 130-131.
The areas of subsidence in the Pacific, as indicated by the distribution of coral islands. Ibid., pp. 131-135.
1844. A System of Mineralogy, 2d edition, 640 pp., 8vo. New York and London.
The composition of corals. Amer. Journ. Sci., vol. 47, pp. 135-136.
1845. Observations on pseudomorphism. Ibid., vol. 48, pp. 81-92.
Origin of the constituent and adventitious minerals of trap and the allied rocks. Ibid., vol. 49, pp. 49-64.
1846. Zoöphytes. [U. S. Exploring Expedition.] Philadelphia, 4°, 741 pp., with a folio atlas of 61 plates. [Under C. Wilkes, U. S. N.]
Notice of some genera of Cyclopacea. Amer. Journ. Sci. (2), vol. 1, pp. 225-230.
General views on the classification of animals. Ibid., pp. 286-288.
On the occurrence of fluorspar, apatite, and chondrodite in limestone. Ibid., vol. 2, pp. 88-89.
The volcanoes of the moon. Ibid., pp. 335-355.
1846-1847. Zoöphytes. Ibid., pp. 64-69, 187-202; vol. 3, pp. 1-24, 160-163, 337-347.
1847. The origin of continents. Ibid., vol. 3, pp. 94-100.
Geological results of the earth's contraction in consequence of cooling. Ibid., pp. 176-188.
Origin of the grand outline features of the earth. Ibid., pp. 381-398.
A general review of the geological effects of the earth's cooling from a state of igneous fusion. Ibid., vol. 4, pp. 88-92.
Fossil shells from Australia. Ibid., pp. 151-160.
Observations on some Tertiary corals described by Mr. Lonsdale. Ibid., pp. 359-362.
1847. Certain laws of cohesive attraction. Ibid., pp. 364-385.
1847-1851. Conspectus Crustaceorum. I. Proc. Amer. Acad., Boston, vol. 1, pp. 149-155. II. Ibid., vol. 2, pp. 9-61. IV. Amer. Journ. Sci. (2), vol. 8, pp. 424-428. V. Ibid., vol. 9, pp. 129-133. III. Proc. Amer. Acad., Boston, vol. 2, pp. 201-220. VI. Amer. Journ. Sci. (2), vol. 11, pp. 268-274.
1848. Manual of Mineralogy, including observations on mines, rocks, reduction of ores, and the application of the science to the arts. New Haven, 12°, 430 pp.
On a law of cohesive attraction as exemplified in a crystal of snow. Amer. Journ. Sci. (2), vol. 5, pp. 100-102.

Data cleaning

Might need to transfer the scan of an image into text

Needed to transfer the bibliography into a spreadsheet

Filling in the Ibid. instances

Parse out several citations from a single entry

1846-1847. Zoöphytes. Ibid., pp. 64-69, 187-202; vol. 3, pp. 1-24, 160-163, 337-347.

Ref #	Year	Month	Author	Title	Journal	Vol.	Iss.	Pages
24	1846	November	Dana, James D.	On Zoöphytes	American Journal of Science and Arts	2	1	64-69
New	1846	September	Dana, James D.	On Zoöphytes, No. II;: GENERAL CHARACTERISTICS OF ZOOPHYTES. ORDER HYDROIDEA	American Journal of Science and Arts	2	5	187-202
New	1847	January	Dana, James D.	On Zoöphytes, No. III;: Order II. ACTINOIDEA. Reproduction by Buds.--The Compound Structure	American Journal of Science and Arts	3	7	1-24
New	1847	March	Dana, James D.	On Zoöphytes, No. IV;: GEOGRAPHICAL DISTRIBUTION OF ZOOPHYTES	American Journal of Science and Arts	3	8	160-163
New	1847	May	Dana, James D.	On Zoöphytes, No. V.: CLASSIFICATION OF ZOOPHYTES	American Journal of Science and Arts	3	9	337-347

Data validation

Check information is correct and complete

If possible collect DOIs

Use of history databases, not science ones, as indexes didn't cover the time period

Open Access databases utilized (WorldCat, Hathi Trust and American Journal of Science)

Journal names changes, journal volume and issue formats changed over time

1864. A Text-book of Geology; designed for schools and academies. Philadelphia, 12°, 356 pp.
Fossil insects from the Carboniferous formation in Illinois. Amer. Journ. Sci., vol. 37, pp. 34-35.

American Journal of Science

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Invertebrate paleontology

On fossil insects from the Carboniferous formation in Illinois

James Dwight Dana

American Journal of Science January 1864, s2-37 (109) 34-35; DOI: https://doi.org/10.2475/ajs.s2-37.109.34

Article | References | Info & Metrics | PDF

34 *Dana on Fossil Insects from the Carboniferous.*

ART. III.—*On Fossil Insects from the Carboniferous formation in Illinois;* by JAMES D. DANA.

The remains of Insects, represented in the following figures, were discovered by Mr. John G. Bronson in the Carboniferous beds at Morris, Illinois. They occur in the flattened iron-stone concretions of the beds. Other concretions of the locality contain various coal plants, and also the remains of two or three species of *Amphipod* Crustaceans. The plants have been investigated by Mr. Lesquereux and descriptions of them, we understand, will appear in the Report on the Geology of the State by Mr. Worthen. Among them, according to Mr. Lesquereux,

1.

In this issue

American Journal of Science
Vol. s2-37, Issue 109
January 1864
Table of Contents
Table of Contents (PDF)
Index by author

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JUMP TO SECTION

- ARTICLE
- INFO & METRICS
- REFERENCES
- PDF

Ref #	Year Published	Month Published	Author 1	Author 2	Title	Publisher	Journal Name	Journal Volume	Journal Issue Number	Journal Page Numbers	DOI or Link
116	1864				A Text-book of Geology; designed for schools and academies						
new	1864	January	Dana, James D.		The classification of animals based on the principle of cephalization; P		American Journal of Science	s2-37	109	10-33	https://doi.org/10.2475/ajs.s2-37.109.10
new	1864	March	Dana, James D.		The classification of animals based on the principle of cephalization; P		American Journal of Science	s2-37	110	157-183	https://doi.org/10.2475/ajs.s2-37.110.157
117	1864	January	Dana, James Dwight		On Fossil insects from the Carboniferous formation in Illinois		American Journal of Science	s2-37	109	34-35	https://doi.org/10.2475/ajs.s2-37.109.34
new	1864	March	Dana, James D.		Note on the position of amphibians among the classes of vertebrates		American Journal of Science	s2-37	110	184-186	https://doi.org/10.2475/ajs.s2-37.110.184

Discovery

DURING THE DATA CLEANING AND VALIDATION STAGES IT BECAME CLEAR THAT THE BIBLIOGRAPHY WAS NOT IN FACT COMPLETE

Tips and solutions

Numbered all entries in the original bibliography, mark new finds as ‘New’

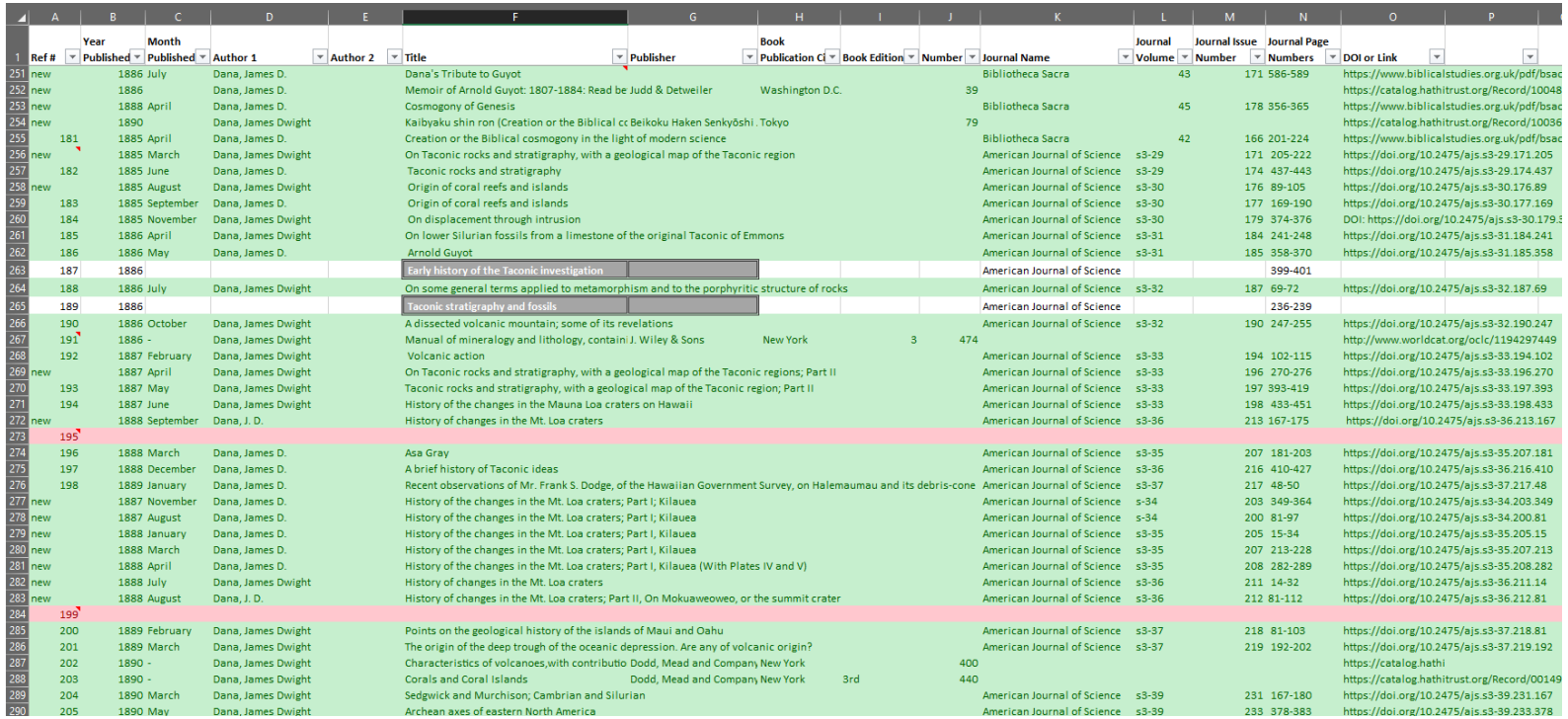
Tackle the easy entries first

Used color shading to indicate validation status

Validate by the journal

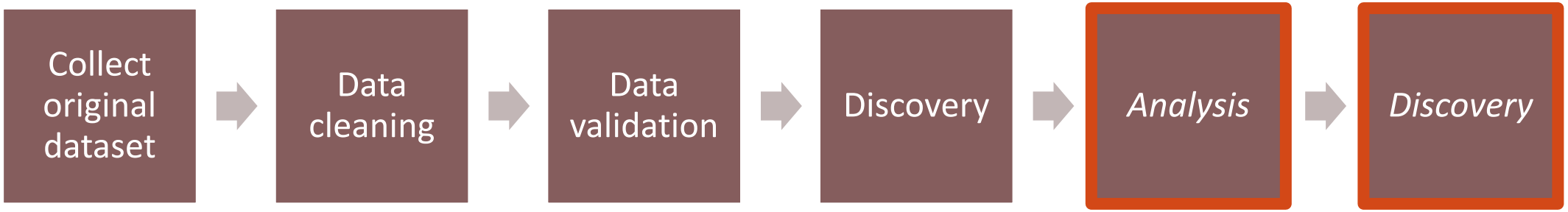
Usually one journal is in the same database

DOI or permalink was recorded



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Ref #	Year Published	Month Published	Author 1	Author 2	Title	Publisher	Book Publication Ci	Book Edition	Number	Journal Name	Journal Volume	Journal Issue Number	Journal Page Numbers	DOI or Link	
251	new	1886	July	Dana, James D.		Dana's Tribute to Guyot					Bibliotheca Sacra		43	171 586-589	https://www.biblicalstudies.org.uk/pdf/bsac	
252	new	1886		Dana, James D.		Memoir of Arnold Guyot: 1807-1884: Read be Judd & Detweiler		Washington D.C.		39					https://catalog.hathitrust.org/Record/10048	
253	new	1888	April	Dana, James D.		Cosmogony of Genesis					Bibliotheca Sacra		45	178 356-365	https://www.biblicalstudies.org.uk/pdf/bsac	
254	new	1890		Dana, James Dwight		Kaibyaku shin ron (Creation or the Biblical cc	Beikoku Haken Senkyōshi	Tokyo		79					https://catalog.hathitrust.org/Record/10036	
255	181	1885	April	Dana, James D.		Creation or the Biblical cosmogony in the light of modern science					Bibliotheca Sacra		42	166 201-224	https://www.biblicalstudies.org.uk/pdf/bsac	
256	new	1885	March	Dana, James Dwight		On Taconic rocks and stratigraphy, with a geological map of the Taconic region					American Journal of Science	s3-29		171 205-222	https://doi.org/10.2475/ajs.s3-29.171.205	
257	182	1885	June	Dana, James D.		Taconic rocks and stratigraphy					American Journal of Science	s3-29		174 437-443	https://doi.org/10.2475/ajs.s3-29.174.437	
258	new	1885	August	Dana, James Dwight		Origin of coral reefs and islands					American Journal of Science	s3-30		176 89-105	https://doi.org/10.2475/ajs.s3-30.176.89	
259	183	1885	September	Dana, James D.		Origin of coral reefs and islands					American Journal of Science	s3-30		177 169-190	https://doi.org/10.2475/ajs.s3-30.177.169	
260	184	1885	November	Dana, James Dwight		On displacement through intrusion					American Journal of Science	s3-30		179 374-376	DOI: https://doi.org/10.2475/ajs.s3-30.179.3	
261	185	1886	April	Dana, James Dwight		On lower Silurian fossils from a limestone of the original Taconic of Emmons					American Journal of Science	s3-31		184 241-248	https://doi.org/10.2475/ajs.s3-31.184.241	
262	186	1886	May	Dana, James D.		Arnold Guyot					American Journal of Science	s3-31		185 358-370	https://doi.org/10.2475/ajs.s3-31.185.358	
263	187	1886				Early history of the Taconic investigation					American Journal of Science			399-401		
264	188	1886	July	Dana, James Dwight		On some general terms applied to metamorphism and to the porphyritic structure of rocks					American Journal of Science	s3-32		187 69-72	https://doi.org/10.2475/ajs.s3-32.187.69	
265	189	1886				Taconic stratigraphy and fossils					American Journal of Science			236-239		
266	190	1886	October	Dana, James Dwight		A dissected volcanic mountain; some of its revelations					American Journal of Science	s3-32		190 247-255	https://doi.org/10.2475/ajs.s3-32.190.247	
267	191	1886	-	Dana, James Dwight		Manual of mineralogy and lithology, contain	J. Wiley & Sons	New York		3 474					http://www.worldcat.org/oclc/1194297449	
268	192	1887	February	Dana, James Dwight		Volcanic action					American Journal of Science	s3-33		194 102-115	https://doi.org/10.2475/ajs.s3-33.194.102	
269	new	1887	April	Dana, James Dwight		On Taconic rocks and stratigraphy, with a geological map of the Taconic regions; Part II					American Journal of Science	s3-33		196 270-276	https://doi.org/10.2475/ajs.s3-33.196.270	
270	193	1887	May	Dana, James Dwight		Taconic rocks and stratigraphy, with a geological map of the Taconic region; Part II					American Journal of Science	s3-33		197 393-419	https://doi.org/10.2475/ajs.s3-33.197.393	
271	194	1887	June	Dana, James Dwight		History of the changes in the Mauna Loa craters on Hawaii					American Journal of Science	s3-33		198 433-451	https://doi.org/10.2475/ajs.s3-33.198.433	
272	new	1888	September	Dana, J. D.		History of changes in the Mt. Loa craters					American Journal of Science	s3-36		213 167-175	https://doi.org/10.2475/ajs.s3-36.213.167	
273	195															
274	196	1888	March	Dana, James D.		Asa Gray					American Journal of Science	s3-35		207 181-203	https://doi.org/10.2475/ajs.s3-35.207.181	
275	197	1888	December	Dana, James D.		A brief history of Taconic ideas					American Journal of Science	s3-36		216 410-427	https://doi.org/10.2475/ajs.s3-36.216.410	
276	198	1889	January	Dana, James D.		Recent observations of Mr. Frank S. Dodge, of the Hawaiian Government Survey, on Halemaumau and its debris-cone					American Journal of Science	s3-37		217 48-50	https://doi.org/10.2475/ajs.s3-37.217.48	
277	new	1887	November	Dana, James D.		History of the changes in the Mt. Loa craters; Part I; Kilauea					American Journal of Science	s-34		203 349-364	https://doi.org/10.2475/ajs.s3-34.203.349	
278	new	1887	August	Dana, James D.		History of the changes in the Mt. Loa craters; Part I; Kilauea					American Journal of Science	s-34		200 81-97	https://doi.org/10.2475/ajs.s3-34.200.81	
279	new	1888	January	Dana, James D.		History of the changes in the Mt. Loa craters; Part I, Kilauea					American Journal of Science	s3-35		205 15-34	https://doi.org/10.2475/ajs.s3-35.205.15	
280	new	1888	March	Dana, James D.		History of the changes in the Mt. Loa craters; Part I, Kilauea					American Journal of Science	s3-35		207 213-228	https://doi.org/10.2475/ajs.s3-35.207.213	
281	new	1888	April	Dana, James D.		History of the changes in the Mt. Loa craters; Part I, Kilauea (With Plates IV and V)					American Journal of Science	s3-35		208 282-289	https://doi.org/10.2475/ajs.s3-35.208.282	
282	new	1888	July	Dana, James Dwight		History of changes in the Mt. Loa craters					American Journal of Science	s3-36		211 14-32	https://doi.org/10.2475/ajs.s3-36.211.14	
283	new	1888	August	Dana, J. D.		History of changes in the Mt. Loa craters; Part II, On Mokuaweoweo, or the summit crater					American Journal of Science	s3-36		212 81-112	https://doi.org/10.2475/ajs.s3-36.212.81	
284	199															
285	200	1889	February	Dana, James Dwight		Points on the geological history of the islands of Maui and Oahu					American Journal of Science	s3-37		218 81-103	https://doi.org/10.2475/ajs.s3-37.218.81	
286	201	1889	March	Dana, James Dwight		The origin of the deep trough of the oceanic depression. Are any of volcanic origin?					American Journal of Science	s3-37		219 192-202	https://doi.org/10.2475/ajs.s3-37.219.192	
287	202	1890	-	Dana, James Dwight		Characteristics of volcanoes,with contributio	Dodd, Mead and Company	New York		400					https://catalog.hathi	
288	203	1890	-	Dana, James Dwight		Corals and Coral Islands	Dodd, Mead and Company	New York	3rd	440					https://catalog.hathitrust.org/Record/00149	
289	204	1890	March	Dana, James Dwight		Sedgwick and Murchison; Cambrian and Silurian					American Journal of Science	s3-39		231 167-180	https://doi.org/10.2475/ajs.s3-39.231.167	
290	205	1890	May	Dana, James Dwight		Archean axes of eastern North America					American Journal of Science	s3-39		233 378-383	https://doi.org/10.2475/ajs.s3-39.233.378	

Wrap up


Collect original dataset
Data cleaning
Data validation
Discovery
Analysis
Discovery

Thanks for listening

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