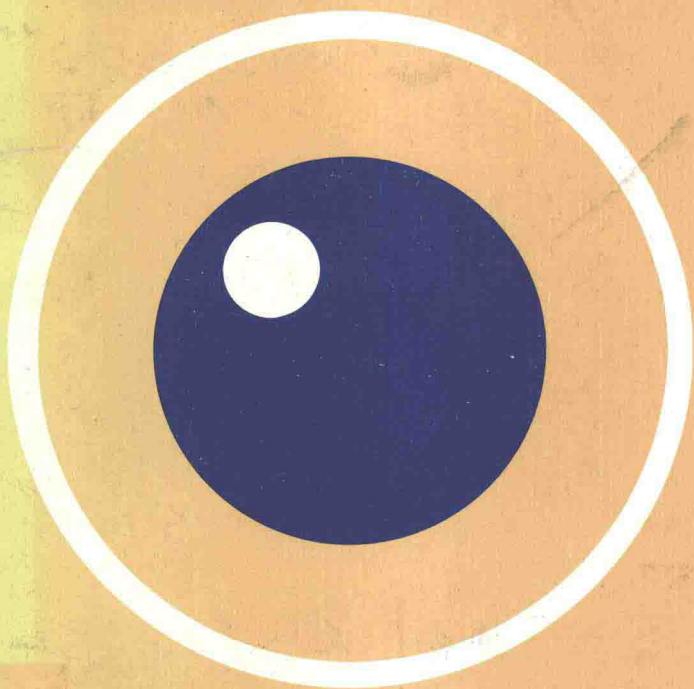


MANUAL OF
**Ophthalmic
terminology**



**Harold A. Stein
Bernard J. Slatt
Penny Cook**

MANUAL OF Ophthalmic terminology

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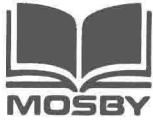
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MANUAL OF
Ophthalmic
terminology

To our children

Raymond, Laurie, and Gary Stein

Jordan and Sari Slatt

Andrew Pilliar (Cook)

who we hope will stop asking us what
certain ophthalmic words mean and look them up.

Foreword

Harold A. Stein, M.D., and Bernard J. Slatt, M.D., have been prolific contributors to the education of allied health personnel within the field of ophthalmology since the publication in 1968 of the first edition of their classic textbook, *The Ophthalmic Assistant*. Committed to the concept that the most efficient use of professional time requires each member of the medical team to perform those functions for which they are best trained and experienced, Drs. Stein and Slatt have been among the leaders of the field in the teaching of ophthalmic medical assistants. *The Ophthalmic Assistant* has become to allied health personnel in ophthalmology what *Adler's Textbook of Ophthalmology*, in its multiple editions, has been to medical students and general physicians for over four decades.

Drs. Stein and Slatt have been joined by their most exceptional protégée, the talented Penny Cook, in the preparation of this timely compendium, *Manual of Ophthalmic Terminology*. This text is a highly illustrated vocabulary builder and reference source, not only for ophthalmic assistants but also for all individuals involved in the visual sciences: opticians, orthoptists, ocularists, contact lens technicians, ophthalmic photographers, and other ancillary personnel and related scientists. Medical students, beginning ophthalmology residents, and established clinicians will find this compendium of ophthalmic words and their origins a worthy supplement to the standard educational material in the field.

Manual of Ophthalmic Terminology will be of special value to secretaries of ophthalmologists in preparing correspondence and narrative reports. Foreign colleagues who wish to communicate in the English language will find this text of great assistance in identifying both the meaning and spelling of English words used commonly in communication among ophthalmologists.

The authors of *Manual of Ophthalmic Terminology* are to be congratulated on a project splendidly executed. Their peers, both in ophthalmology and the allied health professions, will find this compendium a valuable addition to their working libraries.

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and American Association of Ophthalmology*

Preface

This book arose out of the numerous requests and suggestions made to us from individuals in the ophthalmic field who wished to have a handy reference manual of ophthalmic vocabulary. We have attempted to produce a desk-size reference companion that would not only serve as a source book of ophthalmic words but would also serve as a teaching guide in developing a vocabulary in one or more specialized divisions of ophthalmology.

Its presentation is designed to help several groups of individuals in the ophthalmic professions. It is designed to help the individual just entering the field by presenting words in generalized and specialized areas of ophthalmology with cross-references. The book may serve as a reference source for secretaries and ophthalmic technicians and professionals both in the English and non-English speaking world in looking up specific spellings as well as definitions.

Our terminology is rapidly proliferating with etiological terminology frequently replacing long-standing descriptive terminology and even historical eponymic designations. It is often difficult to identify just when a term has become obsolete and a new term has become common usage.

We have attempted to deal primarily with the more commonly used words. The book is oriented for fast delivery of meanings and definitions with the emphasis on simplicity and practicality. It is definitely not a reference tome to give impressive weight to an ophthalmic bookshelf. Rather than provide an exhaustive list of every ophthalmic word and syndrome in a costly compendium, we have prepared a practical book whose function, at the bottom line, is to assist in communication.

To clarify definitions we have used illustrations from our previous works, *The Ophthalmic Assistant* and *Fitting Guide for Hard and Soft Contact Lenses*, published by The C.V. Mosby Company. Figs. 5-6 and 5-7 are borrowed from the second edition of Donaldson: *Atlas of External Diseases of the Eye, Volume III. Cornea and Sclera*, published by The C.V. Mosby Company. Figs. 7-4 and

7-5 are borrowed from the fourth edition of Havener: *Synopsis of Ophthalmology*, also published by Mosby. We would like to thank these authors for their permission to reproduce these figures. We have also used two figures, Figs. 9-8 and 10-4, that are original in this work. Our illustrations and diagrams are used to show a point and are relevant to the needs of this particular endeavor.

We would like to express our appreciation to Dr. Les Landecker and Mr. Raymond Stein, who have helped collect and organize several sections in this text. We are grateful for the contributions of Mr. D'Arcy Kingsmill of Imperial Optical Limited, Canada, for his contribution to the sections on optics, refraction, and spectacles, and to Ms. Jane Leonard and Mr. Don Tomchak of Allergan Pharmaceuticals for their efforts in providing some of the historic origins of words.

We are appreciative of our review readers, Dr. Melvin Freeman, Mr. Ken Swanson, Dr. Joshua Josephson, Dr. Albert Cheskes, Dr. Mark Mandelcorn, and Mr. Keith Harrison, who have critically reviewed portions of the manuscript. As in some of our other textbook publications, we are indebted to Mr. Norman Deer for the illustrations and to Ms. Laurette Larocque for typing.

Harold A. Stein
Bernard J. Slatt
Penny Cook

MANUAL OF

**Ophthalmic
terminology**

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Introduction

Three fourths of all medical and ophthalmic terms are based on either Greek or Latin words. The Greeks, led by Hippocrates in 420 BC and later by Galen, were the founders of rational and scientific medicine, and many Greek terms have persisted to the present time in ophthalmology. However, when Rome conquered Greece and dominated the world, Latin became the universal language in medical sciences. As a result a combination of Greek and Latin roots has remained in use in medicine.

Ophthalmology is one of the oldest branches of medicine; references are made in the *Iliad* and the *Odyssey* to studies of the eye. Although the ancients recognized the importance of the eyes and had some knowledge of eye anatomy as well as certain procedures for cataracts, there was little scientific knowledge about the eye before the invention of the ophthalmoscope by Helmholtz in 1850. However, much had been written, and many words coined by the ancients remain as part of our ophthalmic vocabulary.

With a knowledge of Greek and Latin roots, ophthalmic vocabulary becomes much easier to understand and to build. For instance, *ophthalmology* is derived from the Latin *ophthalmos*, "the eye," and *ogy*, "to study," so ophthalmology is the science dealing with the structure, function, and disease of the eye. The word *surgeon* is derived from the Greek word meaning "hand worker" because the ancient surgeon was one who treated patients with his hands in such procedures as manipulation, bone setting, and cutting in contrast to those doctors who treated patients with herbs, tonics, or pills.

Throughout this book you will learn to identify roots and compound words. Often two roots will make up a compound word and will have either a suffix added to the word or a prefix before it. A suffix such as *itis*, meaning "inflammation," when attached to *iris* becomes *iritis*, which means "inflammation of the iris." If one attaches the suffix *itis* to *uvea*, it becomes "uveitis," meaning "inflammation of the uvea." By looking at the root or stem to which the suffix is added, one can determine which organ or tissue is affected. Be-

cause the suffix *oma* means "tumor," *neuroma* means "nerve tumor," *lipoma* means "tumor of fat," *angioma* means "tumor of blood vessel," and so on. Many words incorporate the Greek stem *ophthalmos* or the Latin stem *oculus*, both signifying "eye," or the Greek *op* meaning "to see."

However, as terms expanded, the system became unwieldy and chaotic until the nomenclature was standardized in 1932, utilizing English terms in preference to Greek or Latin. Yet numerous exceptions exist, particularly in ophthalmology, and many Greek and Latin terms have persisted to the present.

These are some of the more common prefixes:

- a-, an- (Greek alpha privative) to, toward
- ana- (Greek) up, throughout
- ante- (Latin) before, in front of
- anti- (Greek) over against, opposite
- cata- (Greek) from, down from
- circum- (Latin) around
- di-, dis- (Latin) asunder, in two parts
- dia- (Greek) through
- ecto- (Greek) without, outside
- endo-, ento- (Greek) within
- epi- (Greek) upon
- eu- (Greek) good, beneficial
- ex- (Latin) out, out of
- hemi- (Greek) half
- hetero- (Greek) different
- homo- (Greek) the same
- hyper- (Greek) over, excess of
- hypo- (Greek) under, lack of
- infra- (Latin) below, under
- inter- (Latin) within, inside
- iso- (Greek) equal to, the same as
- leuc- (Greek) white
- macro- (Greek) long, large
- mega- (Greek) great, big
- melan- (Greek) black
- micro- (Greek) small, short
- neo- (Greek) new
- neuro- (Greek) nerve, of nerves
- ophth- (Greek) eye, of the eyes
- ophthalm- (Greek) eye, of the eyes
- para- (Greek) beside
- per- (Latin) through, throughout
- per- (Greek) very, intensely
- peri- (Greek) around, about

poly- (Greek) many, much
 post- (Latin) after, behind
 pre- (Latin) before, in front
 pro- (Greek) before, in front
 pseudo- (Greek) false
 re- (Latin) again, turning back
 semi- (Latin) half
 syn- (Greek) along with
 uni- (Greek) one, single

These are some of the more common suffixes:

-aemia (Greek) in (of) the blood
 -agouge (Greek) lead or carry off
 -agra (Greek) seizure
 -algia (Greek) pain
 -ectomy (Greek) a cutting out
 -graph (Greek) write, a record of
 -ia (Greek) indicates a morbidity of an organ
 -ic (Greek) forms an adjective, means pertaining to
 -igo (Latin) implied state or action, especially an overaction
 -ismus (Greek) connotes a disease, usually nervous as opposed to the vascular *-itis*
 (see following)
 -itis (Greek) connotes a vascular disease
 -logy (Greek) word, refers to speech, discourse, or study of a subject
 -mania (Greek) madness
 -odynia (Greek) pain of the part named
 -oid (Greek) that which is seen, like
 -oma (Greek) originally used to make nouns from verb roots: in medicine has come
 to denote a tumor
 -opia (Greek) from eye: denotes characteristic of vision
 -pathy (Greek) suffering or a condition of treatment
 -phobia (Greek) fear of
 -plasty (Greek) to form or mold: restorative operation
 -rhagia (Greek) excessive flow of blood or other substance
 -scope (Greek) instrument of examination
 -scopy (Greek) examination of
 -sis (Greek) process, action, or possession, similar to the English *-ing*
 -tomy, -tome (Greek) to cut, other than removal or incision: see *-ectomy*
 -yl (Greek) the matter of which a thing is made

This book will attempt to build some basis for linking words together in groups. Another skill to be gained is the ability to coin new medical terms in such a fashion that they are universally understood.

We have divided the vocabulary into a number of sections that will be of particular interest to individual groups. In addition, each section is divided

so as to link words together into common areas. The index at the back of the book will serve as a reference to locate words that one finds in the day-to-day practice of ophthalmology.

The following Latin and Greek prefixes denote numerical quantities:

<i>English</i>	<i>Latin</i>	<i>Greek</i>
one	uni-	mono-
two	bi-	di-
three	ter-	tri-
four	quadri-	tetra-
five	quinque-	penta-
six	sexa-	hexa-
seven	septa-	hepta-
eight	octo-	octo-
nine	novem-	ennea-
ten	decem-	deka-
eleven	undecem-	endeka-
twelve	duodecem-	dodeka-
one hundred	cent-	hecto-
one thousand	milli-	kilo-
one half	semi-	hemi-
one half more	sesqui-	—
whole	omni-	holo-
equal	equi-	homo-
many	multi-	poly-
more, over	super-, per-	hyper-
less, under	sub-	hypo-

Part one

**Basic sciences
and
clinical practice**