

Scott-Brown's  
**Diseases of the Ear, Nose and Throat**

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Fourth Edition

Volume 1

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**Basic Sciences**

*Editors*

John Ballantyne, FRCS, HON FRCS (1)

John Groves MB, BS, FRCS

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## **Basic Sciences**

### *Editors*

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**Butterworths**

London Boston

Sydney Wellington Durban Toronto

**United Kingdom** **Butterworth & Co (Publishers) Ltd**  
 London 88 Kingsway, WC2B 6AB

**Australia** **Butterworths Pty Ltd**  
 Sydney 586 Pacific Highway, Chatswood, NSW 2067  
 Also at Melbourne, Brisbane, Adelaide and Perth

**Canada** **Butterworth & Co (Canada) Ltd**  
 Toronto 2265 Midland Avenue, Scarborough, Ontario, M1P 4S1

**New Zealand** **Butterworths of New Zealand Ltd**  
 Wellington T & W Young Building, 77-85 Customhouse Quay, 1, CPO Box 472

**South Africa** **Butterworth & Co (South Africa) (Pty) Ltd**  
 Durban 152-154 Gale Street

**USA** **Butterworth (Publishers) Inc**  
 Boston 10 Tower Office Park, Woburn, Massachusetts 01801

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First edition 1952  
 Second edition 1965  
 Reprinted 1967  
 Reprinted 1968  
 Third edition 1971  
 Reprinted 1977  
 Fourth edition 1979

© Butterworth & Co (Publishers) Ltd, 1979

ISBN 0 407 00147 6 Individual volume  
 ISBN 0 407 00143 3 Set of four volumes

#### **British Library Cataloguing in Publication Data**

Scott-Brown, Walter Graham  
 Scott-Brown's diseases of the ear, nose and  
 throat. — 4th ed.  
 Vol. 1: Basic sciences  
 I. Otolaryngology  
 I. Ballantyne, John II. Groves, John  
 616.2'1 RF46 79-41008

ISBN 0-407-00147-6  
 ISBN 0-407-00143-3 Set of 4 vols

Phototypeset in Great Britain by  
 Filmtype Services Limited, Scarborough  
 Printed and bound by William Clowes & Sons Ltd, Beccles and London

## Introduction to the Fourth Edition

It is a great pleasure to thank and acknowledge all those who have helped so much in the preparation of this edition. We are grateful to those many colleagues who have sent us illustrations; to our registrars who have read proofs, criticized, advised and encouraged; and to those artists who have drawn new illustrations. Among the latter we thank especially Mr Frank Price for his unfailing generosity and technical skills. Equally we thank Mr Cedric Gilson and the Photographic Department of the Royal Free Hospital for their tremendous and willing efforts to provide so many of the new photographs. Finally our gratitude goes to our publishers, Butterworths, who have done so much to lighten our editorial tasks.

London, 1979  
John Ballantyne  
John Green

Some eight years after the last edition of this work appeared it may now seem to the practising clinician that the present decade has been a relatively quiet one in the history of our specialty. In fact, there has been a steady growth in the scientific foundations upon which an increasing amount of our practice is built, and it is therefore not surprising that the first volume, *Basic Sciences*, has now been considerably enlarged.

There has also been a steady expansion of clinical knowledge, and in planning this new edition we quickly became aware that no single volume from the last edition could stand without revision.

Sadly, the list of authors has been depleted by deaths and retirements of old friends and colleagues, whose contributions to British otolaryngology will never be forgotten. We thank sincerely all our colleagues, both old and new who have spared no effort in preparing their manuscripts for this new presentation. The connoisseur will notice that a number of distinguished contributors from overseas have again been invited; we hope that this broadening of outlook will be welcomed by readers, and it is in keeping with the concepts of Mr W G Scott-Brown who originated the text nearly 30 years ago and who continues to flourish and to practice.

In some parts of the work, notably in Volume 2 (*The Ear*), advances in academic research have out-paced our ability to classify neatly a plethora of theories, facts (and sometimes fancies) for clinical application. Retaining the clinical approach as far as possible has compelled us, therefore, to commission chapters (for example in the field of sensorineural deafness) which overlap one another very considerably in content, while differing widely in emphasis. We hope that the reader will bear with this, and that the overall presentation will form a wider basis for learning than could be achieved by a more rigidly structured approach.

As far as we could we have used metric and SI units of measurement, even though a sense of humour is needed to accept some of the numerical absurdities which result. We are increasingly aware, too, that the SI system has brought upon us a hybrid and irrational system, heavily be-spattered with eponymously named units, at a time when eponyms are discouraged in the basic scientific disciplines. We are confident that the present generation will continue to honour Eustachius, Morgagni, Paget, Pott, Rosenmüller, and a hundred and one other great names, however the winds of pseudo-change may blow.

It is a great pleasure to thank and acknowledge all those who have helped so much in the preparation of this edition. We are grateful to those many colleagues who have lent us illustrations; to our registrars who have read proofs, criticized, advised and encouraged; and to those artists who have drawn new illustrations. Among the latter we thank especially Mr Frank Price for his unfailing generosity and technical skills. Equally we thank Mr Cedric Gilson and the Photographic Department of the Royal Free Hospital for their tremendous and willing efforts to provide so many of the new photographs.

Finally our gratitude goes to our publishers, Butterworths, who have done so much to lighten our editorial tasks.

*London, 1979*

**John Ballantyne**

**John Groves**



## Introduction to the Third Edition

A radical new departure is made in the presentation of this work in four separately available volumes. This has been done for two main reasons. First, there is a real need, we feel, to recognize the diverse requirements of different readers – the newcomer to the specialty who needs a compact presentation of the special anatomy, physiology and radiology (for preparation for the DLO Part I and Primary FRCS examinations), and the specialist who is more interested in, say, the ear than in the throat. Secondly, advances are more numerous and more rapid in some sub-divisions of the specialty than in others so that it will be advantageous in the future to revise one volume at a time. The reduction in bulk of the individual volumes results, we hope, in easier handling and more pleasant reading.

A consequence of this change in format and policy is that page and chapter cross-references between different volumes cannot be given, nor is it practicable any longer to compile the symptom index featured in the last edition. To offset the former disadvantage some overlapping of subject material has been deliberately introduced wherever it was felt that too frequent referral to another volume would otherwise be necessary. Each volume has its own Table of Contents and Index, the latter compiled on the basis of noun-entries only.

The text throughout has been comprehensively revised. As a matter of general editorial policy, for this and for any subsequent editions which may appear under our direction, we have invited contributions only from those of our colleagues who are still actively engaged in hospital, university or college practice; and it has been our pleasure to welcome several new contributors. By including several new chapters, we have been able to remedy some of the omissions from earlier editions (for example, 'Congenital Diseases of the Larynx'), and also to give due emphasis to such topics as 'Acoustic Trauma' and 'Acoustic Neuroma', each of which now demands a separate chapter. The weights and liquid measures of all drugs, as well as the measures of distance, are all given in the metric system.

We are grateful to all the authors for submitting their work on schedule so that the production can be uniformly up-to-date. We warmly appreciate the efforts and enthusiasm of the Publisher's Editorial Staff, and the kind help we have received from colleagues, artists, and many friends too numerous to be named. It has been a tremendous encouragement to have the continuing interest of Mr W G Scott-Brown, CVO, MD, FRCS, who has read and contributed substantially to the editing of a

large part of this edition. We wish to thank him for the honour of his invitation to join in the editorship of this standard textbook, which was established solely by him in the First Edition of 1952. Although he has now handed over completely the pleasant duties of joint Editorship to us and our successors, it remains his book and it retains his name.

*London, 1971*

John Ballantyne

John Groves

## Introduction to the Second Edition

The objects set out in the Introduction to the First Edition have been the guiding principles in the present work. In order to make this new edition authoritative and contemporary in outlook, I asked two of my colleagues to join me as co-editors and I have been most fortunate in having the help and inspiration of John Ballantyne and John Gróves. We have together re-cast the main sections, sub-sections and chapters and have given more emphasis to those departments of the specialty which have undergone the greatest changes. We have also made great efforts to have all contributions written and despatched to the printer within one year of starting the project, in order that all the articles shall be finished at the same time and be up-to-date when published. This object has been achieved thanks to the cooperation of our contributors.

It will be seen that the sections on physiology have been extended and improved and the chapters on the ear have been considerably altered and enlarged to include the many fresh ideas and techniques associated with both infective and non-infective ear conditions. The sections on endoscopy have been re-arranged to make the subject as practical as possible for our specialty. It is hoped that the necessary curtailment has not given rise to any major omissions. Neoplasms of the larynx and pharynx have been separated and new chapters on voice and speech have been introduced.

The index has been completely revised, and an innovation in a textbook of this size is an additional index – a symptom index – which is complete for the whole work at the end of each volume. It is hoped that this may be particularly useful to candidates for higher examinations and to general practitioners looking for causes of particular symptoms.

It is a pleasure to acknowledge the generous help which has been given by all the contributors, a number of them new to this book, and to artists and friends, for their kindly and stimulating interest. It is not possible here to record individual acknowledgments, but a special word of thanks must be made to the Editorial Staff of the Publishers.

London, 1965  
W G Scott-Brown



## Introduction to the First Edition

This work has been compiled with the object of presenting a textbook on Diseases of the Ear, Nose and Throat which would include most of the subject matter required by students and post-graduates with sufficient detail for those taking the higher specialized qualifications. It should also be a suitable reference book for general practice.

To achieve this it was decided to ask a number of teachers, examiners and other well-recognized authorities in the specialty to contribute articles on this general plan while leaving them free to put forward their own views of the particular subject in their own way. This has in some cases meant the presentation of individual preferences, classifications or theories, but as far as possible these have been integrated with the more usual views to give a balanced appreciation of the subject. It is hoped that this individuality of articles will give a more stimulating approach to the subject in spite of some overlapping of subject matter and differences of opinion.

Each section is prefaced by its anatomy and physiology as an essential basis to the understanding of the subject, and also to include in a concise manner the material necessary for the examinee. Methods of examination on the other hand have been cut to a minimum as they can only be learnt by the practical examination of patients. After considerable deliberation it was decided to include a chapter on plastic surgery of the nose and ear which should set out what can be done rather than entering into details of technique which are largely the province of the plastic surgeon.

My thanks are due in the first place to all the contributors who have lightened the editorial burden: they have all been most cooperative and have given freely of their time, knowledge and, in many cases, helpful criticism. Acknowledgement is made in the text for opinions and illustrations used.

I must particularly thank the Publisher's team, all of whom have been not only helpful but also encouraging during the many unavoidable delays and difficulties in the production of a new work.

*London, 1952*

W G Scott-Brown

## Colour plates in this volume

### *Plate 1*

Vascular supply of the inner ear (after Axelsson):

- (a) arteries;
- (b) veins

*facing page 46*

### *Plate 2*

Cochlear vasculature (after Axelsson)

*facing page 46*

### *Plate 3*

The blood vessels and nerves of:

- (a) the nasal septum;
- (b) the lateral wall of the nasal cavity

*facing page 206 (Omit)*

### *Plate 4*

Appearance of the tympanic membrane in otic barotrauma:

- (a) normal right tympanic membrane;
- (b) tympanic membrane invaginated, with minimal congestion, during descent from altitude;
- (c) invagination of the tympanic membrane with congestion along the handle of the malleus;
- (d) attic congestion from a relatively mild otic barotrauma;
- (e) scattered interstitial haemorrhages in tympanic membrane, these are usually residual in nature;
- (f) unresolved otic barotrauma with amber-coloured effusion in the middle ear. (The bubbles indicate attempts to ventilate the ear via the eustachian tube.);
- (g) marked congestion, with fresh haemorrhage into the middle ear;
- (h) rupture of the anterior portion of the tympanic membrane

*facing page 222 (Omit)*

### *Plate 5*

A drawing of the pharynx and associated structures as seen from the back

*facing page 302 (Omit)*

### *Plate 6*

A drawing of a dissection to show the main relations of the oesophagus

*facing page 302*

### *Plate 7*

A drawing of the bronchopulmonary segments as seen on the lateral aspect of the right lung

*facing page 414 (Omit)*

Plate 8

facing page 414 (Omit)

A drawing of the bronchopulmonary segments as seen on the lateral aspect of the left lung

Plate 7	A drawing of the bronchopulmonary segments as seen on the lateral aspect of the right lung	facing page 414 (Omit)
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(e)	undissolved otic barotraumata with amber-coloured effusion in the middle ear. (The bubbles indicate attempts to ventilate the ear via the eustachian tube);	
(d)	attic congestion from a relatively mild otic barotraumata;	
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# I Anatomy of the ear

John Ballantyne

## Descriptive and applied anatomy of the human ear

### External ear

The external ear consists of two parts, the auricle (or pinna) and the external auditory canal (or meatus).

#### The auricle

The auricle consists of a single irregularly-shaped thin plate of yellow fibrocartilage about 0.5–1 mm in thickness, covered with skin (*Figure 1.1*) and connected with the surrounding parts by ligaments and muscles.

The concha is the well of the ear. The helix forms the outer rim of the auricle; it begins at the concha and ends at the lobule. The tragus is a small lid that overlaps the concha anteriorly.

The cartilage is continuous with that of the external auditory canal and it extends throughout the entire auricle, except in the lobule and the part between the tragus and the helix. The absence of cartilage in this latter situation (the incisura terminalis) is utilized in one type of endaural incision (p. 46), which can be made without cutting through cartilage.

The skin is covered with fine hairs which are furnished with sebaceous glands. It is firmly adherent on the anterior surface, looser on the posterior surface. Hence in any infection, the swelling is more noticeable in the lax tissues behind the auricle.

The fact that the auricle is formed of a single sheet of cartilage is also important surgically, for if the perichondrium is stripped up by haemorrhage or suppuration, the whole cartilage may necrose.

The abundant blood supply of the auricle is derived from small branches of the external carotid artery, the posterior surface being supplied by the posterior auricular artery, the anterior surface by the anterior temporal artery.

Owing to the relatively little depth of tissue between the skin and the cartilage,