

Classic Descriptions
of Disease



This is the FRONTISPIECE to the second edition of Dekkers' *Exercitationes practicae circa Medendi Methodum*, Leyden, 1694. Here the artist Joseph Mulder has depicted some of the gods of classical antiquity as well as diseases described and treated by the author. In the background we see an ancient temple. On the wall facing us stand Apollo, father of Asclepius, with his lyre, Aphrodite mother of the world, and Clotho, one of the Fates, holding the distaff in her left hand. Behind a column crouches Time, with a scythe in his right hand and an hour-glass in his left, ready to strike down the man who has lived his allotted span of years. In the foreground walks Asclepius touching the sick with his rod, around which a single serpent is coiled, the insignia since of the medical profession. Beside him the artist has placed a cock, since cocks were the favorite animals used in sacrifices to Asclepius. Among the various diseases shown are arthritis, rickets, abdominal cysts, hydrocele, and tumors of the legs and buttocks. On the pillars and walls hang various surgical instruments, including a cupping glass and a long tube for insufflating tobacco smoke into the rectum. The instruments, as well as the patients, are described and illustrated in the book.

Third Edition, Seventh Printing

Classic Descriptions
of Disease

With Biographical Sketches of the Authors

By

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TO MY FATHER

to whom I owe many things,
among them an interest in the
thoughts and language of others.

PREFACE TO THE SECOND EDITION

Every author is grateful for the opportunity which the preparation of the second edition affords him of correcting certain errors and omissions. I am deeply appreciative of the assistance rendered me by many friends in calling certain mistakes to my attention and in suggesting improvements.

In this second edition of *Classic Descriptions of Disease* new sections covering malaria and yellow fever have been included as well as additional readings and illustrations. Many of the biographical sketches have been rewritten and the index has been revised and enlarged. I hope these changes will commend themselves to the reader.

It is again a pleasure to express my appreciation of Mr. Thomas' assistance, encouragement and advice.

R.H.M.

PREFACE TO THE FIRST EDITION

The nucleus of this selection of classic accounts of disease was collected partly because of personal interest in the subject and partly for use in teaching. The value of referring students to classic accounts of disease has been stressed by many of our greatest clinicians, in our own generation notably by Sir William Osler. When, in the clinic, Corrigan's description of the pulse in aortic insufficiency is read while a patient suffering from this disease is presented, the pulse itself is no longer a mere name, but becomes endowed with a definite personality. When we read in our library Heberden's original description of angina pectoris, we cannot but have the thought that if physicians read this account more frequently fewer mistakes in the diagnosis of this condition would occur.

The appearance of Long's *Readings in Pathology* suggested the possibility of expanding my own selections until they attained the dimensions of a sizeable volume and after the later appearance of Fulton's *Selected Reading in the History of Physiology*, the idea took definite form. Mr. Thomas, to whom the manuscript was submitted, has not only undertaken the responsibility of its production but has been of the greatest possible assistance in the completion of the task. It is a great pleasure to acknowledge his cooperation and assistance and to express my appreciation of his interest, enthusiasm, and rare good taste.

My obligations are many to many, both books and persons. My greatest of the former is the assistance received from F. H. Garrison's *History of Medicine*. This mine of historical information, so replete with that accuracy and detail which we admire so much in our Teutonic colleagues, is now with American students the starting point of almost every investigation in the history of medicine. I have also obtained much aid from Professor Hermann Vierordt's *Medizin-Geschichtliches Hilfsbuch*, a very valuable work which deserves a far wider use in this country. I have also consulted frequently Haeser's *Geschichte der Medizin*, Pagel and Neuburger's *Handbuch der Geschichte der Medizin*, Munk's *Roll of the Royal College of Physicians of London*, Bettany's *Eminent*

Doctors, Castiglioni's *Histoire de la médecine*, Sigerist's *Grosse Ärzte*, Camac's *Epoch-making Contributions*, Victor Robinson's *Pathfinders in Medicine*, Ruhrah's *Pediatrics of the Past* and Still's *History of the Paediatrics*. The biographical details have been obtained from the above works, from medical journals, from the *Dictionary of National Biography*, the *Allgemeine Deutsche Biographie*, the *Biographie Universelle*, the *Lexikon hervorragender Ärzte* and in many instances from biographical works which are mentioned in the text.

I am equally under deep personal obligations to certain individuals. Colonel F. H. Garrison, with whom I have discussed this book, has given me many invaluable suggestions, has supplied me with data and selections and shown me many other favors for which I am deeply grateful. Sir Humphry Rolleston has taken the pains to go over the plan and outline of this work and I wish to express my appreciation of his assistance and the splendid helpful suggestions he has made. Much additional aid also he has unconsciously given in his historical papers, particularly in the *Annals of Medical History*, from which much biographical data has been obtained. Dr. Arnold Klebs has aided me very materially in his helpful suggestions and his interest and encouragement are deeply appreciated. My old friend of Heidelberg days, the late Dr. Erich Ebstein, has aided me greatly in the preparation of this book. His unexpected death while at the height of his powers has been a great loss to medicine, and saddened his many friends who will long remember the genial doctor with his inexhaustible fund of medical anecdotes, his prodigious memory for events and his encyclopedic knowledge of medical history which was ever at the command of his colleagues. Dr. Ernest Wickersheimer has aided me materially in his suggestions and references to accounts worthy of inclusion, and I am also under obligations to Dr. Henry Barton Jacobs. To my friend Dr. Logan Clendening, I owe more than he would care to have me mention. He has supplied me with pictures, translations, biographies, and has had the rare courage to go over the manuscript in its unfinished state, and to give the most sane and constructive criticism. Finally I wish to express to Colonel P. M. Ashburn, librarian of the Surgeon General's Library, my sincere appreciation of his unfailing courtesy in supplying numerous selections and photographs and in guiding my path while visiting the library.

I am also under great obligations for the use of materials and pictures, to the editors of the *American Journal of Medical Sciences*, the *Boston Medical and Surgical Journal*, the *Bulletin of the Johns Hopkins Hospital*, the *British Medical Journal*, the *Edinburgh Medical Journal*, the *Lancet*, the *Münchener Medizinische Wochenschrift* and to the Royal College of Physicians in London, the Royal College of Physicians in Dublin, the University Press in Manchester, the Oxford Press, the British Museum, and Paul B. Hoeber, Inc. I wish also to make grateful acknowledgement to Miss Opal Woodruff, librarian of the University of Kansas School of Medicine, and to Mrs. Rose Hibbard, librarian of the Jackson County (Missouri) Medical Society who have aided me in many ways.

In collecting an anthology of this kind certain selections obviously are included and others omitted. The selections are chosen because of their interest

in being either the first known, one of the earliest, or one of the most interesting accounts of the disease in question. Some sections of the book are so sparsely represented that they seem inadequate while others seem so fully represented as to be almost overdone. This is inevitable, however, since some diseases have more interesting and more extended histories than others and also because of personal taste, or bias, if you will, in the selection of authors.

In sections on infectious diseases one misses an account of the discoveries of Koch, Schaudinn, Kitasato, Bordet, Wassermann, and of that many-sided genius Edwin Klebs, who saw the typhoid bacillus before Eberth, the diphtheria bacillus before Löffler, and who inoculated monkeys with syphilis before Metchnikoff. Such discoveries belong, however, to the field of bacteriology, and these selections deal in the main with clinical medicine. The subject of therapeutics has not been included except in a few instances, where they seemed to round out unusually well the history of the disease in question. Neurological selections have been omitted for the reason that their interest and number are sufficient to form an independent series.

Unless otherwise indicated, I am responsible for the translations into English. In making translations from the Latin I have had in several instances the advantages of comparison with a French or German translation. Mistakes have probably crept in, since in many places it is difficult to be sure just what thought some Italian, Frenchman, or Spaniard writing in medieval Latin was trying to express, and at times a translator almost wonders if the author himself knew, particularly when he indulges in flights of speculation. In general, however, I believe the thought of the author has been reproduced with accuracy. Considerable liberty has been taken in paragraphing the accounts of the old authors since the modern reader is almost invariably appalled by the contemplation of a solid sheet of printed matter with no indentations or paragraphs. Such liberty, however, has not, I believe, interfered with the sense of the author or with his continuity of thought.

In conclusion I hope this book will not merit the reproof of Dr. Samuel Johnson, who is reported to have remarked after reading Cadogan's *Dissertation on the Gout*, that "all that is good he stole, all the nonsense is evidently his own."

PREFACE TO THE THIRD EDITION

Twelve years have passed since the first edition of this book appeared. Since then, many notable figures in the history of medicine have died, Professor Karl Sudhoff, Colonel Fielding Garrison, Doctor Arnold Klebs and Sir Humphry Rolleston, to mention only a few. From these men, all interested in the history of medicine have received much inspiration, and their passing leaves us with a sense of deep personal loss as well as with the realization of an irreparable loss to medicine. Their contributions to the history of medicine are a part of medical history itself, and as we look back over these years, they seem from the prospective of today to have been perhaps the golden age of medical history. The work of these men stimulated an interest in the history of medicine which has grown steadily from year to year. Fortunately, many stalwarts of this generation still remain to carry on the unfinished work of these men and a new generation is rising who will keep alive their enthusiasm and their love for this field of medicine.

In this third edition, several new selections have been added and the book has been provided with a bibliography which I hope may prove helpful. In the preparation of this edition I am deeply indebted to Dr. George Blumer, Dr. Henry Sigerist and Dr. Ludwig Edelstein. To my old friend and colleague, Dr. Logan Clendening, who patiently watched the gestation of this book, assisted at its birth and has thoughtfully and tenderly nursed its growing pains as it proceeded to later editions, my deepest gratitude!

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Classic Descriptions
of Disease



Photograph by Author

Statue of "Hippocrates" discovered on the Island of
Cos in 1933 by Professor Luciano Laurenzi.

INTRODUCTION

Hippocrates

“Life is short, and the Art long; the occasion fleeting; experience fallacious, and judgment difficult. The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants and the externals cooperate.” Thus runs the first aphorism of Hippocrates on whom history has bestowed the title of the “Father of Medicine.” His countrymen believed he was descended from Aesculapius, the God of Healing and most of the stories we possess concerning his life are legends and not historical facts. He was born about 460 B.C. on the island of Cos and had as contemporaries some of the greatest men of all time: Pericles the statesman; the poets Aeschylus, Sophocles, Euripides, Aristophanes, and Pindar; the philosophers Socrates and Plato; the historians Herodotus, Xenophon, and Thucydides; and the unrivalled sculptor Phidias. He inherited a distinguished position in the Temple of Aesculapius at Cos and began the study of medicine there. He studied for a time at the neighboring school of Cnidos and then returned to Cos. Later he travelled extensively and practised in Thrace, Delos, and Thessaly. According to a tradition he stamped out the great plague of Athens by the expedient of building fires. Thucydides however, an eye-witness of that plague, does not mention Hippocrates and further states that all measures employed in combatting the plague were unsuccessful. Hippocrates died in Thessaly, circa 375 B.C. His sons Thessalus and Draco and his son-in-law Polybus were famous and successful physicians.

Hippocrates was primarily a physician, endowed with remarkable powers of observation and with an unusual store of common sense. Instead of attributing disease to the gods and speculating as to why man was punished, Hippocrates, unlike the generations of philosopher-physicians who had preceded him, avoided all speculation. “Some say,” he wrote, “both physicians and sophists, that it is impossible to understand medicine, unless we know what man is, how he originated, and how he became, in the beginning an actual body . . . but for myself, I believe, that all these forms of speech of sophists and physicians, and all that they write on nature belongs to the business of writing and not to medicine itself.” Hippocrates stressed the study of patients and the symptoms they presented. He founded the bedside method of study, neglected for centuries and then revived with such signal success. His forty-two clinical cases were almost the only record of the kind for the next 1700 years. He recorded his failures as well as his successes. “I have written this down deliberately,” he says, “believing it to be valuable to learn of unsuccessful experiences and to know the cause of their failure.”

Many of the oldest known descriptions of disease are from Hippocrates. “It has often been remarked that his clinical pictures of phthisis, puerperal septicaemia, epilepsy, epidemic parotitis, the quotidian, tertian, and quartan varieties of remittent fever, and some other diseases, might, with a few changes and additions, take their place in any modern text-book” (Garrison). He was a

precursor of Laënnec in the discovery of auscultation. In his Second Book on Diseases, he notes that in pleurisy one hears "a sound like that made by leather." In the same book, when discussing hydrothorax, he notes "if one places his ear against the chest and listens for a long time, he hears it bubbling inside like vinegar." The terms "Hippocratic facies," "Hippocratic fingers," and "Hippocratic succussion" are familiar to every medical student. The first selection describes the Hippocratic facies and the second the curved nails. Later selections describe the pleural friction rub and râles. Since Hippocrates mentions specifically placing the ear against the chest, he was apparently familiar with immediate auscultation and, it is probable, that he employed this method when he heard râles, the pleural friction rub and the succussion splash.

Many translations of Hippocrates' works have been made. The English translation by Francis Adams ranks among the best. Adams was a country physician in the little Scotch village of Banchory, where, in the midst of an arduous and extensive practice, he found time to read "almost every Greek work which has come down to us from antiquity except the ecclesiastical writers." His translation of Hippocrates appeared in 1849. In addition to this translation, he also translated the works of Paulus Aegineta and of Aretaeus.

The familiar bust in the British Museum so frequently reproduced as the bust of Hippocrates, is not that of the great physician but represents the stoic philosopher Chrysippus. In 1933, Professor Luciano Laurenzi, in the course of his excavations on the island of Cos, discovered a statue which many believe to be of Hippocrates. This statue, which is the work of a Greek sculptor and dates from the third century B.C., is reproduced on *page 2*.

THE BOOK OF PROGNOSTICS*

1. It appears to me a most excellent thing for the physician to cultivate Prognosis; for by foreseeing and foretelling, in the presence of the sick, the present, the past, and the future, and explaining the omissions which patients have been guilty of, he will be the more readily believed to be acquainted with the circumstances of the sick; so that men will have confidence to entrust themselves to such a physician. And he will manage the cure best who has foreseen what is to happen from the present state of matters. For it is impossible to make all the sick well; this indeed, would have been better than to be able to foretell what is going to happen; but since men die, some even before calling the physician, from the violence of the disease, and some die immediately after calling him, having lived, perhaps, only one day or a little longer, and before the physician could

bring his art to counteract the disease; it therefore becomes necessary to know the nature of such affections, how far they are above the powers of the constitution; and, moreover, if there is anything divine in the diseases, and to learn a foreknowledge of this also. Thus a man will be the more esteemed to be a good physician, for he will be the better able to treat those aright who can be saved, from having anticipated everything; and by seeing and announcing beforehand those who will live and those who will die, he will thus escape censure.

2. He would observe thus in acute diseases: first, the countenance of the patient, if it be like those of persons in health, and more so, if like itself, for this is the best of all; whereas the most opposite to it is the worst, such as the following: *a sharp nose, hollow eyes, collapsed temples; the ears cold, contracted, and their lobes turned out; the skin about the forehead being rough, distended, and parched; the color of the whole*

* *The Genuine Works of Hippocrates*, translated by Francis Adams, New York, Wm. Wood, n.d., I, p. 194.

face being green, black, livid, or lead-colored. If the countenance be such at the commencement of the disease, and if this cannot be accounted for from the other symptoms, inquiry must be made whether the patient has long wanted sleep; whether his bowels have been very loose; and whether he has suffered from want of food; and if any of these causes be confessed to, the danger is to be reckoned so far less; and it becomes obvious, in the course of a day and a night, whether or not the appearance of the countenance proceeded from these causes. But if none of these be said to exist, and if the symptoms do not subside in the aforesaid time, it is to be known that certain death is at hand. And, also, if the disease be in a more advanced stage either on the third or fourth day, and the countenance be such, the same inquiries as formerly directed are to be made, and the other symptoms are to be noted, those in the whole countenance, those on the body, and those in the eyes; for if they shun the light, or weep involuntarily, or squint, or if the one be less than the other, or if the white of them be red, livid, or has black veins in it; if there be a gum upon the eyes, if they are restless, protruding, or are become very hollow; and if the countenance be squalid and dark, or the color of the whole face be changed—all these are to be reckoned bad and fatal symptoms. The physician should also observe the appearance of the eyes from below the eyelids in sleep; for when a portion of the white appears, owing to the eyelids not being closed together, and when this is not connected with diarrhoea or purgation from medicine, or when the patient does not sleep thus from habit, it is to be reckoned an unfavorable and very deadly symptom; but if the eyelid be contracted, livid, or pale, or also the lip or nose, along with some of the other symptoms, one may know for certain that death is close at hand. It is a mortal symptom, also, when the lips are relaxed, pendent, cold, and blanched.

3. It is well when the patient is found by his physician reclining upon either his right or his left side, having his hands, neck, and legs slightly bent, and the whole body lying in a relaxed state, for thus the most of persons in health recline, and these are the best postures which most resemble those of healthy persons. But to lie upon one's back, with the hands, neck, and legs extended, is

far less favorable. And if the patient incline forward, and sink down to the foot of the bed, it is a still more dangerous symptom; but if he be found with his feet naked and not sufficiently warm, and the hands, neck and legs tossed about in a disorderly manner and naked, it is bad, for it indicates aberration of intellect. It is a deadly symptom, also, when the patient sleeps constantly with his mouth open, having his legs strongly bent and plaited together, when he lies upon his back; and to lie upon one's belly, when not habitual to the patient to sleep thus while in good health, indicates delirium, or pain in the abdominal regions. And for the patient to wish to sit erect at the acme of a disease is a bad symptom in all acute diseases, but particularly so in pneumonia. To grind the teeth in fever, when such has not been the custom of the patient from childhood, indicates madness and death, both which dangers are to be announced beforehand as likely to happen; and if a person in delirium do this, it is a deadly symptom. And if the patient had an ulcer previously, or if one has occurred in the course of the disease, it is to be observed; for if the man be about to die the sore will become livid and dry, or yellow and dry before death.

4. Respecting the movement of the hands I have these observations to make: When in acute fevers, pneumonia, phrenitis, or headache, the hands are waved before the face, hunting through empty space, as if gathering bits of straw, picking the nap from the coverlet, or beating chaff from the wall—all such symptoms are bad and deadly.

5. Respiration, when frequent, indicates pain or inflammation in the parts above the diaphragm: a large respiration performed at a great interval announces delirium; but a cold respiration at nose or mouth is a very fatal symptom. Free respiration is to be looked upon as contributing much to the safety of the patient in all acute diseases, such as fevers, and those complaints which come to a crisis in forty days.

* * *

17. Empyema may be recognized in all cases by the following symptoms: In the first place, the fever does not go off, but is slight during the day, and increases at night, and copious sweats supervene, there is a desire to cough, and the patients expectorate

nothing worth mentioning, the eyes become hollow, the cheeks have red spots on them, the nails of the hands are bent, the fingers are hot, especially their extremities, there are swellings in the feet, they have no desire for food, and small blisters (phlyctaenae) occur over the body. These symptoms attend chronic empyemata, and may be much trusted to; and such as are of short standing are indicated by the same, provided they be accompanied by those signs which occur at the commencement, and if at the same time the patient has some difficulty of breathing.

I. INFECTIOUS DISEASES

THE THEORY OF INFECTION Hieronymus Fracastorius Veronensis

CHAPTER I*

WHAT IS CONTAGION?

Now we will speak of contagion, on account of which there are so many questions concerning the sympathy and antipathy of things, and we will begin with general questions and then other principles.

According therefore as the name indicates, contagion is an infection passing from one individual to another. For a contagion there must be two factors, either two different individuals or two contiguous parts of the same individual: indeed of that between different individuals we speak as simply and properly contagion, of that between two parts of the same person, we do not speak of as a true contagion but of a sort of contagion. Moreover the infection is seen to be the same for him who has received or has given the infection: also we speak of infection when the same virus has touched one or the other. Also as to those who die from having imbibed poison, we say perhaps they are infected but not that they have suffered from contagion. And in the air where milk, meat and other things normally become putrid, we say there has been corruption but not that they have suffered a contagion, nor that the air itself was similarly corrupted: and we will investigate this diligently in the subsequent chapters.

Every action and occurrence takes place upon the substance of bodies or their appendages: therefore we do not say anyone has received contagion, who was vexed or corrupted by another, for it is seen that contagion is an infection of the substance itself of bodies.

Now therefore, when a burning house destroys its neighbors, do we call it contagion? Certainly not, this is not called contagion, not in general because the house has been destroyed first and then destroys everything but because infection itself is composed of minute and insensible particles and proceeds

* Hieronymus Fracastorius Veronensis, *Opera omnia*, Venice, Junta, 1584, pp. 77-78.

from them; and which the term infection indicates, for we do not call infection a destruction that is total, but only to a certain degree, and from insensible particles.

For I call the whole composite picture, indeed the small and insensible particles, of



HIERONYMUS FRACASTORIUS VERONENSIS
(1484-1553)

From Fracastorius' *Opera omnia*.
Venice, 1584

which the whole is composed, contagion. A fire is seen therefore to act on the whole, a contagion on the component parts, but the whole may be destroyed soon by them, therefore contagion is considered as a condition produced by the mixing. But as mixtures can be destroyed or damaged in two fashions, one method by the advent of a contrary element, so that they do not preserve their form, the other method by a dissolution of the mixture, as happens in putrefaction, so perhaps the doubt arises whether contagion is only caused by infection brought by small particles, and this indeed be infection, or whether by a

corruption of these particles, or rather only by a change, and which indeed may happen: wherefore it may be questioned whether all contagion may not be a putrefaction. More-

over all these questions are clearer, if we seek diligently first the fundamental differences and the causes of contagions.

* * *

CHAPTER II

CONCERNING THE FUNDAMENTAL DIFFERENCES OF CONTAGIONS

The fundamental differences of all contagions are seen to be three in number: those infecting by contact alone, those only by contact and leaving fomites by which they are contagious such as scabies, phthisis, itch, baldness, elephantiasis and others of this sort, I call fomites, clothing, screens and other things healthy themselves but apt to conserve the first seeds of infection and to infect through them and then several things which not only by contact, not only by fomites, but which transfer infection at a distance, such as pestilential fevers, and phthisis and certain ophthalmia and other exanthemata, which are called variola and

the like. And these are seen to follow a certain rule, those which produce contagion from a distance are accustomed to infect both by fomites and by contact, those which are contagious through fomites are also contagious by contact. At a distance all are not contagious but all are by contact, thus it is most simple that we occupy ourselves with studying first that contagion, which infects solely by contact, and its cause inquiring in what manner it takes place and of what origin soon then studying other questions so that we may see whether there be any character common to all or differing in certain instances and what characteristic each one may have.

* * *

CHAPTER III

CONCERNING CONTAGION WHICH IS PRODUCED BY CONTACT ALONE

Not it is observed contagion which appears in fruit to be the mostly of that variety which is produced by contact alone, as from a grape to a grape and an apple to an apple for which reason it is asked what character of infection this may be: for they are spoiled by contact first with one of them which became rotten that is evident, but from what cause it is not evident. But the first one from whom all the infection passed to the others became putrid, and it would be agreed that the second received a similar putrefaction if indeed contagion and infection are similar to each other. For putrefaction is a dissolution of this mixture by the evaporation of the innate heat and moisture, indeed the cause of this evaporation is always a strange heat, whether it be in the air, whether in the surrounding humidity: therefore although the cause of the putrefaction is one or the other, the cause of the contagion is identical, that is external heat.

But this heat in the first place comes either from the air or from somewhere else and is not yet called infection, in the second place it comes from those insensible particles which

evaporate from the first one. and now there is contagion because the infection is similar in both cases. Moreover the heat evaporating from the first could produce in the second, that which the air produced in the first, and in like manner cause putrefaction, indeed more likely because of the resemblance.

Now, moreover, among the particles which evaporate from the first cause are some which are hot and dry, either of themselves or from mixing, others are hot and humid, either of themselves or from mixing. Those hot and dry are seen to be more apt to burn, but less apt to cause putrefaction. Indeed those which are hot and humid, are on the contrary more likely to cause putrefaction, indeed less likely to burn. For humidity softens and loosens and renders easily separable the parts it touches, but heat raises them up and separates them. Hence a dissolution of the mixture was caused by the evaporating heat and the innate humidity, which dissolution was putrefaction.

Wherefore it should be considered that the hot and humid particles, either by themselves, or from the humid mixture, which

evaporate from the first fruit, are the active principle and seeds of this putrefaction, which it produces in the second fruit. I say moreover the humidity from the mixture, because in the evaporations, which take place in putrefying things, it happens that small particles are mixed as much as possible, and thus the active principle is formed now of some generations now of new corruptions. And this mixture, which is made from heat with humidity, is moreover most suited to the production of putrefactions and con-

tagions. In fruits therefore which contagion strikes, it is considered to be caused by this principle, and also in all other fruit too, which the putrefying fruit itself touches, if conditions be similar the same thing happens and it is right to consider it due to the same cause: moreover this principle consists of those small insensible particles which evaporate, indeed hot and acrid but of a humid mixture which henceforth are called seeds of contagion.

Athanasius Kircher

Athanasius Kircher was born at Geisa in 1602 and received his preliminary education at the Jesuit College of Fulda. In 1618 he entered the Jesuit order at Paderborn and remained there until 1622, when the seminary was dissolved and its inmates forced to flee before the army of the warlike Lutheran Bishop of Halberstadt. He completed his studies at Cologne, Coblenz and Heiligenstadt, and then became professor of philosophy, mathematics and Oriental languages at Würzburg. The approach of the Swedish army under Gustavus Adolphus led to the abandonment of the college and both teachers and pupils sought safety in flight. "As everything in Germany," he wrote, "was topsyturvy and there was no hope of returning or remaining," he proceeded to Avignon where he taught mathematics and began his studies of Egyptian hieroglyphics, a study which remained one of his major interests throughout his life. In 1635 he went to Rome at the command of Pope Urban VIII and was made professor of mathematics at the Collegium Romanum. He held this chair for forty-five years, until his death in 1680.

Kircher was a man of wide and varied learning and enjoyed a tremendous reputation during his life-time. He was the author of more than forty books on magnetism, optics, sun-dials, acoustics, music, astronomy, mechanics, arithmetic, natural history, medicine, philosophy, theology, philology, universal language, archeology, history, geography, prestidigitation, and magic. A man of prodigious memory and of a remarkable industry, he was profoundly lacking in judgment and in critical sense. One of his biographers, Brischar, links his name with those of Galileo and Newton, while another Erman, describes him bluntly as a charlatan, and adds that "he was not an investigator, who was satisfied, when the few experts understood his works; what his nature needed was the empty admiration of the so-called 'wide circles' and in order not to lose this he didn't stop at forgeries."

He was probably the first investigator to employ the microscope in the study of disease. He described animalcules in putrefying meat, in sour milk and in rotten wood. While he could not possibly have seen the plague bacillus with the microscope he employed, he may possibly have seen larger bacilli. He was undoubtedly the first to express the doctrine that contagious diseases were spread by small living animals invisible to the naked eye, although

Fracastorius had previously expressed a similar idea "as if in terms of physical chemistry" (Garrison). Kircher, who was interested in all natural phenomena, was an eye-witness of the epidemic of plague which raged in Rome during the



ATHANASIUS KIRCHER (1602-1680)

An engraving of Kircher in 1664, age 62. From *Mundus subterraneus*. Amsterdam, 1665

years 1656 and 1657. His *Scrutinium physico-medicum Contagiosae Luis, quae Pestis dicitur* appeared in Rome in 1658 and was dedicated to Pope Alexander VII.

§II

CONFIRMING EXPERIMENTS*

Everything putrid filled with worms. Therefore it is certain that the air, water and earth are filled with innumerable small animals; and furthermore that they can be

* Kircher, Athanasius, *Scrutinium physico-medicum contagiosae luis quae pestis dicitur*, Rome, Mascardi, 1658, pp. 43, 50, and 140-142.

demonstrated. It has been moreover known to everyone that worms grow from putrefying corpses; but since that admirable invention the microscope, it is known that everything putrid is filled with innumerable worms, invisible to the naked eye; which moreover I would not have believed had I not proved it by the experiments of many years. In order to demonstrate this, note

Experiment I

Spoiled meat filled with worms Take a piece of meat, leave it exposed at night to a wet moon until early the following morning, then study it with the microscope, and you will find, that through the corruption contracted from the moon it has been filled with innumerable worms of different sizes which cannot be seen without the microscope, except

those which have grown large and are visible. The same you will find in cheese, milk and vinegar and in numerous similar spoiled substances. But the microscope must not be carelessly set up, but by a hand not only diligent but expert; my own is such that objects appear a thousand times larger than they really are.

Milk, cheese, vinegar filled with worms.

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CHAPTER VIII

THE PUTRID CADAVERS OF THOSE INFECTED WITH THE PLAGUE FROM AN OUTPOURING OF ANIMATE AND INANIMATE CORPUSCULA ARE THE CAUSE OF CONTAGION

The pestilential poison attracted and inhaled by man soon destroys the internal spirits together with the native heat, immediately changes by its virulence the latent humor into a putrid one, from which condition a pestiferous odor follows which corrupts those who are near the patient and infects their clothes with the exhalation. This exhalation is nothing else than the evaporation of the putrid humor; an evaporation indeed composed of innumerable and invisible corpuscula, which, when they reach the free air, soon spreading out infect everything around with a virulent contagion; which with the same lethal and putrid power persist, are either received into the body by the breath, or introduced through secret hiding-places in the clothes, soon they affect him and then spread out further. In cadavers, indeed in every body with this plague this exhalation of the corpuscles is scattered and not only infect those near, but also are transformed into an animated progeny of most minute and invisible animalculae, which invade first linen, clothing, wood or anything of a porous and loose texture, then inspired inwardly they contaminate the innermost humors; then at the first contact, like touching oil, they communicate the contagion to the pores of the hands and fingers by contact; also in clothes contaminated by the poison, the poison excited by the heat gets in through the pores of the skin just as when breathed in by the breath, and affects them, which plague patients know to their own great sorrow.

What is the pestilential exhalation?

By what method the corpuscles are propagated

Indeed that this living effluvia is composed of invisible living corpuscula, is obvious from the innumerable worms which abound in such bodies, some of which grow large enough to be visible, while others remain of a size which is invisible, these corpuscles or particles multiply in such numbers, become innumerable and constitute the effluvia. Some when they are most minute thin and light are tossed about by the slightest current of air; since also they are sticky and like glue they attach themselves easily to the inner portions of the clothing, cords, linen and fibers; and indeed to anything porous such as wood, bone or cork and by their minuteness penetrate metals, where they scatter new seeds of contagion; and since they are so tenacious they live a long time from the moisture alone drawn from the humid air about, and which they soon convert into a virulent substance.

The effluvia is a living stench of worms.

The manner in which the pestilential foeter persists.

Thus it is very difficult to wash the poison from such things either by long washing or frequent washing with vinegar and lye, therefore the most effective of all remedies is to consume them in the fire; thus clothing and household goods infected with the same contagion when carried somewhere else, in a short time produce tragic catastrophes; indeed not only whole cities are attacked by the sudden and unexpected contagion but also provinces and entire kingdoms. We see the method and manner by which contagion is wont to be propagated; now we will confirm what we have said above by examples.

CHAPTER IV

CONCERNING THE REMARKABLE EFFECTS OF CONTAGION OR PESTILENTIAL FOMITES AND THE POWERS OF THESE CONTAGIOUS THINGS

It should be asked therefore, in what manner and in what ways the plague is acquired by direct contact. I answer, it can spread in many ways, and how, is quite evident. Some of the explanations above are recalled by a few. Therefore, I say first; either the pestiferous exhalations of the earth, or the contaminated air or the infected man are the origin of all infections: for the pestilential exhalations from the bowels of the earth first infect the air; the air inhaled then infects man; this overwhelms numerous others with the acquired evil. I say secondly not so much by immediate contact the infected acquire the plague, but by the contact of all those things, which are in the place, where the patient lies, one can contract the infirmity. These act in this same manner since, as I explain above, the plague is living: for a patient infected with the fierce plague, soon contracts a terrible putrefaction, which we teach, moreover, to be from the generated worms. For these worms are the propagators of the plague, so small, so fine, and subtle that they elude all discernment by the sense,

The plague is acquired by touch of things

and also are perceived only with a most excellent microscope, you may call them atoms. Indeed, similarly, they multiply in such numbers that they cannot be counted; these thus are conceived and generated from putrefaction, thus are extruded easily by all openings and pores of the body with the sweaty exhalations; moreover are scattered, indeed, by the lightest agitation of the air, just as particles in a dark place are agitated in the rays of the sun; and thence they scatter, so that they attack whatever they meet. They then adhere most tenaciously and penetrate deeply into the innermost pores. This thing, moreover is not different, as I said, the putrid blood of sufferers from fevers, as I taught above, which an hour or so after venesection was found full of worms so that it almost astonished me, and, indeed, the man was still living; when dead, innumerable, invisible worms abounded, then I convinced myself that Job was right, "I have said to corruption, Thou art my father: to the worm, Thou art my mother, and my sister."

Small, invisible worms are the propagators of the plague

SYPHILIS

The origin of syphilis, in spite of centuries of patient research, seems shrouded in ever-increasing mystery. The theory that syphilis was introduced into Europe by the sailors of Columbus who had contracted the disease in America, was soon accepted by the medical writers of the sixteenth and seventeenth centuries. All have stressed its appearance in the army of Charles in Naples in 1495. Sudhoff holds, however, that this was an outbreak of typhoid or paratyphoid fever and dismisses the story of the high mortality at Naples, as an "Ammenmärchen" (nursery tale).

In 1863 Captain Dabry in his book *La Médecine chez les Chinois*, gave a striking account of syphilis, taken presumably from the writings of Huang-Ti 2637 B.C. Okamura, however, states he has studied these ancient books with great care, that they contain no description of syphilis, and that syphilis did not appear in China until after its introduction from Europe, early in the sixteenth century. Dohi, in his scholarly *Beiträge zur Geschichte der Syphilis* presents strong evidence that the disease was unknown in China or in Japan until the end of the fifteenth or the beginning of the sixteenth century. Whether or not syphilis was introduced from America or had existed previously in