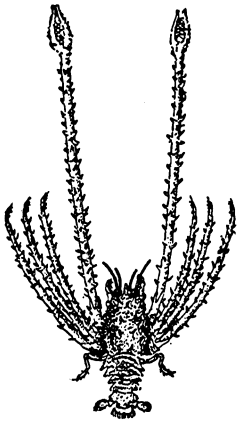
A SOURCE-BOOK of
BIOLOGICAL NAMES and TERMS



A SOURCE-BOOK of BIOLOGICAL NAMES and TERMS

Third Edition

Sixth Printing

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CHARLES C THOMAS · PUBLISHER

SPRINGFIELD · ILLINOIS U. S. A.

Published and Distributed Throughout the World by
CHARLES C THOMAS • PUBLISHER
BANNERSTONE HOUSE
301-327 East Lawrence Avenue, Springfield, Illinois, U.S.A.

ISBN 0-398-00916-3 (cloth) ISBN 0-398-06179-3 (pbk.)
Library of Congress Catalog Card Number: 55-8867

First Edition, First Printing, July, 1944
First Edition, Second Printing, February, 1947
Second Edition, First Printing, January, 1950
Third Edition, First Printing, September, 1955
Third Edition, Revised Second Printing, June, 1959 9
Third Edition, Third Printing, September, 1962
Third Edition, Fourth Printing, August, 1966
Third Edition, Fifth Printing, February, 1972
Third Edition, Sixth Printing, January, 1978

Printed in the United States of America
00-2

TO DAVID STARR JORDAN

who had the good sense, when coining generic names, to explain their origin so that those who followed him could have no doubt concerning their exact connotation. He was seldom, if ever, given to the making of so-called nonsense names for he saw in every well-made scientific name a treasure house of meaning carrying valuable clues to identification, rich allusions to scientific history and discovery.

In many common and technical designations there is hidden a veritable romance of linguistic adventure where research leads across seas and sands to natural habitats and original appellations.

CARL SUMNER KNOPF
Madroño, Vol. VI, No. 7.

Preface to the Third Edition

THE PRESENT BOOK is a careful revision of the Second Edition of 1950. It includes not only a number of corrections and emendations in the body of the text but also a supplement of more than a thousand entries which should increase very much its usefulness to those who wish to know the origin and significance of biological names and terms. In this supplement are included: (1) many new adjective and noun stems used in making trivial (specific) names of animals and plants; (2) more than one hundred additional suffixes and prefixes; (3) a limited number of much used geographical place-name stems employed in forming adjectival trivial and varietal names of plants and animals; and (4) a considerable number (more than 280) of short biographies of persons commemorated in botanical and zoological generic names. In selecting these commemorative names I have included only such as are of greatest importance and most often encountered by beginning students in the biological sciences. A heavy-type **S** placed after main entries in the front or original part of the Source-Book refers the student to additional helpful materials in the Supplement.

E. C. J.

Riverside, California

Preface to the Second Edition

THE PRESENT work is a revised and enlarged edition of my *Source-Book of Biological Names and Terms*, first issued in 1944. To the Introduction have been added a number of explanatory paragraphs. A few necessary corrections and minor revisions of definitions of classical words also have been made. Of most importance is the embodiment of an addition of more than 1800 new word elements, increasing the total number of pages from 256 to 321.

In spite of the fact that I have taken much time in the revision, I cannot venture to hope that even now all imperfections have been removed. I will therefore deem it a favor if those who have found its pages useful will continue to make suggestions for further revision and send lists of terms, generic and specific names needing inclusion.

I am indeed grateful for the reception which has been accorded the first edition. I hope that the changes and additions to which I have alluded may increase many fold the usefulness of the book.

E. C. J.

Riverside College

Preface to the First Edition

HERE ARE alphabetically listed fully 12,000 elements from which scientific biological names and terms are made. With them are given their Greek, Latin, or other origins and their concise meanings, together with numerous examples of their use in scientific nomenclature. The examples were not chosen at random but were selected to show as wide a variety of forms as possible and thus exhibit the many different "turns" a combining form might have. All the more commonly known genera and technical terms are included besides many that are only used by workers in special fields. There is also introduced a wide assemblage of prefixes and suffixes and this will be much appreciated by the young student who is constantly puzzled by the queer beginnings and endings of the words still so new to him.

This gives the student, who wishes to know the literal meaning of the words he uses, the largest assemblage of such formative elements, or combining forms ever brought together in a single volume. In scope it surpasses many times the most complete collections in unabridged dictionaries and scientific glossaries and gives a key which unlocks the treasury of meaning of more than a million technical names and terms. For the benefit of those unacquainted with the Greek characters, the Greek words which serve as bases for so many combining forms have been transliterated into English. That the student may understand and appreciate the methods governing the use of the classical stems and roots in the construction of scientific names, a comprehensive section on the philosophy of word building has been placed at the beginning of the volume.

All compound words serving as examples have been broken down into their simplest elements so as to make them easy to analyze. Each word-element and its meaning is found in its appropriate alphabetical place in the source book and with it are found numerous related words and illustrations of their use in scientific terminology. This segregation of word elements may serve as a guide to a more intelligent pronunciation in which the effort is to preserve the classical sources of the words rather than to conceal them by the rigid rules of euphony. It will also contribute to any easier remembrance of their correct spelling and a more facile understanding and appreciative use in spoken as well as written composition.

No attempt has been made to include geographical names, names based on modern personal names,* misspelled generic names, or a multitude of ill-coined terms of some of the recent ambitious yet careless insect-anatomists and ecologists who have proved themselves to be word-butchers of the mean-

* Generic names based on modern personal names are usually given the endings *-a*, *-ai*, *-ea*, *-ia*, (the *-ia* ending being the more frequent) or occasionally *-ella*, or *-etta* and thus are quite easily detected. Such names are legion both in botanical and zoological literature. Examples are: Westwoodia, Woodwardia, Boerhaavia, Blumea, Brandegea, Bradburya, Fendlera, Parishella, Helietta, etc.

est sort. In their effort to impress young students they have, after the manner of pedants, flooded recent literature with hundreds of new and useless compound terms. The origin of these terms they take no pains to explain and the definitions of them are often so involved that it is doubtful if the authors themselves remember them a week after they have been made. A cursory survey of CARPENTER'S *An Ecological Glossary* and J. R. DE LA TORRE-BUENO'S *A Glossary of Entomology* will reveal the type of degraded words to which I refer, words in which the beautiful classic roots have been chopped into halves, thirds, or quarters, and combined with other mutilated elements without following any rule of proper word-building. Such practices are inexcusable and should be condemned by all students who have any regard for the ethics and aesthetics of orthography.

Every effort has been made to make this a dependable source of information. For the form and definition of Greek words, reliance has been placed on the great lexicons of LIDDELL and SCOTT and of PICKERING. The comprehensive HARPERS' Latin Dictionary has served as the basis of definition for many of the Latin words.

That some errors and omissions may have inadvertently crept in is beyond doubt, and the author will appreciate it if his attention is called to any irregularities, so that in future editions of this work full correction can be made.

In some cases only an approximation toward accuracy was possible in making the application of meanings of the numerous generic examples given. Where the authors of generic names have concisely stated the origin, meanings, and application of their names, the task has been easy; but where no such aids are given, one intelligent guess is as good as another, and the chances for erroneous explanation are much increased. It is indeed unfortunate that the custom of explaining the derivation of scientific names is now so little observed. A few authors used to do it; practically none do it now. Whether it is due to indolence, carelessness or a sort of prosaic academic apathy I shall not say.

Books which have proved of most value as sources of information are: AGASSIZ' *Nomenclator Zoologicus*, NEAVES' *Nomenclator Zoologicus* (VOL. I–IV), JORDAN and EVERMANN'S *Fishes of Middle and North America*, the *Challenger Reports* in which are ERNST HAECKEL'S descriptions of Protozoa, DE DALLA TORRE'S *Catalogus Hymenoptorum*, DON'S *History of the Dichlamideous Plants*, FISCHER'S *Manuel de Conchyliologie*, PALMER'S *Index Generum Mammalium*, RICHMOND'S *Lists of Generic Terms for Birds*, WATERHOUSE'S *Index Generum Avium*, P. A. SACCARDO'S monumental work, *Sylloge Fungorum*, HITCHCOCK'S *Manual of the Grasses of the United States* and GRAY'S *Synoptical Flora*. Liberal use has also been made of the *American Encyclopaedic* and the *Century* dictionaries as well as of numerous original descriptions in taxonomic works and journals.

The author wishes to express his deep gratitude to Dr. S. Stillman Berry of Redlands, California, and Julian K. Richards of Riverside College, for their critical reading of portions of the manuscript and for their many helpful suggestions. He wishes to acknowledge his indebtedness to the United States National Museum, Museum of Zoology of the University of Michigan,

Museum of Comparative Zoology at Harvard College, the American Museum of Natural History and other institutions for their cooperation in generously supplying technical information. Special thanks are also in order for the painstaking clerical work done by Mr. Lloyd M. Smith, Mr. Barton Barrier, Mr. Donald Worley, Mr. Chalmers MacIlvaine, Mr. Eugene Kozloff, Miss Carol McFarland, and Miss Doris Buttles.

Riverside College E. C. J.

How Words Are Built

THAT PART of a derivative word which contains the principal idea is called the stem.* Thus, in the word pro-phase, *phase* is the stem meaning an appearance, aspect. The preceding syllable *pro* meaning before, is called the prefix. To the stem may be added both prefixes and endings called suffixes as in the words, ex-tract-ed and con-sist-ing.

Stems are of two kinds: (1) separable stems which may stand without prefix or suffix. Such a stem is *join* in conjoin: (2) inseparable stems, which though possessed of independent meaning, never stand alone but are always joined to prefixes or suffixes or joined to other stems to form compounds. Examples of such inseparable stems are *ject* (<L. *jacio*, to hurl) in eject, and *clude* (<L. *cludo*, to shut, close) in exclude.

If two stems are joined to form a compound, a vowel or combination of vowels (*a*, *ae*, *e*, *eo*, *i*, *io*, *o*) is generally added to the first stem as a joining agent to bring the two euphoniously together. Thus, in Sylvi-lagus, *i* is the connecting vowel; in Callo-mys, *o* is the joining agent.

In making generic and specific names the following rules outlined in the International Rules of Botanical Nomenclature have in general been applied:

When a new name for a genus is taken from the name of a person it is formed in the following manner: (a) When the name of the person ends in a vowel the letter *a* is added (thus *Bouteloua* after the brothers *Boutelou; Dalea* after Thomas *Dale*), except when the name already ends in *a*, then *ea* is added (e.g. *Jubaea*, after *Juba*, a king); (b) when the name ends in a consonant, the letters *ia* are added (e.g. *Wyethia* after Capt. N. J. *Wyeth*, *Encelia* after Christopher *Encel*) except when the name ends in *-er*, then *a* is added (e.g. *Frasera* after J. *Fraser*, *Viguiera* after Dr. A. *Viguier*). Exceptions are such as *Franseria* from Ant. Franser, etc. When a new specific name is taken from a personal name ending in a vowel, the letter *i* is added (e.g. *Glazioui* from *Glaziou*), except when the name ends in *a* then *e* is added (e.g. *Balansae* from *Balansa*). When the name ends in a consonant, the letters *ii* are added (*Parishii* from *Parish*), except when the name ends in *-er*, then *i* is added (thus *Kerneri* from *Kerner*). Exceptions to all of these rules may be found among the older names made by Linnaeus and other early taxonomists. The original spelling is generally retained except in a clear case of typographic error or of a clearly intentional error in spelling. Examples: Brodiaea* < *Brodie;* Jussiaea* < *Jussieu;* Tellaea* < *Tilli.*

In the formation of specific names composed of two or several roots taken from Latin or Greek, the vowel placed between the two roots becomes a connecting vowel, in Latin *i*, in Gr. *o* (thus *salviifolia* and *macrofolia*). When the second root begins with a vowel and euphony requires, the connecting vowel should be eliminated (e.g. *lepidantha*, not *lepidiantha*). The connecting vowels

* Many words contain a still more primitive form than the stem which is called the root. Thus the Latin stem *caed-* < from *caedo*, to cut, has as its root *cid-*.

ae should be retained only where this is required for etymological reasons (e.g. caricaeformis < *Carica*, in order to avoid confusion with cariciformis from *Carex*, genit. *Caricis*).

If an adjectival specific name ends in *us*, *a* or *um*, it may end in either of the other two endings to correspond with the gender of the generic name to which it is attached: as *Platystemon californicus* (Masculine), *Rhamnus californica* (Feminine), *Veratrum californicum* (Neuter). Or the specific name may end in *is* or *e*, the first agreeing with masculine or feminine generic names, the latter with neuter names. In this work all Latin adjectives are given in the masculine or feminine *-is* or masculine *-us* form.

No special case of the noun or adjective is used when combining words to make compounds, but only the stem. In some cases the stem has, through long use become blurred or obscured in the nominative but is still clear in the course of declension, particularly in the genitive, hence our frequent reference to the genitive case in certain instances, particularly in Greek.

Types of Names Considered

THREE types of names are considered: (1) *specific names*,* generally derived from Latin; (2) *technical terms*, derived from both Greek and Latin; (3) *generic names*, usually derived from Greek stems.

(1) SPECIFIC NAMES are:

(a) Adjectives, simple or compound, agreeing grammatically with the generic name. Example: *Felis marmorata;*

(b) Nouns in the nominative in apposition with the generic name. Example: *Felis leo;*

(c) Nouns in the genitive. Examples: *rosae, sturionis, antillarum, galliae, sancti-pauli, sanctae-helenae.*

In those specific names, called patronymics, honoring or commemorating persons, the genitive is always formed by adding, to the exact and complete name, an *i*, *ii* or *iana* if the person is a man, or an *ae* or *iae* if the person is a woman, even if the name has a Latin form. Such commemorative names are generally easily detected. The specific names most difficult to trace to their origin are those based on obscure geographical names, native names and names of little known deities. See foot-note to preface.

(2) TECHNICAL TERMS—These are usually combinations of Greek and Latin elements with appropriate Latin-derived English endings. Most physiological and many anatomical and medical terms fall in this group. A knowledge of their literal meanings aids much in remembering their orthography and leads to assurance and facility in their use.

(3) GENERIC NAMES—These consist of single words, simple or compound, written with an initial capital letter and used as a noun in the nominative singular. One of the most lucid and comprehensive statements ever made concerning word-formation of generic names was that of T. S. Palmer of the United States Biological Survey in his *Index Generum Mammalium* (North American Fauna No. 23, 1904). While it was written with special reference to generic names of mammals, its broad principles are equally applicable to other generic names. I have taken the liberty to further perpetuate Palmer's labors by quoting at length, with certain omissions, and added notes, the following paragraphs.

* I here use the specific term in the way it is commonly understood. Correctly speaking, to quote Dr. Charles H. O'Donoghue of the University of Reading: "The specific name of any animal or plant must consist of two words, i.e., it must conform with the Linnean binominal system.

"The specific name, i.e., nomen specificum, consists of a generic name (nomen genericum) followed by a trivial name (nomen triviale). What ordinarily is termed the specific name is actually the trivial name."

In zoology the trivial name should always commence with a small letter. The botanists do not always conform to this practice but often commence the trivial name with a capital letter when it is derived from a personal or place name, or when a generic name has been relegated to the position of a trivial name.

KINDS OF GENERIC NAMES

Mythological Names

"A considerable number of generic names are taken from mythology, both classical and Hindu, such as—Titanotherium, Vishnutherium.

Geographical Names

"Geographical names have been used mainly in paleontology. In spite of the fact that they are mainly hybrid words, they have the advantage of convenience, as they are usually based on the type locality of one of the species. Such are: Atlantoxerus, Pampatherium, Uintatherium.

Classical Names

"Apparently every name of an animal used in classical Greek has been made to do service in modern nomenclature, and these have been modified until they form a large number of the designations in common use. . . .

Barbarous Names

"The recognition of generic names derived from barbarous words has given rise to much discussion. Several of the older systematists refused to recognize them, and regularly substituted new ones for those which they considered barbarous. . . .

"On the other hand, some authors not only frequently employed barbarous names, but also advocated their use. Lacepede apparently never missed an opportunity to use them, while Lesson and Gray are responsible for the introduction of many native names. . . .

"The objection to barbarous names has diminished of late, and many of those rejected by Illiger and others are now coming into general use for groups for which no earlier classical derivatives are available."

Nonsense Names

"Reference should be made to names which have been 'coined' and which have no true derivation. These are merely arbitrary groups of letters* sometimes known as 'nonsense names'. They have been proposed by authors who, like Ameghino, Gray, and Lataste, in making many names have found the usual sources insufficient or unsatisfactory. These names may be divided into two groups:

(a) coined or nonsense names, like Azema, Blarina, Degonia, Kogia, and Tatera, and

(b) anagrams, such as—Senodon from Nesodon, Teonoma from Neotoma and Xotoprodon from Protoxodon.

Derivative Names of Different Form

"A large number of names comprise derivatives and compounds of the same Greek or Latin words. These names may have different forms:

(a) According to *gender*, as Otostomus, Otostoma, Otostomum. Otostomis Menke, 1830, a mollusk; Otostomus Beck, 1837, a mollusk;

* It is quite possible for an arbitrary combination of letters to duplicate inadvertently a Greek or Latin root without carrying any of the classical meaning.