

PHYSICAL
DIAGNOSIS



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INTRODUCTION BY

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PREFACE

IF THE NEED for a new book on the subject of employing the senses in diagnosis of diseased bodily states should be questioned, one has only to come into intimate contact with medical students and internes. In this day of scientific medical practice some laboratory procedure or "precision instrument" test is frequently suggested when the examiner himself could very well make an accurate appraisal if he but relied upon logical deductions from a carefully performed physical examination. Indeed, it frequently happens that a condition such as mitral stenosis or asthma can be recognized or established more certainly only by the physical signs.

As far as the beginner is concerned, nearly all textbooks on physical diagnosis either are too large and contain much unnecessary, irrelevant detail, or they confuse the student by failing to stress the signs of practical importance and to distinguish what is common from what is rare.

Physical diagnosis is an art acquired by painstaking practice. A textbook that aims to guide the student should merely set forth principles and methods, briefly outline or describe the more common conditions that illustrate the method, and then leave the student in the hands of a sympathetic, intelligent preceptor to learn through experience on actual cases. The multiplicity of subjective and objective signs of countless diseases are best left to textbooks on medicine.

Over twenty years of preceptorial guidance to students of the University of Pennsylvania on the wards of the Philadelphia General Hospital prompt me to offer this book in the hope that it will save time while the classical conditions are being learned and will enable the student to give valid reasons for his conclusions.

I have adopted for the book the same systematic approach to the various parts of the body that is used in actual practice. Beginning with the head and proceeding downward and inward, each part of the body is taken up and viewed in the light of the results of inspection, palpation, percussion, and auscultation. Throughout, attention is called to those symptoms learned from the history which serve as guideposts to the physical phenomena elicited on examination. Spe-

cial emphasis is given to technics for procedures and the reasons for selecting one in preference to others.

A brief review of the physics of sound indispensable to an understanding of the results of chest examination has been included. Special anatomical considerations and landmarks, and the relationship of the organs to the physical phenomena elicited in health and disease are an important part of the text.

Many observations have been borrowed from past and present masters of the art of physical diagnosis, with due credit given wherever other authors' ideas are incorporated as well as where they are quoted. Indeed, I claim little that is new or original except the method of presentation and arrangement of well-known facts tested by several generations of clinicians. These facts exist widely scattered in a variety of books which contain much that is irrelevant to physical diagnosis per se. In this guide I have tried to present them in essence, integrated and cleared of extraneous material.

The illustrations have been selected to show technics or indicate graphically the basis for certain signs. Pictures of cases illustrating diseased conditions would make an excellent book in themselves. However, to include a representative group of all the conditions described would make this book large and unwieldy, thus defeating its primary intention—to be both complete and compact. In the final analysis, diseased states are best learned by seeing them in several different degrees and varieties so that the observer gets a composite view of each disease entity.

This book differs from those of most other modern authors in *not* presenting electrocardiograms, x-ray pictures, sound tracings and other correlated phenomena to substantiate the physical signs. It is true that such special diagnostic procedures, together with autopsy findings and pathological studies, have allowed valuable advances in the interpretation of physical signs to be made and that these procedures are important to the complete study of many patients. But on the other hand, all physical phenomena of any importance are already substantiated, and, if there is anything that can be *learned* in the art of diagnosis, it is a reliance on one's own observations and a logical interpretation of the *total* evidence that can be assembled from the history, the physical examination, laboratory procedures and special examinations. The more adequate the first two, the less need for the latter two.

A certain amount of repetition is required to avoid constant cross

reference when the same part is discussed under different headings, for example, the carotid sinus in neck examination and again in cardiovascular examination. This I have tried to reduce to a minimum. The repetition will be found chiefly in discussion of the same part in various sections of the chapters on systematic examination and those on neurological examination. Finally, some cross references have been inserted when a better understanding of the condition seems to warrant fuller explanation.

In the preparation of this work I have become indebted to Mrs. Harry Erstad, who painstakingly deciphered my manuscript; to my son, Raymond, Junior, an embryo physician, who helped prepare the index; to Mr. Robert Krell, the photographer, who gave much time and spared no effort to secure original photographs that show every detail I had indicated to him. To Professor Truman G. Schnabel I am particularly grateful not only for the special opportunities he has given me to learn this subject by teaching it in a formal didactic course and to small groups at the bedside, but also for his unfailing generosity and sympathetic encouragement throughout the preparation of this manuscript, including a reading of the completed work. My thanks are also due to Dr. David N. Kremer and Dr. Howard U. Kremer with whom I have spent many enjoyable and profitable hours making ward rounds and conducting classes. Finally, I wish to acknowledge the masterful guidance of the late Dr. David Riesman under whose tutelage I received my early training in physical diagnosis and teaching.

In conclusion, I wish to express my appreciation to the publisher for their excellent editorial treatment of my manuscript and their constant fidelity to the highest ideals of technical achievement.

RAYMOND W. BRUST

INTRODUCTION

THE IMPORTANCE of examining patients from the physical standpoint as a means of discovering normal or abnormal anatomical or physiological states in the human body has been well appreciated for a long time. The pioneers of medicine had to rely for the most part on objective evidence of disease combined with the report of subjective symptoms for their diagnostic conclusions. This was true of their followers up until the last sixty or more years when diagnostic aids of all sorts began to pile up on the doorstep of the medical profession.

As a result of these developments doctors have come to depend less and less on their senses and more and more on what laboratory reports, x-ray studies, and instruments of precision may reveal. Patients now sense this situation in many instances and may not believe their doctors capable of dealing with their ailments without a check by a battery of tests. Little do they know of the false positives and misleading normals, to say nothing of the personal equation which finally colors the checks in many instances. Under such circumstances they cannot be expected to know that such eventualities may muddy the diagnostic waters and delay treatment—that, when all is said and done, the doctor will have to decide on the basis of the patient's history and the results of a physical examination.

A parallel development is the practice of having patients admitted to hospitals for so-called observation. But who does the observing? Not infrequently this practice only means that any number of the hospital's personnel carry out a batch of diagnostic procedures more or less promiscuously with the hope that one of the arrows may find its mark. Unfortunate as all this may be, it becomes doubly so now, when critics of the medical profession are calling attention to the "increased cost of medical care." How much better is it to examine the patient carefully, thoroughly, intelligently, and then to select the pertinent tests. However, with increasing reliance on laboratory investigations, the average doctor tends to examine less and less and thereby loses the skill and confidence which is maintained only by continuous practice.

Perhaps doctors would not be inclined to grow lax in their physical

examinations if physical diagnosis were properly stressed and opportunely presented in the undergraduate medical curriculum. The course in this subject is frequently offered at a time in the life of the medical student when he is not likely to have a proper perspective and therefore cannot appreciate the importance of this subject. The course is frequently tucked in with other courses which at the time seem more important. The student is not likely to feel that what he is supposed to learn is really a part of medicine or, indeed, of any other special clinical field. Furthermore, he probably has never heard of a medical student having failed because he was deficient in fundamental knowledge of or incompetent in the practice of physical diagnosis. Therefore he regards the course as a "cinch." Nor do I believe that a medical student has ever been required to repeat his course in physical diagnosis, valuable as repetition might be for the whole class, because he failed to note the presence of a tugging trachea, a relatively lower arterial pressure in the legs, a palpable gland behind the insertion of the left sternomastoid muscle or some perianal sensory disturbances. It has been suggested that the course in physical diagnosis should be repeated at some time in the fourth medical year but overcrowded curricula have not permitted the adoption of such a plan.

In any event, the publication of a new book on physical diagnosis should be a welcome event for medical students and physicians alike, especially so when it concerns itself with the basic principles of physical diagnosis and presents them in a simple straightforward fashion.

The writer reflects in the pages of this volume the lessons learned during long experience in private and hospital practice as well as in teaching the subject both formally and at the bedside. With the knowledge gained from this guide and with opportunity for continued practice in the art of physical examination, the young doctor should find the practice of medicine an increasingly personal, satisfactory, and enjoyable experience. At the same time he should find himself making a reasonable approach to perfection in diagnosis.

Physical diagnosis coupled with the patient's story constitutes the keystone to successful medical practice.

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CONTENTS

Preface	v
Introduction by TRUMAN G. SCHNABEL	xi
Part One: Orientation	
1. THE PATIENT'S HISTORY	1
2. PRINCIPLES OF PHYSICAL DIAGNOSIS	7
Part Two: The Body in General	
3. THE HEAD AND NECK	11
4. THE SKIN AND ITS APPENDAGES	33
5. THE ARMS AND LEGS	39
Part Three: The Pulmonary System	
6. INSPECTION AND PALPATION OF THE CHEST	59
7. PERCUSSION OF THE CHEST	78
8. AUSCULTATION OF THE CHEST	100
9. COMMON DISEASES OF THE BRONCHI AND LUNGS	113
Part Four: The Cardiovascular System	
10. CARDIAC EXAMINATION	151
11. THE BLOOD VESSELS AND BLOOD PRESSURE	168
12. CARDIOVASCULAR DISEASES	182
Part Five: The Gastrointestinal System	
13. ABDOMINAL REGION	205
14. THE PERINEUM, PELVIS AND RECTUM	230
Part Six: The Nervous System	
15. THE MENTAL STATE AND SPEECH DISORDERS	237
16. THE MOTOR SYSTEM	243
17. THE SENSORY NERVOUS SYSTEM	260
18. THE CRANIAL NERVES	266
Index	279

Part One: Orientation

I THE PATIENT'S HISTORY

PHYSICAL EXAMINATION implies a use of all the examiner's senses while he evaluates the illness of the patient before him. In practice, however, the examination is not an isolated procedure that the physician begins as he would some kind of special test. It is inseparable from history-taking.

The examiner confronted with a patient immediately notes many facts pertaining to sex, color, apparent age, living conditions, economic status and, not infrequently, extent of suffering. The handshake, the greeting, the degree of alertness, all these make their impression; and, as the examiner commences the history, the responses of the patient may be quite revealing in not only what he says but also how he says it.

Since the purpose of the physical examination is to determine what is wrong with the patient, the first and most obvious beginning is to ask him what troubles him. This is recorded as the chief complaint, seemingly an easy matter to determine. In practice, however, the response to the question "What seems to be your complaint?" may be anything but definite and pertinent to the chief ailment. I have seen long, elaborate histories describing all sorts of ailments, none of which touched upon the real disorder of the patient. At times the question will have to be repeated in a different form, such as "What seems to be wrong with you?" or "What is troubling you most?"

Many patients use diagnostic terms to describe the symptoms of the chief complaint. The less intelligent may speak of having "too much acid" or of "gastritis of the stomach." The better educated but often more misleading suggest more profound conditions, for example, "I think I have coronary disease," or "I have bursitis" or

"neuritis." Other patients refer to apparent organ involvement, complaining, "It's my heart."

It sometimes takes considerable time and effort to make the patient describe exactly how he feels and where in relation to the topography rather than the anatomy of his body. I once had a patient who complained of pains in the joints when in reality the pains were in the shafts of bones, a fact which led to the diagnosis of hyperparathyroidism.

The importance of the chief complaint adequately stated is so great in my mind that I urge the student to quote it in the patient's own words and not, as so often happens, translate it into accepted medical nomenclature. The latter practice, I find, sometimes distorts the real significance of the patient's complaint.

Once the chief complaint is determined, the history of its development, in chronologic order if possible, should follow rather easily. The patient should be allowed to discuss his condition without too much interruption, guided from time to time by intelligent questions which will arise in the examiner's mind as he matches the patient's story against his own storehouse of medical knowledge. These queries should not suggest to the patient the conditions the examiner might like to fit in with the picture of a certain disease that comes to his mind (so-called leading questions). Instead, they should suggest possible states that may be a part of the picture but were not recalled by the patient. Such questions are quite necessary. For example, the examiner should inquire about sore tongue in suspected pernicious anemia, and pains in the calves of the legs or periodic loose stools in suspected hyperthyroidism. If he suspects malingering he may ask leading questions to determine consistency of answers.

The time and character of onset are frequently significant. Was it sudden and acute, or indefinite and insidious? Was fever, pain, or a chill present? What was the first thing that was "wrong?" Certain acute diseases, notably lobar pneumonia, malaria, pyelitis, and septicemia, rather constantly and characteristically have their onset with a frank chill. The chill or ague implies a profound feeling of cold with generalized tremors and is to be distinguished from the common chilly sensations which accompany the onset of many fevers. The latter are due to the physiologic mechanism of raising body temperature by diminishing heat loss through peripheral vascular constriction.

In addition, some general questions about the course of events

should be asked. Special inquiry should be made into the effect of the patient's condition on his general well-being, his appetite, and his gastrointestinal functions. These respond to many illnesses not directly involving them. Vomiting, constipation, diarrhea, weight loss, and generalized or localized weakness should be ascertained as to amount and rate. For example, over how long a period did a stated loss of weight (or gain) occur? Was there a general lassitude or did some part like one arm or leg become weak? It is often well to have the patient suggest, if he can, what he thinks may be the cause of his condition. As a former teacher of mine was wont to remark facetiously, "The patient has inside information!"

After recording the patient's account of his illness, including the answers to the general questions asked, the examiner should systematically review all parts of the body, beginning with the head and proceeding downward. Here specific questions regarding abnormal function will have to be asked. It is a good idea to cover all the systems in a general way in the very beginning, later adding more specific details that may be uncovered in the questioning, which should continue as the physician examines each part.

Thus, pains in the head, headache, vertigo, itching scalp, tinnitus, deafness, visual disturbances, photophobia, tearing, redness of the eyes, and swelling are inquired into. Symptoms already mentioned about other parts of the body will usually be referred to later, preceding the detailed examination of that part. In every case an attempt should be made to evaluate the apparent reliability of the patient on hand. Therefore his intelligence and emotional state must be determined. All this, of course, presupposes a more or less normal, conscious individual. A patient whose mentality is obviously abnormal or whose consciousness is obtunded will require further study from the neurologic aspect (see *Neurologic Examination*, page 237).

After obtaining a description of the present illness, the examiner seeks further information by inquiring into past illnesses which may be possible antecedents of the present state or related to it (such as scarlet fever preceding nephritis), or which as associated phenomena (such as a previous allergy, hives, eczema, or hay fever in a suspected asthmatic) may help to clarify the present diagnosis.

Thus the examiner asks about previous illnesses the patient has had, when he had them, the duration of disability or confinement to bed, and whether recovery was complete. Generalities are to be

avoided unless the patient's memory and knowledge preclude any definite statements. Thus "childhood diseases" should not be accepted when the particular ones can be stated. Venereal diseases should be designated by name or description of the lesions if possible, for example, a penile sore occurring after sexual contact and lasting a definite time, or a urethral discharge. The question of abortions in the third trimester of pregnancy in the patient herself or in the wife of a patient may point toward syphilis. The same possibility holds when there is a history of injections for "bad blood" or of blood tests, whether the results are known to the patient as such or are only reflected in the advice or opinion given to him by the physician who had them made.

Specific operations should be noted together with the reasons for them or, if the details are unknown as is often the case, with a description of the condition that caused the patient to require medical aid at the time. Do not jump to conclusions about the nature of a procedure whose description is vague. It is often worth while to communicate directly with the surgeon or hospital where the operation was done.

Next comes the family history, which is relatively less important than the patient's personal history but sometimes gives a clue when familial, inherited or contagious diseases are in question. Many people are quite unaware of the cause of death even in immediate relatives, and the causes of death are not always accurately recorded. A description by the patient of the deceased relative's condition is sometimes helpful. The examiner should ask particularly about the following:

1. Contagious diseases, especially tuberculosis, and the amount of contact the patient has had with the victims of any such diseases.
2. Metabolic disorders with possible familial tendencies, such as diabetes.
3. Malignant diseases. The examiner should use common terms like "cancer," a "growth."
4. Allergic disorders, such as eczema, hives, frequent bronchitis, hay fever.
5. Specific hereditary disease, especially where the case suggests a possibility of hemophilia, familial amaurotic idiocy, Cooley's anemia, and others.
6. Vascular disturbances, as evidenced by hemiplegia or "high

blood pressure." Always use the vernacular when questioning patients—never ask them about "hemiplegia," but rather about a "stroke."

Next in order and very important in most cases is the social history. This consists not only in asking about the patient's occupation with a view to possible occupational hazards and contact diseases, but also in finding out, in general, how the patient lives at work, at home, and at play. What are his reactions to his surroundings and his fellowmen? Such information may be equally or even more valuable. Many a maladjusted person will offer the most amazing detail of facts that condition his complaints if the examiner but probes the outer rim of his personality. Without such knowledge the examiner would be indeed at a loss either to account for the symptoms of the complaint or to treat them adequately.

To return to the subject of occupation. This, like the chief complaint, is not readily ascertained. People are loath to describe what they do, except in generalities. He who works with a hammer and saw styles himself a carpenter. But it makes a considerable difference whether he does a monotonous type of work all day long, such as bending over nailing on washboards in a building operation, or whether he has a diversified job, or perhaps works as a rigger with huge timbers high in the air. It is sometimes of value to inquire whether other co-workers have become afflicted with disorders similar to the patient's.

Those who work in offices commonly refer to themselves as clerks. But here again, monotony or diversity, sedentary or active endeavor make some difference and should be known. Simply stated, the patient should be asked to describe exactly what he does.

The patient's attitude toward his employer and the group he works with, his attitude toward a labor union, or the possibilities of a triangle with an executive, his secretary, and his wife are situations the medical examiner would do well to know. Inhibitions, complexes, repressions, fears, doubts, insecurity, feelings of rejection, excessive responsibilities, and uncooperative, complaining or ill mates—all the things stressed today in the new word correlating the psyche with the soma are included in the social history. Anorexia, "indigestion," loss of weight, are often due to worry, anxiety, prolonged states of tension, domestic strife, frustrated ambitions. All individuals have problems which either they solve in varying degrees or seek to escape. Excessive smoking, drinking, "splurges" of one

kind or another, all these may lead to the condition which the patient considers his real trouble and for which he seeks medical aid.

Completing the history of the present illness in this manner should enable the examiner to have some rather definite ideas about the type of disorder with which he is dealing as well as the type of individual who has the disorder. That is, the disease is either acute or chronic, local or general. It may be febrile or afebrile, malignant or benign, infectious, toxic, or metabolic. It involves chiefly some one system—the gastrointestinal, cardiopulmonary, genitourinary, neuromuscular, nervous, or skeletal. The degree of alertness, the probable degree of suffering, and other reactions of the patient to his disease will likewise be more or less appreciated. With such ideas in mind the physician concentrates on the suspected system.

The value of a well-taken history in pointing to the diagnostic possibilities has recently been emphasized in a study¹ which correlates the interpretation of a self-administered questionnaire with the results of investigation in a university teaching general medical outpatient department.

This method of history-taking, namely, utilizing a questionnaire which the patient fills out, may well represent an advance over the time-consuming personal questioning outlined above in that the patient can complete it while waiting for the formal interview and examination. The examiner can, within a few minutes, interpret the data, which is said to yield correct and comprehensive diagnostic deductions by which physicians were able to identify 94 per cent of the diagnostic categories, or areas, in which disease was found on investigation and, in addition, they could often infer (in 87 per cent of these areas) what specific medical diseases were present.

¹ K. Brodman, A. J. Erdmann, Jr., I. Lorge, and H. G. Wolff, "The Cornell Medical Index-Health Questionnaire. II. As a Diagnostic Instrument," *J.A.M.A.*, 145:152 (1951).

2 PRINCIPLES OF PHYSICAL DIAGNOSIS

STRICTLY SPEAKING, diagnosis by physical means implies the use of all aids by which the examiner can perceive with his senses changes in the bodily state of the patient. Excluded in this concept are examinations for chemical changes in bodily specimens; precision evaluation of functional alterations by means of electrocardiograms, x-ray visualization, and basal metabolism tests; and tests for blood or tissue changes requiring special preparations of smears, sections and stains. In the broadest sense, various special diagnostic procedures of a physical nature such as cystoscopy and bronchoscopy could also be considered proper methods of physical diagnosis, but by such reasoning the subject could be broadened to an all-inclusive confusion!

In practice, physical diagnosis may be said to include all aids to sensuous perception that may be conveniently brought to the patient. Means to elicit subjective as well as objective phenomena are valid additions. Some of the equipment generally used by physicians includes a pocket flashlight, a magnifying glass, a clinical thermometer, a sphygmomanometer, a tuning fork, a tongue depressor, a stethoscope, and various specula and mirrors (Fig. 1).

Some effort to explain the principles of physical phenomena will be made in the sections to which they pertain. At this point it suffices to discuss the role played by the senses in making a fruitful examination.

Vision is the first sense the doctor uses in examining a patient. Good daylight is desirable, even necessary, to evaluate color changes, such as jaundice, which are often missed in artificial, yellow illumination. An exception to this rule is the transillumination of paranasal