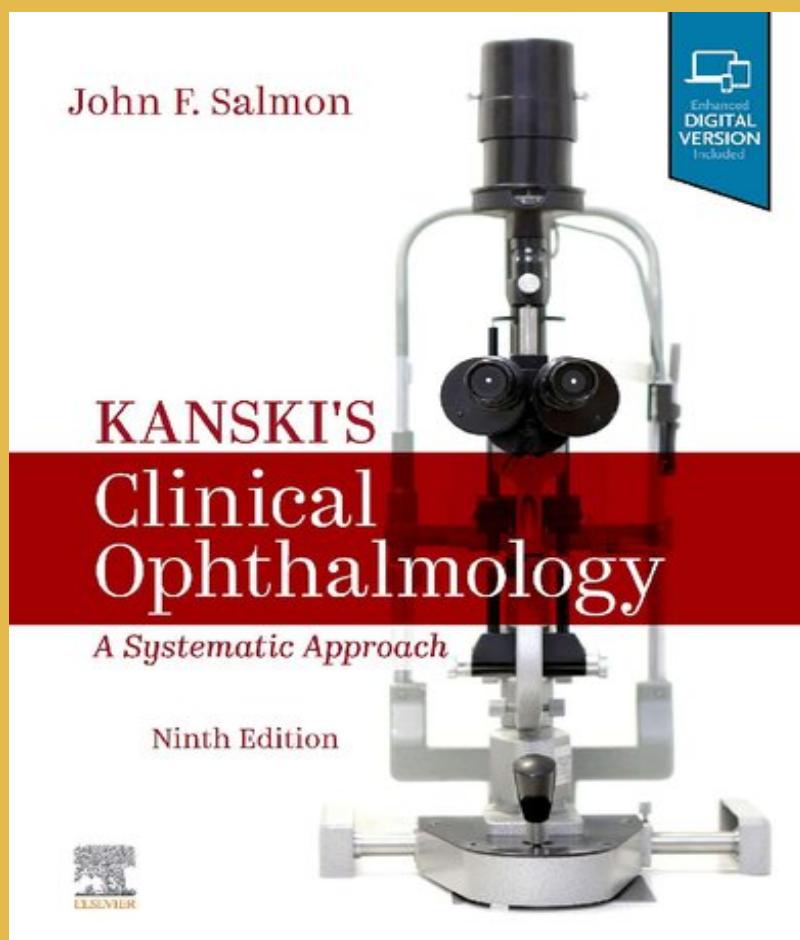


# Kanski's Clinical Ophthalmology: A Systematic Approach 9th Edition John Salmon

<https://ebookmass.com/product/kanskis-clinical-ophthalmology-a-systematic-approach-9th-edition-john-salmon/>



OR CLICK BUTTON

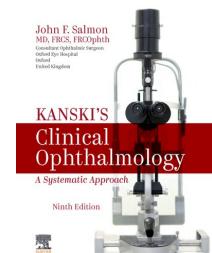
DOWNLOAD NOW

**Recommended digital products (PDF, EPUB, MOBI) that you can download immediately if you are interested.**

## **Kanski's Clinical Ophthalmology. A Systematic Approach 9th Edition John F. Salmon**

<https://ebookmass.com/product/kanskis-clinical-ophthalmology-a-systematic-approach-9th-edition-john-f-salmon/>

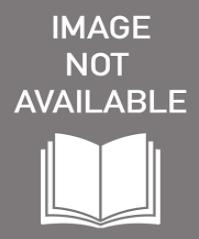
ebookmass.com



## **-Kanski's Clinical Ophthalmology: A Systematic Approach Textbook 9th Edition John F. Salmon**

<https://ebookmass.com/product/kanskis-clinical-ophthalmology-a-systematic-approach-textbook-9th-edition-john-f-salmon/>

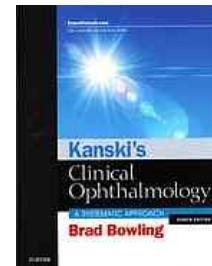
ebookmass.com



## **Kanski's clinical ophthalmology : a systematic approach 8th Edition Bradley Bowling**

<https://ebookmass.com/product/kanskis-clinical-ophthalmology-a-systematic-approach-8th-edition-bradley-bowling/>

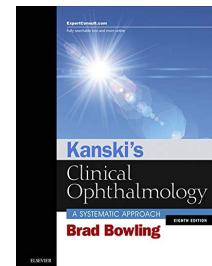
ebookmass.com



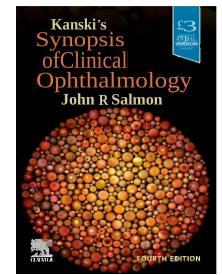
## **Kanski's Clinical Ophthalmology E Book: A Systematic Approach 8th Edition, (Ebook PDF)**

<https://ebookmass.com/product/kanskis-clinical-ophthalmology-e-book-a-systematic-approach-8th-edition-ebook-pdf/>

ebookmass.com



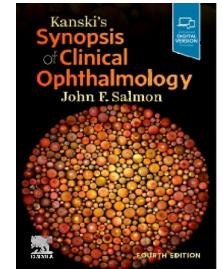
## **Synopsis Of Clinical Ophthalmology 4th Edition John R. Salmon**



<https://ebookmass.com/product/synopsis-of-clinical-ophthalmology-4th-edition-john-r-salmon/>

ebookmass.com

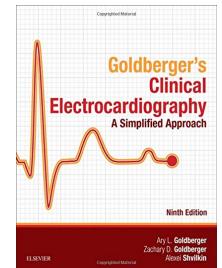
## **Kanski's Synopsis of Clinical Ophthalmology 4th Edition John F. Salmon**



<https://ebookmass.com/product/kanskis-synopsis-of-clinical-ophthalmology-4th-edition-john-f-salmon/>

ebookmass.com

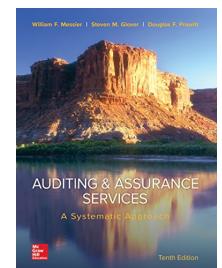
## **Goldberger's Clinical Electrocardiography: A Simplified Approach 9th Edition Ary L. Goldberger**



<https://ebookmass.com/product/goldbergers-clinical-electrocardiography-a-simplified-approach-9th-edition-ary-l-goldberger/>

ebookmass.com

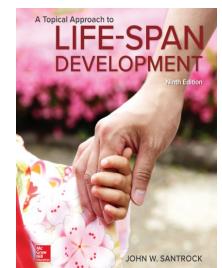
## **Auditing & Assurance Services: A Systematic Approach 10th Edition William Messier Jr**



<https://ebookmass.com/product/auditing-assurance-services-a-systematic-approach-10th-edition-william-messier-jr/>

ebookmass.com

## **A topical approach to life-span development 9th Edition John W. Santrock**



<https://ebookmass.com/product/a-topical-approach-to-life-span-development-9th-edition-john-w-santrock/>

ebookmass.com



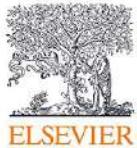
John F. Salmon



# KANSKI'S Clinical Ophthalmology

*A Systematic Approach*

Ninth Edition



# KANSKI'S Clinical Ophthalmology

---

*A Systematic Approach*

**John F. Salmon**  
MD, FRCS, FRCOphth

Consultant Ophthalmic Surgeon  
Oxford Eye Hospital  
Oxford  
United Kingdom

# KANSKI'S Clinical Ophthalmology

*A Systematic Approach*

Ninth Edition



© 2020, Elsevier Limited. All rights reserved.

First edition 1984  
Second edition 1989  
Third edition 1994  
Fourth edition 1999  
Fifth edition 2003  
Sixth edition 2007  
Seventh edition 2011  
Eighth edition 2016  
Ninth edition 2020

The right of John F. Salmon to be identified as author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: [www.elsevier.com/permissions](http://www.elsevier.com/permissions).

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

#### Notices

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds or experiments described herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made. To the fullest extent of the law, no responsibility is assumed by Elsevier, authors, editors or contributors for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

**ISBN:** 978-0-7020-7711-1  
978-0-7020-7712-8

**Content Strategist:** Kayla Wolfe  
**Content Development Specialist:** Kim Benson/Sharon Nash  
**Project Manager:** Julie Taylor  
**Design:** Amy Buxton  
**Illustration Manager:** Paula Catalano  
**Marketing Manager:** Claire McKenzie

Printed in China

Last digit is the print number: 9 8 7 6 5 4 3 2 1



Working together  
to grow libraries in  
developing countries

[www.elsevier.com](http://www.elsevier.com) • [www.bookaid.org](http://www.bookaid.org)

# Contents

---

Dedication.....	viii	Cystic lesions.....	131
In Memoriam .....	ix	Vascular tumours .....	134
Preface to the Ninth Edition .....	x	Lacrimal gland tumours .....	140
Abbreviations.....	xi	Neural tumours.....	142
<b>1 Examination Techniques.....</b>	<b>1</b>	Lymphoma.....	144
Introduction .....	2	Rhabdomyosarcoma .....	147
Psychophysical tests .....	2	Metastatic tumours .....	148
Perimetry .....	9	The anophthalmic socket .....	150
Slit lamp biomicroscopy of the anterior segment .....	20	Craniosynostoses.....	153
Fundus examination.....	21		
Tonometry.....	27		
Gonioscopy.....	30		
Central corneal thickness.....	36		
<b>2 Eyelids .....</b>	<b>37</b>		
Introduction .....	38		
Non-neoplastic lesions.....	39		
Benign epidermal tumours.....	43		
Benign pigmented lesions.....	44		
Benign adnexal tumours .....	47		
Miscellaneous benign tumours.....	47		
Malignant tumours.....	50		
Disorders of the eyelashes .....	60		
Allergic disorders .....	66		
Immune-related inflammation .....	66		
Bacterial infections .....	67		
Viral infections .....	68		
Blepharitis .....	70		
Ptosis .....	74		
Ectropion .....	80		
Entropion.....	85		
Miscellaneous acquired disorders .....	87		
Cosmetic eyelid and periocular surgery .....	91		
Congenital malformations .....	93		
<b>3 Lacrimal Drainage System.....</b>	<b>99</b>		
Introduction .....	100		
Acquired obstruction.....	105		
Congenital obstruction .....	108		
Chronic canaliculitis.....	109		
Dacryocystitis .....	110		
<b>4 Orbit.....</b>	<b>113</b>		
Introduction .....	114		
Thyroid eye disease .....	118		
Infections.....	124		
Non-infective inflammatory disease .....	126		
Non-neoplastic vascular abnormalities.....	129		
<b>5 Dry Eye .....</b>	<b>155</b>		
Introduction .....	156		
Sjögren syndrome .....	158		
Clinical features .....	158		
Investigation .....	159		
Treatment.....	162		
<b>6 Conjunctiva .....</b>	<b>167</b>		
Introduction .....	168		
Bacterial conjunctivitis .....	171		
Viral conjunctivitis.....	177		
Allergic conjunctivitis .....	180		
Conjunctivitis in blistering mucocutaneous disease .....	188		
Miscellaneous disorders of the conjunctiva .....	194		
Degenerations.....	197		
Subconjunctival haemorrhage .....	200		
<b>7 Cornea .....</b>	<b>203</b>		
Introduction .....	204		
Bacterial keratitis .....	209		
Fungal keratitis .....	216		
Herpes simplex keratitis .....	218		
Herpes zoster ophthalmicus .....	224		
Interstitial keratitis .....	229		
Protozoan keratitis .....	232		
Helminthic keratitis .....	234		
Bacterial hypersensitivity-mediated corneal disease.....	234		
Rosacea .....	236		
Peripheral corneal ulceration/thinning.....	238		
Neurotrophic keratopathy .....	241		
Exposure keratopathy .....	242		
Miscellaneous keratopathies .....	243		
Corneal ectasia .....	248		
Corneal dystrophy .....	252		
Corneal degeneration .....	261		
Metabolic keratopathy .....	266		
Contact lenses .....	268		
Congenital anomalies of the cornea and globe.....	270		

<b>8 Corneal and Refractive Surgery .....</b>	<b>275</b>	Investigation .....	429
Keratoplasty .....	276	Treatment.....	432
Keratoprostheses .....	283	Immunomodulatory therapy for non-infectious uveitis .....	433
Refractive procedures .....	283	Uveitis in spondyloarthropathies .....	435
<b>9 Episclera and Sclera .....</b>	<b>291</b>	Fuchs uveitis syndrome.....	437
Anatomy.....	292	Uveitis in juvenile idiopathic arthritis (JIA) .....	439
Episcleritis .....	292	Uveitis in bowel disease.....	441
Immune-mediated scleritis.....	293	Uveitis in renal disease .....	442
Porphyria .....	300	Intermediate uveitis .....	443
Infectious scleritis .....	300	Vogt-Koyanagi-Harada (VKH) syndrome .....	445
Scleral discolouration .....	301	Sympathetic ophthalmitis .....	448
Blue sclera .....	301	Lens-induced uveitis .....	449
Miscellaneous conditions.....	302	Sarcoidosis.....	450
<b>10 Lens .....</b>	<b>307</b>	Behcet disease .....	454
Acquired cataract.....	308	Parasitic uveitis.....	456
Management of age-related cataract.....	311	Viral uveitis.....	465
Congenital cataract.....	335	Fungal uveitis.....	473
Ectopia lentis.....	338	Bacterial uveitis .....	477
Abnormalities of lens shape.....	342	Miscellaneous idiopathic chorioretinopathies .....	484
<b>11 Glaucoma .....</b>	<b>345</b>	<b>13 Retinal Vascular Disease.....</b>	<b>495</b>
Introduction .....	346	Retinal circulation .....	496
Ocular hypertension .....	347	Diabetic retinopathy .....	496
Overview of glaucoma.....	349	Non-diabetic retinopathy .....	513
Primary open-angle glaucoma.....	349	Retinal venous occlusive disease .....	514
Normal-tension glaucoma .....	367	Retinal arterial occlusive disease .....	525
Primary angle-closure glaucoma .....	370	Ocular ischaemic syndrome .....	531
Classification of secondary glaucoma .....	378	Hypertensive eye disease .....	532
Pseudoexfoliation .....	379	Sickle-cell retinopathy .....	533
Pigment dispersion syndrome and pigmentary glaucoma.....	381	Thalassaemia retinopathy .....	536
Neovascular glaucoma .....	383	Retinopathy of prematurity .....	536
Inflammatory glaucoma .....	385	Retinal artery macroaneurysm .....	540
Steroid-induced glaucoma .....	388	Primary retinal telangiectasia .....	543
Lens-related glaucoma.....	389	Eales disease .....	546
Traumatic glaucoma .....	390	Radiation retinopathy .....	546
Ghost cell 'glaucoma' .....	392	Rettscher retinopathy .....	547
Iridocorneal endothelial syndrome .....	392	Valsalva retinopathy .....	549
Glaucoma associated with intraocular tumours .....	394	Lipaemia retinalis .....	549
Glaucoma secondary to epithelial ingrowth .....	394	Retinopathy in blood disorders.....	550
Iridoschisis .....	395	<b>14 Acquired Macular Disorders .....</b>	<b>555</b>
Primary congenital glaucoma .....	395	Introduction .....	556
Iridocorneal dysgenesis .....	399	Clinical evaluation of macular disease .....	557
Glaucoma in phacomatoses.....	403	Investigation of macular disease .....	558
Medical treatment of glaucoma.....	404	Age-related macular degeneration .....	572
Laser treatment of glaucoma.....	407	Retinal angiomatic proliferation .....	589
Trabeculectomy .....	412	Polypoidal choroidal vasculopathy .....	589
Non-penetrating glaucoma surgery .....	419	Peripheral exudative haemorrhagic chorioretinopathy .....	591
Minimally invasive glaucoma surgery (MIGS) .....	420	Idiopathic choroidal neovascularization .....	591
Drainage shunts.....	421	Vitreomacular interface disorders .....	592
<b>12 Uveitis.....</b>	<b>423</b>	Central serous chorioretinopathy .....	598
Classification .....	424	Idiopathic macular telangiectasia .....	601
Clinical features .....	424	Cystoid macular oedema .....	602

Microcystic macular oedema.....	604
Degenerative myopia.....	604
Angiod streaks .....	607
Choroidal folds .....	609
Hypotony maculopathy.....	610
Solar retinopathy .....	610
Focal choroidal excavation .....	611
Dome-shaped macula.....	612
Low visual aids .....	613
<b>15 Hereditary Fundus Dystrophies .....</b>	<b>615</b>
Introduction .....	616
Investigation .....	616
Generalized photoreceptor dystrophies.....	619
Macular dystrophies.....	631
Generalized choroidal dystrophies.....	640
Hereditary vitreoretinopathies .....	641
Albinism .....	649
Cherry-red spot at the macula .....	652
<b>16 Retinal Detachment .....</b>	<b>653</b>
Introduction .....	654
Peripheral lesions predisposing to retinal detachment.....	657
Posterior vitreous detachment.....	663
Retinal breaks.....	666
Rhegmatogenous retinal detachment.....	668
Tractional retinal detachment .....	681
Exudative retinal detachment .....	681
Pars plana vitrectomy.....	683
<b>17 Vitreous Opacities .....</b>	<b>691</b>
<b>18 Strabismus .....</b>	<b>697</b>
Introduction .....	698
Amblyopia .....	707
Clinical evaluation.....	708
Pseudostrabismus .....	726
Heterophoria.....	727
Vergence abnormalities.....	727
Esotropia .....	728
Exotropia .....	733
Congenital cranial dysinnervation disorders.....	735
Monocular elevation deficiency .....	737
Brown syndrome .....	737
Alphabet patterns .....	738
Surgery .....	739
Complications of strabismus surgery.....	742
Botulinum toxin chemodenervation .....	743
<b>19 Neuro-ophthalmology .....</b>	<b>745</b>
Neuroimaging .....	746
Optic nerve .....	751
Pupils .....	779
Chiasm .....	786
Retrochiasmal pathways .....	792
Ocular motor nerves.....	795
Supranuclear disorders of ocular motility .....	806
Nystagmus.....	809
Ocular myopathies .....	814
Miller Fisher syndrome .....	819
Neurofibromatosis .....	819
Migraine .....	820
Neuralgias .....	823
Facial spasm .....	824
Disorders of circadian rhythm.....	825
Neuro-ophthalmology of space flight.....	825
<b>20 Ocular Tumours.....</b>	<b>827</b>
Benign epibulbar tumours.....	828
Malignant and premalignant epibulbar tumours .....	833
Iris tumours .....	839
Iris cysts .....	841
Ciliary body tumours .....	843
Tumours of the choroid.....	846
Neural retinal tumours .....	860
Retinal vascular tumours.....	868
Primary intraocular lymphoma .....	872
Tumours of the retinal pigment epithelium.....	875
Paraneoplastic syndromes .....	878
<b>21 Ophthalmic Side Effects of Systemic Medication .....</b>	<b>881</b>
Eyelids .....	882
Cornea.....	882
Ciliary effusion .....	882
Lens .....	883
Uveitis .....	884
Retina.....	884
Optic nerve .....	889
Visual cortex.....	890
<b>22 Trauma .....</b>	<b>891</b>
Eyelid trauma .....	892
Orbital trauma .....	894
Trauma to the globe .....	898
Chemical injuries .....	912
Thermal burns.....	916
Index .....	917

## ***Dedication***

*This book is dedicated to my wife Susie,  
to my children Mark and Nicola,  
and to my sister, Margaret, who initially awakened my interest in ophthalmology*

## *In Memoriam*

Jack J. Kanski MD, MS, FRCS, FRCOphth, Consultant Ophthalmic Surgeon (1939–2019)



Jack Kanski wrote more than 30 books, but is best known for *Clinical Ophthalmology*, which was first published in 1984. The book has been studied by ophthalmology and optometry students throughout the world since that time. It has justifiably become a classic because of its highly organized format, succinct but comprehensive text and superb clinical photographs. His encyclopaedic knowledge of ophthalmology, meticulous attention to detail and unique ability to sort the wheat from the chaff will be sorely missed. His legacy will live on in the minds of those who benefitted from his teaching.

# Preface to the Ninth Edition

In presenting this new edition of *Kanski's Clinical Ophthalmology*, I am reminded of a quotation from Lewis Carroll's *Alice's Adventures in Wonderland*: "What is the use of a book", thought Alice, "without pictures or conversations?". The ninth edition of this classic textbook is filled with beautiful illustrations and considerable information and is intended to be a useful and comprehensive basis for general ophthalmic practice. It has been a privilege to work on this remarkable book and I am grateful to Jack Kanski and the staff of Elsevier for entrusting me with the task.

The challenge has been to cover the entire field of ophthalmology for a worldwide audience without depending on subspecialists to prepare each chapter. In order to do this, I have maintained Jack Kanski's unique approach of presenting core clinical knowledge in a systemic and succinct form. Brad Bowling has had a significant influence on the two previous editions and his accuracy and meticulous attention to detail has been extremely helpful. I have reverted to the format that was used in the sixth edition by starting with an initial chapter on examination techniques. Special investigations remain in the chapters where they are most relevant.

Each chapter has been updated and the latest evidence-based diagnostic and therapeutic approaches have been covered, including genetics, immunotherapy and imaging techniques. Many new illustrations have been added and better examples of a range of conditions have been used. Jack Kanski's idea of including important 'tips' has been reintroduced. I have included sufficient practical information for trainees to manage common ophthalmic conditions in the clinic and enough detail on rare conditions to enable them to prepare for their examinations without resorting to the internet.

I have been extremely fortunate to have received help from colleagues past and present, to whom I wish to express my grateful thanks. The photographers and research staff at the Oxford Eye Hospital have been wonderfully supportive. Jack Kanski generously gave me his huge collection of images. My friends in

South Africa, Tony Murray (strabismus) and Trevor Carmichael (cornea), provided help with the text and images of pathology that are not easily found in developed countries. I received many pictures from Jonathan Norris and Elizabeth Insull (oculoplastics), Darius Hildebrand and Manoj Parulekar (paediatrics), Peter Issa and Christine Kiire (medical retina), Bertil Damato (ocular oncology), Martin Leyland (corneal surgery), C.K. Patel (vitreoretinal surgery), Patsy Terry (ultrasound) and Pieter Pretorius (neuroradiology). Mitch Ménage provided good pictures of common conditions. Aude Ambresin and Carl Herbort (Switzerland) supplied state-of-the-art retinal images. I have kept many of the outstanding pictures that Chris Barry and Simon Cheng (Australia) provided for the eighth edition. Single examples of rare conditions have been kindly provided by a number of colleagues throughout the United Kingdom and elsewhere and their contribution has been recognized next to the images provided. Other individuals have helped substantially with previous editions of *Clinical Ophthalmology*, including Terry Tarrant, the artist who produced the meticulous ocular paintings. I also wish to thank Kim Benson, Sharon Nash, Kayla Wolfe, Julie Taylor, Anne Collett and the production team at Elsevier.

The ninth edition of *Kanski's Clinical Ophthalmology* could not have been produced in the time available without the help of my assistant, Carolyn Bouter, whose resilience, diligence, intelligence and skill were evident throughout the 6 months that she worked with me. I have also had the good fortune to work with Jonathan Brett, a world-class photographer and artist, whose genius is present in hundreds of the images included in this edition. My wife, Susie, has been extremely supportive throughout this project and her happy and helpful nature has made the task a pleasant and enjoyable experience.

John F. Salmon  
2019

# Abbreviations

---

AAION	arteritic anterior ischaemic optic neuropathy	C-MIN	conjunctival melanocytic intraepithelial neoplasia
AAU	acute anterior uveitis	CMO	cystoid macular oedema (US = CME)
AC	anterior chamber	CNS	central nervous system
AC/A ratio	accommodative convergence/accommodation ratio	CNV	choroidal neovascularization
ACE	angiotensin converting enzyme	CNVM	choroidal neovascular membrane
AD	autosomal dominant	COX-2	cyclo-oxygenase-2
AF	autofluorescence	CPEO	chronic progressive external ophthalmoplegia
AGIS	Advanced Glaucoma Treatment Study	CRAO	central retinal artery occlusion
AHP	abnormal head posture	CRP	C-reactive protein
AI	accommodative insufficiency	CRVO	central retinal vein occlusion
AIBSE	acute idiopathic blind spot enlargement syndrome	CSC	central serous chorioretinopathy
AIDS	acquired immune deficiency syndrome	CSC/CSCR	central serous chorioretinopathy
AIM	(unilateral) acute idiopathic maculopathy	CSMO	clinically significant macular oedema (US = CSME)
AION	anterior ischaemic optic neuropathy	CSR	central serous chorioretinopathy
AIR	autoimmune retinopathies	CSS	central suppression scotoma
AKC	atopic keratoconjunctivitis	CT	computed tomography
ALT	argon laser trabeculoplasty	CXL	corneal collagen cross-linking
AMD	age-related macular degeneration	DALK	deep anterior lamellar keratoplasty
AMN	acute macular neuroretinopathy	DCCT	Diabetes Control and Complication Trial
ANA	antinuclear antibody	DCR	dacryocystorhinostomy
ANCA	antineutrophil cytoplasmic antibodies	DCT	dynamic contour tonometry
APD	afferent pupillary defect	DMEK	Descemet membrane endothelial keratoplasty
APMPPE	acute posterior multifocal placoid pigment epitheliopathy	DMO	diabetic macular oedema (US = DME)
AR	autosomal recessive	DR	diabetic retinopathy
AREDS	Age-Related Eye Disease Study	DRCR.net	Diabetic Retinopathy Clinical Research Network
ARN	acute retinal necrosis	DRPPT	dark room prone provocative test
ARPE	acute retinal pigment epitheliitis	DRS	Diabetic Retinopathy Study
AZOR	acute zonal occult outer retinopathy	DSAEK	Descemet stripping automated endothelial keratoplasty
AZOR	acute zonal outer retinopathy	DVD	dissociated vertical deviation
BADI	bilateral acute depigmentation of the iris	ECG	electrocardiogram
BCC	basal cell carcinoma	EDTA	ethylenediaminetetraacetic acid
BCVA	best-corrected visual acuity	EGFR	epidermal growth factor inhibitors
BIO	binocular indirect ophthalmoscopy	EKC	epidemic keratoconjunctivitis
BP	blood pressure	EMGT	Early Manifest Glaucoma Trial
BRAO	branch retinal artery occlusion	EOG	electro-oculography/gram
BRVO	branch retinal vein occlusion	ERG	electroretinography/gram
BSV	binocular single vision	ERM	epiretinal membrane
BUT	breakup time	ESR	erythrocyte sedimentation rate
CAI	carbonic anhydrase inhibitor	ETDRS	Early Treatment Diabetic Retinopathy Study
CCDD	congenital cranial dysinnervation disorders	ETROP	Early Treatment of Retinopathy of Prematurity
CCT	central corneal thickness	FA	fluorescein angiography (also FFA)
C/D	cup/disc	FAF	fundus autofluorescence
CDCR	canalicular dacryocystorhinostomy	FAP	familial adenomatous polyposis
CF	counts (or counting) fingers	FAZ	foveal avascular zone
CHED	congenital hereditary endothelial dystrophy	FBA	frosted branch angiitis
CHP	compensatory head posture	FBC	full blood count
CHRPE	congenital hypertrophy of the retinal pigment epithelium	FDT	frequency doubling test
CI	convergence insufficiency	FFM	fundus flavimaculatus
		FTMH	full-thickness macular hole

5-FU	5-fluorouracil	MMC	mitomycin C
GA	geographic atrophy	MPS	mucopolysaccharidosis
GAT	Goldmann applanation tonometry	MRI	magnetic resonance imaging
GCA	giant cell arteritis	MS	multiple sclerosis
GDD	glaucoma drainage device	NF1	neurofibromatosis type I
GHT	glaucoma hemifield test	NF2	neurofibromatosis type II
GPA	guided progression analysis	NPDR	non-proliferative diabetic retinopathy
GPC	giant papillary conjunctivitis	NRR	neuroretinal rim
G-TOP	glaucoma tendency orientated perimetry	NSAID	non-steroidal anti-inflammatory drug
HAART	highly active antiretroviral therapy	NSR	neurosensory retina
HFA	Humphrey field analyser	NTG	normal-tension glaucoma
HIV	human immunodeficiency virus	NVD	new vessels on the disc
HM	hand movements	NVE	new vessels elsewhere
HRT	Heidelberg retinal tomography	NVG	neovascular glaucoma
HSV-1	herpes simplex virus type 1	NVI	new vessels iris
HSV-2	herpes simplex virus type 2	OCT	optical coherence tomography/gram
HZO	herpes zoster ophthalmicus	OHT	ocular hypertension
ICE	iridocorneal endothelial	OHTS	Ocular Hypertension Treatment Study
ICG	indocyanine green	OIS	ocular ischaemia syndrome
ICGA	indocyanine green angiography	OKN	optokinetic nystagmus
ICROP	International Classification of Retinopathy of Prematurity	OVD	ophthalmic viscosurgical devices
IFIS	intraoperative floppy iris syndrome	PAC	primary angle closure
Ig	immunoglobulin	PACG	primary angle-closure glaucoma
IK	interstitial keratitis	PACS	primary angle-closure suspect
ILM	internal limiting membrane	PAM	primary acquired melanosis
IMT	idiopathic macular telangiectasia	PAN	polyarteritis nodosa
INO	internuclear ophthalmoplegia	PAS	peripheral anterior synechiae
INR	international normalized ratio	PC	posterior chamber
IOFB	intraocular foreign body	PCO	posterior capsular opacification
OID	idiopathic orbital inflammatory disease	PCR	polymerase chain reaction
IOL	intraocular lens	PCV	polypoidal choroidal vasculopathy
IOP	intraocular pressure	PDR	proliferative diabetic retinopathy
IRMA	intraretinal microvascular abnormality	PDS	pigment dispersion syndrome
IRVAN	idiopathic retinal vasculitis, aneurysms and neuroretinitis syndrome	PDT	photodynamic therapy
ITC	iridotrabecular contact	PED	pigment epithelial detachment
IU	intermediate uveitis	PEE	punctate epithelial erosions
IVTS	International Vitreomacular Traction Study	PEK	punctate epithelial keratitis
JIA	juvenile idiopathic arthritis	PEHCR	peripheral exudative haemorrhagic chorioretinopathy
KC	keratoconus	PH	pinhole
KCS	keratoconjunctivitis sicca	PHM	posterior hyaloid membrane
KP	keratic precipitate	PIC	punctate inner choroidopathy
LA	local anaesthetic	PIOL	primary intraocular lymphoma
LASEK	laser (also laser-assisted) epithelial keratomileusis	PION	posterior ischaemic optic neuropathy
LASIK	laser-assisted <i>in situ</i> keratomileusis	PKP	penetrating keratoplasty
LN	latent nystagmus	PMMA	polymethyl methacrylate
LSCD	limbal stem cell deficiency	POAG	primary open-angle glaucoma
LV	loss variance	POHS	presumed ocular histoplasmosis syndrome
MALT	mucosa-associated lymphoid tissue	PP	pars planitis
MCP	multifocal choroiditis and panuveitis	PPCD	posterior polymorphous corneal dystrophy
MEWDS	multiple evanescent white dot syndrome	PPDR	preproliferative diabetic retinopathy
MFC	multifocal choroiditis and panuveitis	PPM	persistent placoid maculopathy
MIGS	minimally invasive glaucoma surgery	PPRF	paramedian pontine reticular formation
MLF	medial longitudinal fasciculus	PPV	pars plana vitrectomy
MLT	micropulse laser technology	PRK	photorefractive keratectomy
		PRP	panretinal photocoagulation

PS	posterior synechiae	SJS	Stevens–Johnson syndrome
PSD	pattern standard deviation	SLK	superior limbic keratoconjunctivitis
PSS	Posner–Schlossman syndrome	SLT	selective laser trabeculoplasty
PUK	peripheral ulcerative keratitis	SMILE	small incision lenticule extraction
PVD	posterior vitreous detachment	SPARCS	Spaeth Richman contrast sensitivity test
PVR	proliferative vitreoretinopathy	SPK	superficial punctate keratitis
PVRL	primary vitreoretinal lymphoma	SRF	subretinal fluid
PXE	pseudoxanthoma elasticum	SS	Sjögren syndrome
PXF	pseudoexfoliation	STIR	short T1 inversion recovery
RA	rheumatoid arthritis	SWAP	short-wave automated perimetry
RAO	retinal artery occlusion	TAL	total axial length
RAPD	relative afferent pupillary defect	TB	tuberculosis
RD	retinal detachment	TEN	toxic epidermal necrolysis
RNFL	retinal nerve fibre layer	TGF	transforming growth factor
ROCK	Rho-kinase	TIA	transient ischaemic attack
ROP	retinopathy of prematurity	TM	trabecular meshwork
RP	retinitis pigmentosa	TRD	tractional retinal detachment
RPC	relentless placoid chorioretinitis	TRP	targeted retinal photocoagulation
RPE	retinal pigment epithelium	TTT	transpupillary thermotherapy
RRD	rhegmatogenous retinal detachment	UBM	ultrasonic biomicroscopy
RS	retinoschisis	US	ultrasongraphy
RVO	retinal vein occlusion	VA	visual acuity
SANS	space flight-associated neuro-ocular syndrome	VEGF	vascular endothelial growth factor
SAP	standard automated perimetry	VEP	visual(ly) evoked potential(s)
SCC	squamous cell carcinoma	VFI	visual field index
SCN	suprachiasmatic nucleus	VHL	von Hippel–Lindau syndrome
SD-OCT	spectral domain optical coherence tomography	VKC	vernal keratoconjunctivitis
SF	short-term fluctuation	VKH	Vogt–Koyanagi–Harada syndrome
SFU	progressive subretinal fibrosis and uveitis syndrome	VMA	vitreomacular adhesion
SIC	solitary idiopathic choroiditis	VMT	vitreomacular traction
SITA	Swedish Interactive Thresholding Algorithm	VZV	varicella zoster virus
		XL	X-linked

# Chapter

# 1

## Examination Techniques

### INTRODUCTION 2

### PSYCHOPHYSICAL TESTS 2

- Visual acuity 2
  - Near visual acuity 4
  - Contrast sensitivity 4
  - Amsler grid 5
  - Light brightness comparison test 6
  - Photostress test 6
  - Colour vision testing 7
  - Plus lens test 9
- PERIMETRY 9**
- Definitions 9
  - Testing algorithms 11
  - Testing patterns 14
  - Analysis 14
  - High-sensitivity field modalities 17

### Sources of error 18

### Microperimetry 18

### SLIT LAMP BIOMICROSCOPY OF THE ANTERIOR SEGMENT 20

- Direct illumination 20
- Scleral scatter 20
- Retroillumination 20
- Specular reflection 21

### FUNDUS EXAMINATION 21

- Direct ophthalmoscopy 21
- Slit lamp biomicroscopy 22
- Goldmann three-mirror examination 23
- Head-mounted binocular indirect ophthalmoscopy 25
- Fundus drawing 27

### TONOMETRY 27

- Goldmann tonometry 27
- Other forms of tonometry 29
- Ocular response analyser and corneal hysteresis 30

### GONIOSCOPY 30

- Introduction 30
- Indirect gonioscopy 32
- Direct gonioscopy 33
- Identification of angle structures 34
- Pathological findings 35

### CENTRAL CORNEAL THICKNESS 36

## INTRODUCTION

Patients with ophthalmic disease must have their vision accurately measured and their eyes need to be examined using specialized techniques. Special investigations should be used to supplement the findings of clinical examination. Electrophysiological tests, fluorescein angiography and optical coherence tomography are discussed in later chapters.

## PSYCHOPHYSICAL TESTS

### Visual acuity

#### *Snellen visual acuity*

Distance visual acuity (VA) is directly related to the minimum angle of separation (subtended at the nodal point of the eye) between two objects that allow them to be perceived as distinct. In practice, it is most commonly carried out using a Snellen chart, which utilizes black letters or symbols (optotypes) of a range of sizes set on a white chart (Fig. 1.1), with the subject reading the chart from a standard distance. Distance VA is usually first measured using a patient's refractive correction, generally their own glasses or contact lenses. For completeness, an unaided acuity may also be recorded. The eye reported as having worse vision should be tested first, with the other eye occluded. It is important to push the patient to read every letter possible on the optotypes being tested.

- **Normal monocular VA** equates to 6/6 (metric notation; 20/20 in non-metric 'English' notation) on Snellen testing. Normal corrected VA in young adults is often superior to 6/6.
- **Best-corrected VA (BCVA)** denotes the level achieved with optimal refractive correction.



Fig. 1.1 Snellen visual acuity chart

- **Pinhole VA:** a pinhole (PH) aperture compensates for the effect of refractive error, and consists of an opaque occluder perforated by one or more holes of about 1 mm diameter (Fig. 1.2). However, PH acuity in patients with macular disease and posterior lens opacities may be worse than with spectacle correction. If the VA is less than 6/6 Snellen equivalent, testing is repeated using a pinhole aperture.
- **Binocular VA** is usually superior to the better monocular VA of each eye, at least where both eyes have roughly equal vision.

#### *Very poor visual acuity*

- **Counting (or counts) fingers (CF)** denotes that the patient is able to tell how many fingers the examiner is holding up at a specified distance (Fig. 1.3), usually 1 metre.
- **Hand movements (HM)** is the ability to distinguish whether the examiner's hand is moving when held just in front of the patient.
- **Perception of light (PL):** the patient can discern only light (e.g. pen torch), but no shapes or movement. Careful occlusion of the other eye is necessary. If poor vision is due solely to a dense media opacity such as cataract, the patient should



Fig. 1.2 Pinhole

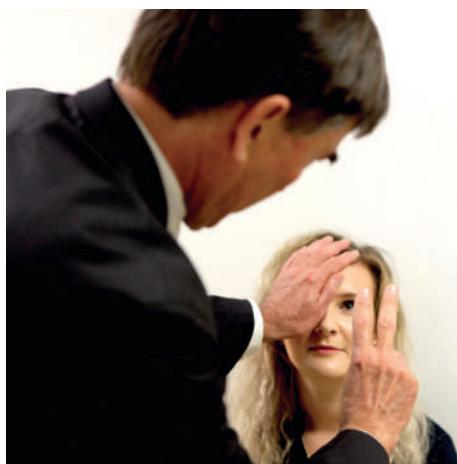


Fig. 1.3 Testing of 'counts fingers' visual acuity

# Discovering Diverse Content Through Random Scribd Documents

BORROW'S BIBLE IN SPAIN: The Journeys, Adventures, and Imprisonments of an Englishman, in an attempt to circulate the Scriptures in the Peninsula. By GEORGE BORROW, Author of "The Gipsies of Spain." With a Biographical Introduction by the Editor, and Illustrations.

"Lovers of good literature and cheap may be commended to the 'Minerva Library' edition of 'The Bible in Spain,' edited by Mr. G.T. Bettany. This is an excellent reprint, with neat binding, good type, and fair woodcuts."—*Saturday Review*.

#### VOLUME IV.—FOURTH EDITION.

EMERSON'S PROSE WORKS: The complete Prose Works of RALPH WALDO EMERSON. With a Critical Introduction by the Editor, and Portrait of the Author.

"The series, judging by the initial volumes, will be endowed with everything that makes reading pleasant and agreeable.... The printing is a marvel of clearness, the slurs that too often characterise cheap volumes being conspicuous by their absence.... The binding is both elegant and durable.... If the excellence of the first volumes is maintained in the future, the series will enjoy a success both widespread and prolonged."—*City Press*.

#### VOLUME V.—THIRD EDITION.

GALTON'S SOUTH AFRICA: The Narrative of an Explorer in Tropical South Africa: being an Account of a Visit to Damaraland in 1851. By FRANCIS GALTON, F.R.S. With a New Map and Appendix, together with a Biographical Introduction by the Editor, Portrait of Mr. Galton, and Illustrations. Containing also Vacation Tours in 1860 and 1861, by SIR GEORGE GROVE, FRANCIS GALTON, F.R.S., and W.G. CLARK, M.A.

"Be it understood the 'Minerva Library' presents itself in a form that even the lover of luxurious books could scarcely find fault with."—*Warrington Guardian*.

"The 'Minerva Library' will be hailed with delight, we are sure, by all readers."—*The Weekly Times*.

## VOLUME VI.—THIRD EDITION.

THE BETROTHED LOVERS (*I Promessi Sposi*). By ALESSANDRO MANZONI. With a Biographical Introduction by the Editor, and Portrait of the Author.

Of this great Work GOETHE wrote:—"Manzoni's romance transcends all that we have knowledge of in this kind. I need only say that the internal part, all that comes from the core of the poet, is thoroughly perfect, and that the external part, all the notes of localities and so forth, is not a whit behind its great inner qualities.... The work gives us the pleasure of an absolutely ripe fruit."

## VOLUME VII.—THIRD EDITION.

GOETHE'S FAUST (Complete). Translated in the Original Metres, with copious Critical and Explanatory Notes by BAYARD TAYLOR. With a Critical Introduction by the Editor, Portrait of GOETHE, and RETZSCH's Illustrations.

This is a full and complete reprint of BAYARD TAYLOR's unrivalled rendering of GOETHE's masterpiece. It is published by special arrangement with MRS. BAYARD TAYLOR, and contains the whole of the Translator's copious and extremely valuable Notes, Introductions, and Appendices.

## VOLUME VIII.—SECOND EDITION.

WALLACE'S TRAVELS ON THE AMAZON: Travels on the Amazon and Rio Negro. By ALFRED RUSSEL WALLACE, Author of "The Malay Archipelago," "Darwinism," etc. Giving an account of the Native Tribes, and Observations on the Climate, Geology, and Natural History of the Amazon Valley. With a Biographical Introduction, Portrait of the Author, and Illustrations.

"It would be impossible to overrate the service which Mr. Wallace, the co-discoverer of Darwinism, has done."—*Times, September 11th, 1889.*

## VOLUME IX.—THIRD EDITION.

DEAN STANLEY'S LIFE OF DR. ARNOLD. The Life and Correspondence of Thomas Arnold, D.D. (Head-Master of Rugby School). By ARTHUR PENRHYN STANLEY, D.D., Dean of Westminster. With a Portrait of ARNOLD, and Full Page Illustrations.

"One of the most remarkable and most instructive books ever published—a book for which Arnold himself left abundant materials in his voluminous correspondence, supplemented by a large quantity of miscellaneous matter added by his friend and former pupil, Dean Stanley."—*Morning Advertiser*.

#### VOLUME X.—SECOND EDITION.

POE'S TALES OF ADVENTURE, MYSTERY, AND IMAGINATION. By EDGAR ALLAN POE. With a Biographical Introduction by the Editor, Portrait of the Author, and Illustrations.

"Contains over forty of Poe's marvellous stories, certainly among the most exciting and sensational tales ever written. The volume itself is a marvel, comprising, as it does, over 560 pages, strongly and neatly bound, for two shillings."—*Newcastle Chronicle*.

#### VOLUME XI.

COMEDIES BY MOLIÈRE: Including The Would-Be Gentleman; The Affected Young Ladies; The Forced Marriage; The Doctor by Compulsion; Scapin's Rogueries; The Blunderer; The School for Husbands; The School for Wives; The Miser; The Hypochondriac; The Misanthrope; The Blue-Stockings; Tartuffe, or the Hypocrite. Newly Translated by CHARLES MATHEW, M.A. The Translation revised by the Editor, with a Portrait of the Author, and Biographical Introduction.

#### VOLUME XII.

FORSTER'S LIFE OF GOLDSMITH: The Life and Times of Oliver Goldsmith. By JOHN FORSTER, Author of "The Life of Charles Dickens," etc. With a Biography of

FORSTER by the Editor, and Numerous Illustrations by MACLISE, STANFIELD, LEECH, and Others.

VOLUME XIII.

LANE'S MODERN EGYPTIANS: The Manners and Customs of the Modern Egyptians. By EDWARD WILLIAM LANE, Translator of "The Arabian Nights' Entertainments." With a Biographical Introduction by the Editor, Sixteen Full Page Plates, and Eighty Illustrations in the Text.

VOLUME XIV.

TORRENS' LIFE OF LORD MELBOURNE: Memoirs of William Lamb, Second Viscount Melbourne. By W.M. TORRENS. Revised by the Author. With an Introduction by the Editor, and Portrait of Melbourne.

VOLUME XV.

THACKERAY'S VANITY FAIR: A Novel Without a Hero. By WILLIAM MAKEPEACE THACKERAY. With a Biographical Introduction by the Editor, Portrait of the Author, and Thirteen Full-Page Illustrations.

WARD, LOCK & CO., LONDON, NEW YORK, AND MELBOURNE.  
*And at all Booksellers' and Railway Bookstalls.*

# **STANDARD WORKS BY GREAT WRITERS.**

THE WORLD LIBRARY

OF STANDARD BOOKS.

*A Series of Standard Works, including many of the acknowledged Masterpieces of Historical and Critical Literature, made more accessible than hitherto to the general reader by publication in a cheap form and at a moderate price.*

Crown 8vo, cloth gilt or buckram, label on back, uncut edges.

1 Hallam's Constitutional History of England. With Lord MACAULAY's Essay on the same. 970 pp., 5s. LIBRARY EDITION, demy 8vo, 7s. 6d.; half-calf, 12s.

2 Hallam's Europe during the Middle Ages. By the Author of "The Constitutional History of England." 720 pp., 3s. 6d. LIBRARY EDITION, 894 pp., demy 8vo, 6s.; half-calf, 10s. 6d.

3 Hallam's Church and State. By the Author of "The Constitutional History of England." 400 pp., 2s. 6d.

4 The Wealth of Nations (Inquiry into the Nature and Causes of). By ADAM SMITH. 832 pp., 3s. 6d.; half-calf, 7s. 6d. LIBRARY EDITION, demy 8vo. 6s.; half-calf, 10s. 6d.

6 M'Culloch's Works: Principles of Political Economy, Notes, &c., to "Smith's Wealth of Nations," &c. 700 pp., 3s. 6d.

7 Adam Smith's Essays: Moral Sentiments, Astronomy, Physics, &c. 476 pp., 3s. 6d.

8 Hume's History of England. In Three Vols. 2,240 pp., 10s. 6d. LIBRARY EDITION, demy 8vo, 18s.; half-calf, 31s. 6d.

9 Hume's Essays: Literary, Moral, and Political. 3s. 6d.

10 Montaigne's Essays. Complete. 684 pp., 3s. 6d.; half-calf, 7s. 6d. LIBRARY EDITION, 920 pp., 6s.; hf.-calf, 10s. 6d.

11 Warton's History of English Poetry, from the Eleventh to the Seventeenth Century. 1,032 pp., 6s.

12 The Court and Times of Queen Elizabeth. By LUCY AIKIN. 530 pp., 3s. 6d.

13 Edmund Burke's Choice Pieces. Containing the Speech on the Law of Libel, Reflections on Revolution in France, on the Sublime and Beautiful, Abridgment of English History. 3s. 6d.

14 Herbert's Autobiography and History of England under Henry VIII. By Lord HERBERT of Cherbury. 770 pp., 3s. 6d.

15 Walpole's Anecdotes of Painting in England. By HORACE WALPOLE. 538 pp., 3s. 6d.

17 Locke's Essays: On Toleration, Education, Value of Money. 700 pp., 3s. 6d.

18 Bolingbroke on the Study and Use of History. 3s. 6d.

19 Essays on Beauty and Taste: On Beauty, by FRANCIS, Lord JEFFREY; On Taste, by ARCHIBALD ALISON, LL.D. 324 pp., 3s. 6d.

20 Milton's Early Britain. With More's England under Richard III., and Bacon's England under Henry VIII., 430 pp., 3s. 6d.

21 Marvell's Poems and Satires. With Memoir of the Author. 3s. 6d.

- 22 Macaulay: Reviews, Essays, and Poems. 650 pp., 3s. 6d.; half-calf, 6s. LIBRARY EDITION, demy 8vo, 6s.
- 23 Sydney Smith's Essays, Social and Political. 3s. 6d.; LIBRARY EDITION, demy 8vo, 6s.
- 24 Lord Bacon. Proficiency and Advancement of Learning, Historical Sketches and Essays. 530 pp., 3s. 6d.; half-calf, 6s.; LIBRARY EDITION, demy 8vo, 6s.
- 25 Essays by Thomas de Quincey. Confessions of an Opium Eater, Letters to a Young Man, &c. 550 pp., 3s. 6d.; LIBRARY EDITION, demy 8vo, 6s.
- 26 Josephus (The Complete Works of). By WHISTON. Life and Marginal Notes. 810 pp., 3s. 6d. LIBRARY EDITION, 6s.
- 27 Paley's Works: "The Evidences of Christianity," "Horæ Paulinæ," and "Natural Theology." With Life and Notes. 3s. 6d.
- 28 Taylor's Holy Living and Dying. With Life, Introduction, and Notes. 2s. 6d.
- 29 Dean Milman's History of the Jews. 520 pp., 3s. 6d.
- 30 Macaulay: Reviews and Essays. Second Series. 2s. 6d.
- 31 Locke on the Human Understanding. 670 pp., 3s. 6d.; half-calf, 7s. 6d.
- 32 Plutarch's Lives. By LANGHORNE. 750 pp., 3s. 6d.; half-calf, 7s. 6d.
- 33 Addison's Essays from "Spectator." 600 pp., 3s. 6d.
- 34 Shakespere's Complete Works. With Life and Glossary. 1,000 pp., 3s. 6d. LIBRARY EDITION, 6s.
- 35 Cook's Boston Monday Lectures. 640 pp., 5s.
- 36 Todd's Complete Works. Sunday School Teacher, Lectures for Young Men, &c. 920 pp., 5s.

37 D'Aubigne's History of the Reformation. 870 pp., 3s.  
6d.; half-calf, 7s. 6d.

38 The Arabian Nights' Entertainments. 430 pp., 3s. 6d.

39 Heroes for the Faith: Scottish Worthies who suffered  
during the Reformation. 3s. 6d.

40 Martyrs for the Truth. Last Words and Dying  
Testimonies of the Scottish Worthies. Revised, with Notes.  
3s. 6d.

41 Cook's Boston Monday Lectures. 1st Series. 340 pp.,  
2s. 6d.

42 Cook's Boston Monday Lectures. 2nd Series. 300 pp.,  
2s. 6d.

43 Newman Smyth's Works. Containing "Old Faiths in  
New Light," "The Religious Feeling," and "Orthodox  
Theology." 3s. 6d.

44 Hallam's Literature of Europe during the 15th, 16th,  
and 17th Centuries. Complete. 900 pp., 5s.

45 Lamb's Essays of Elia and Eliana. 850 pp., 3s. 6d.

46 History of Rome. By D. ROSE. Edited by H.W.  
DULCKEN, Ph.D. 500 pp., 3s. 6d.

47 History of Greece. By D. ROSE. Edited by H.W.  
DULCKEN, Ph.D. 480 pp., 3s. 6d.

48 Palgrave's History of the Anglo-Saxons. 2s. 6d.

WARD, LOCK & CO., London, Melbourne, and New York.

\*\*\* END OF THE PROJECT GUTENBERG EBOOK A DEAD MAN'S  
DIARY \*\*\*

Updated editions will replace the previous one—the old editions will be renamed.

Creating the works from print editions not protected by U.S. copyright law means that no one owns a United States copyright in these works, so the Foundation (and you!) can copy and distribute it in the United States without permission and without paying copyright royalties. Special rules, set forth in the General Terms of Use part of this license, apply to copying and distributing Project Gutenberg™ electronic works to protect the PROJECT GUTENBERG™ concept and trademark. Project Gutenberg is a registered trademark, and may not be used if you charge for an eBook, except by following the terms of the trademark license, including paying royalties for use of the Project Gutenberg trademark. If you do not charge anything for copies of this eBook, complying with the trademark license is very easy. You may use this eBook for nearly any purpose such as creation of derivative works, reports, performances and research. Project Gutenberg eBooks may be modified and printed and given away—you may do practically ANYTHING in the United States with eBooks not protected by U.S. copyright law. Redistribution is subject to the trademark license, especially commercial redistribution.

START: FULL LICENSE

# THE FULL PROJECT GUTENBERG LICENSE

## **PLEASE READ THIS BEFORE YOU DISTRIBUTE OR USE THIS WORK**

To protect the Project Gutenberg™ mission of promoting the free distribution of electronic works, by using or distributing this work (or any other work associated in any way with the phrase “Project Gutenberg”), you agree to comply with all the terms of the Full Project Gutenberg™ License available with this file or online at [www.gutenberg.org/license](http://www.gutenberg.org/license).

### **Section 1. General Terms of Use and Redistributing Project Gutenberg™ electronic works**

1.A. By reading or using any part of this Project Gutenberg™ electronic work, you indicate that you have read, understand, agree to and accept all the terms of this license and intellectual property (trademark/copyright) agreement. If you do not agree to abide by all the terms of this agreement, you must cease using and return or destroy all copies of Project Gutenberg™ electronic works in your possession. If you paid a fee for obtaining a copy of or access to a Project Gutenberg™ electronic work and you do not agree to be bound by the terms of this agreement, you may obtain a refund from the person or entity to whom you paid the fee as set forth in paragraph 1.E.8.

1.B. “Project Gutenberg” is a registered trademark. It may only be used on or associated in any way with an electronic work by people who agree to be bound by the terms of this agreement. There are a few things that you can do with most Project Gutenberg™ electronic works even without complying with the full terms of this agreement. See paragraph 1.C below. There are a lot of things you can do with Project Gutenberg™ electronic works if you follow the terms of this agreement and help preserve free future access to Project Gutenberg™ electronic works. See paragraph 1.E below.

1.C. The Project Gutenberg Literary Archive Foundation (“the Foundation” or PGLAF), owns a compilation copyright in the collection of Project Gutenberg™ electronic works. Nearly all the individual works in the collection are in the public domain in the United States. If an individual work is unprotected by copyright law in the United States and you are located in the United States, we do not claim a right to prevent you from copying, distributing, performing, displaying or creating derivative works based on the work as long as all references to Project Gutenberg are removed. Of course, we hope that you will support the Project Gutenberg™ mission of promoting free access to electronic works by freely sharing Project Gutenberg™ works in compliance with the terms of this agreement for keeping the Project Gutenberg™ name associated with the work. You can easily comply with the terms of this agreement by keeping this work in the same format with its attached full Project Gutenberg™ License when you share it without charge with others.

1.D. The copyright laws of the place where you are located also govern what you can do with this work. Copyright laws in most countries are in a constant state of change. If you are outside the United States, check the laws of your country in addition to the terms of this agreement before downloading, copying, displaying, performing, distributing or creating derivative works based on this work or any other Project Gutenberg™ work. The Foundation makes no representations concerning the copyright status of any work in any country other than the United States.

1.E. Unless you have removed all references to Project Gutenberg:

1.E.1. The following sentence, with active links to, or other immediate access to, the full Project Gutenberg™ License must appear prominently whenever any copy of a Project Gutenberg™ work (any work on which the phrase “Project Gutenberg” appears, or with which the phrase “Project Gutenberg” is associated) is accessed, displayed, performed, viewed, copied or distributed:

This eBook is for the use of anyone anywhere in the United States and most other parts of the world at no cost and with almost no restrictions whatsoever. You may copy it, give it away or re-use it under the terms of the Project Gutenberg License included with this eBook or online at [www.gutenberg.org](http://www.gutenberg.org). If you are not located in the United States, you will have to check the laws of the country where you are located before using this eBook.

1.E.2. If an individual Project Gutenberg™ electronic work is derived from texts not protected by U.S. copyright law (does not contain a notice indicating that it is posted with permission of the copyright holder), the work can be copied and distributed to anyone in the United States without paying any fees or charges. If you are redistributing or providing access to a work with the phrase “Project Gutenberg” associated with or appearing on the work, you must comply either with the requirements of paragraphs 1.E.1 through 1.E.7 or obtain permission for the use of the work and the Project Gutenberg™ trademark as set forth in paragraphs 1.E.8 or 1.E.9.

1.E.3. If an individual Project Gutenberg™ electronic work is posted with the permission of the copyright holder, your use and distribution must comply with both paragraphs 1.E.1 through 1.E.7 and any additional terms imposed by the copyright holder. Additional terms will be linked to the Project Gutenberg™ License for all works posted with the permission of the copyright holder found at the beginning of this work.

1.E.4. Do not unlink or detach or remove the full Project Gutenberg™ License terms from this work, or any files containing a part of this work or any other work associated with Project Gutenberg™.

1.E.5. Do not copy, display, perform, distribute or redistribute this electronic work, or any part of this electronic work, without prominently displaying the sentence set forth in paragraph 1.E.1 with active links or immediate access to the full terms of the Project Gutenberg™ License.

1.E.6. You may convert to and distribute this work in any binary, compressed, marked up, nonproprietary or proprietary form, including any word processing or hypertext form. However, if you provide access to or distribute copies of a Project Gutenberg™ work in a format other than "Plain Vanilla ASCII" or other format used in the official version posted on the official Project Gutenberg™ website ([www.gutenberg.org](http://www.gutenberg.org)), you must, at no additional cost, fee or expense to the user, provide a copy, a means of exporting a copy, or a means of obtaining a copy upon request, of the work in its original "Plain Vanilla ASCII" or other form. Any alternate format must include the full Project Gutenberg™ License as specified in paragraph 1.E.1.

1.E.7. Do not charge a fee for access to, viewing, displaying, performing, copying or distributing any Project Gutenberg™ works unless you comply with paragraph 1.E.8 or 1.E.9.

1.E.8. You may charge a reasonable fee for copies of or providing access to or distributing Project Gutenberg™ electronic works provided that:

- You pay a royalty fee of 20% of the gross profits you derive from the use of Project Gutenberg™ works calculated using the method you already use to calculate your applicable taxes. The fee is owed to the owner of the Project Gutenberg™ trademark, but he has agreed to donate royalties under this paragraph to the Project Gutenberg Literary Archive Foundation. Royalty payments must be paid within 60 days following each date on which you prepare (or are legally required to prepare) your periodic tax returns. Royalty payments should be clearly marked as such and sent to the Project Gutenberg Literary Archive Foundation at the address specified in Section 4, "Information about donations to the Project Gutenberg Literary Archive Foundation."
- You provide a full refund of any money paid by a user who notifies you in writing (or by e-mail) within 30 days of receipt that s/he does not agree to the terms of the full Project Gutenberg™ License. You must require such a user to return or destroy all

copies of the works possessed in a physical medium and discontinue all use of and all access to other copies of Project Gutenberg™ works.

- You provide, in accordance with paragraph 1.F.3, a full refund of any money paid for a work or a replacement copy, if a defect in the electronic work is discovered and reported to you within 90 days of receipt of the work.
- You comply with all other terms of this agreement for free distribution of Project Gutenberg™ works.

1.E.9. If you wish to charge a fee or distribute a Project Gutenberg™ electronic work or group of works on different terms than are set forth in this agreement, you must obtain permission in writing from the Project Gutenberg Literary Archive Foundation, the manager of the Project Gutenberg™ trademark. Contact the Foundation as set forth in Section 3 below.

## 1.F.

1.F.1. Project Gutenberg volunteers and employees expend considerable effort to identify, do copyright research on, transcribe and proofread works not protected by U.S. copyright law in creating the Project Gutenberg™ collection. Despite these efforts, Project Gutenberg™ electronic works, and the medium on which they may be stored, may contain “Defects,” such as, but not limited to, incomplete, inaccurate or corrupt data, transcription errors, a copyright or other intellectual property infringement, a defective or damaged disk or other medium, a computer virus, or computer codes that damage or cannot be read by your equipment.

1.F.2. LIMITED WARRANTY, DISCLAIMER OF DAMAGES - Except for the “Right of Replacement or Refund” described in paragraph 1.F.3, the Project Gutenberg Literary Archive Foundation, the owner of the Project Gutenberg™ trademark, and any other party distributing a Project Gutenberg™ electronic work under this agreement, disclaim all liability to you for damages, costs and

expenses, including legal fees. YOU AGREE THAT YOU HAVE NO REMEDIES FOR NEGLIGENCE, STRICT LIABILITY, BREACH OF WARRANTY OR BREACH OF CONTRACT EXCEPT THOSE PROVIDED IN PARAGRAPH 1.F.3. YOU AGREE THAT THE FOUNDATION, THE TRADEMARK OWNER, AND ANY DISTRIBUTOR UNDER THIS AGREEMENT WILL NOT BE LIABLE TO YOU FOR ACTUAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR INCIDENTAL DAMAGES EVEN IF YOU GIVE NOTICE OF THE POSSIBILITY OF SUCH DAMAGE.

**1.F.3. LIMITED RIGHT OF REPLACEMENT OR REFUND** - If you discover a defect in this electronic work within 90 days of receiving it, you can receive a refund of the money (if any) you paid for it by sending a written explanation to the person you received the work from. If you received the work on a physical medium, you must return the medium with your written explanation. The person or entity that provided you with the defective work may elect to provide a replacement copy in lieu of a refund. If you received the work electronically, the person or entity providing it to you may choose to give you a second opportunity to receive the work electronically in lieu of a refund. If the second copy is also defective, you may demand a refund in writing without further opportunities to fix the problem.

**1.F.4.** Except for the limited right of replacement or refund set forth in paragraph 1.F.3, this work is provided to you 'AS-IS', WITH NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE.

**1.F.5.** Some states do not allow disclaimers of certain implied warranties or the exclusion or limitation of certain types of damages. If any disclaimer or limitation set forth in this agreement violates the law of the state applicable to this agreement, the agreement shall be interpreted to make the maximum disclaimer or limitation permitted by the applicable state law. The invalidity or unenforceability of any provision of this agreement shall not void the remaining provisions.

1.F.6. INDEMNITY - You agree to indemnify and hold the Foundation, the trademark owner, any agent or employee of the Foundation, anyone providing copies of Project Gutenberg™ electronic works in accordance with this agreement, and any volunteers associated with the production, promotion and distribution of Project Gutenberg™ electronic works, harmless from all liability, costs and expenses, including legal fees, that arise directly or indirectly from any of the following which you do or cause to occur: (a) distribution of this or any Project Gutenberg™ work, (b) alteration, modification, or additions or deletions to any Project Gutenberg™ work, and (c) any Defect you cause.

## **Section 2. Information about the Mission of Project Gutenberg™**

Project Gutenberg™ is synonymous with the free distribution of electronic works in formats readable by the widest variety of computers including obsolete, old, middle-aged and new computers. It exists because of the efforts of hundreds of volunteers and donations from people in all walks of life.

Volunteers and financial support to provide volunteers with the assistance they need are critical to reaching Project Gutenberg™'s goals and ensuring that the Project Gutenberg™ collection will remain freely available for generations to come. In 2001, the Project Gutenberg Literary Archive Foundation was created to provide a secure and permanent future for Project Gutenberg™ and future generations. To learn more about the Project Gutenberg Literary Archive Foundation and how your efforts and donations can help, see Sections 3 and 4 and the Foundation information page at [www.gutenberg.org](http://www.gutenberg.org).

## **Section 3. Information about the Project Gutenberg Literary Archive Foundation**

The Project Gutenberg Literary Archive Foundation is a non-profit 501(c)(3) educational corporation organized under the laws of the state of Mississippi and granted tax exempt status by the Internal Revenue Service. The Foundation's EIN or federal tax identification number is 64-6221541. Contributions to the Project Gutenberg Literary Archive Foundation are tax deductible to the full extent permitted by U.S. federal laws and your state's laws.

The Foundation's business office is located at 809 North 1500 West, Salt Lake City, UT 84116, (801) 596-1887. Email contact links and up to date contact information can be found at the Foundation's website and official page at [www.gutenberg.org/contact](http://www.gutenberg.org/contact)

## **Section 4. Information about Donations to the Project Gutenberg Literary Archive Foundation**

Project Gutenberg™ depends upon and cannot survive without widespread public support and donations to carry out its mission of increasing the number of public domain and licensed works that can be freely distributed in machine-readable form accessible by the widest array of equipment including outdated equipment. Many small donations (\$1 to \$5,000) are particularly important to maintaining tax exempt status with the IRS.

The Foundation is committed to complying with the laws regulating charities and charitable donations in all 50 states of the United States. Compliance requirements are not uniform and it takes a considerable effort, much paperwork and many fees to meet and keep up with these requirements. We do not solicit donations in locations where we have not received written confirmation of compliance. To SEND DONATIONS or determine the status of compliance for any particular state visit [www.gutenberg.org/donate](http://www.gutenberg.org/donate).

While we cannot and do not solicit contributions from states where we have not met the solicitation requirements, we know of no

prohibition against accepting unsolicited donations from donors in such states who approach us with offers to donate.

International donations are gratefully accepted, but we cannot make any statements concerning tax treatment of donations received from outside the United States. U.S. laws alone swamp our small staff.

Please check the Project Gutenberg web pages for current donation methods and addresses. Donations are accepted in a number of other ways including checks, online payments and credit card donations. To donate, please visit: [www.gutenberg.org/donate](http://www.gutenberg.org/donate).

## **Section 5. General Information About Project Gutenberg™ electronic works**

Professor Michael S. Hart was the originator of the Project Gutenberg™ concept of a library of electronic works that could be freely shared with anyone. For forty years, he produced and distributed Project Gutenberg™ eBooks with only a loose network of volunteer support.

Project Gutenberg™ eBooks are often created from several printed editions, all of which are confirmed as not protected by copyright in the U.S. unless a copyright notice is included. Thus, we do not necessarily keep eBooks in compliance with any particular paper edition.

Most people start at our website which has the main PG search facility: [www.gutenberg.org](http://www.gutenberg.org).

This website includes information about Project Gutenberg™, including how to make donations to the Project Gutenberg Literary Archive Foundation, how to help produce our new eBooks, and how to subscribe to our email newsletter to hear about new eBooks.

Welcome to our website – the ideal destination for book lovers and knowledge seekers. With a mission to inspire endlessly, we offer a vast collection of books, ranging from classic literary works to specialized publications, self-development books, and children's literature. Each book is a new journey of discovery, expanding knowledge and enriching the soul of the reader.

Our website is not just a platform for buying books, but a bridge connecting readers to the timeless values of culture and wisdom. With an elegant, user-friendly interface and an intelligent search system, we are committed to providing a quick and convenient shopping experience. Additionally, our special promotions and home delivery services ensure that you save time and fully enjoy the joy of reading.

Let us accompany you on the journey of exploring knowledge and personal growth!