BIOLEXICON
A Guide to the Language of Biology

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By

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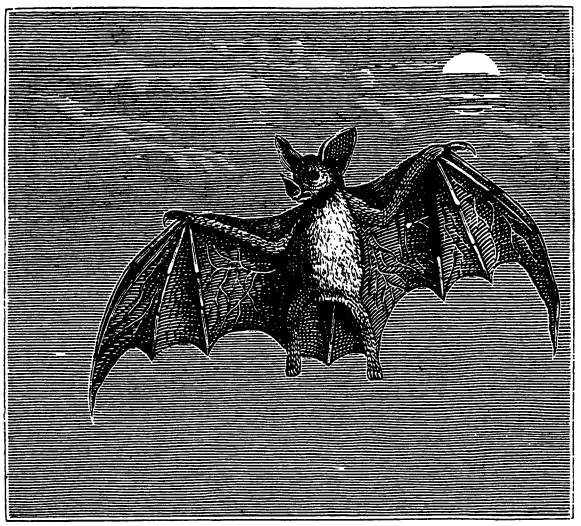

Chiropteran, a Bat
from Greek *chiro-,* hand + *pteran,* wing

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PREFACE

Biolexicon is a guide for students and others who need or want to learn the meanings of words in the vocabulary of biology, especially in the vocabulary of medicine. The first principle of the book is that learning this vocabulary is made easier through knowing the meanings of elements that make up whole words. Its second principle is that knowing this history will contribute to a comprehensive and interdisciplinary liberal education.

The reader should anticipate incursions into philosophy, religion, history, mythology, theories of evolution, Renaissance anatomy, spooky obsessions that frighten people. I hope that *Biolexicon* will provide an economical way to decipher the words of a very large biological vocabulary. I hope the book will be not only informative and useful, but also at least sometimes, enjoyable.

Long lists of words can be intimidating. Though it's necessary to have these lists as examples of how elements join to make up words, it is not necessary to memorize the words themselves. We are pursuing the elements given in **bold** at their fullest presentation and listed alphabetically in the index. Fortunately, there's a finite number of these elements.

Tracking elements will often lead us to prehistoric ancestral sources that have themselves gone extinct while their desendants live on in various linguistic sites. The process is like reconstructing an extinct animal ancestor from its modern descendants. The geneologies of these elements are given in boxes which are not parenthetical comments but very much at the heart of the process of learning the meanings of biological words. One box will reveal, for example, that *Oedipus* is a sibling to *platypus* and that these words are cousins to *fetch, moped, podiatrist,* and *pajamas.*

The elements are called prefixes, suffixes, and bases; for the central part of a word, the term *base* has been chosen in preference to *stem* and *root. Stem* as a noun is not used at all, and *root* is used for an original prehistoric hypothesized term from which the elements evolved.

Like an element in chemistry, the base joins with other parts to form compounds.

As in the past, English continues to adopt words from foreign languages and to build its vocabulary by the more generative process of inventing new words from old elements. Close to 500 words enter English every year, most of them inventions that reside in technical vocabularies. Knowing what the elements mean will prepare the pre-medical or medical student, the aspiring biologist, the practitioner of any biological science, and anyone else to decipher these new words that might name a newly discovered microbe or mastodon, a disease, or a surgical procedure.

As in the past, English continues to give new meanings to old words. Greek *thorax*, which once meant breastplate underwent metaphoric transference in referring to the body area that used to be covered by that shield. Latin *acetabulum*, which once meant vinegar cup, underwent such transference in referring to the cup of the pelvis that embraces the knob of the femur. *Culture* is used metaphorically in describing a planned growth of micro-organisms. Recently, *lawn* became a metaphor for surface growth on a culture. A particular kind of transference is someone's name being generalized to some thing or event. *Iris* was once the goddess of the rainbow; *morphine* comes from the name of the god of sleep; and *arachnid*, from the name of a precocious spinster, now refers to spiders. Transferences of old words and names provide many intriguing stories.

Other observations on how the biological vocabulary has been constructed will be given in appropriate places in the text, and at times illustrated. For now, I hope that the exploration will be as pleasurable for the reader as it has been for the writer.

Abbreviations:

<	stemming or derived from		
>	producing or giving rise to		
cp.	compare	adj.	adjective
syn.	synonym	orig.	originally
ant.	antonym	pert.	pertaining to
lit.	literally	etym.	etymological
pl.	plural		
IE	Indo-European	L.	Latin
OE	Old English	Fr.	French
E.	English	Gk.	Greek

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PART I: INTRODUCTION

CHAPTER 1—THE BIOLEXICON

The characteristics of modern English arose from English having been remarkably, maybe uniquely, hospitable to adopting words from other languages. All of English has been enriched by this hospitality, and the scientific vocabulary has benefited particularly from Greek and Latin adoptions. These Latin and Greek adoptions sometimes seem like an impenetrable code, but they have brought advantages to the scientific vocabulary, advantages that can be seen in tracking the history of words like *human.* The study of the history of words in the general as well as in specialized scientific vocabularies is called *etymology.* Etymology is the subject of this book.

1.1 Adoptions

Starting five hundred years ago, Arabic has endowed English with dozens of words. *Assassin* is from Arabic. A medieval character with the nickname Old Man of the Mountains encouraged his gang to get high on *hashish* and then go out and murder Crusaders. From the name of the weed they ate there came the name of their profession: *assassin. Assassin* entered English in the early 16th century, *hashish* and the compound *assassinate* much later in that century. When a bloodsucking insect of the Reduviidae family was identified three hundred years later, it received the popular name *assassin bug.*

Less bloody histories attend other words that English adopted from Arabic:

alcohol	*alfalfa*	*amber*	*caliber*
alkali	*artichoke*	*emerald*	*average*
nitre	*syrup*	*giraffe*	*gazelle*

algebra, entered E. in 1541

Words may enter English directly from a foreign language's own stores, as *sputnik* rocketed into English from Russian in 1957. Or they may undertake extensive journeys from one language to another, sometimes wandering across the globe. A couple of useful words that originated in Greek were transmitted through Arabic:

Gk. *chyma* became Arabic *alchemy* and, in 1555, E. *chemist,* in 1600 E. *chemistry.* Gk. *xeros,* dry, is the source of Arabic *elixir* as well as the name of a photocopying process. *Camphor* came to E. from Arabic at the beginning of the 14th century; it travelled into Arabic from Malay.

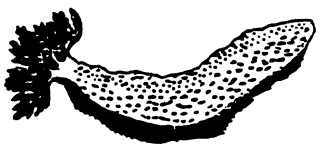
A Sanskrit word, *sunya,* empty, was adopted by Arabic as *sifr,* with the same meaning; this travelled into English in the mid-14th century as *cipher.* Arabic *sifr* also travelled into Italian and came into E. in the late 16th century as *zero.*

Sanskrit itself, through its descendant Hindi, has contributed *pepper, cheetah, anaconda,* and *jungle* to the vocabulary of natural history, and *sugar* and *sacchar* to the vocabulary of the kitchen and the laboratory. That story begins with Sanskrit *sarkara,* sugar. This went into Italian as *zucchero,* from which, eventually, Middle French *sucre* and E. *sugar. Sugar* came into E. in the second half of the 13th century. Centuries later, the Sanskrit root was revisited to produce, in 1665, *saccharine,* which orig. meant like sugar, very sweet, and in 1880, as *saccharin* became a word for a sugar substitute. The base for *sugar* and *saccharin* therefore undertook a long journey: Sanskrit > Arabic > Italian > French > English.

From German itself have come *anlage,* the initial embryological stage of organ development, *diener,* a laboratory handyman, and words originally from Greek transmitted through German into the vocabulary of psychiatry, such as *psycho-analysis, narcissism, Oedipal complex.*

Renaissance and subsequent explorations introduced Europe to the fauna and flora and exotic diseases of faraway lands. A quick inventory displays words from these languages:

African languages	> *chimpanzee, gorilla, gnu, yam, tsetse*
	banana
Persian	> *kala-azar, borax*
Hebrew	> *balsam, balm*
Tibetan	> *panda*
Chinese	> *trepang,* sea cucumber



Sea cucumber
Genus *Holothuroidea*

Japanese	> *sodoku,* fever caused by infection from a rat bite
Sinhalese	> *beri-beri*
Austronesian	> *kangaroo, koala*
	kiwi, bird and fruit
	pangolin, an anteater
	agar, seaweed nutrient
	bantam, an Indonesian bird

Samoan > *palolo*, a worm, taxonomic name *Eunica viridis*

The people who originally settled into North America contributed words for the plants and animals of this land,

terrapin	*sequoia*	*persimmon*	*hickory*
opossum	*squash*	*skunk*	

woodchuck, orig. Algonquian *ockqutchaun*

Those who originally settled into South America contributed, mostly through the intermediary of Spanish:

maize	*marijuna*	*jaguar*
potato	*cocaine*	*jaguarundi*
tomato	*quinine*	*coati-mundi*

ipecac, an emetic

These words for animals, plants, diseases, do not exhaust the vocabulary that English adopted from entirely unrelated languages; but the total contribution from these languages is small relative to the fragment consisting of words from native English (about 5%) and tiny relative to the great number from Greek and Latin.

Ninety-five percent of the words in the medical vocabulary comes from Greek and Latin. The abundance of Greek and Latin terms could inspire a pretentiousness by which we intimidate people by using uncommon terms instead of common ones, such as *cephalalgia* instead of *headache*, *lentigo* instead of *freckle*, *rhexis* instead of *rupture*, and *verruca* instead of *wart*.

In turning our attention to Greek and Latin, we can note first that in ancient times these adopted words from other languages. The Greek invaders who took over Crete absorped some Cretan words:

sponge	*syrinx*	*salping*, trumpet, oviduct
turpentine	*hyacinth*	*porphyra*, purple

labyrinth, once a Cretan palace

It should be noted that some of these terms have not definitely been traced back to Cretan, and that the original sources of other words in the medical vocabulary remain uncertain: *coccyx, clitoris, abdomen.*

It has been estimated that the Latin medical vocabulary is at least half Greek. All Roman medical literature was written in Greek. Among many other words, Latin adopted Gk. *nausea, skeleton,* and *placenta.* Gk. *gangraina* became L. *gangrene,* and Gk. *dakruma,* tear, L. *lacrima.* The New Latin of the Renaissance did this too, for example, Gk. *amoibe* becoming *amoeba,* today's *ameba.* Sometimes, Latin would find an equivalence for a Greek term, as it did in substituting *spiritus* for the Greek *pneuma.*

Many words have come into English with the same form and often with the same meaning that they had in ancient Greece and Rome, such as