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The Demon Under the Microscope (2006) by Thomas Hager. New York: Harmony Books.

This is the story of how the first widely used antibiotic was discovered in Germany and distributed throughout the world. Sulfa was developed by Gehard Domagk during the 1930s at Bayer Laboratories, which specialized in making dyes for industrial uses. The Bayer research staff believed that possible germ fighting properties of dyes needed to be investigated. Domagk began his research by using different chemical variants of Sulfa dyes until he eventually discovered one particular type for curing infections. Following additional research on Sulfa variants in France and England, researchers found that the antibiotic effects were caused by pure Sulfa rather than the chemical structure of dyes.

Domagk received the Nobel Prize in medicine or physiology for his research and discovery which paved the way for the development of other antibiotics such as penicillin. His Nobel was originally awarded in 1939, but he could not attend the ceremonies in Stockholm until after World War II in 1947.

The book is interesting because it contains several interrelated stories: discussion of scientific research in medicine and biology; medical practices prior to and during World War I; growth of industrial pharmaceutical research; Domagk's education and motivation to find cures for prevalent diseases such as staph and strep infections, pneumonia and tuberculosis; competition between medical researchers in Germany, France and England; the Nazis' influence upon Domagk's research and career; political occurrences in the United States that affected Sulfa's widespread use; and major mishaps in the American pharmaceutical industry that spurred the federal government to extend oversight powers of the Food and Drug Administration. All of these topics provide the reader with a thorough description of the early history of pharmaceutical research in Europe and America. By reading **The Demon Under the Microscope**, gifted students who plan to study medicine or the biological sciences will find it to be an excellent history of the first systematically designed antibiotic.

Measuring the Cosmos: How Scientists Discovered the Dimensions of the Universe (2004) by David H. Clark and Matthew D. H. Clark. New Brunswick, NJ: Rutgers University.

Father and son have written a very clear history of astronomy compared to other recently published and popular books. They begin with the Babylonian and Greek contributions to modern cosmology. It is fascinating to read about the Babylonians' dedication to keeping detailed records on the movements of constellations and planets. The Greek natural philosophers' numerous theoretical speculations concentrated upon asking why the stars and planets acted in certain ways as related to their movement and composition. It is also enlightening to learn about the debates over the geocentric and heliocentric models of the solar system, and how Galileo produced empirical proof for the sun-centered model in the early 1600s. His telescopic observations and Kepler's development of three laws of planetary motion set the stage for Sir Isaac Newton's universal law of gravitation.

Later astronomers designed progressively more accurate methods for measuring distances to stars and planets as shown by the minute observations of two women who worked at the Harvard College Observatory, Annie J. Cannon and Henrietta S. Leavitt. They were instrumental during the early 1900s in using Cepheids (stars with definite bright and dim periods, and variations in intrinsic brightness) to accurately measure distances. This advance, combined with Harlow Shapley's finding that Cepheids were single rather than double stars, enabled Shapley (in the 1920s) to measure the vastness of the Milky Way galaxy and to describe its flattened disk shape – currently reported to be 100,000 light years across. He also found that the Solar System was not at the center of the Milky Way. Then came the great Edwin Hubble's observations in the 1920s - 1930s which demonstrated that the Universe was expanding at an increasing rate (measured by red shift changes in the electromagnetic spectrum), and that spiral nebula such as Andromeda were separate galaxies rather than a part of the Milky Way. Among other fascinating topics covered by the Clarks are the life, birth and death of stars, their chemical composition, and the Big Bang theory of the Universe's origin.

Measuring the Cosmos will provide gifted students with an exciting history of astronomy and cosmology. The advances in these fields demonstrate scientific thinking and research at their most successful and powerful levels. The book also shows that scientific advances are based upon the hard work and reasoning of *standouts*, i.e., original, creative thinkers who are willing to take revolutionary conceptual leaps based upon years of systematic observation. "Group think" is alien to these great scientists. But they use previous concepts and findings from their colleagues as scaffolds for building their own innovative scientific contributions.

The Discovery of Poetry: A Field Guide to Reading and Writing Poems (2001) by Frances Mayes. New York: Harcourt.

The author is well-known for her delightful books on Tuscany (e.g., **Under the Tuscan Sun: At Home in Italy**, 2003). As the former chair of the Creative Writing Department at San Francisco State University, she has extensive experience in teaching literature and poetry. Her knowledge of techniques for writing creative poetry is clearly and informatively reflected in the book. It would be very useful for gifted students who are aspiring poets or who want to learn about some technical characteristics of good poems. The book is sectioned according to topics that Mayes has found to be important for improving one's awareness of poetry techniques, and for applying them to writing one's own poems. However, the reader does not have to be a poet to enjoy and learn from Mayes' book because it is also designed to increase the appreciation of great poems.

Mayes fills each didactic section with her own numerous interpretations, and she presents many excellent poems to illustrate her useful ideas. Some of the sections of **The Discovery of Poetry** are: Words: Texture and Sound, Images: The Perceptual Field, Rhyme and Repetition, Meter: The Measured Flow, and Free Verse. In the Words section, She presents a famous nonsense poem (pp. 26-27) to show how words can "claim" our interest:

JABBERWOCKY (Lewis Carroll, 1832-1898)

'Twas briIlig, and the slithy toves
  Did gyre and gimble in the wabe;
All mimsy were the borogoves,
  And the mome raths outgrabe.

"Beware the Jabberwock, my son!
  The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
  The frumious Bandersnatch!"

He took his vorpal sword in hand:
  Long time the manxome foe he sought—
So rested he by the Tumtum tree,
  And stood awhile in thought.

And as in uffish thought he stood,
  The Jabberwock, with eyes of flame,
Came whiffling through the tulgey wood,
  And burbled as it came!
. . . . . .

She also points out that many individuals such as Dylan Thomas and Shakespeare started writing poetry because of a love of words and language. The section on Words is further illustrated with many imaginative poems by Shakespeare, Gerard Manley Hopkins, William Butler Yeats, James Wright, James Dickey, Robinson Jeffers, Elizabeth Bishop, and others.

One of the most interesting sections is on Images since it covers the poet's stock-in-trade – figurative language. If gifted students mastered and applied some of the ideas included in this chapter, they would make significant progress toward understanding the creation of great poetry. Mayes gives many explanations and poetical examples of figures of speech such as similes and metaphors, but she also has more detailed examples related to human perception and emotion. She discusses the following image poem (p. 70) that focuses on the auditory perception of a dog:

WHAT THE DOG *PERHAPS HEARS* (Lisel Mueller, 1924-)

If an inaudible whistle
blown between our lips
can send him home to us,
then silence is perhaps
the sound of spiders breathing
and roots mining the earth;
it may be asparagus heaving,
headfirst, into the light
and the long brown sound
of cracked cups, when it happens.
We would like to ask the dog
if there is a continuous whirr
because the child in the house
keeps growing, if the snake
really stretches full length
without a click and the sun
breaks through clouds without
a decibel of effort;
whether in autumn, when the trees
dry up their wells, there isn't a shudder
too high for us to hear.

What is it like up there
above the shut-off level
of our simple ears?
For us there was no birth-cry,
the newborn bird is suddenly here,
the egg broken, the nest alive,
and we heard nothing when the world changed.

The Discovery of Poetry will help gifted students to understand linguistic associations underlying poetry. They will be delighted by the author's fascination with words and her determination to analyze the language elements of outstanding poetry.