

J. L. C. MARTIN-DOYLE
MARTIN H. KEMP

A SYNOPSIS OF
Ophthalmology

FIFTH EDITION



A synopsis of OPHTHALMOLOGY

J. L. C. MARTIN-DOYLE

MRCS (Eng) LRCP (Lond) DO (Oxon)

*Formerly Senior Surgeon, Worcester Eye Hospital,
Senior Ophthalmic Consultant to Worcester Royal
Infirmary and Rorkswood Hospital, etc.*

and

MARTIN H. KEMP

MB (Dunelm) FRCS (Eng) DO (Eng)

Senior Surgeon, Worcester Eye Hospital

Fifth edition



BRISTOL ·

JOHN WRIGHT & SONS LTD

© John Wright & Sons Ltd. 1975

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of John Wright & Sons Ltd.

First edition: 1951

Second edition: 1961

Third edition: 1967

Fourth edition: 1971

Fifth edition: 1975

ISBN 0 7236 0411 8

Printed in Great Britain by
JOHN WRIGHT AND SONS LIMITED
at The Stonebridge Press, Bristol

PREFACE TO THE FIFTH EDITION

IN preparing this edition I would like first of all to welcome my colleague Mr Martin Kemp of the Worcester Eye Hospital as joint author. Every ophthalmic surgeon knows the value of consultations with colleagues from time to time especially when confronted with difficult problems. Exactly the same is true when writing a book. When two minds are involved, various viewpoints, problems and theories are looked at from two angles and this is always helpful. I am grateful to him for his co-operation.

We have jointly endeavoured to bring this volume up to date. The chapter on ophthalmic operations has been rewritten and that on recent advances has been enlarged to include such things as operating microscopes and electronic helps for the blind which are being developed but are not yet on the market. Sections on multifocal and tinted lenses have been added. TRIC agent conjunctivitis has been discussed and there is a description of eye damage in the all-too-prevalent 'battered baby' syndrome. A chapter on the personal and social aspects of blindness and partial sight has been added in response to a suggestion by one of the reviewers to whom I am grateful for the idea. Both Mr Kemp and I think this will be fulfilling a real need and neither of us can remember having seen a reference to this in any textbook. Particular attention has been paid to the sections on Treatment and Pathology. The authors gladly acknowledge their indebtedness to Dr C. H. Greer's book *Ocular Pathology* (Blackwell), 2nd ed., 1972. His opinion has been quoted in a few places and Dr Greer's name appears in brackets after quoting his views.

Both authors would like to thank Mrs Beardsell, the orthoptist at the Worcester Eye Hospital, for her kind help in revising the chapter on orthoptics. Lastly, I again thank Messrs John Wright & Sons Ltd, for help and advice concerning various aspects of this edition. No author could have had happier relations with their publishers than I have had with Messrs John Wright over these five editions.

C. MARTIN-DOYLE

1975

PREFACE TO THE FIRST EDITION

IN writing this synopsis of ophthalmology it has been my somewhat optimistic aim to give a comprehensive view of the whole of ophthalmology in one small volume. I have endeavoured to include the rare as well as the common conditions and to give as much attention to pathology and treatment as space permits. It is not for a moment suggested that this work should replace the larger and well-illustrated textbooks, but I hope that it will meet the needs of the following important sections of the medical community:

1. The senior medical student who will appreciate an inexpensive and *multum in parvo* volume to help him when first attending the ophthalmic outpatient department.

2. The busy general practitioner, who lacks the time (and possibly the inclination!) to wade through a larger book, should find this a handy volume for quick reference.

3. The postgraduate student or Ophthalmic House Surgeon working for a higher diploma in ophthalmology, may be glad of a condensed work of this kind when revising for examinations. I have therefore endeavoured to make the work as up to date as possible and to include a number of recently described diseases which have been discussed in ophthalmic periodicals but which have reached few textbooks as yet.

It would be difficult to recall all the textbooks to which I have referred in the preparation of this volume, but I would like to take this opportunity of acknowledging my special indebtedness to the following:

Parsons' *Diseases of the Eye* (the newest edition is by Duke-Elder). This small but complete work has been my constant companion through my professional life and has been of particular help to me in preparing this synopsis.

Duke-Elder's *Textbook of Ophthalmology*, Vols. 1-4. I have made frequent reference to this monumental and exhaustive work and I gladly acknowledge my indebtedness to it.

Wolff's *Pathology of the Eye*. This book has been my chief source of reference on pathological matters.

Without these three textbooks my work would have been much harder.

In conclusion I should like to thank the following individuals for invaluable help: Mr T. G. Shields, the Librarian of the BMA Library, has always upon request posted me up-to-date literature published in all parts of the world dealing with more abstruse and recently described conditions. It is owing to his help that I have been able to include a

description of a number of conditions that have not yet appeared in textbooks. My friend Mr C. G. Sinclair, FRCS, of Worcester and the Birmingham Eye Hospital, has kindly read through the proofs and given me constructive and helpful criticism. Miss J. M. Richardson, Secretary of the Worcester Eye Hospital, has in her spare time taken down the whole of this book in shorthand and typed it out with the maximum of efficiency and the minimum of mistakes. Last, but by no means least, it gives me real pleasure to thank the publishers, Messrs John Wright & Sons, for their unfailing courtesy, help and advice in the preparation of this book, and I am especially indebted to their Mr Owens, who has kindly gone through the whole of the typescript with me and advised on typographical details. I am also grateful to the publishers for allowing me to include a number of quotations which, because they are so grossly wrested from their context, add a touch of humour, thus relieving the deadly tedium of an otherwise purely factual book.

C. MARTIN-DOYLE

CONTENTS

Preface to the fifth edition	<i>page</i> v
Preface to the first edition	vii
I The routine examination of an ophthalmic patient	1
II Diseases of the conjunctiva	8
III Diseases of the cornea	25
IV Drugs affecting intra-ocular muscles	43
V Diseases of the uveal tract	45
VI Diseases of the retina	67
VII Diseases of the sclera	93
VIII Diseases of the optic nerve	96
IX Diseases of the vitreous	104
X Diseases of the lens	110
XI Glaucoma	121
XII Diseases of the orbit	132
XIII Diseases of the eyelids	141
XIV Diseases of the lacrimal apparatus	153
XV Intra-ocular neoplasms	159
XVI Optical anomalies of the eye	164
XVII Anomalies of ocular movements	174
XVIII Subjective visual disturbances	188
XIX Ocular signs of general disease	196
XX Ocular side-effects of systemic medication	215
XXI Contact lenses	218
XXII The eyes in malnutrition	221
XXIII Ophthalmic operations	225
XXIV Sympathetic ophthalmia	234
XXV Chemotherapy and antibiotics in eye diseases	237
XXVI Corticosteroids in ophthalmology	244
XXVII Allergy in ophthalmology	248
XXVIII Slit-lamp microscopy	250
XXIX Recent advances in ophthalmic practice	255
XXX The social aspects of blindness and partial sight	261
Index	265

THE ROUTINE EXAMINATION OF AN OPHTHALMIC PATIENT

'My method in such cases,' SIR A. CONAN DOYLE, *The Musgrave Ritual*

In a work that aims at giving a bird's eye view of the whole of ophthalmology in a small volume, space prevents detailed description of the theory and technique of ophthalmoscopy, retinoscopy, etc. The author has, therefore, decided to assume some knowledge on the part of the student of the elementary use of such instruments and to concentrate instead on the various practical points of the routine examination which are frequently forgotten or neglected.

Every good physician has a systematic routine for the examination of every patient, and it is only by carrying this out in the same order that errors and omissions are avoided. The ophthalmologist should be just as precise and businesslike and form his own routine procedure. There is, however, one danger of a routine that must be avoided at all costs: the danger of regarding the patient as a 'case'. He is not. He is a human being, and often a very scared and timid one, and should always be treated accordingly. Kindness and politeness cost nothing and are rewarded by a responsiveness and co-operation that is rarely given to the impatient brow-beating type of surgeon. The patient should never be given the impression that he is regarded as a case. Routine is necessary, but it should not be so inflexible that the patient is aware of it.

Order of Examination: The authors adopt the following order of examination as a routine in almost every case and recognize it as in their experience the best. They in no sense wish to condemn the methods of others who follow a different practice. The important thing for every prospective ophthalmic surgeon to do is to form his own routine order and to stick to it.

History.

Visual acuity.

External examination of:

Lids;

Conjunctiva;

Cornea;

Sclera;

Pupil;

Iris;

Anterior chamber;

Lacrimal apparatus.

2 A SYNOPSIS OF OPHTHALMOLOGY

Refraction.

Lens and media.

Fundus.

Ocular movements.

Muscle balance tests.

Perimetry

Slit-lamp examination

Gonioscopy

Tonometry

Syringeing of lacrimal passages

} where indicated.

Other examinations not directly ophthalmic, e.g. urine, blood pressure, etc.

History: The ophthalmologist will soon find that a careful record of the patient's history is abundantly worth while. In every case the age and occupation should be noted, for very often the power or type of glasses to be ordered will depend upon this. After ascertaining these elementary factors the question: 'What are you complaining of?' should be put to the patient and the answer noted. Care should be taken over these notes. It is not sufficient to write the bald word 'headaches'. Their location, severity, frequency, relationship to close work, whether associated with vomiting or not, should be noted. Lengthy notes are unnecessary, but something trite such as 'pains at the back of the eye after close work' or 'severe right-sided headache with dazzling lights and ending with a bilious attack' is always helpful. Furthermore, on subsequent consultations it is a good plan to inquire about previous symptoms and, rightly or wrongly, it gives the oculist the reputation of having a good memory and therefore of 'taking an interest in my case'. Notes should be taken also of the general health, illnesses, operations and indeed anything else that seems important to the patient and might have a bearing on the case. The oculist who is curt, abrupt and too busy to listen to the patient's history will be a bad oculist and had better give up ophthalmology and try his hand at pathology. He may be quite good at post-mortem examinations, for his patients will be dead!

FAMILY HISTORY: This can be of great importance, as such common complaints as glaucoma, senile cataract, astigmatism, amblyopia, etc. often 'run in families'.

Visual Acuity: Each eye must be taken separately as an invariable routine in every case. This is of fundamental importance and is often most important of all in cases where it seems most superfluous. A record of this is of utmost value in subsequent consultations. More than once the author has come across patients who make claims for compensation for very trivial injuries such as corneal foreign bodies, etc., and who have grossly exaggerated their symptoms. A record of the visual acuity at the time the injury was treated is of obvious value in such cases.

In Britain, the visual acuity is always tested by Snellen's types (*Fig. 1*), which are based upon the assumption that the minimum visual angle is 1 minute. Each letter is shaped so that it subtends 5 minutes of arc at a given distance, while the width of each constituent



Fig. 1.—Snellen's test types. (By courtesy of Messrs. Hamblin Ltd.)

arm of the letter subtends 1 minute. This type is placed 6 m from the patient's eyes (or 3 m if a reverse type is used and it is viewed in a mirror).

The normal patient should be able to read the seventh line at a distance of 6 m, the sixth line at 9 m, the fifth at 12, the fourth at 18, the third at 24, the second at 36 and the top at 60 m, because from each of these distances the respective lines subtend 5 minutes. Normal vision is expressed by the fraction 6/6; if a patient can only read the sixth line his vision is 6/9, and so on, 6/12, 6/18, 6/24, 6/36

and if he can read the top only it is 6/60. If the patient can only read some letters of a certain line this should be recorded, e.g. 6/18 partly or 6/12-2. If a patient cannot see the top letter he should be asked to count fingers at 1 m, and if he cannot do this he should be tested as to his ability to see a hand moving at the same distance. If the vision is too poor even for this, tests should be made as to whether he can perceive light. These last three measures of visual acuity are recorded as CF, HM and PL, respectively. Time will be saved in vision taking if a 1-cm strip of red cellophane or *passe-partout* is stuck on the test type to underline the 6/12 line (A H X N T) and the patient is asked to read below the red line. If the visual acuity is not good enough for this, the patient should be asked to start at the top and read downwards.

In America and some Continental countries, vision is recorded in terms of the 20-ft table. The following is the conversion table:

<i>Snellen's 6-metre Table</i>	<i>20-foot Table</i>
6/6	20/20
6/9	20/30
6/12	20/40
6/18	20/70
6/24	20/80
6/36	20/120
6/60	20/200

External Examinations: All examinations of the external eye should be made in the first instance without a magnifier but with a good light. Two methods of illumination are excellent:

1. OBLIQUE ILLUMINATION WITH BRIGHT DAYLIGHT focused on the eye by means of a high-powered convex condensing lens.
2. OBLIQUE EXAMINATION WITH FOCUSING HAND-INSPECTION LAMP.

After examination without magnification, the use of a binocular loupe may be very helpful. The monocular loupe has been somewhat outdated by the slit-lamp, which gives a much greater magnification and the additional advantage of stereoscopic vision. Nevertheless, the monocular loupe still plays a useful part in that it gives a fairly high magnification without elaborate apparatus and in a time-saving manner.

LIDS: These should be examined for blepharitis, ectropion, entropion, trichiasis, meibomian cysts and other abnormalities.

CONJUNCTIVA: Both bulbar and palpebral conjunctivae should then be examined and note should be taken as to whether the former is injected or oedematous and the latter red or velvety. In such cases the upper lid should be everted, for quite often a case of chronic conjunctivitis that fails to respond to treatment is due to

a foreign body under the lid. The tarsal surface should be examined for concretions, cysts, etc.

SCLERA: This should be examined for nodules of episcleritis, blue coloration, areas of pigmentation, etc. Circumcorneal injection ('ciliary flush') may be seen in some cases of deep-seated inflammation. Occasionally staphylomata—the herniation of uveal tissue through thinned-out sclera—is observed in cases of grossly increased intra-ocular pressure.

CORNEA: First note whether this structure is large or small. If small and a shallow anterior chamber is present, glaucoma would have to be ruled out. Then examine with a focusing hand-lamp. A search should be made for any of the following conditions:

- Oedema;
- Pannus;
- Keratic precipitates (KP);
- Ulcers;
- Scars or nebulæ;
- Tracks made by foreign body;
- Dystrophy;
- Loss of sensation, etc.

If conical cornea is suspected, examination should be made in profile from the patient's side while he is looking straight ahead. If any corneal abnormality is found, no examination is complete without the slit-lamp.

PUPIL: The state of the pupils should be examined carefully and note made whether they are regular, equal and react to light and accommodation. If irregular, cyclopentolate 1 per cent should be instilled and the patient seen a little while later to ascertain whether the irregularity is due to posterior synechiae or to congenital abnormalities. If doubt exists as to whether it reacts or not, the matter can be decided with the slit-lamp. In every case the consensual reaction should be noted.

IRIS: The iris and ciliary region should then be examined for:

Colour: Whether both irides are the same (*see* HETEROCHROMIC IRIDOCYCLITIS, p. 58) and particularly whether either appear 'muddy'.

- Ciliary flush (circumcorneal injection);
- Synechiae;
- Atrophy;
- Nodules;
- New vessels;
- Iridodonesis.

If any of the above abnormalities are found, examination with the slit-lamp is imperative. The delicate structure of the iris is the easiest part of the eye for slit-lamp examination. The beginner is

much encouraged and really feels he is 'seeing something' at this examination. It is well worth practising this before going on to the anterior chamber and the lens which are much more difficult examinations.

ANTERIOR CHAMBER: Should be noted particularly with regard to its depth. If very shallow it is suggestive of closed angle glaucoma.

In certain cases of chronic iridocyclitis it is deeper than normal.

LACRIMAL APPARATUS: If epiphora is present, either the punctum is not in apposition or there is some obstruction to the drainage. A careful examination will reveal whether the former is the case. Pressure with the forefinger should be placed upon the sac to test for regurgitation and later in the examination the passages may be syringed through the lower punctum in order to test for patency or in an endeavour to relieve an obstruction.

Note: The *tension* can be conveniently estimated digitally at this point, but if an accurate tonometric investigation is required it is best left until later.

Refraction: A careful written note should be made of the findings. It is impossible to attempt any description of the detailed technique of this examination here. The student is referred to textbooks on the subject, but is at the same time reminded that an ounce of practice is worth a pound of theory. Nothing can take the place of patient practice in the outpatient department. Subjective tests are then made based upon the refraction findings and the appropriate prescription is ordered.

Opinions differ as to whether refraction should be estimated under a mydriatic or with an undilated pupil. All, however, are agreed that in the case of children a mydriatic is highly advisable, if not absolutely necessary. With regard to adults its use has one great drawback: for accurate subjective results a post-mydriatic test is necessary, and this necessitates a second visit and often a second day off work. The following routine is, therefore, recommended with regard to mydriatics:

Children under 5	Atropine
Young people, 5-12	Cyclopentolate
Over 12	Undilated

It must be remembered that the lighter the colour of the iris, the quicker the mydriatic works. In children with deeply pigmented irides, it may be necessary to instil further mydriatic drops at 4-hourly intervals until full dilatation is obtained.

Lens and Media: At this stage the ophthalmoscope comes into its own. Always begin the examination with the +12 lens up; this brings into focus the cornea and anterior segment of the eye and will reveal lens opacities at a glance. Furthermore, begin the examination at a

distance of about 30 cm from the eye and gradually bring the ophthalmoscope nearer (distant direct ophthalmoscopy). This is a most helpful clinical technique and is neglected by many oculists. The lens system should be rotated until 'O' is reached. This method will reveal any abnormality anywhere between the cornea and the retina. In the case of very short-sighted persons ophthalmoscopic examination is best done by looking through the patient's own glasses. Slit-lamp examination of the lens is helpful but much practice is required to become efficient. A mydriatic is essential for this.

Fundus: Here again, examination should begin with the +12 lens up and working downwards. Make this an invariable technique, not merely for the purpose of impressing examiners, but because, if it is not done, sooner or later a shallow detachment of the retina is certain to be missed. First, examine the disc region for cupping, papilloedema, etc., then follow up one or two of the vessels until an arteriovenous crossing is found. This should be examined for the pinching of arteriosclerosis. Careful attention is paid to the arteries for irregular calibre, tortuosity, sheathing, etc. At the same time the rest of the fundus should be searched for haemorrhages, exudates, choroiditis or other abnormalities. The patient should be told successively to look up, down, to the right and to the left, and various parts of the fundus explored. Lastly, the macular area requires a particularly careful examination. For this the patient should be told to look directly into the light. A mydriatic should always be used if a thorough search of the fundus is indicated, and for an adequate examination of the macula it is absolutely indispensable.

Ocular Movements, including the cover test, can now be investigated and notes should be taken of any nystagmus, defective movement, squint, etc.

Muscle-balance Tests: Maddox rod and wing tests should be carried out if there is any indication. If squint or heterophoria is present and circumstances permit, it is always wise to obtain an orthoptic report.

Special Examinations: At the close of these routine examinations special instrumental examinations can be undertaken if necessary. These include *perimetry*, *tonometry*, *slit-lamp examination* and *gonioscopy*, and each has been touched upon under their respective headings. Occasionally *tonography*, *ultrasonography* and *fundus photography* are required. These more elaborate examinations are best left until this stage, when all the simple routine has been completed.

General Examinations: Finally, if desired, certain general investigations can be undertaken which are not directly ophthalmic but which are often necessary as the result of examination of the eye. These include blood pressure, urine tests, blood tests, etc. It has been the practice of the author, if these investigations are indicated, to refer the patients back to their own general practitioner or physician, who is better able to carry out these and any other necessary examinations.

DISEASES OF THE CONJUNCTIVA

'Holding his pocket handkerchief before his streaming eyes.' LEWIS CARROLL,
The Walrus and the Carpenter

THE ANATOMY AND PHYSIOLOGY OF THE NORMAL CONJUNCTIVA

THE conjunctiva is divided into the bulbar and tarsal portions. The bulbar portion covers the anterior third of the eyeball, and is loosely attached to the sclerotic except at the limbus, where it merges with the corneal epithelium. Advantage is taken of this looseness by the surgeon in covering wounds. Medially it runs beneath the semilunar fold (the remains of the nictitating membrane) and at the fornices it is especially loose—hence permitting wide range of movements. The tarsal portion is very firmly adherent. The blood supply comes from the vessels to the skin of the eyelids. The nerve supply of the tarsal portion is from the nerves of the lid, that of the bulbar portion is from the ciliary nerves. The lymph drainage goes to the pre-auricular gland and to a gland in the submaxillary region near the lower border of the mandible. The function of the conjunctiva is twofold: (1) to moisten the lids; and (2) to assist the lids in the cleansing of the cornea.

Bacteriology: The conjunctiva is hardly ever sterile, but most organisms present are not pathological, neither do they multiply very freely owing to the antibacterial action of the lysozyme and the relatively low temperature and the poor blood supply. The following conditions may cause bacteria to multiply, and previously innocuous ones to become pathogenic: (1) Trauma of conjunctiva; (2) Presence of a foreign body; (3) Wearing of a celluloid eye-shield.

Pneumococci, gonococci and *Ps. pyocyanea* are the most dangerous organisms in ocular infections. After these come the *Staph. aureus*. *Esch. coli* and *Proteus* infections occur less commonly.

The *Corynebacterium xerosis* closely resembles the *C. diphtheriae* and is a frequent inhabitant of the conjunctival sac, as also is *H. influenzae*. Virus infections occur frequently, especially the herpes virus and adenoviruses. It has been shown by Ainley and Brenda Smith at the Oxford Eye Hospital that fungal infections of the human eye occur more frequently than is supposed, and work by Buschmann and others in Humboldt University has been successful in treating these with amphotericin B.

ACUTE CONJUNCTIVITIS

There are seven distinct clinical variations of acute conjunctivitis: (1) Simple acute conjunctivitis ('pink eye'); (2) Mucopurulent conjunctivitis; (3) Purulent conjunctivitis; (4) Ophthalmia neonatorum; (5) Membranous conjunctivitis; (6) Phlyctenular conjunctivitis; (7) Photophthalmia.

1. Simple Acute Conjunctivitis: The affected eye becomes red and the conjunctiva grossly hyperaemic. There is profuse lacrimation and a burning or pricking feeling in the eye. The patient complains of a sensation of 'something in it'. Acute pain is rare and, if present, iritis should be suspected. In severe cases there may be marked oedema. Every care should be taken to examine the affected eye for a foreign body either in the cornea or under the upper lid. After a course of 3-4 days the condition usually subsides, and about this time similar symptoms may commence in the unaffected eye. If the condition is prolonged and remains in one eye only, especially if it affects mainly the lower fornix, malingering may be suspected.

PATHOLOGY: The condition is very contagious and is inclined to cause epidemics in schools and institutions. A variety of organisms cause these diseases, including *H. influenzae*, diplococci, staphylococci and *H. aegyptius* (or Koch-Weeks bacillus). The conjunctival vessels become enlarged and wavy, transudation or serum occurs, and there is cellular infiltration of the subepithelial tissues.

TREATMENT: The ideal method would be to isolate the causative organism, and, if this were found to be sensitive to penicillin, chemotherapy or one of the broad-spectrum antibiotics, to institute the appropriate remedy. In practice, however, this involves time and expense, and often by the time the result is known the condition has improved, since simple conjunctivitis tends to correct itself with or without treatment.

The best treatment is sulphacetamide or chloramphenicol drops four times a day. Eye lotions and irrigations are not indicated since they reduce the lysozyme contents of the conjunctival sac. If there is gross hyperaemia or chemosis, adrenaline drops 1-1000 can be instilled. If photophobia is present, dark glasses are indicated.

2. Mucopurulent Conjunctivitis: This differs from simple conjunctivitis only in degree, and is often preceded by it. It is especially common in cases of acute fevers such as measles, scarlet fever, etc. The signs and symptoms are identical with those of acute conjunctivitis, but there is mucopurulent discharge. Pathology is the same as that of acute simple conjunctivitis. When pneumococci are present, there tends to be more exudation and chemosis than with other organisms.

TREATMENT: Saline irrigations may be used if there is much purulent discharge. Gutt. chloramphenicol 0.5 per cent or Ung. Chloramphenicol 1 per cent may be instilled. Some surgeons have been

using antibiotic *ointments* on the supposed grounds that drops become immediately diluted with tears and hence lose their effective concentration. This view has been negated by work done by F. Ridley, whose experiments do not suggest that ointment is more effective than drops. The eye should *not* be bandaged. Dark glasses or a loose fitting shade may be worn. Great care must be taken to wash after handling, and special precautions must be taken with towels, handkerchiefs, etc., otherwise the disease will spread.

- 3. Purulent Conjunctivitis:** This is a much more serious condition and occurs usually in babies (ophthalmia neonatorum, *see* (4) *below*) or in adults. It is frequently, but by no means invariably, due to the gonococcus, and in these cases the eyes are often infected direct from the urethral discharges. When the conjunctivitis is frankly purulent, there is a real chance of corneal involvement. The epithelium becomes devitalized and ulceration, with all its attendant risks, is the result. The condition is acutely painful and the patient is often very ill, with a raised temperature and enlarged pre-auricular glands. In cases of corneal involvement there is a risk of iritis or iridocyclitis. In the worst cases gonococcal arthritis or even septicaemia may supervene.

TREATMENT: The utmost care must be taken to prevent the spread of infection to the other eye, and likewise the greatest care exercised by the surgeon and nurses to prevent an infection of their own eyes. The following steps should be taken:

- a. First protect the unaffected eye by a Buller's shield.
 - b. Take a smear and culture to isolate the causative organism.
 - c. Before awaiting the result of the smear and culture, use Gutt. chloramphenicol 0.5 per cent every 2 hours, or one of the newer broad-spectrum antibiotics.
 - d. Commence intensive chemotherapy treatment internally and give penicillin injections.
 - e. One per cent atropine drops should be used in the affected eye twice a day.
 - f. Frequent saline irrigations give relief.
 - g. Give careful attention to general health, state of bowels, etc. Sedatives may be given as required.
- 4. Ophthalmia Neonatorum:** This is officially defined as a 'persistent discharge from the eyes of an infant commencing within twenty-one days of birth'. It used to be a most serious disease and was responsible for large numbers of blind children. Many cases are preventable and are due to lack of appropriate attention at birth and the failure to instil 1 per cent silver nitrate drops in the eyes of a newborn infant. Fortunately nowadays severe ophthalmia neonatorum is a rare complaint and its serious effects are seldom seen.