January 2004

O Henry, Where Art Thou? The Origin of the Property Data Index

Linda Shackle

Follow this and additional works at: https://jdc.jefferson.edu/scitechnews

Let us know how access to this document benefits you

O Henry, Where Art Thou?
The Origin of the Property Data Index

by Linda Shackle, Noble Science and Engineering Library, Arizona State University

I think I was born to be a librarian. Even as a child I organized my "collections" … records, books, toys, clothes, you name it. Mystery novels have always been my favorites; I savor the challenge of figuring out "whodunit" before the last chapter. I'll even read a mystery more than once, first time for the enjoyment, second time to explore how the plot was crafted.

Inevitably these interests influenced the choices that I've made in my career as a reference librarian. I'm like a dog with a bone; the student could have left for his next class over 30 minutes ago but I'll still on the case. Finding the answer isn't everything, though. How one gets to the answer is just as interesting as the answer itself.

Looking back over my 30 years as a librarian reveals a long history of developing finding aids. I've done indexes in card format, pathfinders in print and on the web, developed a web site for my state library association, taught workshops on retrieving information from the Internet during the pre-web days and of course, there's the Index to Physical, Chemical and Other Property Data (http://www.asu.edu/lib/noble/chem/property.htm) or as it's more commonly known in my library, the "Property Data Index".

Arguably, finding property data is the sci/tech librarian's most challenging area. The properties span subject areas from physics to chemistry to engineering to toxicology; the substances could be chemicals, pharmaceuticals, engineered materials or natural products. Each property can be described in several ways, differing not just between the disciplines but also within a discipline. Each subject has its major data compilations as well as the primary literature but there is no guarantee that the information is in any of these.

Coming from the "print-only" generation of librarians, I prepared for these property questions by memorizing the title, location and general content of the most frequently used handbooks and keeping a file of those hard-to-remember resources or infrequently-sought properties. If I got a call from the reference desk that someone was looking for property data, I'd check my files for clues, then rack my brain for what major resources might have it. Of course, Chemical Abstracts was always the back up when the handbooks or my personal file failed me.

In 1998 a plea on CHMINF-L for finding Henry's law constants elicited responses containing several good resources that I wanted to add to my file. I printed out the messages and was about to put the pages in my file under "Henry" when it hit me. What the heck am I doing?!

It was like a thunderbolt from the sky. I sat back down with the pages still in my hand and started to visualize.

If the information could be filed in paper format, it could be made into a web page. The web page could be formatted in the same way that my file were organized, alphabetically by property and then listing the resources under each property.

So who is this "Henry", the one whose difficult-to-find constants inspired the Property Data Index?

William Henry (1774-1836) lived in Manchester, England. Childhood injuries necessitated a sedentary life that he decided to devote to the study of medicine and chemistry. His father, Thomas Henry, was a sponsor of John Dalton, who also resided in Manchester during this period and is, of course, most remembered for his law on the behavior of gases in relation to pressure. Undoubtedly, William Henry's friendship with Dalton influenced Henry's study of the behavior (solubility) of gases in contact with liquids. Well respected and reportedly a more skilled technician than Dalton, Henry primarily spent his time validating others' work. Besides Henry's law, another major contribution was his Elements of Experimental Chemistry, a popular textbook that went through many editions. Increasing disabilities and pain resulting from his early physical injuries eventually forced a discontinuation of his laboratory work in the 1820's and ultimately led to his suicide. The publication behind Henry's law is "Experiments on the Quantity of Gases Absorbed by Water at Different Temperatures and Under Different Pressures" in *Philosophical Transactions of the Royal Society*, 1803, 93:29-42, 274-276. For more biographical information on Dalton and Henry, see: *Dictionary of Scientific Biography*, 3: 537-546 and 6: 284-286.

1

I had been creating web pages since 1995, why hadn't I thought of this before? With a web page, my colleagues would be able to access all of my information without me having to be there. If I put all of the resources that I had tucked away in my brain on to that web page too, then my colleagues would have access to everything that I knew about finding property data.

The first thing I did was to make a small sample web page that I could show to my colleagues. The page's content was primarily from the information that I had in my file; of course, resources for Henry's law constant were the first entries I made so I could throw those pieces of paper into the wastebasket. The web page organization was simple; the properties were listed alphabetically with the resources indented under each heading using an unordered list <ul>.

I solicited my colleagues to select books or web sites in their subject areas for inclusion and to indicate what properties they specifically wanted to see on the page. I worked on one subject area at a time. Each handbook (or web site) was examined for property data. The first time a specific property was encountered, I researched the property to find synonyms or related properties from which cross-references would be needed. By doing one subject area at a time, I was able to concentrate on a small group of related properties applicable to that subject. I worked on the Index around my regular job duties, so it took months to complete although in less time than my colleagues and myself originally thought.

Inevitably, changes in page design and content occurred as unanticipated situations were encountered. As the content grew so did the size of the site expanding from its original one page to the current 14 pages. Also, the project needed to be kept to a reasonable size, so an informal policy was developed for the site content:

- Standard resources familiar to students would not be included. It was assumed that these resources would have already been consulted. A separate category, called "Standard Reference Sources" was listed on the site's home page directly under the instructions, the list included such items as the CRC Handbook of Chemistry and Physics, Perry's Chemical Engineers' Handbook, and the ChemFinder web site (http://www.chemfinder.com).
- Boiling point, melting point, and density were not included as practically every resource includes this information; instead, a cross reference was made

under these properties to the list of standard reference sources.
- If several handbooks, all containing the same type of information, were shelved next to each other, only 1 or 2 would be put in the Index. It was assumed that once a student or librarian went to a specific resource in our printed collection, they would see other similar resources on the same shelf.
- Beilstein's, Gmelin, and Landolt-Bornstein were beyond the scope of the project and were included in the list of standard reference sources.
- Publications indexed elsewhere would not be put in the index; this included:
  - CRC publications covered by the CRC Composite Index,
  - Journal articles retrievable via a Chemical Abstracts search,
  - Major web databases with search engines such as the NIST Data Gateway (http://srdata.nist.gov/gateway/gateway/); these were put under the standard reference sources; some web databases were included in the Index before this policy was created.
  - Web sites easily retrieved via standard Internet search engines; most students search the Internet before trying the standard "library" resources.
  - Exceptions to all of the above were made for frequently given assignments. For example, the CRC Handbook of Biochemistry and Molecular Biology was listed under extinction coefficients so that the students taking the physical biochemistry lab could easily find the data for horse heart cytochrome c .

In 2000, a new section was added to the Index. That Fall I participated in a workshop at the Arizona Library Association's annual conference. I presented an instructional session on finding property data for science librarians without science backgrounds; the session talked about how substances are identified (molecular formula, structure, names, and registration numbers) and included tips such as using synonyms for property name and how handbooks and databases are organized. After the session, attendees suggested that the information in this session should be available as part of the Index, so I created a web page that was essentially my talk from that session. That page, 10 Easy Tips for Finding Property Data, is now linked from the Index's home page and is located at http://www.asu.edu/lib/noble/ chem/prophelp.htm
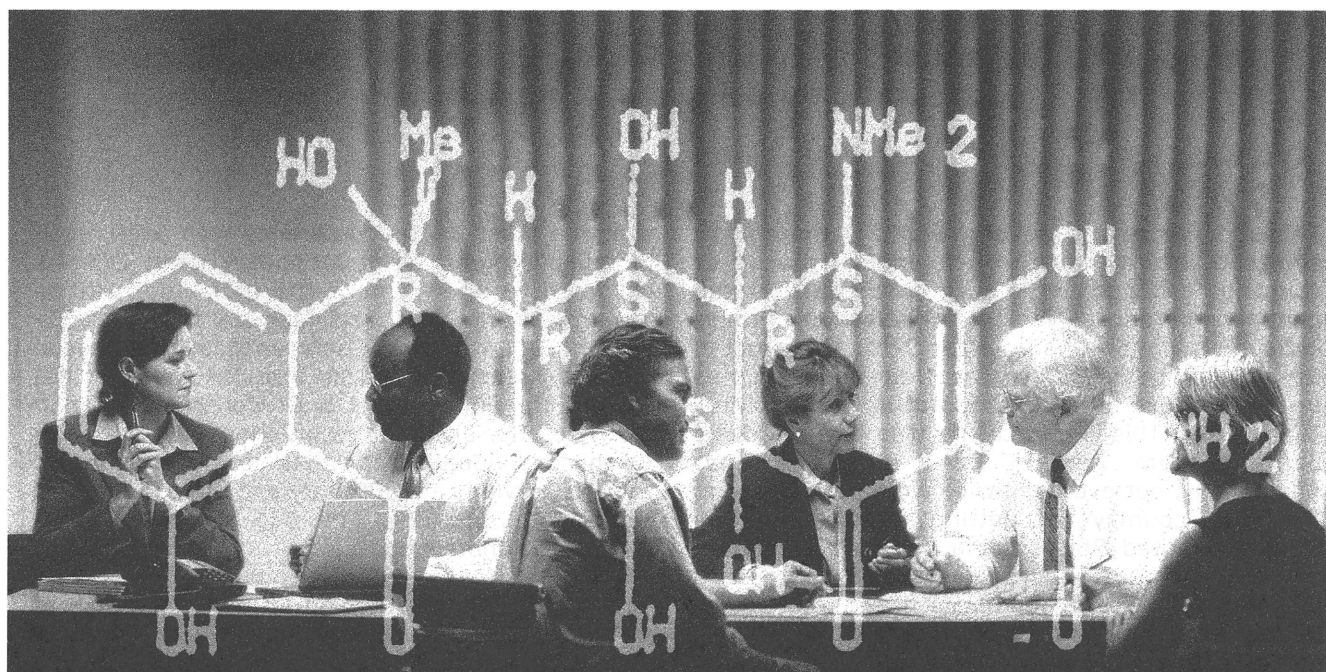
More than five years after its inception, the Index is going strong, ranking in hits only behind our library's home page. As of the end of 2003, approximately 90 other web sites are linked to it. I still continue to add to it, as new resources appear and of course, I periodically have to check the links for web sites that have disappeared.

The Index is showing its age as the years go by; it has neither a search engine nor does it account for every piece of content within a handbook or web site. Although by no means perfected, the ability to search the full text is now available for many resources. That's why Knovel is listed on the Index's home page under standard reference sources. That's also why I instruct our reference staff to search the Internet for property data not only to identify web pages and government publications but also to identify journal articles in which the data is embedded within the text.

Periodically someone will ask if I'm afraid my job will disappear as the finding aids I've developed and the online proliferation of information makes the students and faculty more self-sufficient. My answer is an emphatic "No!" I still get called out to the reference desk to help with property data questions, only now that my colleagues have already used my favorite resources, these questions are much more challenging but also much more interesting.

My job has changed immensely over the past 30 years but it hasn't disappeared; it's morphed and I've had to make sure that I morphed along with it. After helping a student get the necessary data, I sometimes hear "Wow, how do you know all these things?" I not only thank the student for the compliment, I take a moment to reflect on whether the students inability to find something that I could means there's a need for a new finding aid, a new resource to be added to an existing finding aid, or maybe just a change in the design of web page. As Thomas Edison once said "There is always a way to do it better … find it!"

4