

Glasscock-Shambaugh

SURGERY of the EAR

Fifth Edition

Glasscock • Gulya

with illustrations by
George W. Card

Glasscock-Shambaugh
SURGERY
of the
EAR
Fifth Edition

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Dedication

This book is dedicated to the three most influential otologists of the twentieth century, Julius Lempert, John J. Shea Jr, and William F. House. These pioneers fought the status quo of the medical establishment to advance the diagnosis and surgical treatment of otologic disease.

Lempert was a Jewish immigrant who came to the United States in the early part of the Twentieth Century to settle in New York City. He should be considered the father of modern otology because of his many contributions to this specialty.

Lempert established his surgical techniques based on the work of Gunnar Holmgren and Maurice Sourdille to develop the one-stage fenestration procedure for otosclerosis. While other New York otologists were advising hearing aids for their patients, Lempert was opening the lateral semicircular canal and improving hearing. In some cases, hearing was brought to a 20- or 25-dB level.

He routinely used magnification (loupes) in otologic surgery and was the first to employ a dental drill to open the mastoid in place of a gouge and mallet. His techniques reduced the incidence of facial nerve injuries in radical and modified radical procedures. Lempert's approach to the petrous apex via the carotid artery established the basis for modern skull base surgery.

Lempert was willing to share his knowledge and surgical techniques with other surgeons, and that may well be his greatest contribution to the specialty of otology. He established the first temporal bone laboratory for teaching the one-stage fenestration procedure and ran a 6-week course in his private hospital. Lempert single-handedly trained the entire first echelon of otologists, such as Howard House, George Shambaugh Jr, and Gordon Hoople, who went on to follow their mentor's example by training a second generation of young otologists.

Lempert overcame a poor medical education (third-rate medical school and no formal residency in otolaryngology), rampant anti-Semitism, and the wrath of the academic medical community to become a respected and renowned otologist who treated patients from all over the world.

In the mid- to late 1950s, John Shea Jr took the bold step of removing the stapes of an individual with otosclerosis and replaced it with a polyethylene prosthesis, thereby performing the first successful stapedectomy. He should also be credited with the first stapedotomy because early on he placed a wire through the intact stapes and obtained a hearing improvement.

Working with Harry Treace of the old Richards Company, he developed a whole new line of surgical instruments for middle ear surgery. He did a great deal to popularize the operating microscope in his teaching activities. Shea, along with Harold Tabb, performed the first transcanal, under-surface tympanoplasty using connective tissue (vein). This contribution opened the way for fascia grafts and essentially did away with using skin in an overlay technique for tympanoplasty.

A charismatic and daring young surgeon, Shea traveled the world teaching his techniques, and the world came to his clinic for treatment — all of this when he was still in his thirties. He had his picture on the cover of *Life* magazine and was the most famous ear surgeon in the United States. Doctors from far and wide came to study with him, and at medical meetings, he had a whole entourage following him and hanging on to his every word. This notoriety and the excel-

lent results of the stapedectomy procedure stimulated an entire generation of otolaryngologists to enter the subspecialty of otology.

Like Lempert, Shea had to dispel the naysayers who told him that he would destroy hearing by removing the stapes and subject his patients to meningitis and possible death.

The last 40 years of the Twentieth Century belong to William F. House. The list of his accomplishments and contributions to otology is legendary. He is considered the father of neurotology and is credited with introducing the operating microscope to the field of neurosurgery.

Working with an electrical engineer, Jack Urban, House developed the first practical teaching system for the microscope, starting with a viewing tube (side arm) so that a student could follow every move the operating surgeon made. Soon followed a 16-mm movie camera and a black and white television that preceded the color system.

An innovator, House was constantly developing new surgical procedures to deal with specific medical problems. He championed the intact canal wall mastoidectomy for chronic ear disease and cholesteatoma. In an attempt to control the symptoms of Meniere's disease, he perfected the endolymphatic shunt procedure and introduced the middle fossa vestibular nerve section.

In the early 1960s, working with the neurosurgeon William Hitselberger, House changed forever the course of acoustic neuroma surgery. Before his groundbreaking techniques were adopted, the mortality rate ran 15 to 17%, facial nerves were sacrificed 90 to 100% of the time, and hearing was almost always destroyed. Today most large series report mortality rates of 1% or less, preservation of facial nerve function in 90%, and hearing preservation of 35 to 40% in small tumors. Some institutions report hearing conservation in as much as 75% of their cases.

In the early 1970s, House, again working with Jack Urban, developed the first cochlear implant. I remember going to a meeting in San Francisco during this period, which was attended by most of the department heads of university otolaryngology programs along with the directors of their research laboratories. The consensus from this group held that it was impossible to stimulate the auditory nerve electrically and produce intelligible sound in an individual with a profound sensorineural hearing loss. They were wrong.

Throughout his incredible career, William F. House courageously fought the medical establishment every step of the way. He was told repeatedly that what he wanted to do was impossible, and he was accused on more than one occasion of experimenting on humans simply because he believed in clinical research.

Otologists today owe a great debt to these three pioneers because they overcame tremendous odds to advance the specialty. It shocks me when I talk to young otologic surgeons and realize how little they understand of the history of their chosen field of practice.

*Michael E. Glasscock III, MD, FACS
Nashville, Tennessee
August 2002*



Julius Lempert (1890–1968).

Foremost advocate of the endaural approach to the temporal bone. His one-stage fenestration operation led to the renaissance of reconstructive surgery for conductive hearing loss.



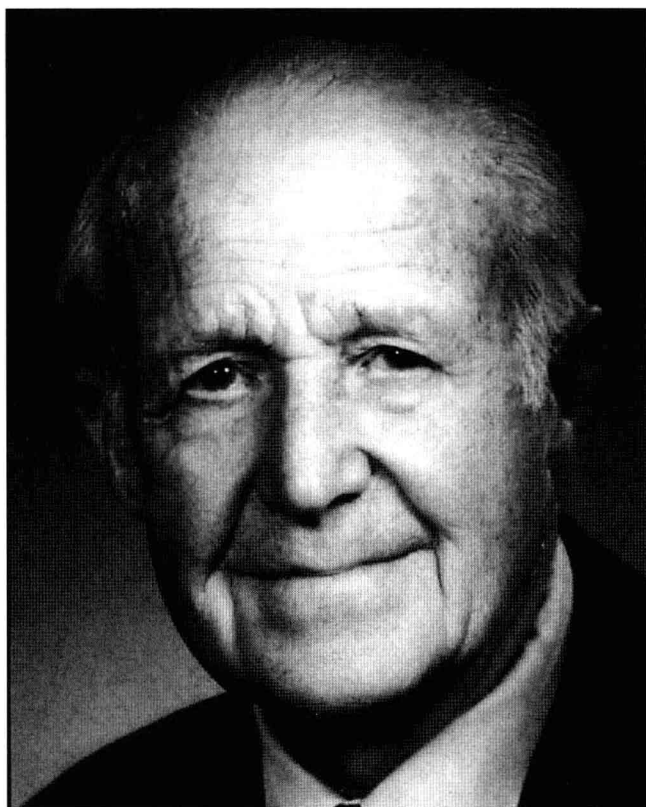
John J. Shea Jr (born 1924).

Revived stapedectomy more than half a century after Blake and Jack, adding prosthetic restoration of ossicular continuity from the incus to tissue covering the oval window.



William F. House, MD (born 1923).

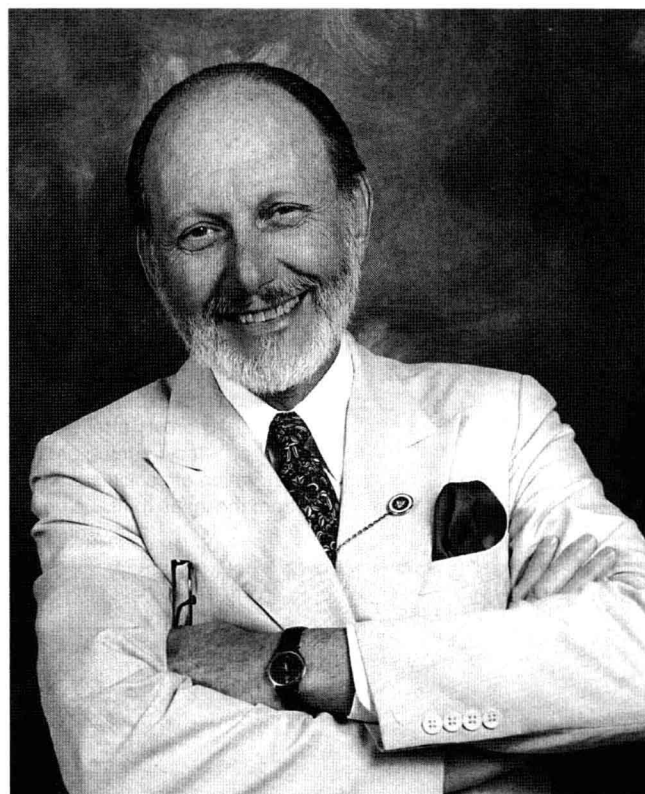
The “father of neurotology.” He pioneered the early diagnosis and translabyrinthine removal of vestibular schwannomas and the development of the cochlear implant.



Michael E. Glasscock III, MD, FACS.
Editor of the fourth edition of
Surgery of the Ear and
co-editor of this edition.



George E. Shambaugh Jr, MD (1903–1999).
Author of the first and second editions of
Surgery of the Ear and senior coauthor of the
third edition.



Aina Julianna Gulya, MD.
Co-editor of this edition of
Surgery of the Ear. Photo
by Jennifer Flesher, American
Academy of Otolaryngology
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Editor's Note

Through four editions, spanning nearly 50 years, *Glasscock & Shambaugh's Surgery of the Ear* has been recognized not only as *the* primer for the neophyte otologist but also as a trusted reference for the experienced surgeon. The practical, easy-to-read content of the book belied the wealth and complexity of information conveyed by the text.

It was therefore with some trepidation that I accepted Michael Glasscock's challenge to update this classic. A sustaining motivation throughout this endeavor has been the desire to honor the mentors who have so profoundly influenced my career, Harold F. Schuknecht, MD, and Michael E. Glasscock III, MD, as well as to recognize the support and encouragement of my husband, William R. Wilson, MD, and my parents, Aladar and Sylvia Gulya.

Working with Michael Glasscock and Brian C. Decker, I sought to revamp the content of the book to reflect the modern surgical practice of otology/neurotology. Accordingly, those familiar with *Surgery of the Ear* will detect changes in the table of contents, both in organization and in subject matter. For example, the "Auditory Physiology (Mechanics of Hearing)" chapter has been moved to the lead section, "Scientific Foundations"; the "Cochlear Implantation" chapter has been greatly expanded; and new chapters have been added, for example, "Surgery for Middle Ear Implants." In contrast, a few chapters, such as "The Simple Mastoid Operation," remain much as in previous editions, requiring only the updating of a few details.

Hopefully, this fifth edition of *Surgery of the Ear* will serve otologic surgeons as well as its predecessor did.

*Aina Julianna Gulya, MD
Washington, District of Columbia
August 2002*

Acknowledgment

Many thanks to Andy Rideout for all his help with the illustrations and to Jamie White for all her hard work and dedication.

Preface

Sometime in 1957, George E. Shambaugh Jr took 6 months out of his busy otologic practice to write what was to become a classic text on surgery of the ear. There have now been four editions of *Surgery of the Ear*: 1959, 1967, 1980, and 1990. I was fortunate to have been asked to assist in the 1980 edition and was responsible for the 1990 effort.

The hallmark of this text has always been its simplicity and straightforwardness. It has always been an easy read. My goal is to keep it that way.

I bought my 1959 edition in 1963 when I was a resident in otolaryngology at the University of Tennessee. It formed the basis of my knowledge of temporal bone anatomy, and I kept it open while I drilled my first cadaver specimens. I routinely referred to the text when I ran into a difficult diagnostic problem and continued to use later editions when I went into practice.

Much has changed in our specialty since 1959. We still perform radical and modified radical mastoidectomies and tympanoplasties as they are described in the first *Surgery of the Ear*, but gone are the fenestration and stapes mobilization procedures. These have been replaced by a variety of new surgical procedures, such as stapedotomies, middle fossa approaches, translabyrinthine removal of acoustic tumors, intact canal wall mastoidectomies, skull base tumor removal, endolymphatic shunt operations, vestibular nerve sections, cochlear implants, and totally implanted hearing aids.

Any text on otology must be revised on a regular basis for it is impossible to keep current otherwise. As it has worked out, a new edition of *Surgery of the Ear* has been published about every 10 years. Given the rapid expansion of knowledge in this day of data processing, that interval is probably too long. I am not really sure what the proper time period is, but my guess would be somewhere between 6 and 8 years. For truly current literature, the student should depend on the many fine journals in this field.

In the first edition, Dr. Shambaugh made a point of stating that physicians should remain students for the remainder of their professional careers. I can remember going to meetings and seeing Dr. Shambaugh sitting on the front row taking notes furiously. This was when he was in his late eighties. He practiced what he taught, and that should be an example for all of us.

I am deeply indebted to Julie Gulya for overseeing the development of this fifth edition. Without her help, this edition of *Surgery of the Ear* would never have come to fruition. Numerous chapters in this book were written by my ex-fellows. I am grateful to all of them. I wish to thank the other authors, as well, for their fine contributions. My input has been minimal because it is my feeling that a surgeon no longer in active practice cannot truly be considered on the cutting edge of the specialty.

It is my sincere desire that subsequent editions of *Surgery of the Ear* will be forthcoming in the future. As I write this Preface to the fifth edition, the field of otology appears to be in good hands. I continue to be impressed by the moral and ethical quality of our modern young otologists. I will leave the reader with this one thought: *All of us benefit from the knowledge passed on by the pioneers in our chosen field.*

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Friedrich Bezold (1842–1908). Clarified the differentiation by tuning fork tests of conductive and sensorineural hearing losses and the clinical diagnosis of otosclerosis. His clear and concise *Textbook of Otology* served as a model for Shambaugh as he wrote his *Surgery of the Ear*.

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