

DISEASES *of the* EAR, NOSE AND THROAT

by

WILLIAM WALLACE MORRISON, M.D.

Professor of Otolaryngology and Director of Department, New York Polyclinic
Postgraduate Medical School and Hospital; Associate Professor of Clinical
Otolaryngology, New York University Postgraduate Medical School;
Assistant Surgeon, New York Eye and Ear Infirmary;
Captain, Medical Corps (U.S.N.R.)

Foreword by

ARTHUR W. PROETZ

SECOND EDITION



APPLETON-CENTURY-CROFTS, INC.
NEW YORK

Copyright, © 1955, by
APPLETON-CENTURY-CROFTS, INC.

All rights reserved. This book or parts thereof, must not be reproduced in any form without permission of the publisher.

Library of Congress Card Number: 55-6229

Copyright, 1948, by Appleton-Century-Crofts, Inc.

PRINTED IN THE UNITED STATES OF AMERICA

DISEASES OF THE
EAR, NOSE AND THROAT

PREFACE

For more than thirty years the author has been almost constantly engaged in the teaching of otolaryngology. The present book epitomizes the material gathered and organized for this teaching. It has been written entirely for the undergraduate medical student and the general practitioner. This has necessitated a most careful and critical choice of material since the great problem in writing a small textbook is to choose the subjects which are of practical value to the student in gaining an introduction to a study of the diseases of the ear, nose and throat, and to the practitioner as he meets the conditions in his daily rounds. It has been the aim of the author to give only the facts necessary to make each subject clear so as to enable the student and practitioner to apply such knowledge in treating the sick. Thus the author has striven to stress common conditions and to deal briefly with rare diseases, and always to be practical rather than theoretical. The modern viewpoint has been stated and many antiquated ideas discarded.

The first section of the book deals with such general considerations as the taking of the history, the equipment necessary for the usual physical examination, the safe use of anesthetic and vasoconstrictor drugs, and local and general anesthesia. Then follows a chapter of general information on chemotherapy with the sulfonamide drugs, on the use of antibiotics in infections, and on the employment of drugs in autonomic nervous system disturbances.

In each of the following sections a brief review of essential points in the surgical anatomy is given and followed by a consideration of the physiology of the parts concerned, since modern medicine strives always to restore normal function. The etiology of any disease is stated simply if it is known; the most widely held belief is given when the true cause is in doubt. The important points in the pathology are described, or pictured, since a knowledge of the gross and microscopic changes is essential to the understanding of the causation of symptoms and physical signs.

The symptoms and signs are enumerated in their order of occurrence or importance so that thumbnail clinical pictures are brought to the mind's eye. More emphasis has been placed on methods of physical examination than might seem necessary because it has been the experience of all teachers that more mistakes in diagnosis are made from want of "looking" through incomplete or poorly made physical examination than from want of "knowing" facts concerning the disease. Diagnosis and differential diagnosis are outlined with stress on characteristic differential points when they exist. Prognosis is discussed when it is of importance. The prevention of disease is fully outlined in accordance with modern ideas of preventive medicine.

Finally, from a host of possible methods of treatment that have been tried for many of the diseases discussed, only one or two that are either specific or that have stood the test of time have been chosen in the interest of both brevity and clarity. The descriptions of surgical operations, which are one form of therapy, are given quite briefly, since many of the procedures are technically difficult and should be attempted only by those who have had special postgraduate training. It has been the author's aim to indicate rather what must be done to achieve the desired results from an operation rather than to describe the technic in detail. Simpler operations which can be safely performed by those with limited training are more fully described and illustrated.

The illustrations were drawn by the author; they are largely an amplified form of chalk drawings used to illustrate lectures. The author fully subscribes to the belief that a picture is worth a thousand words, so that many illustrations are used. They are often quite diagrammatic in order that they may be most clear and quickly understandable; little effort was made to have merely beautiful pictures.

The author desires sincerely to express his appreciation to all those whose work has served as source material and hereby acknowledges his debt to them. The sources listed in brief bibliographies at the end of each chapter will serve as guides to those interested in following a subject more fully than the scope of the book will allow. The author is especially grateful to the memory of Dr. Lee Maidment Hurd, who died in 1945, for many helpful suggestions and practical knowledge gained through twenty years of association. He wishes to thank the publishers for their help with technical problems and for their fine cooperation in every way. He also wishes to express his lasting gratitude to Claire Radley Morrison for unfailing aid and encouragement, in the belief that she will be aware of it in her place in Heaven. Finally he desires to express his gratitude for the support given by Helen Stewart Morrison in the extensive work of the revision now completed. He fully realizes how he has been blessed in sharing the lives of two wonderful women.

WILLIAM WALLACE MORRISON

FOREWORD

On my shelf stands a long row of textbooks all purporting to deal in an informative way with the problem of the otorhinolaryngologist. Some of them were acquired by free choice through careful discrimination; some appeared during a momentary lapse in sales resistance; more came gratis from the publishers for review in a medical journal.

Like a gallery of portraits each delineates its author and since many of these are known to me I derive much pleasure from their company.

Some of them are small, precise and timid; some are portly and a little florid; some radiate the essence of culture and fine judgment; others are merely precious to the point of dullness.

There is one type of text that to me is completely exasperating. It is apt to be large and imposingly put together. More likely than not the illustrations will be excellent and the typeface pleasing. The index may be voluminous (one of the first things I look for in a textbook, for no reference book is better than its index). Now comes the disappointment. The textual matter has all the indications of having been dashed off on the high seas from a steamer chair, without benefit of library or reference, quotation or detail. Procedures are mentioned but not described. Controversial matters are side-stepped or worse, sideswiped.

Then there is the pretentious type. Every description and illustration portrays the worst case of everything that anybody ever encountered. The student is overwhelmed. No help to him, that tumor obliterating most of the face. What he needs to know is how that tumor looked when it was small. What he wants is concise information about his little case in hand: How to recognize it, what to do and exactly when and how.

Fortunately every decade has produced a few authors who have towered above the crowd. Their books were simple, complete and scholarly. Their descriptions were authentic and they shared their references with the grateful reader. No Politzer, no Logan Turner, no Thomson or Kerrison or Skillern was ever pitched into the corner in dismay.

For my part, Morrison is a worthy successor to these. I do not always agree with him but I always approve. His simplicity appeals to me and I find what I am looking for. Students can understand him and there is meat for more experienced minds. Wisely he is keeping his book up to date, and is handling his new material with discrimination. In this age of transition Morrison's book will render conspicuous service in stimulating and stabilizing American Otolaryngology in the years ahead.

ARTHUR W. PROETZ

**DISEASES OF THE
EAR, NOSE AND THROAT**

CONTENTS

PREFACE	v
FOREWORD	ix

ARTHUR W. PROETZ

Part I: GENERAL CONSIDERATIONS

1. The History of the Patient	1
2. Equipment for the Physical Examination of the Ear, Nose and Throat: Anesthesia	5
3. The Use of Chemotherapy, the Antibiotics, Hormone and Autonomic Therapy in Otolaryngology	17

Part II: THE DISEASES OF THE EAR

4. The Anatomy of the Ear	41
5. The Physiology of the Ear	61
6. The Physical and Functional Examination of the Ear	72
7. The Diseases of the External Ear, the External Auditory Canal and the Tympanic Membrane	92
8. Acute Inflammation of the Tympanic Cavity and Mastoid Cells	107
9. Chronic Suppurative Otitis Media and Chronic Mastoiditis	135
10. The Complications of Otitic Suppuration	147
11. The Endaural Surgery of the Temporal Bone	178
12. Miscellaneous Aural Affections	186
13. Miscellaneous Affections of the Internal Ear and Acoustic Nerve	204

Part III. THE DISEASES OF THE EXTERNAL NOSE AND THE NASAL CAVITIES

14. The Anatomy and Physiology of the External Nose and Nasal Cavities	227
15. The Physical Examination of the External Nose and Nasal Cavities	243
16. The Diseases of the External Nose and Nasal Vestibule	250
17. The Diseases of the Nasal Septum	261
18. The Diseases of the Nasal Cavities	275
19. The Diseases of the Nasal Cavities (continued)	301
20. The Diseases of the Nasal Cavities (continued)	307

Part IV: THE ALLERGIC DISEASES OF THE RESPIRATORY TRACT

21. The Nature of Allergy: Allergic Diseases of the Nose and Paranasal Sinuses	318
---	-----

Part V: THE DISEASES OF THE PARANASAL SINUSES

22. The Anatomy and Physiology of the Paranasal Sinuses; Their Examination	345
23. Acute Sinusitis	364

24. Chronic Sinusitis	382
25. The Complications of Sinus Disease	416
26. Miscellaneous Diseases of the Paranasal Sinuses	434
27. Headache, the Neuralgias and Cephalalgias of the Head and Neck	443

Part VI: DISEASES OF THE THROAT

28. The Anatomy and Physiology of the Pharynx	463
29. Physical Examination of the Pharynx	473
30. The Diseases of the Pharynx	478
31. The Diseases of the Pharynx (continued)	493
32. The Diseases of the Pharynx (continued)	504
33. The Diseases of the Lymphatic Structures of the Pharynx	516

Part VII: DISEASES OF THE LARYNX

34. Anatomy and Physiology	551
35. The Physical Examination of the Hypopharynx and the Larynx by Mirror Laryngoscopy	560
36. The Diseases of the Larynx	565
37. The Diseases of the Larynx (continued)	576
38. The Diseases of the Larynx (continued)	585
39. The Diseases of the Larynx (continued)	600
40. The Diseases of the Larynx (continued)	620

Part VIII: DISEASES OF THE TRACHEA, BRONCHI, ESOPHAGUS AND MEDIASTINUM

41. The Anatomy and Physiology of the Trachea, Bronchi, Esophagus and Mediastinum; Their Physical Examination	645
42. The Diseases of the Trachea and Bronchi	663
43. The Diseases of the Esophagus	677
44. Foreign Bodies in the Larynx, Trachea, Bronchi and Esophagus	693

FORMULARY: Prescriptions for Medications To Be Used by Patients	699
---	-----

SYMPTOM INDEX	708
-------------------------	-----

SUBJECT INDEX	727
-------------------------	-----

DISEASES OF THE EAR, NOSE AND THROAT

PART I

GENERAL CONSIDERATIONS

Chapter I

THE HISTORY OF THE PATIENT

The taking and recording of the medical history is the first step in the examination of a patient, and precedes the physical investigation. The purpose in taking such a history is to learn all the essential facts observed by the patient, or by the parents of child patients, concerning the disease. These facts serve as a guide in the making of the physical examination, and when correlated with the findings lead to the diagnosis and to the application of treatment.

The history must be complete enough to contain all important facts, but short enough to omit nonessentials. Hence it is necessary to pick the wheat from the chaff with the voluble patient, and to draw out the whole story from the reticent or unobservant person. This constitutes the art of taking the history, which can be learned only by practice, and perfected by experience.

In general, it is best first to inquire as to the *chief complaint*, and then to let the patient tell his story of the symptoms as they appeared in chronological order, guiding him when the story is not clear by seeking direct answers to straight questions. When the story of past and present symptoms in the immediate area of the disease has been noted, it is important to secure information regarding symptoms referable to other areas, such as the nasal, sinus, pharyngeal, laryngeal, tracheopulmonary, esophageal and aural systems; and finally data regarding the general health and concerning trouble with distant areas must be recorded. An estimation of the psychic status of the patient is of great value.

While every doctor develops his own method of taking a history, the following plan is offered for the guidance of the student. Not all of the information will be required in every case; only those portions of the history having a bearing on any given case will need to be applied.

1. In aural conditions, make notes regarding:

- (a) Deafness, whether one or both ears, and which the worse ear, as to its duration, severity, whether intermittent or constant, whether growing worse, whether with paracusis, its apparent cause, and relation to other symptoms.
- (b) Tinnitus, its nature, whether one or both ears, its duration,

THE HISTORY OF THE PATIENT

severity, whether intermittent or constant, and its relation to other symptoms.

- (c) Aural discharge, whether one or both ears, its nature, whether watery, pus, bloody, foul smelling, as to its duration, amount, whether intermittent or constant, and its relation to other symptoms.
- (d) Pain, as to its duration, severity, location in or about the ear or mastoid process, and its relation to other symptoms.
- (e) Headache, as to its location and extent, its duration, severity, whether intermittent or constant, worse at night, and relation to other symptoms.
- (f) Local tenderness or swelling, as to its duration, location and extent.
- (g) Vertigo, as to its duration, severity, whether true whirling or unsteadiness, whether with nausea and vomiting, falling, relation to position and movements of head and body, effect of closing eyes, and relation to other symptoms.
- (h) The presence of fever, malaise and chills.

2. In nasal conditions, make notes regarding:

- (a) Nasal obstruction, its duration, severity, whether of one or both sides, whether intermittent or continuous, and its relation to other symptoms.
- (b) Anterior and posterior nasal discharge, its duration, quantity, nature, whether watery, mucus, mucopus, pure pus, bloody, fluid or crust, with foul smell or none.
- (c) Headache, its location, duration, severity, time of occurrence in day or night, its relation to other symptoms and frequency.
- (d) Attacks of acute rhinitis, their frequency, severity, duration and complications.
- (e) Previous similar trouble, as to frequency, severity, duration, treatment given and its results.
- (f) Previous nasal and sinus operations, as to when performed, the nature of the operation and the results secured.

3. In pharyngeal conditions, make notes regarding:

- (a) Difficulty or pain on swallowing, or spontaneous pain, as to duration, severity, location and extent.
- (b) The presence of fever, chill or malaise.
- (c) Mouth breathing, as to duration, severity, whether constant day and night, snoring and restless sleep.
- (d) Discharge hawked out, as to amount and nature, whether mucus, pus, blood or crust.
- (e) Previous attacks of sore throat, as to frequency, duration, severity, and their association with "rheumatic" symptoms.
- (f) Previous throat operations, as to their nature, when performed and the results secured.

4. In laryngeal conditions, make notes regarding:

- (a) Changes in the voice, as to their nature, duration, severity, whether constant or intermittent, and association with other symptoms.

- (b) Difficulty in breathing, as to duration, severity, whether constant or intermittent, whether inspiratory or expiratory, whether with noisy stridor or not.
- (c) Cough and expectoration, as to duration, severity, the amount and nature of the sputum, whether mucus, mucopus, pure pus, blood, foul smelling or not.
- (d) Pain in the larynx, spontaneously or on phonation or swallowing, as to duration, severity, location, extent and direction to which it is referred.
- (e) Previous attacks of laryngeal trouble, as to their nature if known, frequency, severity, duration, treatment and results secured.

5. In tracheobronchial conditions, make notes regarding:

- (a) Cough and expectoration as for laryngeal conditions.
- (b) Hemoptysis, as to its frequency, severity, duration and relation to other symptoms.
- (c) The presence of fever, sweats, malaise, loss of weight and anorexia.
- (d) The possibility of previous inhalation of a foreign body.
- (e) Previous tracheobronchial conditions, as to their nature, duration, severity, frequency, treatment and results secured.

6. In esophageal conditions, make notes regarding:

- (a) Difficulty in swallowing, as to its duration, severity, whether for fluids, or solids, or both, and its relation to other symptoms.
- (b) Pain on swallowing, or spontaneously, as to its duration, severity, apparent location, and direction of reference, and its relation to other symptoms.
- (c) Regurgitation or true vomiting, as to its frequency, severity, relation to taking of food, whether food as swallowed or sour stomach contents, and admixture with mucus, pus, blood, and relation to other symptoms.
- (d) Hematemesis, as to its frequency, amount of blood, whether bright or dark red blood, whether mixed with food or not.
- (e) The possibility of previous swallowing of a foreign body.

7. On the general health of the patient, making notes regarding:

- (a) The presence of disease of the heart and blood vessels, lungs, kidneys, eyes, and gastro-intestinal tract, especially dyspepsia and constipation.
- (b) The presence of symptoms of focal infection, such as "rheumatism", lumbago, neuritis, joint, muscle and fascial pain, easy fatigue, lack of resistance to infection, etc.
- (c) The use of alcohol, tobacco, drugs and narcotics.
- (d) The possible presence of hemophilia, syphilis and tuberculosis.

It is of the greatest importance that the history be recorded in ink, as it is taken, for future reference. It should be written on a portion of the form on which the physical findings, the results of laboratory tests and radiographic examinations, the diagnosis, the treatment given and operative work recommended and performed are also recorded. Space on the reverse of the form is used for progress notes. The most convenient form for such

records is the bristol board filing card, size 6 by 9 inches, which is easily read, and accessible when kept in a modern filing device. Additional cards may be attached to the first with a metal staple or eyelet.

The habit of making and keeping full records of all information concerning the patient cannot be advised too strongly, as such records are indispensable for scientific study, for legal purposes and for guidance in the future care of the patient.

With a growing appreciation of the importance of the part played by emotional disturbance in many of the noninfectious diseases of the ear, nose and throat, it is becoming constantly more essential that in taking the history, the personality of the patient be considered. By thus inquiring into the patient's life situation and taking note of the emotional reactions or attitudes to the stress caused by anxiety, fear, discontent, feelings of frustration, resentment and anger, one can usually gain a fair idea of the personality of the patient who brings his "disease," as well as the disturbance which brings the patient to the doctor. The manner of taking the history with its evidence of interest, sympathy and understanding of both patient and disease often secures the trust of the patient. By just letting the patient talk of his troubles and himself if time can be given, he will usually soon reveal life problems and attitudes taken toward them which can be of great importance in diagnosis and treatment. This is particularly important in such conditions as chronic nasal and bronchial allergy, most of the vasodilator headaches, cephalalgias and myalgias, in Ménière's disease and some other forms of vertigo, in functional deafness and with psychogenic overlay of organic impairment of hearing, in functional laryngeal paralysis and other forms of conversion hysteria.

It is true that the otolaryngologist cannot properly treat patients with immature personalities and profound emotional disturbance by psychiatric care because of lack of time and training. It is also true that he often can help, first by ruling out organic disease as the cause for symptoms or by giving relief by treatment of incidental physical disease found. In milder cases he can also aid by letting the patient ventilate his repressed fears, worries and resentments in confidence, by helping him to see the relationship between these and his ailment if possible, and by encouraging him to do what can be done to ease tension. Being thus psychologically oriented is sure to make the relation between patient and doctor, often so delicate but important, not only more pleasant but also more productive of good results in the treatment of almost any disease; it is essential in dealing with those with emotional disturbances and frank neuroses. The study of "psychosomatic medicine" and a study of the neuroses should form an essential part of all postgraduate medical education. Many helpful books on these subjects are available.

Chapter 2

EQUIPMENT FOR THE PHYSICAL EXAMINATION OF THE EAR, NOSE AND THROAT

Local and General Anesthesia

Preoperative and Postoperative Care

EQUIPMENT AND APPARATUS

The essentials of equipment needed to carry out the usual examination will be described. The specialist adds many elaborate details needful for his more comprehensive investigation.

The essential *furniture* consists of a comfortable chair for the patient, firmly anchored to the floor, with a seat that can be raised and lowered, and a suitable head rest. The doctor uses a stool with a seat of adjustable height. A table beside the chair and stool bears the instruments in a tray or upon a sterile towel, a holder for sterile cotton, an alcohol lamp and matches, and a rack or stand to hold sprays and bottles. Sterile tongue cloths of muslin or gauze, soft paper handkerchiefs, clean towels and a waterproof drape may be kept in a drawer of the table. Lacking a dental cuspidor, a metal or black papier mache pus basin will serve to catch expectoration or irrigating fluid. A paper bag attached to the table will serve as a receptacle for waste.

Irrigations are much used in diagnosis and treatment. The solution may be held in a sterile metal douche can, suspended from a standard, or a large metal syringe may be employed. The irrigating bottle illustrated in Figure 1 is ideal for the purpose. It is filled by siphonage and emptied by air pressure with an atomizer bulb, and the solution in it is warmed by standing the bottle in a hot-water sterilizer.

The *source of light* for use with the head mirror is an electric bulb of from 40 to 100 watts, with a clear bull's eye in the frosting, before which a condensing lens is held by means of a clamp on the light socket. The light is supported on a bracket from the wall or chair, or in a floor standard, and must be so placed that the bulb is 6 inches above the level of, and 6 inches behind the ear of the patient, on either side. The light bulb may be covered with a shield, except for the bull's eye, to cut out glare.

The aid of a *suction and air pressure pump* is very necessary. Pressure operated sprays are most efficient; a control cut-off is hung from the work table in easy reach. A catch bottle of large size should be included in the suction line, and a foot cut-off is an easy means of control, as it leaves both hands free. A simple suction system operated by water flow is illustrated in Figure 2.

A hot-water *sterilizer* and a basin of antiseptic solution for sharp instru-

6 • EQUIPMENT FOR THE PHYSICAL EXAMINATION

ments and mirrors are necessary. A suitable wash basin should be near at hand.

For *transillumination* of the paranasal sinuses, a dark room is needed. The examining room may be darkened by tightly fitting black window shades, or a dark closet may be used. The transilluminator is a small, slender electric light, with proper rheostat control, run from a battery or the power line with a transformer.

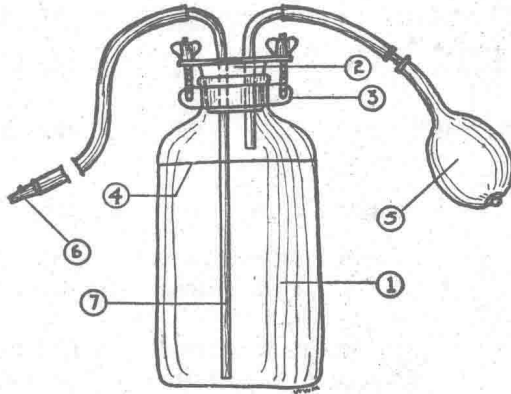


FIG. 1.—AN EFFICIENT IRRIGATING BOTTLE.

(1) Quart-size wide-mouth glass bottle. (2) Two-hole rubber stopper. (3) Metal clamp for holding rubber stopper in place against pressure. (4) Maximum level of fluid used in bottle. (5) Atomizer rubber bulb. (6) Male portion of bayonet coupling for attachment of sinus cannulae and other irrigating tubes.

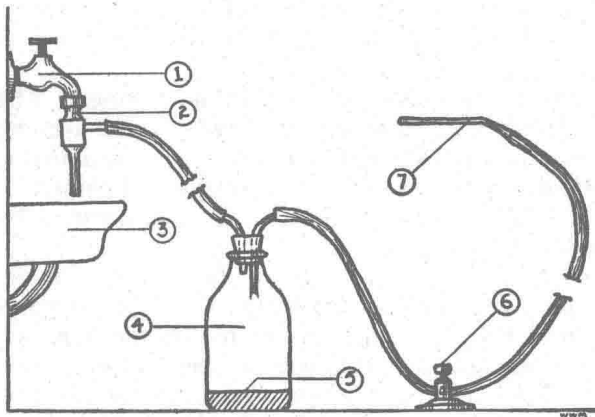


FIG. 2.—A SIMPLE SUCTION APPARATUS OPERATED BY RUNNING WATER.

(1) Source of running water. (2) Standard brass ejector vacuum pump. (3) Waste basin connecting with sewer. (4) Catch bottle of 80-ounce size with two-hole rubber stopper and metal connecting tubes. (5) Dilute tricresol solution to be changed at short intervals. (6) Foot control cut-off. (7) Small metal nasal suction tip.

The *instruments* essential for a complete examination comprise a nasal speculum, the Vienna type being the most useful, a metal tongue depressor, metal applicators, a postnasal mirror measuring 1 cm. in diameter, a laryn-

geal mirror measuring $2\frac{1}{2}$ cm. in diameter in a handle, a bayonet forceps, ear specula of small, medium, and large sizes, a slender metal nasal suction tube, a spray tip for the atomizers and a flexible metal probe.

Despite the fact that the field is never sterile, *surgical cleanliness* of instruments, dressings and hands is necessary. Used instruments must be scrubbed with soap and water, and boiled for twenty minutes. Sharp instruments and mirrors must be washed, and soaked in antiseptic solution for half an hour. Dressings must be sterilized by autoclaving or dry heat. The hands of the doctor should always be scrubbed with a hand brush in soap and water, and the nails cleansed, before touching the instruments or the patient.

The *position of patient and doctor* allows of proper examination with comfort for both. For the investigation of the nose and throat, the patient sits facing the doctor, with his knees between those of the doctor. The heads of both patient and doctor must be at the same level; the chair or stool is adjusted in height until this is attained. For the ear examination, the patient rotates the body and head to one side or the other. The head rest fastened to the chair back is used to steady the head. When examination in bed is necessary, the light is held in a socket with an insulated base, and placed beside the patient's head, or it may be held in a clamp attached to the head of the bed.

The use of reflected light is essential for the illumination of the dark cavities to be examined. The *head mirror* is the standard method of reflecting the light beam. It is a concave mirror of circular shape, measuring $3\frac{1}{2}$ inches in diameter, with a central hole $\frac{1}{2}$ inch in size, and of a focal distance of 14 inches. It is supported by a ball and socket joint upon a head band, which must fit comfortably about the doctor's head. The mirror and head band should be as light in weight as possible. The mirror is worn over either eye. The method of its use to secure brilliant illumination within the cavities to be examined can be learned only by patient practice. The light source and the mirror must be so adjusted that the converging rays from the mirror fall in a small area upon the desired spot, which can be fully seen by the eye behind the central opening of the mirror. The eye not behind the mirror can be protected from the glare by a shield hung from the head band.

Electric head lamps and electrically lighted specula of various kinds are available, but none furnishes quite the brilliant and adaptable illumination given by the skilful use of the head mirror. Further, the one source of light can be used with the mirror to examine all of the areas usually concerned, and most of the operations performed in this field can also be done with the head mirror illumination.

There are two special electrically lighted examining instruments with which practitioners should become familiar and make use of for their distinct advantages. The first of these is the electric otoscope. Its brilliant illumination and the magnification given by the lenses supplied with the instrument enable the examiner to see the details of the drum in a way that is almost impossible by other methods. It allows the examination of small infants and of the bedridden, otherwise very difficult.

The other special instrument is the electric nasopharyngoscope. While this is an examining apparatus usually employed by the specialist, the view