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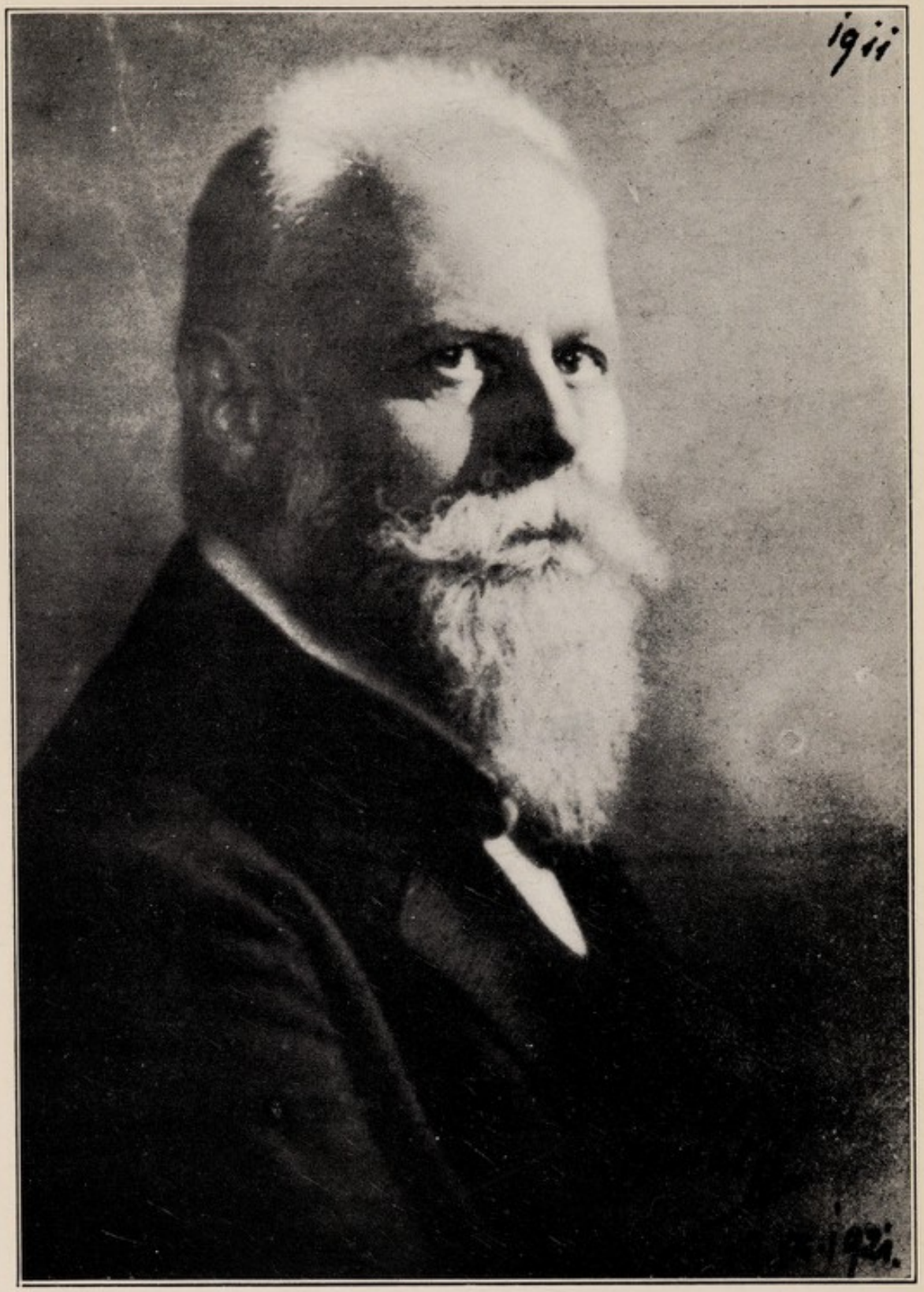
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KARL SUDHOFF

ESSAYS IN THE HISTORY OF MEDICINE

BY

KARL SUDHOFF, M.D.

Professor of History of Medicine in the University of Leipzig, 1895-1924

Translated by various hands and edited, with foreword and biographical sketch,

BY

FIELDING H. GARRISON, M.D.

Lieutenant Colonel, Medical Corps, U. S. Army.

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1926

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FOREWORD

The historical studies contained in this volume are, in the main, those published by Professor Sudhoff under the modest title "Sketches" (*Skizzen*) on July 4, 1921, his wife's birthday. But as about one fifth of the original volume deals with Goethe's relations to the Rhineland, some of Sudhoff's later medico-historical essays and sketches have been substituted therefore, with his consent, as being of more immediate interest to American physicians. In the dedication of the original "Sketches" (to his children), Sudhoff states that these children of his fancy are inscribed, not only to the actual children of his hearth and home, but to those whom he would fain regard as his spiritual kindred in the world outside, namely the younger school of medical historians, who, indeed, owe so much to him. He describes the present collection as a nosegay of many colors (*ein bunter Strauss*), bound together by his special mode of envisaging historical problems, in which he has unconsciously followed the device of that guiding spirit of his life, Goethe: "First sense a truth; then rationalize it."

"Erst Empfindung,"
Dann Gedanken."

first, perceptive;
then, cogitation

And, in effect, these essays and sketches represent, in a manner, the fine flower, the end-results of Sudhoff's massive achievement in the history of medicine, a prodigious life-work which has not been approached in variety, extent and importance by that of any other medical historian of the past or present. Sudhoff has practically created the newer history

of the medicine of Hellenistic Alexandria, and the Middle Ages, including the school of Salerno, of ancient balneology, dentistry and veterinary medicine, of the Paracelsian writings, of the traditional anatomy of the Middle Ages and of many another theme of lesser importance. Compare the perfunctory histories of hygiene in any modern *Handbücher* with Sudhoff's Dresden Catalogue (1911). You will perceive at once that the history of hygiene and the history of medicine are two entirely different subjects, tangent only at certain point. Indeed, the building stones for the future history of hygiene were assembled by Sudhoff in this catalogue and in the innumerable mediæval ordinances printed for the first time in his *Archiv*. The present collection of essays is, however, intended, not merely for professional medical historians, but for physicians, scientific men and all who are interested in the general history of culture. For this reason, contributions and even public addresses which deal with the technical handling of problems, or what Sudhoff himself, in his dedication, styles *Fachgelehrtenkram,* have been omitted. The superadded contributions such as those on Salerno, Leonardo da Vinci, Aims and Methods of Research in the History of Hygiene, have been chosen upon the same principle, by and with his advice and consent. We beg to thank the editors and publishers of the Annals of Medical History (New York) and the Bulletin of the Medical History Society of Chicago for permission to reprint the biographical sketch of Sudhoff and two translations of articles by him published in these periodicals.

When I received on Christmas, 1921, the original volume of the *Skizzen,* in its attractive binding of white and gold, I conceived a strong desire to translate these essays, or to see them translated, on account of their intrinsic and prospective value for the dissemination of new currents of ideas. I accordingly took up this work as a pensum for leisure hours during my tour of duty in the Philippines. I am not proud

of my ultimate performance. In two years time, with abundant leisure, I succeeded in translating three of the longer essays, and for this the depressing, steamy atmosphere of Manila, with its utter lack of fresh air, is not entirely accountable. To an outlander, Sudhoff's German is the knottiest conceivable. Sometimes straightforward it is oftener intensely idiomatic, woolly, primeval, Paracelsian, full of baffling redundancies, "provisos, sub-intents and saving clauses," the expression of a mind which, as in the case of Paracelsus or Haller, contains a host of ideas and facts in a state of solution (Sudhoff is a relative of Paracelsus). To accelerate and facilitate the work, I have therefore enlisted the aid of a number of professional colleagues, who have responded handsomely, and with military promptitude. Each translation has, however, been revised by me with reference to the actual meaning of the text. The separate translations by Drs. John C. Hemmeter, Albert Allemann, John Ruhräh, Major G. Seelig, Edward B. Krumbhaar, Hermann T. Radin, Frank J. Stockman, David Riesman and by Mr. George Panebaker, Mr. Felix Neumann (Surgeon General's Library) and Miss Emilie Recht, have been properly credited. In its present shape, the book is thus a quasi *Festschrift,* a sheaf of translations rendered by friends and admirers, and published by the Editor of "Medical Life" as a graceful tribute to the acknowledged master of our subject.

Whoever reads this book will not fail to perceive that it is the work of a mind of intensely masculine cast, that here matter and substance are more important than manner or form. That the mental processes implicit in its composition are, none the less, of a refined and highly specialized order will be apparent to any who are disposed to read attentively. Let the reader consider, for instance, the studies of prehistoric medicine and surgery, in which, with hardly any data to start with, Sudhoff gradually unfolds a vivid picture of the attempts of

primitive mentality to cope with pain, disease, injury and violent death; or his reading of the real significance of the figuration of female generative organs as votive offerings in antiquity, as a pathetic groping toward relief of a kind of human suffering which remained helpless and hopeless until the days of McDowell and Marion Sims. But it is in the fine essays which sketch out ground plans for the development of medical history in the future that Sudhoff shows the large and rugged competency of his race. If the history of medicine is to day an important and well organized branch of science, employing, as tools and adjuvants, the data of archæology, anthropology, ethnology, folk-lore, comparative and ethnic psychology, palæopathology, comparative philology, palæography, bibliography, numismatics, the plastic and graphic arts, the history and science of religions and every other phase of cultural history, it is due to the enterprising, resolute and self-helping labors of Sudhoff. When any big achievement is to be put over, such as his history of mediæval surgery or his great exhibit and catalogue of 20,394 material objects illustrating the history of hygiene, he goes at it in the spirit of one to whom "deeds are masculine, words feminine"——

> "Der Worte sind genug gewechselt,
> Lasst uns nun endlich Taten sehn."

If I may guess the guiding principle of his intellectual life, it would be in the splendid sentence of Sir Henry Maine: "Nothing moves in the modern world that is not Greek." The center of gravity of this book is, in fact, the eloquent conclusion of Sudhoff's "Galen," in which he reaffirms the ancient vow of our profession, since the days of Salerno: *"Was griechisch ist, kommt schliesslich zu Ehren!"* I have, therefore, not hesitated to render it *molto expressivo,* to drive home the centric thought. As a test of the worth and value of Sudhoff's teaching, I ask any professor of medical history to read to his

That which is Greek comes eventually to honor

classes this Galen essay, in connection with Greek medicine in Rome. In Sudhoff's view, Greek medicine is the purest strain of medicine the world has known. Those who read his paragraphs on obstetric details in early Dutch paintings will sense another side of the man. As Richard Wagner said of Beethoven, the rugged outer husk conceals a warm heart and valid soul, *integer vitae scelerisque purus,* if the soul be, in Gaskell's and Sherrington's reading of it, the integration of our whole being. Sudhoff's letters to me convey, in fact, an exquisite feeling about private and domestic life, and that whimsical tenderness about children and womankind which is often found in civilized men of the big mastiff type. At his special request, the sketch of Goethe's friendship with Maximiliane de la Roche has been included, as being Sudhoff's ultimate expression of himself, even as Brahms has lifted the veil for a brief moment in *"Liebliches Kind"* or *"Immer leise wird mein Schlummer."* It is because his inmost sentiments are of this genuine kind that we love and revere Karl Sudhoff.

F. H. Garrison

BIOGRAPHICAL SKETCH

by

FIELDING H. GARRISON

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ESSAYS IN THE HISTORY OF MEDICINE

BIOGRAPHICAL SKETCH

OF those who have retained, through thick and thin, the virtues and charm of the multiform romantic German past, I know of none more worthy of esteem and admiration than my revered friend and colleague, Professor Karl Sudhoff of Leipzig. An ardent follower of Goethe in his youth, he has been true, all his life, to the old-fashioned Goethe-Beethoven ideal, *im Ganzen, Guten, Wahren resolut zu leben.* In 1913 he was an honored guest of Sir William Osler at the International Medical Congress at London, of which he was one of the leading figures. To the end of the war he rendered faithful service to his country as a medical officer in hospital duty at Leipzig, and throughout the war his reviews and comments upon the works of enemy colleagues—English, French, American or other—were generous, magnanimous, fair-minded, equitable, as if no war existed. The end of the war found him a man of advanced years, much broken in health by lack of food and other privations, yet, in spite of these handicaps, pouring forth masterpiece after masterpiece, thus realizing, in a manner, upon the vast researches of earlier years. He is easily the greatest and most accomplished of all medical historians, the only one I know of who has that mysterious "natural faculty" which Carlyle called genius. It is the work of this remarkable man and of the institute founded by him that I desire to give some account.

Karl Sudhoff, the son of a theologian and philosopher of Luxembourg, was born at Frankfort-on-the-Main on November 26, 1853. He received his early education in the gymnasium of his native town and in schools at Zweibrücken and Kreuznach. Feeling strongly drawn to the study of medicine, he matriculated at the University of Erlangen in 1871, and after spending some time at Tübingen received his medical degree at Erlangen in 1875, his graduating dissertation being a study of primary multiple carcinoma of the osseous system (1875). Passing the state examination in 1876, Sudhoff removed to Berlin, and after serving a year as assistant physician at Augsburg completed his post-graduate training at Vienna. In the beginning of the year 1878 he commenced medical practice in Frankfort, and at the end of the year settled in the suburb of Bergen, whence, after five years' successful practice, he moved to Hochdahl, a suburb of Düsseldorf. In the 28 years of professional activity between the date of his graduation and the assumption of his professorship at Leipzig, Sudhoff had early acquired a keen interest in the history of medicine, and for this field, in which he was entirely self-taught, his academic training, like his medical training, had foundations of the broadest and deepest character. Even as a gymnasial student (*Sekunda* and *Prima*), he was an ardent botanist, worked in the physical and chemical laboratories, read Aristophanes and the Greek and Roman lyrists privately during the early morning hours of 5–7, made himself acquainted with the whole mass of the Gothic, Old High, Middle High and Low German literature, and left in the library of his gymnasium a monograph on rhymes in Sophocles. The director of his gymnasium was furious when Sudhoff decided to follow medicine instead of Germanic philology, in which he had already done considerable work with the celebrated Rudolph von Raumer. He was drawn to the study of the history of medicine by his interest in the Middle Ages, with the medical litera-

ture of which, as far as then published, he was soon familiar. From mediæval medicine it was but a step to Paracelsus, the *point d'appui* of most of Sudhoff's subsequent investigations. He began his Paracelsus studies at Bergen in 1879. The state archives at Düsseldorf were later placed at his disposal and through his lucrative practice he early acquired an extensive medical library. His earliest contribution to the history of medicine was a review of Dr. Leonhard Jörg's academic program on the scientific attainments of Paracelsus (1883). This was followed by further researches, culminating in two series of *Paracelsus-Forschungen,* in collaboration with Dr. Eduard Schubert (1887–1889). The first of these is a critique of the researches of Friedrich Mook and Heinrich Rohlfs. The second deals with the manuscript documents bearing upon the life of Parecelsus. Ten years later, this investigation was completed by an independent piece of research work, viz., a critical exegesis of the authenticity of the Paracelsian writings, with a *Bibliographia Paracelsica* (1894–1899). This preliminary work was the starting point of Sudhoff's vast researches on mediæval medicine in the manuscript sources (documents and illustrations), mastery of which was essential to comprehend the "long foreground" which explains the unique phenomenon, Paracelsus. Apart from the subsequent Paracelsus studies, his most important contributions prior to 1905 were his investigations of the life of Goethe (1893–1904) and his monograph on the iatro-mathematicians of the fifteenth and sixteenth centuries (1902), a most important study of astrological medicine. All this time Sudhoff was for thirty years an active and highly successful practitioner, specializing in gynecology and attaining the rank of Prussian Sanitary Councilor in 1900. He was highly popular in Düsseldorf and got up two historical expositions there in 1898–1899, which were so well remembered that he was asked to participate in another by his former townsmen, some fifteen years later

(1915). He was the originator of the great Rhineland jubilee exposition in honor of Goethe in 1899, and, as stated, made many investigations of Goethe's relations to the Rhineland. In 1901, the German Society of the History of Medicine was founded in Hamburg (later removing to Leipzig) and Sudhoff was the first president. In the summer of 1905 he found himself facing a momentous decision. Through the will of Prof. Theodor Puschmann of Vienna, the well-known medical historian, and his wife, both people of independent fortunes, their joint estates were to be bequeathed to the University of Leipzig "for the promotion of scientific work in the history of medicine" (January 12, 1885). When Puschmann died, on September 28, 1899, however, he had apparently reconsidered his decision and left his estate to the University of Vienna, while his wife, who had meantime separated from him, was also moved to annul the original joint will, executed at Berlin in 1885. In 1900, she again changed her mind in favor of Leipzig, but the claims of relatives led, after her death in 1901, to a prolonged and tedious lawsuit over her will. In the end, however, the courts decided in favor of the University of Leipzig, which thus acquired a sum of about 500,000 marks. This was put into the hands of nine trustees, with the rector as president, and including the prospective professor of history of medicine, whose salary was fixed in the plans for the new foundation. This chair was offered to Sudhoff. Following conferences with the Saxon Ministry at Dresden, Sudhoff pondered this matter after a mid-day meal on the beautiful Brühl Terrace, overlooking the Elbe, and, not without tears, decided to give up his professional practice for a life devoted to investigation and teaching. It was a step which no man could take without a certain sadness. It meant the loss of a highly satisfactory income from practice and the consideration for wife and children, which rendered such a retrenchment of resources unattractive; but more than that, it

meant the severing of many pleasant social relations in a city in which he was deservedly popular, the loss of professional and personal liberty and of a deep humanitarian interest in his profession, to gain the dubious advantages of an isolated academic career, a small-salaried university chair in a specialty for which few physicians or university professors had, at that time, any active sympathy or enthusiasm. But to his free joyous life on the Rhine, with its pleasurings, its friendships, its leisure for miscellaneous reading in novels and poetry, Sudhoff said a resolute farewell and took up the work which lay to his hand.

In accepting the university chair created for him, Sudhoff had stipulated that the venture must have a local habitation as well as a name, and accordingly an institute was established in the Talstrasse as a home for the new specialty. Here he began a series of original researches unparalleled in the history of his specialty, accomplished, many of them, by a method which was a new departure. With the ample funds at his command, he began a long series of travel researches, which centered, in effect, on the exhumation of all the unprinted manuscripts and manuscript illustrations of mediæval medicine to which he might gain access in the monasteries, libraries, museums, city archives, castles and private dwellings of different cities of continental Europe and Great Britain. In connection with his earlier Paracelsus studies, Sudhoff had already undertaken several journeys of this kind, notably to the British Museum in 1893. In 1903, he made his first Italian journey, covering Naples, Salerno and Pompeii, but spent mainly in Rome and at the Vatican; to be followed by a second in 1905, covering the museums and libraries of northern Italy; a third to Verona, Vicenza, Padua and Venice in 1906; a fourth to Modena, Bologna, Pistoia and Florence in 1910; a fifth to Milan, Pisa, Rome and Florence in 1912; a sixth, lasting several months in 1913, to Ferrara, Ravenna, Forlì, Cesena,

Rimini, Ancona, Loretto, Ascoli, Piceno, Benevento, Naples (and environs), Palermo, Catania, Syracuse, Messina, Reggio, Agropoli, Pesto, Salerno, Monte Cassino, Rome, Siena, San Gimignano, Perugia and Florence. Sudhoff's seventh and last Italian journey, in 1921, covered Mantua, Reggio Emilia, Parma, Piacenza, Pavia, Cremona and Brescia. In 1906, he went through the libraries at Wolfenbüttel, Brunswick, Hamburg, Göttingen and Cassel. The year 1908 took him to Leyden, Cambridge, Oxford, London, Brussels and Munich. In 1909 he visited Prague, Vienna, Graz, Innsbruck and the libraries of the Carinthian monasteries, while part of 1913 was spent in Oxford and London. He also knows Paris and the French cities well and contemplates investigating the medical treasures of Spain and Greece, and perhaps even those of the Ukraine and Asia Minor.

The call to Leipzig, the academic duties connected with the organization of the institute and the training of advanced students as research workers in medical history, brought up a great number of new problems. Sudhoff was soon penetrated with the conviction that he must compass the whole field of his specialty in the most thoroughgoing manner and on the broadest cultural basis. He therefore made an intensive study of ancient Oriental medicine as preliminary to the classical period, and of the extensive papyric literature of Hellenized Alexandria. The results of his studies in the latter field appeared in 1909 as a large monograph on "Medicine in Papyric Archives: A Building Stone for the Cultural History of Greek Medicine." Meanwhile his mediæval studies had not been neglected, as evidenced by three important monographs on "Tradition and Natural Observation in the Illustrations of Medical Manuscripts and Early Printed Books Principally of the Fifteenth Century" (1907); on the "German Medical Incunabula" (1908); and "A Contribution to the History of Anatomy in the Middle Ages" (1908). For the cinquennial

celebration of the foundation of the University of Leipzig he prepared a "History of the Leipzig Medical Faculty in the Earlier Period" (1909). The publication of these five massive monographs in rapid succession, together with the issue of the first number of his *Archiv für Geschichte der Medizin* (1907), confirmed Sudhoff's already established position as the first of living medical historians. Research work of such highly original character and path-breaking intention had not been seen since the publication of Haeser's third volume on the history of epidemic diseases, but it had been earlier recognized among the cognoscenti that a new star had arisen in the medical firmament, and the Leipzig Institute soon came to be regarded as the center of medico-historical investigation. The next problems which Sudhoff attacked were the epidemiology and public hygiene of the Middle Ages, in particular the history of syphilis prior to 1495, and the sanitary measures taken by the mediæval peoples against leprosy, plague and syphilis. As building stones for this important phase of the history of public hygiene, he published in his *Archiv* a vast number of hitherto unprinted hygienic ordinances of the mediæval towns and other manuscript material bearing upon the history of these diseases, made exhaustive studies of the enormous literature of the pest tracts, of the leprosy protocols, of the manuscripts and printed material showing the existence of syphilis in Europe before 1495, of the prehistory of the *Regimen Sanitatis* and of the whole body of Salernitan medical literature. These labors, which were in progress at the outbreak of the European War, were interrupted in 1911 by the Dresden Hygienic Exposition, for which Professor Sudhoff and Dr. Neustätter, with the assistance of other colleagues, were called upon to prepare the exhibit of the Historical Section. Here Sudhoff's previous experience with the two Lower Rhine expositions of 1898–1899 served him in good stead, and the result further justified his now well established reputation.

An exhibit of some 20,394 objects and texts was prepared, each of them a *point d'appui* for a special investigation in the history of hygiene, and the whole collection was handsomely and effectively housed and arranged in the left wing of the "Stone Palace," comprising some 47 rooms. The different exhibits were grouped in chronological order from the prehistoric to the modern period, Groups I–IV including prehistoric medicine, Assyro-Babylonia, Israel and Egypt; Groups V–XXI, classical antiquity (Greece and Rome); Groups XXII–XXXIII, the Middle Ages; and Groups XXXIV–LVII, the modern period, while an unnumbered series, prepared by Dr. E. Seidel, was reserved for Islam including Palestine, Egypt, Turkey, Persia and Bosnia. The catalogue of this exposition, published in 1911, is one of Sudhoff's most remarkable achievements. His multifarious researches on the communicable diseases of the Middle Ages were eventually crystallized in such monographs as those on "History and Epidemiology" (1910), "Mal Franzoso in Italy" (1912), "Graphic and Typographic First Fruits of the Literature of Syphilis" (1912), "Findings in the Early History of Syphilis" (1912), "Pest Tracts of the First 150 Years After the Black Death" (1910–1918). But now came a further interruption to these studies—the European War. By the end of 1913, Sudhoff had already published 456 books and papers and nearly 1,800 reviews.

Upon the outbreak of the war Sudhoff was called to the colors, and, although at the age of 61, rendered faithful service as a medical officer in hospital at Leipzig during the entire four years (1914–1918). In his letters to friends he records that he endeavored to treat enemy sick and wounded with the same care and attention that he gave to German wounded. In such hours of leisure as he could acquire, he managed to issue his *Archiv* regularly during the entire period, and in 1918 his "Contributions to the Surgery of the Middle Ages," begun in 1914, was completed in two volumes bearing these

dates. This massive study, with its many wonderful illustrations and unique assemblage of unprinted texts, is easily the most important contribution to the earlier history of surgery since the date of Gurlt's great work in three volumes. During the period 1914–1918, Sudhoff also did much toward the completion of his studies in the history of mediæval anatomy, on the prehistory of the *Regimen Sanitatis*, on the manuscript drawings representing consultation and bedside scenes of mediæval practice, and (through his students' dissertations as well as his own contributions), on the entire Salernitan medical literature. In 1915, Sudhoff published a complete revision of Julius Pagel's "Introduction to the History of Medicine" as a second edition of this valuable work, with a dedication, "In Memory of Julius Leopold Pagel (1851–1912)." Six years later, in collaboration with Theodor Meyer-Steineg, he published a "Survey of the History of Medicine" (Jena, 1921), with many unique illustrations, of which the portion dealing with ancient medicine up to the death of Galen was written by Meyer-Steineg, that from the end of the Greek period up to the time of Francis Bacon by Sudhoff, that from Harvey to the present time by Meyer-Steineg. This is a most valuable book, intended for the instruction of the physician as well as the student of medical history, a treatise well deserving of an English translation. It was followed by a "History of Dentistry" (1921), and in the same year a reprint of the first book on dentistry, the *Zene-Artzney* of 1536. In addition to these larger works, Sudhoff has published hundreds of miscellaneous papers dealing with all aspects of the history of medicine, many fine biographical sketches of great physicians of the past, obituary notices of deceased colleagues and countless reviews of current medico-historical literature, each of them revealing extraordinary *expertise* and range of knowledge. Among these minor contributions are a number of essays dealing with the larger aspects of his subject along broad

cultural lines and written with unusual literary skill and charm. The fine flower of these essays were brought together by Sudhoff in a handsome volume bearing the modest title, "Sketches" (*Skizzen*), which was published at the end of the year 1921 and sent out as a Christmas offering to his many friends.

On November 26, 1923, Sudhoff's seventieth birthday was celebrated at Leipzig, with appropriate festivities, and the presentation of a *Festschrift* by his friends and pupils, edited for the press by Drs. Charles Singer and Henry E. Sigerist. A handsome bronze medallion of his likeness was also made. In 1924, he was retired for age, and, in January 1925, succeeded by Dr. Henry E. Sigerist, whom he regards as his most promising pupil.

SCIENTIFIC ACHIEVEMENT

In rendering some account of what Sudhoff has actually accomplished in original investigation of his subject, it will be convenient to group the various contributions to each separate line of research by paragraphing under appropriate titles, beginning with the Paracelsus studies of 1887–1899.

Paracelsus Studies (1887–1922)

Paracelsus, before Sudhoff took him up, was regarded as a cross between a mystic and a mountebank. Clever books had been written about him. Browning made him one superfine protagonist of a closet drama. Baas, in his History of Medicine, gives a most intelligent view of him. But prior to Sudhoff's reading of Paracelsus it is no exaggeration to say that a just comprehension and appraisal of the true scientific and historic import of the reformer's writings was not to be found within the pages of printed books. Sudhoff's own

studies in this field have covered no less than thirty-five years and constitute the "long foreground" to the definitive edition of the published works and hitherto unprinted manuscripts which he is now preparing. He began his Paracelsus studies with a number of critiques of previous investigations, leading up to the complete bibliography of the Paracelsian writings, published in 1894–1899. This bibliography is one of the most searching, exhaustive and complete ever made of any writer. It includes 214 printed items and 525 manuscript items (variants of 165 individual manuscripts), arranged in chronological order. It is therefore an historical bibliography, in which one can trace, year by year, the appearance and subsequent editions of the famous works which were published in Paracelsus's lifetime—the treatise on open wounds (1529), on syphilis (1530), on the mineral bath at Pfeffers (1535), the greater surgery (*Chirurgia magna,* 1536), the posthumous works on the pest (1554), gout (1563), miner's phthisis (1567), the tartaric diseases (gout and stone, 1574), and natural thermal springs (1576), as also the *Sieben Defensiones* (1538), the hospital book (*Spitalbuch,* 1562), the *Bäderbüchlein* (1562), the *Paramirum* (1562) and *Paragranum* (1565) and the Journey to Mineral Baths (*Badenfahrt,* 1566). The enormous popularity of Paracelsus, who was the "people's physician" in a sense never realized before or since, is evidenced by the extraordinary number of his unprinted writings which were published after his death (1541). Each item in the Sudhoff bibliography is accompanied by a minute description of the book, like that of an incunable, and a close *rendement* of its history. The motto of the two volumes, in fact, might well have been: *Habent sua fata libelli.* This monumental performance exposed Sudhoff to many criticisms and controversial attacks. One of his opponents even went the length of an epigram, perpetrated, as usual, at the expense of truth, and to the effect that Sudhoff had, indeed, written a big book

about Paracelsus but had never read him. How well versed our author is in the Paracelsus literature, however, will be plain to anyone who has followed his long series of preliminary studies leading up to the definitive edition. Of the kind of editing which this publication will have, we have already a fair example in the charming reprint of the *Sieben Defensiones,* which Sudhoff issued in 1915. Dip into this little book, purchasable for a trifling sum, and you will be face to face with the real Paracelsus, addressing you personally in his fiery *oratio directa.* The *Sieben Defensiones* are a series of sermons on the newer medicine of the sixteenth century, resembling, in their forceful eloquence, the sermons of Bishop Latimer or those which Abraham à Santa Clara hurled at the Viennese population in the seventeenth century. In reading these flaming propaganda for rational as opposed to scholastic medicine, you will realize that "great thoughts come from the heart," are conditioned by a generous tidal determination of arterial blood to the brain. It is true that the main argument is swamped in garrulity, bombast and circumlocution, and that the great reformer seems at times, in Beaconsfield's phrase, "inebriated with the exuberance of his own verbosity." But this is to some extent conditioned by the florid, expansive spirit of the Renaissance itself. Paracelsus does not write the plain, straightforward German of Luther. He not only writes in vernacular Swiss, but (thought being a function of language), he *thinks* in the vernacular, and in Swiss vernacular at that. But follow him closely in this little book and you will sense the great heart, the high intellectual courage of the man, as also his remarkable insight into the nature of things. "If Christ said, *'Perscrutamini scripturas,'* " he cries, "Why should I not say, *'Perscrutamini naturas rerum?'* " To those who would theorize on medicine, he recommends that they read, not Galen, Avicenna, Averroes, Guy, Roger, but in the great book of nature. "Blessed is the physician who lives and moves in

this realm, for he moves in the light and not in the darkness." As an example of the remarkable flashes of insight in Paracelsus, the following may interest those who follow recent work on the detoxication of remedies poisonous in themselves:

If good sometimes turns to evil, then it is possible to make evil things good. We should never sentence a thing until we know its capacity for transmutation and what of evil may be separated from it. A substance may be poisonous, yet so employed that it will not act as a poison. For example, arsenic is the most poisonous of substances, and a drachm of it will kill a horse; but fire it with a salt of niter and it is no longer a poison; a horse may then swallow 10 pounds without harm.

The prospective new edition of the works of Paracelsus, to be published by subscription by O. W. Barth, Munich, will comprise his medical, scientific and philosophical works in fifteen volumes, edited by Sudhoff, and his theosophic and religious writings in ten volumes, edited by Dr. Wilhelm Matthieson. Of the medical and scientific portion, Sudhoff says, in the prospectus, that it will include everything in the four-volume collective edition of Huser (Strassburg, 1589–1591), the surgical material in the folio of 1605, all original publications that were issued during Paracelsus's lifetime, everything that was published from the manuscripts after his death, as also the entire manuscript material that has been found scattered in the different libraries. All the different readings and variants in these sources will be carefully collated, with the proper *apparatus criticus* of notes. But in order not to overburden the text with footnotes and appendices, the exegeses of terms and explanations of fact will be brought together in a single and separate index volume at the end, common to the twenty-five volumes of both series.

Volumes I–II will include the general introduction and the writings of the period prior to the call to Basel, viz.: those of the

Salzburg and Rhenish periods (1525–1526); Volumes III–V will include the writings of the Basel period (1527); Volume VI the Colmar monographs on surgery and syphilis (1528); Volumes VII–VIII the writings of the Nuremburg period and from the Upper Palatinate and Bavaria (1529–1530); Volume IX, those from St. Gall, Appenzell, Tyrol and Pfeffers (1531–1535); Volume X, those from Augsburg and Swabia (1536); Volumes XI–XII, the last works from the Danube region, Vienna, Carinthia and the second residence in Salzburg (1537–1541); Volumes XIII–XIV, the writings of indeterminate period or of doubtful authenticity. The theological series will include those religious, theosophic and political lucubrations which attracted such wide attention before the modern reputation of Paracelsus in medicine and science had been definitely established.

The Basil Valentine Problem
(1894)

Before Sudhoff published his Bibliographica Paracelsica (1894), Basil Valentine was supposed to be an actual monk of the fifteenth century, frequently represented in extant engravings, the supposed discoverer of hydrochloric acid and sugar of lead, and the supposititious author of the "Triumphal Chariot of Antimony" (1604), which set the fashion of exhibiting this substance in fevers up to the eighteenth century. Sudhoff's researches show that the whole Basil Valentine matter is in the nature of an elaborate hoax, mythus or *supercherie*, perpetrated by Johann Thölde, a seventeenth century writer, who mystified the medical public with these pseudonymous publications, very much as Pastor J. V. Andreas fooled people finely with the Rosicrucian legend, or Meinhold with *The Amber Witch,* or Father Prout with *Les Fiançailles du Beaumanoir.* How clever was this Valentine hoax, we may judge when we consider that pseudo-Valentine described the chemical processes of preparing ammonia and sulphuric acid, stated some

of the therapeutic indications for the use of antimony and recommended a mixture of antimony, lead and mercury for syphilis, which he describes as "the new disease of soldiery."

Iatromathematicians of the Fifteenth and Sixteenth Centuries
(1902)

This is the first close and exhaustive study ever made of the true inwardness of medical astrology, which Paracelsus despised and ridiculed, although he is commonly regarded as the "father of astrological medicine." While Paracelsus believed that astral influences act upon the "astral body" of man, much as other physicians believed that cosmic, telluric and meteorological influences have to do with the causation of epidemics, yet this is something utterly different from the actual computation of horoscopes as prognosis and to determine the proper time for bloodletting, purgation and emesis under different conjunctions of the planets. Paracelsus's opinion of this kind of astrological medicine is expressed in his characteristic outburst: "I will throw your horoscopic prognostications into Lake Pilatus." As Sudhoff points out, we are prone to regard the iatromathematician today as one who applies legitimate mathematical computations to legitimate medicine, whether he be a medical statistician like Louis or Farr, an investigator of the mathematical theory of vision like Kepler or Helmholtz or Landolt, or a biometrist like Karl Pearson or Raymond Pearl. From this viewpoint, the iatromathematician becomes the strict analogue of the iatrochemist of the sixteenth century, such as Paracelsus or Sennert or Franciscus Sylvius, or the iatrophysicists of the seventeenth century, like Sanctorius, Borelli, Bellini or Baglivi. But historically speaking, iatromathematics means the application of astrology to medicine. As indicated in the Horatian *nec Babylonios tentaris numeros,*

judicial astrology is of Chaldean or Babylonian origin and was already applied to predicting the chances of life and to prognosis as early as the seventh century B. C. Oefele has shown that the determination of the days favorable for bloodletting is already featured in the cuneiform inscriptions. In Egypt, the astrologer Petosiris is said to have devised for Nechepso, King of Sais (677–671 B. C.), two prognostic diagrams known as the "circles of Petosiris." While in reality these are probably of the second century B. C., they are none the less the oldest Egyptian relics of iatromathematic lore and the basis of most purgation and bloodletting calendars, zodiacal and suchlike diagrams for the last 2,000 years. Even the term "iatromathematics" is of Alexandrian origin and due to Ptolemy (100–178 A. D.), whose *Tetrabiblos* has been called the "Bible of Astrology." In classical antiquity, the third book of the Galenic treatise on critical days was basic in Greek astrology. The spurious text attributed to Hermes Trismegistus contains most of the fundamental concepts favored by mediæval astrologers. A pseudo-Hippocratic *libellus de medicorum astrologia* was translated by Peter of Abano (1300), and in the third to fourth centuries, A. D., several iatromathematical prognoses were written by Pancharios, Zenarios, Dorotheos of Sidon, Hephaiston of Thebes and others. In the Mohammedan period, Haly Abbas wrote a standard commentary on the *Centiloquium* of Ptolemy, the Hebrew Ben Ezra (1093–1168), a book on critical days, while the thirteenth century compend of Alchabitius was in every one's hands. In the Middle Ages, Peter of Albano and Arnold of Villanova were the dominant authorities on medical astrology, which attained enormous popularity in the fifteenth, sixteenth and seventeenth centuries. The medical calendar of Regiomontanus (1512) is highly prized by bibliophiles, and even Marcello Ficino, Lorenz Fries and Otho Brunfels coquetted with this cult. Cardan's horoscope is frequently reproduced. Wallenstein's astrologer, Giambattista Zenno

(1600–1656), called "Seni" in Schiller's drama, was a very real person. Sudhoff gives a full account of this great swarm of iatromathematicians from Jean Ganivet (1431) to Abdias Thew (1663), whose *astrologia medica* he calls the "swan song" of horoscopic medicine. Each text is closely described, as in the Paracelsus bibliography, by the use of different fonts of type. It would lead us too far to give a more detailed account of this exhaustive monograph, which has been the starting point of the elaborate studies of Singer and Wickersheimer on the sphere of Petosiris and other astrological diagrams of the Middle Ages. Sudhoff's own conclusion is the following:

> If alchemy may be styled the mother of chemistry, then is astrology the fantastic, degenerate sister of astronomy, who from birth bore in her body the germs of early dissolution. Iatrochemistry was an important half-way station in the progress of medicine, and its influences are still vital and sensible in the scientific medicine of today; but iatromathematics was a confused dream of the possibility of exactitude in prognosis and therapeutics, which has faded completely from the memory of recent medicine and only survives, by scanty shreds of recollection, in the nursery tales of the children's playroom, cherished by the tender desires of overanxious mothers.

Studies in the Anatomy of the Middle Ages (1907–1917)

The starting point of these studies is Sudhoff's monograph on Tradition and Natural Observation in the Medical Illustrations of the Fifteenth Century (1907). His thesis is that both the printed and the manuscript texts and illustrations of this period reveal the almighty power of tradition, a servile adherence to ideas sometimes three centuries old, and that a careful study of both manuscripts and printed publications will enable the investigator to locate the exact periods in which spon-

taneous, first hand observation of nature made its timid first beginnings, in the face of bigoted opposition and *intransigeance.* In order to understand the descriptions of medical plants in Theophrastus and Dioscorides and their therapeutic applications in Hippocrates and Galen, it is necessary to know the actual flora of Greece, Asia Minor and the outlying islands. To evaluate the descriptions of diseases in the Hippocratic Canon, it would be necessary to know the actual medical geography and meteorology of the regions traversed by the master of Cos and subsequently by Galen. To understand the relations of physician and patient in the antique world, it is necessary to know the whole private life of the time, as revealed by the literature and by archæological research. In order to comprehend and evaluate the fantastic anatomical and medical illustrations of the Middle Ages, one must consider the possibility of "a long foreground," and endeavor to trace presumable connecting links with the past. Thus, in 1858, Ludwig Choulant committed himself to the colossal blunder of maintaining that Greek and Roman illustrations of surgical instruments, appliances and operations are non-existent, although one of the most interesting assertions in Aristotle and Pliny is to the effect that the ancients prepared anatomical and botanical illustrations for didactic purposes. In 1906, Hermann Schöne published a series of surgical pictures from a Florentine manuscript which, as corresponding with the textual descriptions in Hippocrates, are obviously derived from the remote past. Sudhoff traces, step by step, the connecting threads between the printed drawings in Ketham (1491) and manuscript illustrations of a much earlier period, the colored assemblages of urine glasses in ring formation, the anatomical schemata, the pictures of the schematic eye, the *situs viscerum* in the zodiacal diagrams, the crude figurations of the female *situs* with the *fœtus in utero.* In his second monograph on Graphic Anatomy in the Middle Ages (1908), he traces the history of the "five-picture series"

(schematic representations of the osseous, arterial, venous, nervous and muscular systems) in German manuscripts from the cloisters at Prüfening (1154) and Scheyern (1250), in in a Provençal manuscript of the thirteenth century, in Persian manuscripts of the same period or earlier, and latterly in an eleventh century manuscript in the Bodleian, a fourteenth century manuscript in Bohemia and a fifteenth century manuscript in Stockholm. This "five-picture series," the ascertained dates of which run as 1158, 1250, 1292, 1350, 1399 and later, are monotonously alike in attitude, expression and delineation, with a few touches here and there showing better natural observation. They are to be compared with the series of 1345, exhumed at Chantilly by Wickersheimer, the figure in the Aztec Codex at Florence, the Thibetan anatomical figures discovered by Walsh and Laufer and the Chinese anatomical drawings recently published by Cowdry. The similarity in attitude and other features in all these pictures suggests that, in all probability, they were derived from anatomical diagrams of Alexandrian provenance. Egypt, rather than China, is, in Sudhoff's view, the starting point of anatomical illustration for didactic or mnemonic purposes. He has developed in vast detail the whole science of the astrological figures and visceral schemata in the medical diagrams and the didactic schemata for bloodletting, cauterization and purgation. The late Prof. William A. Locy of Chicago was the first to call attention to this phase of Sudhoff's work, which has since become widely known among students of anatomical illustration.

Researches in the History of Hygiene
(1907–1922)

Sudhoff has done more for the history of hygiene in the past than any other medical historian, first, through his investigations of the public and personal hygiene of the Assyro-

Babylonian, Greek, Roman and Alexandrian periods, which give us an entirely new conception of hygiene in antiquity; second, through his long and patient labors in collecting the *Bausteine* for the history of hygiene in the Middle Ages and the important conclusions he has drawn from these findings. If to date no satisfactory history of hygiene has been written, it is due, in the main, to this lack of building stones for the edifice, a deficiency which has now been well supplied in part through Sudhoff's industry. To realize what this means, one has only to glance through the successive volumes of his *Archiv* and note the impressive array of hygienic ordinances and placards of mediæval towns, leprosy protocols, pest-tracts and other documents published therein from manuscripts, or to examine in some detail his catalogue of the Dresden Hygienic Exposition of 1911, each itemized exhibit of which constitutes a theme for investigation. This catalogue is unquestionably the most important survey of the history of hygiene ever made, all the more valuable in that the approaches to the subject, indicated in vast profusion, are each of them of cultural or humanistic significance. The terse illuminative summaries at the head of each section, usually written by Sudhoff himself, are of the utmost importance, examples of his best, most communicative manner of writing, and deserve to be translated.[1] Sudhoff's views of the general trend of hygiene through the ages, a subject of much broader scope than the mere history of medicine, are conveyed in remarkably fresh and engaging manner in his essay, "The Hygienic Idea and Its Manifestations in World History" (1913), a translation of which by Dr. Frank J. Stockman was published in the Annals of Medical History (1917), and is included in this volume. It

[1] The writer regrets that lack of time has prevented him from making these translations and inserting them in this brief summary of Sudhoff's work.

is hoped by many of his friends and admirers that Sudhoff will some day crown his labors in this field by expanding this essay into a complete history of hygiene through the ages. The need for such a book has long been felt by practical sanitarians, and there is no historian so well equipped for this task as Sudhoff himself.

German Medical Incunabula
(1908)

In 1902, Sudhoff began his studies of German medical texts printed before 1500, publishing the results of his findings in 1908. This study gives exhaustive bibliographical accounts of some 454 items with their variants and subsequent editions. These include the German translations of the *Regimen sanitatis,* the works of such well-known writers as Ortolff of Bavaria, Metlinger, Brunschwig, Conrad von Megenburg (*Buch der Natur*), Johann Kaub (*Gart der Gesundheit*), Sabastian Brant and Gerson, and all the various herbals, lexicons, pest-tracts, syphilis-tracts, blood-letting calendars, and popular writings on farriery, dietetics, bathing, gymnastics, monsters, witchcraft and astrology which were issued in Germany up to 1500. In the introduction, Sudhoff expressly declines to treat the subject as "a sport for bibliographers," with all due respect for their predilection for rare and curious additions. He strikes boldly into the newer and larger field of interpretation of the meaning and significance of these old texts in the light of their actual content. To limit the period of publication of the incunabula by the year 1500, he regards as an act of violence, but he none the less accepts this time-limit, since to fix it at 1550 or otherwise would be equally dubious and misleading. A book of 1501 or of 1510–30 will be alike esteemed by bibliophiles as *"presqu' un incunable,"*

while to the medical historian it is of even greater importance. In Sudhoff's view,[1] there are two ways of arriving at historic truth: first, that of the general investigator of the whole broad field of medical history (or of some phase of it), who, captivated by the profusion of his material or its seeming freshness, proceeds joyously, without scruple as to possible gaps in his knowledge, to some new interpretation whether of a period or a personality; and second, that of the quiet earnest seeker after new truths which, dimly apprehended at first, gradually become plain to his vision "like countless stars in the night" (*wie Sterne rings unzählig aus der Nacht*), until a new dawn merges them into the light of common day. To this second class, the investigator of the incunabula, *nouveau genre,* properly belongs. At the time of this particular study (1908), Sudhoff expresses grave doubt whether his own span of life will be sufficient to enable him to draw the proper general conclusions from his studies in this field. The study of incunabula, in fact, is now a little science in itself, and the medical incunabula, in all probability, include everything of value that was circulated among the profession before the inventions of block-types. In the Middle Ages, the medical authors of antiquity, as well as those of the Mohammedan period, stood high in professional esteem, while, at the same time, the best medical literature of the mediæval period—Arnold, Roger, Theodoric, Guy, Saliceto and Lanfranc—as well as the popular literature and fugitive tracts of practical import, were all printed in the second half of the 15th century. Of the texts in the incunabula of classical provenance, most are valueless and forgotten, with the exception of certain readings based upon manuscripts which have been irrecoverably lost; these are, in effect, the equivalents of the most valuable manuscript codices. In the case of texts

[1] What follows in this section is a free paraphrase, in the writer's own language, of Sudhoff's valuable introduction to his "Deutsche Medizinische Inkunabeln" (1908).

from the mediæval literature, the readings in the manuscripts are usually not more reliable than those in the incunabula, which often had the advantage of careful editing at the hands of some capable medical scholar, or were based upon exceptionally good manuscript material. In all future editions and reprints of these sources, therefore, collation and exegesis of the readings in both the original manuscripts and the incunabula will be an obvious essential. In some cases, the reading in the incunable is better than in most manuscripts of older provenance, and is always more accessible, in spite of the fact that librarians do not lend them; for duplicate copies, even of the rarest incunables, are usually found to exist in different libraries. There are, however, some incunabula which, through destruction of duplicates in the wear and tear of time, have become as rare as the manuscripts. In spite of this fact there is, as a rule, no need for reprinting these rare texts, in view of the ease with which they can now be multigraphed by the photostat; and of the mediæval literature in particular, only those texts should be published which have never yet seen the light in printed form. The important thing for the medical historian is that the major part of the medical literature of the Middle Ages is permanently preserved in the incunabula and in the texts printed during the half century following 1500. Unless the medical historian acquires a fundamental knowledge of the medical texts published during the 40–60 years following the invention of printing, his knowledge of the history of mediæval science in the second half of the 15th century will thus remain very much "in the air." A thoroughgoing study of this period must begin with the incunabula. The first thing to dawn upon the comprehension of the investigator will be that the deeper he studies into the medical incunabula, the more will the "author," in the modern sense, disappear. The peoples of the Middle Ages were not, like the Greeks, individualistic; they were collectivistic. Their works, as Allbutt says,

were "the offspring, not of individuals but of peoples." Seldom, therefore, do we find an "author" of 1470–1500 turning over his own "work" to a printer for publication. Indeed, it is always necessary to ascertain if the "author" of a given incunable really wrote it, whether it appeared in his lifetime, and whether it is not a plagiarism, a *rechauffé*, or a rehash of some older work or works then circulating in manuscript. Many texts ascribed to "authors" of 1450–1500 are often to be allocated to an earlier period. Among the German medical incunabula, only Brunschwig, Metlinger and the pest-tracts are really self-edited writings of contemporary medical authors. This is also true of no inconsiderable number of Latin medical incunabula, as Sudhoff has shown in his studies on the prehistory of Ketham. An exhaustive survey of the whole early history of the dissemination of knowledge by means of printed texts will convince any one (Sudhoff thinks) that precious little (*bitterwenig*) can be learned from the science of incunabula alone. For some unaccountable reason, no investigator had yet given utterance to this simple, self evident truth, and, in consequence, those who attacked the problem of the medical incunabula often found themselves in the case of blind men hopelessly floundering amid the unyielding, thorny quickset which hedged them in, "while all around lay fresh green meadows" (*und rings herum lag frische grüne Weide*). It was precisely in this spirit that Billings voiced a similar caution to the student at the London Medical Congress of 1881: "If, perchance, among the dusty folios there are stray golden grains yet ungleaned, remember that just in front are whole fields waiting the reaper." The real object of the study of the medical incunabula is, therefore, to gain a clear, definite comprehension of the true inwardness of mediæval medicine, which has been the ambition of the principal medical historians of Europe in recent years. In earlier studies bearing upon this matter, the investigator had hitherto neglected an almost unknown and

unexplored field of research, viz., the unprinted medical and scientific manuscripts, the pathway to which lies through the early printed books. These savants had failed to notice that the first attempts at printing with movable block-types were in the nature of an untried, and therefore dubious, experiment: a novel mode of multigraphing and manifolding written material; and that, hand in hand with the new invention and its slender output, the older method of copying manuscripts in cursive script proceeded apace for a considerable period of time, just as the use of the typewriter has not entirely displaced the time honored custom of writing personal letters in long hand. To be effective, therefore, the study of the medical incunabula must proceed simultaneously with the study of the medical manuscripts and without reference to the modern predominance of the printed text. As an example of the extreme importance of keeping this fact in mind, Sudhoff instances the almost insurmountable difficulties which E. H. F. Meyer and Choulant created for themselves in their attempts to unravel the knotty problem of the *Hortus Sanitatis,* difficulties which would have vanished utterly had they but once reflected that copying in script not only antedated the art of printing but competed with it for a long time; so that a favorite manuscript snatched from the great welter of written material for purposes of publication was usually printed without any alteration whatever. A later printer who published another and entirely different manuscript, giving the same text in compressed or extended form, should never be regarded as a thievish pirate. Another confusing circumstance is that manuscript material, whether of scientific or popular character, was often cast in mediæval Latin, then amplified in later manuscripts, then often translated into the vernacular (German, Provençal, Italian), and that in these versions the original text and its translation were frequently combined, worked over, compressed or amplified; or that the original Latin manu-

script, in wide circulation, was never printed as such, but first saw the light through the medium of a French or German translation. In the examination, editing and evaluation of medical incunabula, therefore, the first inquiry must always be: Was the book written for the press and turned over to the publisher by the author?—an unusual circumstance in the Middle Ages—or was it fished up out of the great mass of existing manuscripts by the printer himself, with a learned "editor" as coadjutor (the usual case), and if so, what was the original source of the material? In his catalogue of the German medical incunabula, Sudhoff has applied this acid test to each item coming under his observation. Of the 454 texts investigated, there were only 20 which he was unable to examine personally in his many journeys. In prosecuting these studies, he cordially acknowledges the assistance rendered by the masters of *Inkunabelkunde*—Burger, Freys, Günther, Voullième and Haebler, of whom the latter was able to increase Sudhoff's list of single-sheet purgation-calendars from 125 to 150. The table of contents of this catalogue affords in itself a bird's eye view of the status of learned and popular medicine and its curious by-paths in the Middle Ages. Missing items, if any, will no doubt be included in the great supplementary work upon which Sudhoff is now engaged, viz., a complete reasoned catalogue of all existing medical incunabula which he is preparing in collaboration with Dr. Arnold C. Klebs. This will undoubtedly be one of the most important contributions to the history of medicine in the Middle Ages as conveyed in the printed texts.

Studies in Alexandrian Medicine
(1909)

Before this monograph was printed, little was known of the cultural aspects of Greek medicine in the Alexandrian

period. The work was accomplished by a laborious and thoroughgoing exegesis of the medical portions of the mutilated and fragmentary oxyrhyncus papyri, which, after critical emendation and completion of the Greek text by interpolation of conjectural readings in the mutilated passages, were written out, as far as possible, in fair copy, translated and subjected to illuminative interpretation. The whole sheds a great deal of new light upon the social aspects of Alexandrian medicine, the effect of the superimposition of Greek ideas and ideals upon a more ancient culture. The social status of physicians, the ritual of the Serapieia (the Alexandrian analogue of the Æsculapian temples), the bathing customs, wet-nursing contracts (with picture of the first nursing bottle), the etiquette of prostitution, are visualized before us as in Ebers' Uarda or Meyer-Steinegs' "A Day in the Life of Galen."

Ancient Balneology
(1910)

Sudhoff's studies on the bathing habits and appliances of the ancient Greeks are a triumphant demonstration of what can be done to illuminate obscure phases of the history of medicine by intelligent use of the data of an alien science, in this case archæology. The accumulated material in the way of figurations on antique vases and actual remains of public and private baths is immense. The greatest caution was requisite to interpret the findings properly and to avoid drawing false conclusions. But here Sudhoff's wide knowledge, natural insight and broad humanism availed to good purpose and the result is one of his most effective readings of the antique. The first part deals with the Greek foot-bath (*podanipter*), the large stationary wash-bowl (*luter*) and the public wash-rooms and shower-baths. The many representations of the episodes of Odysseus and Eurycleia, and of Theseus and the robber Skyron,

on vases, as also the actual objects excavated, show that the *podanipter* was a heavy round shallow bowl, usually of bronze, resting on three short legs and provided with two handles, suitable for a foot-bath in the standing or squatting position. The extreme heaviness and stability of these foot-baths is indicated by various pictures. The stationary wash-basin consisted of a massive spacious bowl resting upon a cylindrical column, waist high, with a broad, flat or incurvated base, the whole having the appearance of a large mushroom. These were usually in two pieces (with removable bowl), or else cast or carved in a single piece, with a possible central canal for draining off the water in more recent forms. They are undoubtedly the originals of the stationary wash-stands of our hotels and lavatories. With these the public baths and private wash-rooms of the larger Greek houses were abundantly supplied, many of them highly ornate in structure. The bathing scenes represented as ceramic decorations show robust athletes and women in all stages of the toilet, often adorned with bathing caps, long pointed bathing shoes, pearl necklaces, bracelets or girdles, and the apotropaic band or knot on the left thigh. The shower-baths were of almost modern type. The vases show youths and maidens douching themselves in liberal sprays of water flowing from orifices fashioned like the heads of lions, panthers or fish. These phases of construction already imply some advance in sanitary engineering, but water was usually carried to the wash-stands in large buckets or was poured over the body from an *arytaina* or water-can, the characteristic shape of which gave the anatomical name to the arytenoid cartilage. The second part of Sudhoff's researches deals with the bathing pools, bath-tubs and sunken foot-baths excavated at Tiryns, Ægina, Priene, Pergamon, Epidaurus and Argolis. Here the cult-cleanliness and sanitary science of the Greeks is demonstrable *in situ*. The many photographs and architectural plans and elevations in Sudhoff's brochure

constitute a most important contribution to the early history of sanitary engineering.

The Manuscript Pest-tracts (1910–1918)

As part of Sudhoff's general plan to collect all available building stones for the history of hygiene in the Middle Ages, he began early to collect the fugitive manuscript writings on the plague covering the first 150 years after the Black Death, i. e., up to the end of the 14th century (1248–1398). The publication of this imposing mass of manuscript literature has been continued in the *Archiv* for 15 years running (1910–1925). The collection, with Sudhoff's commentaries, may be studied in the light of George Sticker's learned history of the plague in three volumes, and undoubtedly inspired Charles and Dorothea Singer to make similar studies of the pest from the great mass of unprinted medical manuscripts of the Middle Ages in England.

Early History of Syphilis (1912–1913)

Sudhoff's own summary of his researches in the early history of syphilis in Europe, as given at the International Medical Congress in London (1913), have already been printed in Dr. Allemann's translation in this volume. They are, in effect, a refutation of the theory, entertained by Proksch, Bloch and others, that syphilis was originally imported into Europe from the New World just after Columbus' return voyage from America. In the prosecution of these researches, Sudhoff exhumed and reprinted a considerable number of forgotten early publications relating to the apparition of syphilis in this period, some of them illustrated in colors; and the first of

these in order of time, the Edict against Blasphemers of Emperor Maximilian (1495), is itself a strong argument in favor of the view that syphilis was known in Europe long before Columbus' voyage (1492) or the supposititious "siege" of Naples (1495). Sudhoff shows that syphilis (especially the secondary and tertiary manifestations) was at first confused with leprosy or with scabies and other cutaneous affections; that the Arabian, and latterly the Salernitan physicians already practised the exhibition of mercury as an inunction in this mysterious class of eruptions which, as yielding to the drug, could only have been luetic; that the Italian Saliceto described syphilis as due to *coitus cum meretrice* in his medical treatise written in 1469 and published in 1472; that even before this time, electuaries for the disease (*mal franzoso*) were prescribed in old Florentine recipe books dated 1465, but from the internal evidence of handwriting, belonging to the period of 1425–1430; that about the same time, syphilis was referred to as *gros mal* in forensic procedure in a public court of Dijon (July 25, 1463); that it was well known to the vagabond barber surgeons who treated Parisian prostitutes for the disease; that the term *"mal franzoso"* is, in consequence, not an expression of opprobrium, but indicative of the fact that the knowledge gained by these surgeons was regarded as of value; that an ordinance of the city of Paris, of date March 25, 1493, directs the town-crier to proclaim, with blast of trumpet, that all persons afflicted with *"la grosse vérole"* must leave the town immediately, on pain of being thrown into the Seine, if apprehended within the city limits the following day; that the Spanish writers of Columbus' time say nothing of its prevalence in Spain; and that Emperor Maximilian's edict of August 7, 1495, shows that the disease was well known in Germany before the alleged epidemic at Naples (1495) which was in reality typhus fever. Sudhoff's investigations of the expense accounts of hospitals for syphilitics, at Augsburg,

Nuremburg and elsewhere, show that from 1495 on, the disease ran a fairly even course, and was never really epidemic. Syphilis, in Sudhoff's view, was, in its early European phases, a mild endemic spirochætosis caused by a parasite of obviously tropical provenance brought in from Asia or Africa. This was also the view of Syndenham, who maintained that syphilis was originally a modified West African yaws, a view which seems not unreasonable when we consider the malignancy of the disease in attacking peoples not before exposed to it, and when we reflect that Ehrlich's salvarsan is a true *therapia sterilisans* for frambœsia.

Exegesis of the Salernitan Writings (1913–1921)

Sudhoff has exhumed, examined, collated and studied all the manuscript literature of the School of Salerno accessible to him in connection with the early printed publications emanating from this school, and his exegesis of this great body of medical literature completes and goes far beyond the well-known collection made by Salvatore de Renzi in eight volumes. His solution of the difficult problem of the true provenance of the *Regimen Sanitatis,* which he traces back to an early hygienic tract of John of Toledo, with his determination of the approximate date of the poem (1290) as nearly two centuries later than the false date foolishly copied by all subsequent writers from Warton's History of English Poetry (1101), is an important outcome of these investigations. His final analysis of the larger medical compendium of the Salernitan School, which winds up this series, should be read by all historical students. These studies are basic for the history of medical education, medical practice and public hygiene in the Middle Ages.

Studies in the Surgery of the Middle Ages (1914–1918)

It was during the stormy years of the European War (1914–1918) that Sudhoff published his most important single monograph, viz., his contributions to the history of surgery in the Middle Ages in two volumes. These consist of a huge mass of unprinted manuscript texts and illustrations with an informing commentary, the first volume covering the manuscripts on the use of the cautery, cupping, venesection, determination of the time and site of election for bloodletting by zodiacal diagrams and other horoscopic schemata, with innumerable manuscript pictures of the cauterization diagrams, the bloodletting manikins, zodiac-men, planet-men, etc. Some of those, such as the astrolabe diagram from Chantilly or the quaint zodiacal scheme from a Munich manuscript, are highly attractive. The second volume contains unprinted manuscript texts by Roger, Saliceto, Guy and other famous hands, with many pictures illustrating surgical instruments and surgical practice of the time, particularly the treatment of hæmorrhoids, rectal fistula, cataract, nasal polypi, etc., with droll representations of bandaging and operating scenes. These rude drawings afford a purview of the etiquette and methods of surgical practice of the period comparable with the dissecting scenes in Henri de Mondeville, the illuminated Dresden Codex of Galen, or the Salernitan picture in the album published by Piero Giacosa.

The two volumes contain some 65 separate surgical texts of the Middle Ages, printed from the manuscripts for the first time.

History of Dentistry (1921)

Sudhoff's history of dentistry (1921), which should appear in English dress, is the authoritative book on the subject,

displacing Guerrini. It is a remarkable example of his power to realize upon his vast material. Splendidly illustrated with pictures of instruments of all periods and primitive peoples and other illustrations drawn from ethnology, the book is a striking phase of the new departure which visualizes the early history of medicine as a phase of anthropology. Egyptian, Assyro-Babylonian, Chinese, Central American, Ancient Indian and other phases of ancient dentistry are here presented as never before. The telling citations from the Greek and Roman writers are given. The chapter on Etruscan dentistry, including gold filling, crown and bridge work, is illuminative. The citations from Martial are apposite, and such chapters as those on the dental armamentarium of the Greeks and Romans, on dentistry under Islam (Albucasis), and on the mediæval and Renaissance phases (Sudhoff's special province), are absolutely new. The pictures from Leonardo will be a revelation to many, and the succeeding chapters are replete with illustrations of dental instrumentation, with just estimates of the work of Fauchard, Hunter and Pfaff. The work ends with a brief survey of modern dentistry in the 19th century. The index is provided with a special register of Greek terms. As a supplement to this valuable work, Sudhoff has published a facsimile reprint of the *Zene-Artzney* of 1536, the earliest German book on the subject. A goodly number of valuable monographs on the history of dentistry have recently been published under his direction as students' dissertations.

Minor Contributions

Along with these monographs of larger scope, Sudhoff has turned out a host of minor contributions of value, including several thousand reviews of current medico-historical literature in the Leipzig *Mitteilungen* and elsewhere. He has been particularly fair and generous to the work of American colleagues,

and is keenly desirous of having American contributions well represented in the library of his institute. American writers on history of medicine are requested to send copies of their books, pamphlets and reprints addressed to the Leipzig Institute (38 Talstrasse) where they will be filed in the library collections, the more important being reviewed in the *Mitteilungen* of the German Society of History of Medicine. Sudhoff's reviews are critical, searching, but always fair and unprejudiced, and the amateur will always profit by his corrections of fact.

Of Sudhoff's minor investigations, an excellent example is his *catalogue raisonné* of the earlier German medical periodicals which gives the pedigree and life history of each important periodical. While a number of ordinary catalogues of scientific and medical periodicals have been made, such as those of the British Museum, the Library of Congress, the Surgeon General's Library, or H. C. Bolton's catalogue of scientific and technical periodicals of 1665–1895 (1885–1897), there have been no reasoned or analytical surveys of the periodical medical literature of a given country save those of Thomas More Madden for Ireland, Chéreau for France and Billings for the United States. While Sudhoff admits that his list would have been more complete had the Index Catalogue been accessible to him at the time, his study is a valuable contribution to the bibliography of medicine, well worthy of emulation in other countries. Dr. Wickersheimer has recently supplemented Chéreau's history of French medical journalism by the publication of a complete chronological list of French medical periodicals from 1679 to 1856. Such contributions as these are of inestimable value to the medical librarian, not only through their historical interest but also as check-lists for completing his files.

As examples of the extraordinary range of observation and study covered in Sudhoff's briefer contributions, we find such

themes as Faust as an oculist, seven as an unlucky number, alchemistic symbols, the doctrine of critical days, donaria, the antiquity of the fork, ancient bronze syringes, *planta noctis,* amulets for pregnancy, the miracle of Menuthis, Bacon as a scientist, medical prescriptions for mediæval travelers, aqueduct physicians, German death-prognoses, a mediæval isolation hospital for epileptics, midwives' certificates of 1500, a subscription for shaving in 1442, mediæval compends of farriery, Thibetan anatomy, early military medicine, anatomical blasphemies and a chat on medical libraries.

Sudhoff's literary style is fresh, vigorous, full of enthusiasm, but sometimes cast in sentences that are woolly, involved and difficult to construe. This may be due in part to his multifarious reading in the older medical writers, particularly those of the Middle Ages and the Renaissance period. Familiarity with his style and syntax is necessary to read him readily. His biographical sketches and obituary notices of deceased colleagues are admirable. He has laid a laurel wreath on the grave of every deceased colleague known to him, from Romeo Seligmann to Julius Hirschfeld. The briefer essays in his "Sketches" have sometimes a genuine poetic quality.

The Leipzig Institute and its Achievement

When the contest over the Puschmann will was decided in favor of the University of Leipzig, Sudhoff stipulated that an institute be erected or established for the new discipline. From October, 1905 to the end of March, 1906, the Institute had for its local habitation a room on the second story in the right wing of the Augusteum (one of the university buildings), with no other appointments than a writing table, a few bookcases and a glass case for exhibition purposes. As soon as funds were available, steps were at once taken to acquire the necessary material for demonstrations, and Professor Cursch-

mann, the dean of the Leipzig Medical Faculty, endeavored to secure additional space for the new venture. This problem was eventually settled by the vacation of a suite of rooms in the Mathematical-Mineralogical Institute on the corner of Leipzig- and Talstrassen, while at the same time the lecture room of the Mathematical Institute on the ground floor was placed at Sudhoff's disposal by its director. The central stair case leads directly to the rooms of the Institute, viz., the director's office, and to the right, in succession, the seminary and reading room, the library and the glass case collections. The seminary is furnished with working tables of horseshoe shape, with the director's reference library and vitrines containing surgical instruments and other objects against the walls. The book shelves of the library are against the walls, with further shelves in the corridor outside (containing periodicals, encyclopædias, etc.), while double glass cases run through the length of these rooms. The arrangement of the books and exhibits is: Room III, prehistoric and folk-medicine, ancient Oriental medicine and that of classical antiquity; Room IV, the Middle Ages (Orient and Occident), including the Byzantine period and the Renaissance; Room V, the modern period and literature of the history of the different scientific disciplines and medical specialties. Room III also contains the medical portrait collection of the Institute, and Room IV a cabinet of medical medals and coins. The vitrines contain museum specimens, usually reproductions in plaster of Paris or metal, since these are quite as useful for teaching purposes as the original objects, which have not been especially sought after by the director. Cases of drawers, on either side of the vitrines, contain countless photographic reproductions, medical engravings, etc., covering every subject of interest to medical culture from Adam and Eve to veterinary medicine. In the library, some of the older bibliographical treasures are lacking by reason of their expensive character at the present time, but the director's principal regret

is that the collection of modern medico-historical literature has been too much at the mercy of blind chance, since it would be obviously to the advantage of any physician writing on the history of medicine to have his work represented at this institute.

Of Sudhoff's methods in teaching at Leipzig it may be said that they resemble those employed by Carl Ludwig in former years at the Physiological Institute of the same university. Sudhoff's aim is to form and develop capable investigators in the history of medicine. To this end, it is necessary that the student familiarize himself with the *Handapparat* of reference books, how to use them as tools, how to investigate the pedigree and content of a medical manuscript, incunable or other ancient text, how to settle questions of authorship, date, priority, etc., and how to attack a specific unsolved problem or other line of original investigation set by the director for the graduating thesis. Sudhoff's lectures are said to be so replete with keen, original thought and deep learning (set off with an astonishing lay-out of the best reference literature) that the neophyte is apt to be bewildered at the start, but personal contact with the master is described as a source of inspiration to pupil and friend alike. Any institution must be judged by its products and results, and the best criterion of the work of the Leipzig plant is its output of original *Arbeiten* and students' theses during the thirty-five years of its activity (1891–1925). These have increased in number each year, and from the start, have done much to illuminate obscure or unexplored phases of the early history of anatomy, dentistry, gynæcology, uroscopy, therapeutics, dietetics, venesection and general medical and surgical practice during the Middle Ages. The large number of theses on dentistry alone will necessitate a reconsideration of the whole early history of the subject.

In consequence of the political changes and financial depression following the war, the Leipzig Institute was denuded of

many of its resources, and even the *Archiv* and *Mitteilungen* were hard put to it for funds and paper. But in January, 1925, the Institute and the Leipzig chair of history of medicine were again funded and subsidized by the Saxon Ministry, with the stipulation that the incumbent should be not more than 53 years of age.

Sudhoff is described by his friends and pupils as a man of imposing height and appearance, blue-eyed, white-bearded, his head, in his later period, bearing a striking resemblance to some of the Viennese portraits of the great composer Brahms whom he resembles in his capacity to turn dry, scholastic material into something fresh and vital, in that species of magnanimity which is based upon genuinely refined perceptions, and in a certain humorous *brusquerie,* repelling to some, but nowise offensive to his familiars. To those who know him he has the trait common to most men of large and massive physique: *ex forte dulcedo.* He is a man of decided views, ever ready to state the truth as he sees it, and in no sense diplomatic in relation to shams, humbuggery and solemn nonsense. The following anecdote is highly characteristic of Sudhoff: A foreign contributor to his *Archiv* began his article with an eulogy of the Institute and its director so lengthy and fulsome that the limits of good taste were transcended after the first page or so. Sudhoff printed just so much of it, stopping flush with the bottom of the printed page with a footnote which in modern American might be rendered: "I'll not print another line of this stuff!" In like manner he recently notified the reviewers in his *Mitteilungen* that any reviews written on the same sheet of paper as other reviews by the same author would find their way into his wastebasket. These are traits of a man who is ever ready to help any sincere student of his subject with generous assistance and advice, as in the case of the late Dr. Mortimer Frank. In anticipation of the cele-

bration of Sudhoff's seventieth birthday in November, 1923, the present account of his work is presented for the information of American colleagues and with the customary salutation: *Heil dem Meister!*

AIMS AND VALUE OF MEDICAL HISTORY IN THE SELF-DEVELOPMENT AND PROFESSIONAL LIFE OF THE PHYSICIAN

Translated by

FIELDING H. GARRISON

AIMS AND VALUE OF MEDICAL HISTORY IN THE SELF-DEVELOPMENT AND PROFESSIONAL LIFE OF THE PHYSICIAN

IN all branches of science, the need for cultivating the study of their historical development is beyond question. From the literary standpoint, this is equally true of the natural sciences, including medicine. And here, Goethe's dictum is still apposite,—that the history of a science is the science itself. At any rate, for the nomothetic as well as the ideographic sciences, inadequate cultivation of their history sets at stake the most costly issue, namely that science will lose its essential character thereby. For that very reason, the question will be actually turned about if we insist upon a justification of the utilitarian motive at the start. For if the representatives of medical science are to be ever and anon seeking the proofs of their usefulness in the history of their profession, is not that already the grave premonitory sign of a slippery descent from the pure heights of science itself?

If university people considered only the practical viewpoint of utility or productivity, what then would become of a whole series of sciences which are brilliantly flowering under the guidance of prominent lights of our collegiate institutions, where, in fact, would Assyriology, Egyptology, Sanscrit and countless other studies be? With equal justice can the history of medicine lay claim to its academic majority, that it be regarded purely as a science, as one of the most considerable offshoots of cultural history, not lagging behind any other branch or phase of that subject in achievement. At the same time, medical history is destined, in connection with other modern en-

deavors, to bridge over the immense gap existing between medicine and pure science, and thus, on its part, to help toward realizing the lofty ideal of the unity of all the sciences. For the history of medicine itself can only prosper when it maintains a close communal relation with theology, philosophy, jurisprudence, and especially with all historical and philological disciplines, even then not simply because it is daily and hourly drawn upon in connection with their common aims.

As I see it, the history of medicine is destined to so convert this thought of common relationship of all the sciences into accomplished fact that it will come into its own unawares among circles of contemporary practitioners. It has in store, for physicians of the future, ideal benefits destined to be no less advantageous to them in their thorny careers than that appanage of positive knowledge whereby they are enabled to advise, to help, to be useful, to remedy the multiform complaints of their heavy laden fellow creatures. In truth, whoever looks around and about him, sharing, with a warm heart and a sympathetic understanding, the lot of the medical profession to-day, must soon realize that, along with the cardinal necessity of a first-class scientific and practical training, the contemporary physician still needs two things not yet fully provided for in our admirable system of professional education, namely a superior general culture and an inexhaustible fund of idealism. Or, to put it differently, does not the physician of today, weighted down, as he is, like a beast of burden, with the oppressive mass of fact he deals with, does he not seem one-sided in comparison with other university graduates? Does he not display, to his disadvantage, a certain lack of broad, general culture that makes it difficult, except in rare cases, for him to take the social position which should be his natural right, and which would otherwise open out to him the possibility of receiving full recognition everywhere for his endless, many sided and momentous labors for the common good? Is not this undeniable

deficiency only too often apparent through the fact that, in the great world outside, medical science no longer enjoys the high consideration which was undoubtedly its portion everywhere in the distant past? Indeed, even the exaggerated evaluation of so-called popular medicine which now obtains is a feature, more and more significant, of this diminished estate of medical science, due to a certain isolation which seems to go on increasing as medicine is more and more split up into specialties. In common with other theoretical sciences upon which medicine is based, the history of medicine has a special call to equalize this imbalance, by winding itself like a ribbon around the several scientific and medical disciplines *via* the demonstration of their common origin from a single root, and by cultivating a common interest in their glorious past. But physicians of to-day, young as well as old, are sadly lacking, furthermore, in the nameless something that would fortify their feeling for the ideal.

Can any one deny that the modern state needs the coöperation of physicians more than ever before? Above all, in applying to the prevention and control of epidemic diseases, acute and chronic, those devices in public sanitation which it learned, incidentally, from scientific medicine, and for the proper understanding of which the history of these diseases is as illuminating as bacteriology itself? What unheard of progress has not been made in municipal sanitation during the last decade, thanks to the cheerful, self-sacrificing preliminary labors and coöperative zeal of physicians! Even more illimitable and multiform seems the panorama of medical coöperation in the execution of the comprehensive, far-reaching and highly differentiated public legislation of the last decades. For well-nigh a whole life-span has German legislation imposed new duties, year by year, upon German physicians, with the tacit conviction that the German physician would, without any reservations, do his duty, carry on with patience every new

task laid upon him, and promptly come up to the standard expected of him. And has he not absolved these new obligations in the most brilliant, cheerful and self-sacrificing manner? As a set-off to this proposition, one would hardly raise the question: How has the State, on its part, comported itself toward physicians?

Along with the constant tendency to make the conditions of public examination more and more difficult, there has come about a parallel and daily increasing tendency to make the conditions of the physician's very existence difficult. This has forced the medical profession to take its own affairs into its hands and to organize in defense of its own economic status. This daily struggle of a whole profession to secure the slightest improvements in the petty concerns of daily bread and the actual needs of life [1]—can any one conceive that it will strengthen the idealism so necessary to professional life? If so, shall we say in accordance with the old by-word, that hunger and idealism must go through life hand in hand? No, let no one believe that this daily battle for the bare necessities of existence, this penurious competition with other economic interests, can do much for the physician's idealism, especially when he has to realize that legislation views the contest between physicians and the accepted modes of lay-medicine with folded arms, as if it were a squabble about the pocket-book rather than a struggle for the weightiest concerns of public health.

Everything, then, tends to destroy, at base and root, the German physician's idealism, which he now needs more than ever, which his profession requires more urgently than any other profession. If the inexhaustible spring of idealism which flowed unceasingly as a phase of the incomparable æsthetic

[1] All enlightened Spanish physicians agree that the backward condition of medical science in Spain is due to the effect of caciquism (political bossism), whereby the Spanish physician has to concentrate all his abilities and efforts upon the narrow program of gaining a bare living. [Ed.]

and ethical grandeur of the antique world, if this is no longer regarded as necessary to the physician of modern type, then, parallel with the personal influence of the medical teacher in our German universities, with its matchless examples of untiring devotion to duty, its continual good offices of noble human friendliness, and its words of counsel and inspiration, only the history of the medical profession and of medical science can avail to compensate for the defect. It does this through its power to widen the physician's horizon, its demonstration of the cultural relationship of all the intellectual attainments of the human race, its plenitude of exemplars of the noblest application of the physician's total virtues, his joyous, self-sacrificing and never-resting activities and achievements. Medical history is unquestionably *the best school of medical ethics.* So far then, the modern state has a distinct interest in the cultivation of historical teaching and investigation in medicine, and of a historic sense in the German medical profession.

How very necessary the historian is to the contemporary physician, even for practical reasons, will become apparent to any one who has eyes to see the effects of the ever increasing inroads of quackery. Along with thoroughgoing knowledge of his specialty, of which the quack ever shows his deficiency in his impudent bunglings with the finer organism of life, along with the practiced dialectics which mercilessly expose the false conclusions preached to credulous souls by the apostles of one-sided all-holiness, the physician needs, in this very strife, the aid of the medical and cultural historian, ever ready to show him that our accepted lay medicine is but a theft from aboriginal and primitive medicine. It is over and over a question of those by-paths which, in the historic development of medicine, would have led only into blind alleys, which were therefore abandoned at the proper time, through the insight and clairvoyance of medical science, to the blessing of sick humanity, and which are now preached to the same suffering

humanity by irresponsible fanatics as the only pathways to truth. They lead only more deeply and hopelessly into the wilderness than well-considered medical science could have conceived or has conceived. A solitary example, drawn from the history of our subject, will suffice. Everything which self-appointed opponents of scientific medicine, posing as redeemers, preach as holy writ, is nothing new whatever, but only a simple, blatant acquisition from the primitive phases of medicine. Just this simple, demonstrable fact deprives quackery of most of its trumps. Better still, we can prove that this "healing" doctrine was conscientiously and thoroughly tried out, centuries and centuries ago, and was shown to be misleading and, in the extreme phase, absolutely injurious to the functioning of the human body and the harmony of its inner relations.

In this way, the historical investigation of medicine can be made useful and truly helpful to the young practitioner.

For investigators, the aphorism of Friedrich Nietzsche may be accepted without reservation: "Even the most gifted will only flounder in continual uncertainty, once the thread of historical development is snapped."

A recent incident impels me to raise another question, the answer to which is largely contained in the foregoing. Some months ago, while in one of our German capitals, I had occasion to witness the strange spectacle of the total failure of one of the ablest of German scholars in attempting to unravel a comparatively simple historical problem. That brought home to me again the pernicious effects of the erroneous doctrine that no completely trained instructors in medical history are necessary in universities, that any good teacher of a specialty, who is familiar with its developments, can, without further preparation, teach its history. For that task, a highly specialized course of preliminary training is necessary, a very particularized course of study, requiring such extensive outlay

of time as is not at the disposal of most of our representatives of the medical specialties, much time, indeed, and many other desiderata which I cannot mention here in detail.

The medal, indeed, has its reverse side also. The historian of general medicine is, on his part, in no sense competent to give intelligent and exhaustive instruction in the histories of the several specialties, if he relies upon his fund of general knowledge alone. That requires first and foremost, a thoroughgoing course of self-instruction, such as could only be obtained in connection with long continued practice of the specialty itself. Only an ophthalmologist could write a history of his specialty that would be really worthy of the name. Only a surgeon could write a history of surgery that could be taken seriously. A suggestive and stimulating history of a disease can only be written by a practitioner who is thoroughly familiar with its manifestations at the bedside, and so on.

All this tends to put considerable limitation upon the status and significance of the historian of the medical specialties, but we are not so much concerned with him as with the history of medicine itself. The general historian of medicine, as teacher and investigator, will still have plenty to do, if he collects the so widely scattered materials of his subject, discovers and edits new sources of knowledge, and prepares for the historians of the several specialties everything necessary to their particular investigations and monographs. He should bring everything into broad comprehensive relations with his science and with the general development of culture. He should stack up a goodly array of special investigations and should ever strive to lay bare the connecting threads that lead from one science to another, so that the unity of the whole fabric may be continually demonstrated. Above all, he should strive to inform and saturate all medical and scientific thought and achievement with the historical spirit, to deepen the interests of these important branches of human knowledge and to help

toward a lusty new-birth of the idea of an *universitas literarum!*

So may the historian of medicine act as a ferment in the scientific faculties of his university, a useful member, serving the best interests of the whole body.

TENDENCIES AND ASPIRATIONS IN MEDICAL HISTORY

Translated by

FIELDING H. GARRISON

TENDENCIES AND ASPIRATIONS IN MEDICAL HISTORY

IN an age of biogenetic investigations and of nature study, the history of medicine also comes in for its share of extended importance. Wherever there is continuous study of developmental phenomena, wherever the idea of development dominates the whole fabric of science, the question of the origins of recent medical knowledge and modes of thought will assail the mind of the investigator with constant and overwhelming force.

Medical history is also destined to be a positive coefficient in many other lines of investigation. Thus it has shown itself to be more and more indispensable to general pathology and ætiology; the historical investigation of the movement of diseases, of the course of epidemics, is a necessary adjunct to present day study of the biology of disease in general. And in many other directions, medical history is progressive and efficient. The by-paths and blind alleys of science can only be fully illuminated at their points of departure. To set up warning guide-posts is ofttimes a genuine historical achievement.

In the prosecution of modern science, it has been excellent custom, once the necessity for the wholesale application of a newly discovered or approved remedy has been established, to create new coigns of vantage for the further testing and development of such methods. In establishing a working basis for the study of medical history, I desire to make clear to industrious colleagues its aims and methods and, in the phrase of our industrial plants, its order of work.

In medico-historical investigation, the watcher by the

stream is always in position to register a continual increase of the current. But whether he functions as a conscientious watcher by the shore, or studies, on his own account, the dance of the waves from a rocking boat—

> "Born to see,
> But called to observe,"

he will not fail to note occasionally where sandbars threaten or where the pressure of overflow manifests itself above the established level of the banks. Many things whispered by the fleeting waves will cause him to shake his head or may excite his justifiable displeasure.

My not merely superficial concern with the medical history and historical writings of earlier decades has driven me to the constantly recurring thought that almost no decade has so completely ignored the almost self evident orientations of authentic historic research as the last—that "the immediate past needs to be understood rather than subjected to opinionated pronouncements." At the start, therefore, there is the crying need that from rigid, unduly premature judgments, easily liable to be harsh, there should be an energetic shifting toward an open minded desire for comprehension, for that sympathetic, reverential sinking of self in the true nature of past periods of time, of particular personalities and theories, by means of intensive study.

And further! The more I concern myself with medical history, the more I am convinced that it is, to date, an accidental science, devoid of well-considered revision and method.

A solitary exception, and that only up to a certain point, is the study of classical antiquity, thanks to the first class cooperative labors of the philologists. But even here, an endless amount of combined investigation and creative work remains to be done, and is in fact vigorously prosecuted, even now. But what prospects in other directions? Only a few

modest original researches of isolated workers, here and there. Yet even for remotest antiquity, the wealth of material uncovered by sparrows is still so enormous that methodical interpretation of it should have set in long ago.

But even the valuable sources of later periods, the accumulation of centuries, have remained untouched up to the present time. Only what rolls accidentally at the feet of some solitary wanderer through the fields of mediæval and Renaissance medicine has been picked up, examined and described; of the modern period I say nothing whatever. There medical historians seem fairly in agreement; while, in the past, some manuscript might be published which blind chance had thrown into the way of an industrious observer, even when much better variants lay unnoticed elsewhere; or perhaps from much more dependable, more carefully edited material, the text in question might be printed as an incunable, over 300 years old, to be as highly prized as original manuscripts of which no bibliographer knows anything. On the casual assertion of any renowned predecessor, some text will be signalized as a rarity, when it actually appeared in a vast number of editions, as an important book in its day, not to mention other eccentric and wrong-headed opinions of this type.

We must do better than that if our features are not to be reddened by a perpetual blush of shame. Occasionally, say in the composition of a manual or text-book, such hoary errors still go uncorrected. It is bad enough that contemporary medical historians are hardly conscious of this deplorable state of affairs, simply because their aims are entirely different; but even then with no particular reason, or at least on too exclusive grounds.

For a long time, our best pens have been servants of the idea that it is of paramount importance to inspire physicians with the old-time delight in the history of their profession. And, indeed, among the juniors as well as the masters of our

noble science, among practitioners as well as forward-looking investigators, there is bitter need for historic sense; just why, I need hardly say at present.

To activate propaganda for cultural enlightenment is certainly the task of those who have devoted their lives to the historic investigation of medicine. For only he who is master of the whole terrain of a scientific discipline has any call to plant the torches of his science elsewhere, so that, as far as such spiritual torches can, they may glow, shine, attract, and even warm, or here and there send a spark of their flaming light to receptive minds and hearts.

The experienced historian of medicine must undoubtedly be both herald and recruiting sergeant, gathering all under the flag of his salutary knowledge. But does his task end with beating his drum to draw new recruits and warriors to his standard? Is not that too narrow a concept of his duty?

Just as little as scientific medicine can be satisfied with sending out its best men to enlighten the people about personal hygiene and the evils of quackery—important as both tasks are—or as little as we can dispense with serious scientific activities in all fields of medicine, unimpeded by the duties and cares of the day and undisturbed by sidelong glances from the advertisers of utilitarian and immediately practical aims—even so little is the task of medical history exhausted by uplift and enlightenment. Nay, not even is the medical historian at the end of his labors when he attempts the attractive and grateful task of smelting the crude ore of history into noble forms, presenting it in finished beauty to the hucksters of our profession, who hardly realize what beggars in spirit they are and how they hunger and thirst after spiritual sustenance.

It is possible that many of my more intimate colleagues may feel the sacred fire of the creative impulse and the joy in production more than I do, but I see very clearly that the treasures of our science which have been heaped up for smelting, anal-

ysis and weighing, are not inexhaustible, and that around and about us still are whole mountains of clinking ore, with pockets of noble metal still untouched, with massive heavy lodes in the slopes which have never yet been excavated. I see, also with fearful clearness, that much base metal, fool's gold and false silver has already been riveted into the fair framework of medical history. I see that not only has mica been substituted for diamonds, but that fine gold has been used to mount bogus jewels, or even bits of colored glass, that things of illusory historic worth and verity have been given the most costly settings.

Since when, for example, has the iron industry been occupied exclusively with casting nails, cutting files, polishing razors and making other necessary and serviceable utensils? Iron mines and iron foundries are also notable things, worthy of the application of noble minds, and surely no less useful. Indeed, they must of necessity precede the detailed labors of the whitesmith, who is incidentally occupied only with smelting down worn out steel blades and scrap-iron. Mines and smelting plants and rolling mills, make, in the first place, the real bulk of large scale iron industry, which stands on its feet as securely, in these iron days, as an independent science.

And, rightly understood, the history of medicine itself is just as independent and upstanding a science as any other that constantly recreates itself from new material. That is the standard of this science, which willingly coördinates itself into the whole field of scientific medicine, but which can only fulfill its great obligations when it can go its own way in a simple, straightforward, laborious and self-respecting manner, unconcerned about the up-turned noses of rhetoricians, wearing its everyday working clothes and revealing its beauty only on solemn occasions, when it appears as a royal princess, displaying all her jewels. Finally, our science is only qualified to attract attention and appreciation, or to win respect, through its own

positive achievements; it must rely upon its own accomplishment in the eyes of physicians as well as of historians of other fields of knowledge. Let no one be taken in by the eternal talk about other obligations which medical history has to meet. In spite of everything, these are only side issues. Only the actual positive performances of the science itself are decisive. The science which disperses into side issues will become superficial. Why am I so hard and definite about all this? Because it must come to light, because from day to day more and more base metal is passed off as historic material of authentic excavation. Because our modern utilitarian tendency has accustomed us to regard a science, worthy in itself, as unworthy of cultivation, unless it be an applied science. Because we are becoming more indulgent toward unrestricted and broadcast falsifications of medical history by the extreme protagonists of one sided therapeutic tendencies, who do violence to historic truth by force of numbers, and as venal servants of a science designated in earlier times by the apt expression "rump-science," degrade the august goddess to the level of a street-walker. Because, finally, we are in danger of becoming self indulgent, and tend to erect massive structures, too heavy for the shaky foundations, and built of loose rubbish accumulated in the past along with hastily gathered material of recent provenance. I repeat that contemporary investigation has not, as yet, got far enough in any field of medical history to attempt anything of lasting value: that is the conclusion drawn from my renewed exegesis of the history of medicine during recent years. Acting upon this clear perception, I have the honor to sound the call: To work! To the unceasing work of many years; yes even to those who, like myself, long to create artistic shapes in the round, I say: To work, with spade, pickaxe and hammer in hand!

WHAT IS HISTORY OF MEDICINE?

Translated by
GEORGE PANEBAKER

WHAT IS HISTORY OF MEDICINE?

THE answer will vary and depend upon how much the questioner or the person questioned knows of the subject matter, how deeply he has entered into the spirit of medical history; upon the range of his aims, his inclinations and his capability to rise above daily routine and the clamor of prevailing opinions.

One man will shrug his shoulders and superciliously speak of an old curiosity shop; another will call it a catalogue of exploded theories; to another, who has had just a peep at it, it will offer a convenient opportunity for throwing out his chest and telling a gaping audience how wonderfully we moderns have advanced and what poor sticks our colleagues of yore have been, fellows without vision, without critical judgment, without method, so quite unlike modern science with all its profundity and inherent exactitude,—in brief, to him the history of medicine will be a ready means for glorifying the present state of affairs and for belittling the men of the past "as they well deserve." And a third will use the history of medicine for launching a powerful speech with a few grains of knowledge and much phantasy, and if he wields a clever pen, he can be as brilliant as he likes: hardly one in ten thousand can control the urge!

But is this really history of medicine? Many believe so and not a few act upon this belief, yet their understanding of the matter is as remote from the true meaning of history as heaven from earth.

In many respects, true history is just the opposite of what many believe it to be. True history means serious scientific

labor based upon the inductive establishment of facts by strictly methodical and critical tests, prompted by self-discipline and conscientious veracity. It resembles modern science in its mechanistic-dynamic and biological tendency, and always asks: "How reliable are our findings? What is the incontestable basis of exact knowledge? What needs to be revised by the most modern and advanced methods of investigation?"

What is needful is coaptation of the results obtained by incessant investigation of the distant past with the daily increasing findings unearthed by the spade as well as by the study of ancient texts and the examination of their material and intellectual content. From a thoughtful synthesis of all this, we shall obtain a true picture of the medical and hygienic ideas and achievements of single epochs as well as of the total development down to the present day. For only the past can furnish the key for an understanding of the things of the present.

"Even Hippocrates"—thus till yesterday almost all medico-historical works began—"even Hippocrates maintained regarding the question under discussion."

Even today, rightly or wrongly, this phrase is used, although we now know that not only in those parts of Asia Minor where Greek was spoken and in the outlying islands, many an able medical thinker flourished before Hippocrates, and that to the Greeks the name of Hippocrates did not represent the beginning of medical science and medical art. We also know that in other cultural circles, medical knowledge, based on experience, and curative tendencies, can be traced back thousands of years, and that, apart from their own achievements, the gifted people of Hellas had access to observations and experiences made by other peoples many centuries ago. All this the Greeks took over to re-shape it in their own way, by combining their own with foreign achievements,—always revising, examining, sifting,—and thus creating something entirely new; the won-

derful edifice of a positive, rational, experimental science of medicine, in close relationship with the physical science of an impetuously advancing period.

We also begin to understand—and this needs still closer examination—that the practical and half intuitively acquired empirical data of Asia Minor, based on medical and hygienic considerations, were not completely absorbed by Greek science and that there were left untapped other sources of knowledge which, in the Occident later on, were to mature and bear fruit, when, growing beyond the limits of ancient civilization, the science of the Orient and of the Occident fused and became one.

However, if we wish to get a clear idea as to the nature of medical history and the value and profit to be derived from its study, the introductory phrase "even Hippocrates" is quite appropriate. Hippocrates, one of the greatest men in medical history, felt already the necessity of getting in touch with his predecessors and with previous tendencies in the healing art, just as today every thinking physician wants to conscientiously examine the opinions and methods of his fellows as well as of his antagonists, to find out whether they are of any permanent value.

As in his book "Ancient Medicine," the great Coan referred to his predecessors, so at the commencement of his classic work on medicine, the Roman encyclopedist Celsus reviewed the development of the art of healing down to the period of the Empire, and even today we read his book with profit.

The history of medicine forms an essential part of medical science and is indeed as serious a science, based on experience and observation, as any other department of natural philosophy. It links every new finding with previous findings, tests and analyzes every detail, lays bare the inner connections to reconstruct finally, from a whole series of single facts, the things of the past, whether they took place amongst a whole

diseased people, in the lecture halls of a medical school, or in the mind of a great physician of bygone days.

That is the way in which we modern historians look at the matter. We therefore attach less importance to single dates and systems than to cultural and scientific relations, to the real understanding of a period, its physicians and their methods.

For this again, it is necessary to understand the so-called nosological systems (of these more later), which, in the course of time, dominated medical science, and from their origins, their subsequent neglect and their final restoration to a dominant position, proclaim, not only the mutability of all things, but also show how the past and its study acquires significance for the comprehension of the most recent developments. It thus serves as a ready and fruitful means of orientation regarding the currents and undercurrents of modern medicine, enabling us to evaluate all its aims and tendencies. Thus the study of the past, for a while regarded as superfluous, acquires vast significance for all medical problems and not merely for the understanding of one or more isolated instances.

I wish to cite only one instance which is not devoid of an actual charm: In the attempt to base his new theory and its application upon a firm basis, one of the most prominent leaders in modern therapeutics was prompted to give quite an unexpected testimony on behalf of historical studies:

August Bier, in his "Hyperemia as a Remedial Agent" (6th ed., Leipzig, 1907, 81), says: "As I lately, much too lately, went over the literature, I was not a little surprised to learn to what extent this venerable instrument (the cupping-glass) was employed throughout the past down to the present day."

Thus one of the most original investigators of modern medical problems who had not the slightest idea or intention of writing an encomium of medical history, yet reached these conclusions in the course of his investigations.

It is especially the periods of great change in the general

fundamental view of medical science—and such a period we entered several years ago—that urge us to seek the historical background. The latest and the most ancient advances in medicine clasp hands across the abyss of ages.

A return to Hippocratism, to the natural individualistic method of healing, has occurred several times in the history of medicine, and today, although this call seems not to be too insistent, the fundamental ideas of the nature of disease, as taught on the island of Cos, seem again to invite our attention.

At the hands of the Asclepiads, it seems, the humoral pathology acquired a scientific formulation, which owes its preliminary, at any rate temporary dominance to Polybus, the pupil of Hippocrates. For a long time, this view of things was to be revered as the highest manifestation of truth, to be later, however, despised and rejected again and again. As a matter of fact, humoral pathology did not originate in Cos, for, under another form, it had arisen on the banks of the Euphrates, whence a vague knowledge of it may have reached Cos and Cnidus by the way of indefinite reports, which produced the effect of undertones in the concert of competing medical schools on the shores of the Ægean Sea. Later, when riveted in dogma and expressed in distinct forms, these attained an independent existence, and, accepted as exotic products, were occasionally registered, *sub specie temporis,* as "Persian" views, although they were considerably older than the "Ancient Medicine" of Hippocrates.

But Greek medicine was never swayed exclusively by the humoral pathology, by the doctrine of the disturbances of the fluids of the body, even though it may seem so to others, in view of the fact that Galen, who finally came to be the sole master of the field, shaped his whole system according to this theory. Very early, and particularly during the Alexandrian period, certain medical circles sought to locate the seat of morbid alterations in the solid tissues of the body. The main

protagonists of this view were the Methodists, while the Pneumatic School allocated morbid processes to the aërial or gaseous constituents of the body, the "pneuma," which was thought to circulate not only in the lungs but also in the arteries and the nerves.

The war waged between the humoral pathologists, the solidists and pneumatists dates back two thousand years, to subside during the Middle Ages, as long as the doctrine of the four humors held sway. In the 17th century the chemical schools of medicine, the Iatrochemists and Chemiatrists, were again exclusively humoralistic while the Iatromechanists and Physiatrists, on the other hand, were strongly solidist, while mixed or syncretic systems are associated with the names of Boerhaave, van Swieten, Friedrich Hoffmann and others.

Whenever the humoral pathology was in ascendancy, the doctrine of general diseases always came to the front again, while the solidistic pathology always furthered localistic views. The old antagonisms between the schools of Cos and Cnidus were resurrected and fought out in France and Germany, where finally the localistic-solidistic principle of pathology exclusively dominated everything, and in the opinion of its votaries was established forever—the "anatomic concept," as reëstablished by Rudolf Virchow. The master himself, it is true, vehemently combated the monopoly of humoral pathology, but its substitution by the monopoly of solidistic pathology, the exclusive predominance of cellular changes, was established against his express wishes by his followers, who in the course of time became more dogmatic than the teacher himself.

And, yet, today we see that everything is again in a state of uncertainty: the "general diseases," driven back to a few isolated outlying forts, have again acquired significance, and the "humoral" tendency, formerly treated with such contempt, begins gradually to occupy new territory. This change had been prepared and was finally brought about by a revolution

in another field of pathology, namely, that of chronic infectious diseases. By Virchow and his "localistic" predecessors and followers, the infectious agent had been shelved, and in many fields it seemed to have been annihilated. Thus (so complex are the ways of evolution) modern and ancient medicine again find points of contact, although in the case of modern medicine, humoralistic views were thrown overboard by localistic (solidist) doctrine.

Nearly all of us can remember the first publications of Koch's discovery of the tubercle bacillus. Like a new revelation they impressed us all with few exceptions, physicians as well as laymen. From all the crannies of our science came flashes and bright rays of a freshly discovered and newly coined precious metal! How could all that have been overlooked for such a long time, until Koch finally appeared and solved the Sphinx's riddle!

And what wonderful consequences the new discovery had, for the "sick" as well as the "whole"!

But was that really something new? Ah, no! Only a fraction of it was really new, the rest had been only rediscovered, and was a self-evident result of the idea of infection on a bacterial basis.

Even Plato maintained that phthisis is infectious, but this was not the case with most ancient physicians, who had no more use for the idea than the "localists" of nineteenth century France and Germany. And yet, this idea, which was one of the above mentioned brilliant intuitions which came out of Asia Minor, came gradually to the front again during the much abused Middle Ages, at first within modest limits, which were again narrowed during the much lauded Renaissance period, until Fracastoro first presented it in scientific dress (1546). Thus, slowly the doctrine began to gain respect, until, during the 18th Century, in several districts of Italy, legislative measures were enacted which, in principle, strictness and

execution, resemble in all details the most modern legislative enactments against tuberculosis. But soon all that was buried again under the rubbish heap of "localistic" ideas, which, methodically developed by various schools and antagonistic tendencies in France and Germany (Schönlein, Griesinger, Wunderlich, Virchow), attained an ever more logical cast, while to-day in amused supercilious affectation of superiority, which is not free from nationalistic animosities, one ridicules the whole matter, even as once Virchow's followers had scoffed at the late "humoral" pathology or even the "unblessed" Nature Philosophy.

In spite of all this, Virchow's "anatomical idea," the crowning glory of all that had preceded, although nowise invented by Morgagni, was a splendid creation, which added an element of permanent value to medical thought, although this period of lofty achievements gradually revealed itself to be only a transitional phase after all.

It is well known how bacterial investigation revealed processes going on primarily in the blood-serum, in which the anatomical lesion plays hardly any part at all while the formation of antitoxins and antibodies in the circulation is the chief factor. But along with this modern discovery, a series of ancient medical ideas are once more gaining currency in modified form, doctrines shelved long ago at least officially, but now becoming topics of general discussion, namely those of the complexion, constitution, diathesis and crasis.

The never entirely extinct species of "thoughtful practitioner" had always tinkered with "complexions" and "constitutions" because observations occurred over and over again in his practice which were only explicable on the basis of ideas relating to constitutions and suchlike; but such interpretations were far from being fully satisfactory, since, in this field, one could only employ syllogisms, the sickly pallor of which could never acquire the healthy hue of reality.

Here again, as so often in the past, history must sound an earnest warning note lest, as in the very earliest phases of these ideas, the green fields of clinical observation be again blighted by dialectic mildew, lest outworn theories be again revamped, or old errors, even though unwittingly, be repeated.

The road is clear again for an unprejudiced examination of the "constitutions" and "diatheses," which, of course, must be sharply differentiated as concepts, lest our already badly muddled terminology fall into a state of worse confusion. In these still problematical fields also, comparative material of physiological, chemico-pathological and racial-biological import must be gathered in long series by modern clinical and experimental methods, so that new life may be imparted to old views, lest they vanish like phantoms or degenerate into a shallow schematism.

From the past of our science, modern investigation may take its guide-posts, while, on the other hand, the most recent scientific findings will shed light upon the scientific life of the past, thus enabling us better to understand and more justly estimate the significance of the mental struggles and honest endeavors of seekers after truth in bygone days. Thus, today one might ask: "The great Rokitansky, the real creator of modern pathological anatomy in its essential parts as well as in its total conception, was he in his doctrine of crases, nothing more than a victim of atavistic notions which he could not get rid of, an impractical dreamer, in comparison with whom the sober-sided localistic clinician gained all the more admiration?" Just for this reason, perhaps, we may learn to admire Rokitansky's genial, far-seeing vision; he did not want to throw overboard the intuitive conclusions of the past because they had begun to seem improbable by comparison with the ever-advancing triumphs of the localistic gospel, of which he was the most successful standard-bearer himself. And we are bound to admire him all the more in that the unparalleled

successes in one trend of investigation did not prevent him from envisaging basic pathological problems that could get no satisfactory answer from "localistic" doctrine.

From such historical considerations, the modern medical investigator will learn to be cautious in judging the abrupt changes of the last decade, to be modest in estimating the great intellectual struggles of the past, and to be conservative in evaluating scientific achievements of the immediate present.

All things are subject to change, but not every point of vantage gained loses its value simply because newer investigations have given us other viewpoints, enabling us to see the other side of recent results, and yet, unexpectedly, rehabilitate what we formerly rejected.

While, during many decades the solidistic tendency solved localistic, morphological, cellular and other problems with indefatigable restless activity and immense success, not forgetting pathological physiology, the historical aspects of medical science were temporarily neglected and pushed aside. The changes of viewpoint in recent times show clearly the dangers incurred by such depreciation. As soon as the dangers are sensed, people endeavor to make amends by redoubled efforts in all departments. Thus, in epidemiology and the prevention of epidemics, the scientific as well as the immediately practical dangers springing from a neglect of the results and teachings of doctrines of earlier periods are more conspicuous than in the problems of general pathology just under consideration. The same holds true elsewhere and in like manner. These are the real and deeper causes of the great progress which medico-historical investigation has made in England, Italy, France, America, and, most intensively, in Germany—aside from the glaring contradiction that a science which is based intrinsically on the study of organic development and the history of evolution, should be able to dispense with intimate knowledge of its own development. As to the ideal value accruing to the

thoughtful investigator from the study of history, Goethe has expressed himself as follows:

"He who cannot render an account to himself of at least three thousand years of time, will always grope in the darkness of inexperience and merely live from day to day." And this holds true of the organism of a science as well as of the biological entity of the individual who is the bearer of this science.

PERIODS IN THE DEVELOPMENT OF MEDICAL SCIENCE

Translated by

FIELDING H. GARRISON

PERIODS IN THE DEVELOPMENT OF MEDICAL SCIENCE

WHERE do we find the beginnings of medical knowledge in early times? They go back to the days of man's earliest development, even, indeed, into the defensive reactions of the animal world and their mutual interactions. The motives were necessity and the altruistic impulses and the feeling of tribal solidarity.

A purely empirical attempt to remove destructive external influences, irritating foreign bodies of all kinds or noxious living creatures, comprises the first category.

Discriminations of complex kind are connected with the two ghastlier modes of sudden death from hæmorrhage and suffocation. In the combats of the chase and the battlefield, they appeared frankly as the effects of external force and, as such, were readily understandable. But, from their very nature, they came again and again to be observed as the effect of invisible, unintelligible causes, which were to be unraveled, just like the nature of disease, in connection with the first attempts to explain it by the foreign body theory, or the worm and parasitic hypothesis. That diseases abounded even in the imaginary Golden Age of early man, ten thousands of years ago, yes, even in the Paleozoic Era, millions of years before, is demonstrated by the investigations of human and animal remains of primordial and prehistoric times.

Coarsely empirical, emanistic views were resolved into animistic, demonic ideas, to dominate all humanity. General theories of existence are perceptible even in the medicine of earlier times. The medicine-man, the Shaman, the physician-

priest took possession of the field. Magic spells, verbal, manual and objective incantations became factors in healing. This hyperphysical system came to be regarded as a sublime sort of knowledge which rejected with contempt the coarser empirical therapeutics but could not exclude it entirely.

Only in very unusual stations of humanity's endless wanderings over the earth, and then only among chosen people, as it were, do we find the compilation of great masses of observed facts, as a subject for penetrating investigation. Among these, whatever could be healed acquired a noticeable status, in connection with other hoards of observations. The whole developed into a corporate collection of impersonal, professional knowledge in the hands of a priesthood who made notations of it, combined it from many sources of observation, codified it and twisted it to the purpose of a cult. The healing factor itself remained, at the same time, the centric feature, at least the most important and applicable, if not the only one. In combination with all other sacred, ecclesiastic knowledge, medicine becomes a secret pseudo-science, developed into a solemn ætiological, prognostic, even diagnostic and curative-ritual system, and as part of a theurgic and theosophical theory of the universe.

As a divinely-appointed investigator of the causes of things, the priest, through his very office, answers, with surety and full competence, humanity's eternal questionings as to the origin and existence of pain, disease and death. He spins therefrom one of the most tangible threads of his scheme of the universe, interweaving it with everything else that is known.

Divine punishment, obsession and possession by evil powers, special demons for particular diseases, e. g., fever, demonomania, insanity, are merely isolated examples of the countless possibilities of a pseudo-scientific professional consideration of healing or ameliorative or destructive processes by means of rites of atonement, catharsis, transplantation, propitiation

by way of sacrifice, apotropaic rites or counter-magic with the aid of stones, plants, animals, or of rituals, incantations, charms, sound and rhythm.

Of such well considered schemes of the universe, the individual course of disease is also but a part, offering no further diagnostic or prognostic difficulties to orthodox investigation. Such was the accomplishment of the priestly caste in its highest development. The most refined and consequential phases originated in Mesopotamia, upon the basis of the ancient Oriental scheme of the universe, supported by contemporaneous empirical therapeutics, pharmacology and dietetics which were also recorded, like all other phases of priestly knowledge, and were in part, as it seems, turned over even to a non-priestly caste of physicians, while the registered and recorded rules of treatment remained under control of the priestly caste who formulated them.

The experiences observed, recorded, generally developed and carried over into practice by physicians of priestly caste in the Nile Valley appear to have been even more widely developed and ripened in the second and third millenia before Christ, simultaneously with similar observations on the shores of the Euphrates; but, today, a better bird's eye view of the total development is already accessible, up to the time when, under Babylonian influences, the magical and superstitious elements overgrew the petrified doctrine of the past. That cult of priestly magic has, in some inferior aspect or other, well-nigh overshadowed the popular medicine of primitive peoples of the whole world to this day, and from its coils, not even Egypt and Babylon were ever able to free themselves entirely.

But along with this transcendental progress into the open there was an ever closely parallel trend of original observation; no matter how far the problematical schemes of the universe may have diverged therefrom, the narrow pathway of observational science remained. The "revealed doctrine" of

disease demons was never quite adequate to total human needs.

Even hæmatic and pneumatic theories, evolved, as they were, to typify death by bleeding or suffocation, did not suffice in the long run. Excretions from the orifices of the body were continually forcing themselves upon observation and thought: tears, sputum, cerumen, urine, fæces and suchlike, their disturbing influence when excessive, the fatal effects of their diminution or absence, their striking regularity in nocturnal emissions and menstruation, indeed whatever oozed, trickled, gushed or streamed forth from the body, whether watery, slimy, putrid or bloody, arrested attention, became the corner-stone of biological theory. Especial attention was also drawn, in the end, to what was vomited from the inmost depths of the body.

Blood flows from wounds, as also from the nose, eyelids, mouth, blood-vessels, urinary and sexual orifices and anus, mixed or unmixed with air from the trachea, with synovial fluid from the joints, with fæces from the intestines, and so on! Blood is therefore everywhere! Similarly, bland or irritating secretions of like nature are seen to come from normal orifices, as also from flesh or long-standing wounds, or from lesions in all possible parts of the body in acute and chronic conditions.

Furthermore, all such bodily secretions and excretions may be sometimes activated by kneading and pressure or may be postponed or held in check by a tight bandage, a fact which was, often perhaps, first noticed accidentally in bleeding to death from wounds in the extremities, just as a noticeable effect in hæmorrhage from wounds was ultimately obtained by ligatures, even when applied to relatively distant parts. On the other hand, it was believed that therapeutic effects could be obtained by opening the blood-vessels (venesection) or by openings made with the seton.

In this way, the mind was almost inevitably drawn to hu-

Seton = skein of cotton or like passed under the skin with ends protruding to maintain an artificial issue as counter-irritant, etc.

moral theories, as they reveal themselves in different cultural periods; in varying aspects. Such doctrine is, in fact, peculiar to nearly all dominant cultures of earlier times: blood (water), pus, mucus, water fæces, and, in what was so striking as to taste and color, the vomitus and the bile, now green, now yellow, now black—all these were regarded as causes, carriers or consequences of disease.

Details of this humoral pathology crop up even in Babylonian medicine, e. g., in the *sualu*-series (mucus-series). In Egypt arose the concept of a kind of tubal system, in which fluid and air seemed to ebb and flow, without, however, any definite notion of a circulation of gases or fluids, let alone of an explicit humoral system.

In later times, the influence of the medical magic and exorcisms of Babylon upon the already ossified Egypt is definitely ascertainable. Less certain is the presumable counter-influence of Egypt upon Babylon, although this too must have gradually come to pass up to a certain point, after which the two cultures exerted a decisive influence upon the farther East.

Much is expected from a very particular cultural cycle, that of the Land of the Rising Sun in the farthest East—China, which today is supposed to imply an uninterrupted culture of 5,000 years or more. Really uninterrupted? Really uninfluenced? Two big queries which may be reinforced by a third: Is this culture after all so old? It must be admitted that answers to all three questions are very dubious.

Before the middle of the 9th century, Chinese chronology is by no means reliably ascertained. That the physician Pients'io belongs in the 6th century B. C. is not yet certain. The book on "Grave Diseases" (Nan King), which goes under his name, was perhaps a product of his school, in the first instance. His, in any case, is the first medical personality to be decisively prominent in literature (the first in China, at any rate!); while, before his time, there may well have been an impersonal

period of collective medical knowledge, then characterized by names of emperors, and to which later tradition assigned physicians as mentors. So far, then, there is a recognizable parallelism with Western Asiatic developments, if only of very general type. With Pients'io, we enter a new period, coincident with the foundation of ancient Indian medicine, of which we shall speak in turn.

The influence of the priesthood is, to all appearance, less recognizable in the first period of ancient Chinese medicine (although it may be concealed by mere dynastic externalities), yet the superstitious belief in exorcism is still very potent in China. Even today, the disease-demons are driven out by shamans; during epidemics, the cult still flourishes without restraint. The primitive demonology of Eastern Asia seems to have enjoyed the same authority as the specifically Chinese natural philosophy; it was not merely a substratum of belief, as in some parts of the West. If the lore of the five elements, five planets, organs, colors, tonal qualities and the two polar principles, really existed in the third millennium before the beginning of our era, it was not without its counterpart in Babylon and Egypt, particularly in its marked astrological flavor. But when all this took place and was codified is still by no means certain. Parallelism with the ancient Indian phase would be more likely. In this field, there is pressing need for investigation.

And now, as to the question of further effects on Eastern culture. A transmission of Chinese medicine to Japan is first noticeable about the beginning of our era. But did it not pass over the great ocean, with the Kuro-Siwo current,[1] south of the Aleutian Islands? An attempt to show some probable effect of Babylonian on Aztec culture has been made. If so, the next supposition would be that there must have been some emigration thither, at a time when Eastern Asia too was under

[1] The Pacific equivalent of the Gulf Stream.

Babylonian influences. This implies exclusive acceptance of the doctrine of direct convection of culture,[1] with corresponding rejection of the theory of parallel authochthonous origin of identical cultures, as taught by Ratzel. But for the solution of such wilder conjectures as these, the basic data fail us and are still to be established. Whether this is possible, remains to be seen. Even in ancient America, at any rate, knowledge was everywhere in the hands of the priesthood, and medical knowledge stood in close relationship with theories of the universe and other problems of cosmic and astrological nature, as in the first periods of the ancient world. Out of these primitive phases, ancient America never really emerged, at least not before the immigration of Europeans.

In the first period, then, we find the same developments over the whole world, at least in the stages accesssible to us, viz., simple empiricism (emanism); foreign body and worm theories; demons of disease with exorcism, along with collection of observed data (in favored localities) as the basis of further views of nature and the cosmos, quickened with religious views of life; and finally a gradually recognizable effort to effect release from animism, which comes to pass in the second period, and indeed, exclusively in Greek medicine.

Babylonian medicine was transmitted to the Assyrians, then to the Hittites, was spread thence over Asia Minor to the Ægean, without, as far as we know, encountering anywhere, any culture, however remote, that was quite its equal (it was unique of its kind). Ancient Babylonian doctrine, with its hæmatic peculiarities, spread also through Syria up to Northern Palestine. This hæmatic-pneumatic lore penetrated even southward and the interchange of ideas between Babylonian and Egyptian medicine was gradually effected, with a slight preponderance in favor of Babylon. But ancient Assyro-Babylonian medicine extended its spheres of influence eastward also, and

[1] Originally formulated by Bastian and exploited by Elliot-Smith.

even before the Persian conquest of Babylon. There seems to be no ground for the hypothesis that the Indo-Iranian peoples developed any growth of culture comparable with that of Babylon before the second millennium B. C., and, in the nature of things, the pre-Aryan Hindus did even less.

Babylonian influences were as potent over the Iranian highlands as westward. Specimens of Babylonian culture come down to us frankly as "Persian" in Greek manuscripts. (We even find Indian animals on obelisks at Nineveh and evidences of the Assyrian conquest in the valley of the Indus.)

The effect of Assyro-Babylonian medical reasoning and of their (pseudo-scientific) teaching upon the Persians could certainly not have ended with the subjugation of Babylon. On the contrary, Babylonian medicine, with an Egyptian slant, began, at that time, to gain real consideration; but its influence or at least its recognition, goes back as far as the second century B. C., while theological doctrine developed itself in an entirely independent manner. The Zenda Vesta becomes accessible only in a very late period (Sassanid period, 3rd century A. D.), while the Indian religious philosophy comes down to us from a much earlier time. It does not lack medical features. Of the relationship between the Iranians and Hindus of the second century B. C. we know nothing.

As a race of thinkers, the Aryan Hindus were far superior to the Iranians. The Veda is not only older than the Avesta, but it is characteristic that interesting medical and hygienic data in the Riga Veda are to be found in the later lore of personal cleanliness attributed to Manu. Far more significant for the knowledge of primitive medicine of Indo-(Iranian-?)Aryan provenance is the Magic Veda (Atharva Veda), a collection of healing and prophylactic doctrine and of magical superstitions that is almost without parallel in the literature of the world. It is one of the fundamental texts of our knowledge of supernatural folk-medicine, representing

thousands of years of early human development, and comparable with (if independent of) the cultural and magical ritual of Mesopotamia.

But it is none the less an error to attempt to educe the scientific medicine of the Atreya and Sasruta from the magic medicine of the Vedas, since the former, in the light of recent investigation, dates back to the 6th century B. C. and is therefore too ancient for the Buddhistic basis hitherto accepted. In the medicine of the Susruta, we encounter a highly organized system of scientific medicine as a tangible product of the Aryan intellect, comparable only with Greek medicine of the 5th century B. C. As the first and oldest attempt to create an authentic science of medicine, it may well be assigned to the period of Vedic literature, yet is no more a product of it than was the medicine of Cos and Cnidos a creation of the priests of Asclepias. Hindu medicine, as we find it in the Atreya and Susruta, is like the Hippocratic medicine of Cos and Cnidos in one other respect, viz., both are associated with the tangible personalities of actual physicians, and are thus no longer the impersonal collective knowledge of guilds and castes, as was everything that preceded them. They have an individuality all their own. Behind them is sensed the great, thoughtful physician, who stamps them with the seal of his personality. The caste-lore of the Euphrates and the Nile, and to all appearance, of the Yangtse-Kiang and Hoang-Ho also, belongs in a much lower developmental stratum. The Atreya and Susruta stand upon a higher and more recent plane and presuppose the mental and observational activities of at least one or two thousand years preceding, even as the Hippocratic canon has for its long foreground the intellectual achievement of the Ionian nature-philosophers. In India, any significant advance over the Susruta is demonstrable only (to a very modest degree) in the work of Charaka, the contemporary of Galen. Susruta is, in round numbers, a hundred

years older than Hippocrates, while Vagbhata, the latest of the compilers, belongs somewhere in the time of Paul of Ægina, which city was occupied by the Arabs, simultaneously with Alexandria, in 643 A. D.

What the Hindus achieved in medicine and surgery is the first great attempt at a systematization of scientific medicine according to humoral principles, the second thing of the kind being that of Hellenic medical science, which, however, was destined to go beyond the earlier humoral scheme by leaps and bounds.

Whether the Chinese development, to which we have already alluded in passing, is to be paralleled with the Babylonian-Nilotic in its first stage, or in its second, with the Indian and Grecian at need, or whether it arose independently, without any (recent?) influences from the West, and simultaneously with Atreya and Susruta, is as yet uncertain: a possibility but not too much of a probability. Stimuli from Babylonia and India at some definite time may perhaps be postulated. These are most important problems in the general cultural development of mankind which await a solution in the future. In any case, the middle period in China, which is, at the same time, its most recent period, stands on the same plane with the simultaneous period in India, which also had a parallel stage, in its first period, with Egypt and Babylon. It may be asserted that the stages Egypt-Babylon-China and India-(China?) Greece, comprise the total medical achievement of the whole world, in a scientific and historic sense. The notion of China as a totally independent culture must be checked with a large question-mark.

The tendencies of Greek medicine are known to all. It can hardly be overestimated as an individual achievement. It grew up independently, out of the Babylonian nutritive stratum, on the coasts of Asia Minor and is based upon the collective observational material of Mesopotamia, like many another science

which had already taken root along the Euphrates and the Tigris. But more even than astronomy, for instance, is Greek medicine, even to its roots, a specifically Greek growth, both as science and as art. With the temple-medicine of the Greeks, this growth had only a certain initial symbiosis. Certain earlier priestly elements were *perhaps* contained and retained in the lofty code of professional ethics—*perhaps*—while the temple-medicine itself degenerated.

The mother who reared and suckled Hellenic medicine, and indeed all Greek natural science, was the Ionian natural philosophy, as is self evident from the Hippocratic polemic tract Περὶ ἀρχαίης ἰητρικῆς.

But from Babylonian medicine came the meager beginnings of the humoral pathology, as they were spread over Phrygia and Lydia. The matter cannot be justly argued, from lack of basic material. The mucus or *sualu*-series is really the first example that is, in any way, tangible. Before Hippocrates, we find the Sardian physician Thrasymachus dealing with blood, mucus, bile, and liquid fæces as pathological humors.

Shall we, then, regard the doctrine of the four humors, commonly described as "Hippocratic" but by no means property of the great Coan, as indeed, in all its innumerable variants, a Chaldaic survival? That would agree with its tough tenacity of life. If it had not been for its restoration at the hands of Galen, which has a ring of atavism, just this theory of blood, mucus, black and yellow bile, as a renewal of ostensible Hippocratism, would have been disposed of at the beginning of our era. Enthroned again by Galen, it dominated thought for well-nigh 1500 years. Even the Titan Paracelsus was not able to annihilate it entirely. It was a full century later when Schneider, in his work on catarrh, applying the corrosive method of German investigation, made an end of this phase of the humoral pathology (at least, gradually) by disposing of mucus as one of the cardinal humors.

Something entirely separate, namely the general doctrine of body fluids, occupied the minds of Greek philosophers to a degree, from the time of Alcmaeon at least, nor were the gaseous constituents ignored, but indeed later acquired the steady consideration which was their due. A plenitude of opposing views of things was ever characteristic of Greek science and medicine from the very beginning. Indeed, it may be calmly asserted of this multiplicity of viewpoints alone, as we sense them in the Hippocratic canon, that they are not equaled in variety and extent by the medical theories of the whole world before their time or taken all together. This individualistic development from the start is one of the most progressive factors in the development of Greek medicine, based as it was upon the philosophy of experience. The rivalry in the search for truth which existed between the schools of Cos and Cnidos alone is a historic fact of incomparable significance, since it certifies the victorious progress of Greek science from the coasts of Asia Minor and Southern Italy to Alexandria and Rome. In the life-histories of the various attempts to solve the riddles of nature by the Empirical, Methodist, Pneumatic, Eclectic and suchlike schools, Greek science ever strove for authentic and perfected knowledge under ever novel ways and means of investigation, a matter which we need not elaborate further. The results were almost surpassed in significance by the ways and means of attaining them, in other words by the method of Greek science.

To resume. 1st. Period: Primary nuclei of a definite development of the science and art of medicine on the basis of experience existed only in Babylonia and Egypt, perhaps also (but only conditionally) in China.

2nd Period: Foundation of an actual science, a system of surgery in India and Greece and (presumably *via* Thibet and spreading thence to) China. The danger of overestimating

the Chinese element, is, however, always considerable. We come to the third and most recent phase.

Greek medicine, in its progress from Alexandria to Rome, dominated the whole world, in the Mediterranean sense. The concept Hellenism includes ancient Egyptian, ancient Babylonian, traces of ancient Indian elements, all coalescing with the native Greek strain. The whole complex was already in a state of decline, when, with the downfall of the Roman Empire, the great stage set for Greek science also collapsed, burying much under its crumbled ruins. The one remaining oasis at Byzantium was visibly choked with sand. In India it is true, the teachings of Susruta and Charaka retained their vitality, and indeed found, in Vâgbhata, their latest revival in the days of the last survivor of Hellenism, Paul of Ægina, to moulder into nothingness shortly thereafter. Thibet came under Indian influences, and by this route, China also, in part, with cultural offshoots to Japan.

Everything, from the Indus to the Pillars of Hercules, was now overlaid with successive thrusts of migrating peoples, proceeding westward from the North and eastward from the South. After a brief destructive interlude, the barbarians brought in new life, which germinated everywhere from the ruins.

The Justinian thrust to westward was a futile fulmination that left Byzantium in even greater exhaustion than before. The East went down swiftly under the assaults of the thin ranks of Arabic warrior-hordes, who invaded areas occupied by ancient schools of learning, in Syria, Mesopotamia, on the border of Iran, in the Nile Delta, at Armid, Nisibis, Edessa, Gondisapur, and Alexandria, where the scientific life of Hellenism persisted in Greek, Syrian and Persian guise, and where the liveliest activity in translating mathematical, astronomical, astrological, and particularly medical writings into Arabic was

going forward gradually, as the language proved equal to the task. This was particularly the case after the removal of the Caliphate to Damascus and later to Bagdad, when far seeing statecraft had blazed a trail for the fusion of Arabian and Persian strains—a result only partly attained. Highly significant for the understanding of the earlier achievement of the Persian element is the fact that the greatest of physicians of Islam were Persians. The actual achievement of the first great renascence of Greek medicine under Islam is worthy of highest esteem. Its most significant accomplishment was perhaps the production of a large number of clear, well-arranged text-books of general medicine, naturally in the trend of the already sterile encyclopedic tendency of the Greek decadence after Galen. There were some special offshoots, such as the "Royal Book" of Haly Abbas and the Canon of Avicenna, which are like nothing else in the whole medical literature of the world, and the text-books of ophthalmology, of which all Greek medicine produced but one, the (lost) book of Demosthenes, and Arabic medicine almost one and a half dozen, including such first-rate specimens as Honain's gloss on Ali ibn Isa, Ammar of Mosul, Zarrindast of Halifa and Saladin. But it was also given to Islam to make genuine achievements in clinical medicine and even more in the attainment of isolated segments of knowledge, incidental to their initiation into Greek science. A rapid rise in the 9th, 10th and even into the 11th centuries, then stagnation, which still endures.

Toilsome and wearisome was, meanwhile, the course of events in the Western world at the beginning of the third period. Over that wide terrain of desolation, to begin with, there was not a single one of those centers of medical teaching which had abounded in the East. Rome was never an academic or university center, like Athens or Alexandria or Constantinople. In the stately Roman lecture-halls which were eventually built (for example, on the Aventine), teach-

ing was confined to general culture, including, of course, medicine, but only popular lectures in the sense of ἔγκυκλος πχὶσεαῖ, never real professional training. This departure was destined to be short-lived, and even the meager lecture-fees were soon discontinued. There was not a single medical library.

The idea of founding a Roman university after the Syriac pattern, cherished by the Imperial Chancellor of the Ostrogoths (Cassiodorus), was eventually realized by him in a more modest degree, in the claustral "Vivarium" on the Gulf of Squillace at the end of the 6th Century, A. D. The important feature was the creation of a great library in a region in which Greek was, eight centuries later, the language of the people and of business, and which still has tiny areas (enclaves) of Greek influence.

He, Cassiodorus, and not St. Benedict, was thus the creator of clerical or cloistral learning, and so became the father of "monastic medicine." Above all, he was concerned with Latin translations from the Greek (*via* the Syriac versions), a task which offered no difficulties in the bilingual Italy of that period.

Weariful was the development of monastic medicine, especially to the north of the Alps, aided only by the literary material afforded, mostly in Southern Italy, in Fulda, on the Reichenau, in St. Gall, and particularly at Chartres and on the Loire in France.

In Southern Italy, there was, over and above this meager literature, a traditional practice of technical surgery in families and guilds, as also some practice and teaching of internal medicine (in distinct opposition to the sheer, formal book-learning of the clerics and their schools). From the 9th century onward, this tendency gained a definite status at Salerno, as competent practice of medicine on the basis of experience. Literary work does not appear to have been in order at Salerno. It was thought sufficient to draw upon the generally accessible ancient literature of the transition period,

eked out only by current prescriptions of experienced physicians, as they came to be zealously collected in the form of booklets of recipes (*Receptarius, Antidotarius*) in the cloisters so frequently drawn upon for medical assistance.

Genuine literary activity was first developed at Salerno when the so-called African (but perhaps only Sicilian) Constantine, after a brief presumable residence at Salerno, at length settled down as a monk at Monte Cassino, and began to issue, often as his own writings, worthwhile Arabic treatises of the beginning and middle of the 10th century in Latin dress. Among these was the "Royal Book" of Haly Abbas, a systematic manual of theoretical and practical medicine, which he entitled the *Pantegni* or "whole art" of the subject. Incidentally, he translated minor treatises of Hippocratic, Galenic and Byzantine provenance for the daily use of practitioners, and this compend enjoyed a wide popularity far into the Renaissance period, and, as the "Ars Medicinæ," was extensively consulted, both in university lecturing and daily routine practice.

Thus, from 1080 on, an earlier, simpler form of Arabian medicine, more allied to the Greek, celebrated its reawakening in West European medical literature, with Cassino and Salerno as starting points. It was combined with original observation on the basis of the antique, constituting a rich body of native didactic writings.

Flourishing luxuriously in the 12th century on the Gulf of Salerno, this literature of "High Salerno" dominated the whole of Europe, for nearly a century, until, about 1180–1200, when a second and still more overwhelming wave of Moslem literature started from Toledo. This served to familiarize the West with the work of the great clinician Rhazes, and above all with Avicenna. In other words, at the end of the 11th century, all this would have been to Western physicians a book of seven seals, had they not been prepared for it by a whole century of early Arabian doctrine, as expounded by Constantine. In this

way, Aristotle and Galen were presented to the West, about 1200, in a new Arabic-Persian dress and so made familiar to all. They now dominated Western medicine to an extent and with an exclusiveness which Galen himself, even at the close of ancient history, never enjoyed, at least, never in Italy, Gaul and North Africa.

Then, gradually, in Southern Italy, in Sicily, in the maritime cities of Eastern and Western Italy, an ever increasing body of literature on natural science and medicine was faithfully, often too faithfully, translated from Greek into Latin. Much had already been translated, several decades before, when Francesco Petrarca worked for the restoration of ancient Roman culture, and declared war on Arabism in any form. Arabism had already fallen into partial decadence in other parts of Italy and had, in many places, met with that violent resistance and rejection which was the lot of its Jewish interpreters and its practical exponents.

Even as the great scholastic thinker and Paduan physician, Peter of Abano, had betaken himself in the 13th century to Constantinople for a long course of study, in order to master and expound the "Problems" of the school of Aristotle in the original Greek, so an ever increasing shoal of physicians undertook the study of Greek. Finally, the whole body of ancient medical literature, as we possess it today, was again made accessible to the West, although, as to facts, not very much that was new came to the knowledge of learned physicians. For the full body of ancient medical literature, as it had been accessible to Moslem medicine in its developing period, was never again to be known. Even today, for instance, many Galenic writings are accessible to us only as translations from the Arabic, for the Greek originals seem to be lost forever. In characterizing the Renaissance, we can merely say that what had been previously acquired on crutches, as it were, was now to be reached only by walking securely on one's own feet.

But very clear-headed scholastics, like Roger Bacon and the Catalan, Arnold of Villanova, had at once perceived, even in the 13th century, that Greek and Moslem knowledge of natural history and medicine were not the last word in science. Doctrinal self sufficiency had, in fact, been Galen's legacy to posterity. But when, along with Galen, people came to know Aretæus, the great Archigenes, Rufus and Aetius and their kind, they were astounded. A critical spirit set in when Vesalius, a Teuton of the Low Countries, at last declared that it was necessary to go back of Galen, to his predecessors, the independent inquiring Alexandrians, and to rid human anatomy, in particular, of its disfiguring patches of Galenic simian anatomy, in short, to base investigation, in the old Greek spirit, on individual observation and experience. Even twenty years before, this was recognized by a High German thinker and observer, Theophrastus Paracelsus of Hohenheim, who, with the hammer of individual experience, shattered the ornate clay columns of the Galenic temple, declaring the four cardinal humors, which had fooled the medical world for 2000 years, to be flights into unreality, and accepting only Hippocrates as an authority. Doughtily, he began to build, from the ground up, a new medicine, on the basis of original observation and experience, a structure on which we are still at work today, basing our observation on experimentation, testing one stone after another before putting it into place, and confident that, in this way, the whole truth will, in the end, reveal itself. So it had been 2500 years before, with the inquiring and observing Ionian thinkers, with whom the second period begins. This period stands for the original foundation of science and medicine, the preliminary stages of which are lost in the obscurity of early Hellenic culture, while the preliminary stage of the third period in the East and West has revealed itself in all essentials, developing, as it were, in the clear light of common day. Preliminary and preparatory was the work of the Moslem physicians,

who did not go beyond complete acquisition of Greek medicine and are therefore historically not on the same level with Indian medicine of the second period. Preparatory, too, was the work of Salerno, Bologna and Montpellier. But even in the age of Scholasticism, we begin to perceive the origins of the third period, the period of modern medicine, which sets in fully with Paracelsus, Vesalius, Pare and Harvey, to attain its fruition in Borelli, Sylvius de le Boë, Sydenham, Stahl, Haller, Morgagni, Bichat and Johannes Müller, a period which we still believe to stand upon the same level as Hellenic culture in the height of the Alexandrian period.

To such a simple formula can the general development of medicine during the three periods be reduced if they have been thoroughly studied, penetrated and scrutinized from all sides. And still another point! What has enabled us to go considerably beyond Greek achievement during the last hundred years has been the devising of new means of investigation of the most varied kind, particularly in apparatus and to some extent also in methods, means which have opened out entirely new fields of observation and science, and thus created unexpected possibilities of gaining knowledge in the older fields of research.

SCHOOLS OF PHYSICIANS

Translated by
GEORGE PANEBAKER

SCHOOLS OF PHYSICIANS

THE phrase "schools of physicians" has an ambiguous connotation. Almost every man of strong personality and significant achievements has founded a "school." Many, during their lives, have gathered about them an ever changing circle of pupils and even after their death, have lived on in their "schools."

How widely influential, for instance, is the school of Curschman in the leading clinical chairs of German universities today! Only a few decades ago the school of Virchow dominated the teaching of pathological anatomy everywhere. Even today, and almost exclusively, it numbers many prominent epigoni amongst its followers. And if we delve deeper into the past, does not the school of the great Rhinelander Johannes Müller still wield an influence far beyond the field of medicine? While the "Tübingen school" of a Wunderlich and a Griesinger, the "rational" medicine of a Henle, a Pfeuffer, had apparently but a transient influence in the eyes of a superficial beholder.

As a matter of fact, the conflicting tendencies of the schools flourishing during the forties and fifties of the nineteenth century had a permanent effect upon the whole of German medicine.

From a wider viewpoint, the same can be said of the conflict of the Iatrochemical and Iatrophysical Schools, from Paracelsus down to Sylvius de le Boë and Sennert, from Harvey and Descartes down to Baglivi, and their final reconciliation in the teachings of Pitcairne, Sydenham, and Boerhaave.

Going back to classical antiquity, we see that the war waged for centuries between Dogmatists, Empirics and Methodists,

in spite of all the dialectic contentiousness, was no mean factor in the scientific progress of Hellenic and Hellenistic medicine.

Just now, however, we are not concerned with discussing the prospective value of the tendencies of the different antagonistic schools in the history of the healing art, though the elaboration of this subject would be profitable for modern medicine, and must some day be carried out exhaustively. At present we are not yet advanced far enough in our knowledge, and pressing historic problems have been pushed into the background for awhile by the turmoils of the recent war.

For the present, therefore, it is better to discuss, in brief outline, schools of another type, in their relation to the primary instruction of young physicians in the elements of their science.

Not much is known as to the way in which this instruction was imparted on the shores of the Euphrates and Tigris. All we know for certain is that in Babylonia there were professional physicians as early as 2000 years before our era, that is, 4000 years ago, although this was denied by Herodotus 1500 years later.

In the code of Hammurabi we encounter the physician (*asu*) in a firmly established though not very elevated position; he received fees for services rendered, but was threatened with severe punishment when his treatment was unsuccessful. From this we may infer the requirement of a professional education, regulated by law. Undoubtedly, this, as well as any other branch of learning, lay in the hands of the priests, who, in medicine as in other branches, made prognoses of various kinds, without any apparent participation in medical practice on their own account. The physician who, under the code of Hammurabi, was liable to criminal prosecution, was certainly no priest.

The medical literature preserved on 2000 clay tablets (one half

of them in Berlin and the other half in London) represents the impersonal (i. e., anonymous) knowledge of a caste, in the hands of the priests, who were guided and instructed by them. From documents and letters, we know the names of a number of Assyro-Babylonian physicians, but no medical authors or teachers are mentioned.

Almost the same thing may be said of Egypt. Here also we find medical lore written down in the temples, a body of knowledge preserved by a caste, no names of authors, a literature written on papyri which today we designate by the names of their discoverers or the places where these documents were found, such as the Ebers Papyrus, the Papyrus Brugsch, the Kahun-Papyri, and so on.

As to instruction given by priests in the land of the Nile we know more than in the case of Babylonia. We read of temple schools at Heliopolis, Memphis, Thebes, where medicine was taught along with other branches of knowledge. That special medical schools existed has not been definitely ascertained to date; but we read of the treatment of the sick by priests and that the aid of physicians was eagerly sought. Whether these physicians were priests is still a matter of conjecture.

Among the Israelites also, certain medical duties were intrusted to the priests, as, for instance, the supervision of the lepers. But in Israel, the priests enjoyed no such authority as in Egypt.

The *"rophe,"* i. e., the practicing physician, was not a priest. Where he got his training, we do not know. In many instances, it is probable that in Babylonia, Egypt and Israel, the father imparted his knowledge to the son, the experienced master to his pupil, but real medical schools the Israelites did not have. During the latter days of Hellenism, the records of Talmudism usually refer to physicians in groups, in other words, as corporations. The physicians apparently were members of corporations.

In pre-Hellenistic times, among all the peoples of Asia Minor and the Levant, knowledge was still the exclusive possession of a caste. The individualistic physician, identified by name as the author of medical writings, appears almost synchronously amongst the ancient Hindus and Hellenes. At this stage, instruction, which, during the whole period of classic antiquity, was the work of a single medical teacher, takes on a marked personal complexion, which not only made for progress, but was the essential condition of a marked uplift in knowledge.

Passing over the medical instruction in India which is bound up with the famous name of a Susruta (Sixth Century B. C.) and a Charaka (Second Century B. C.), let us turn to the medical schools of the Hellenes which, like all Greek science, became patterns for coming generations and are still potential influences today.

In Greece, also, the priestly origin of medicine is unquestionable. But as time went on, complete emancipation from the lore of the priestly caste was effected—a rebirth of Greek medicine out of the womb of Ionian Nature Philosophy, which was also the mother of all the other sciences. At the start, however, medical theory and practice were not everywhere completely separated from the temples of Aesculapius and the service of the Aesclepiads. To the latter we are perhaps indebted for the oldest codified text of medical ethics. The so-called "Hippocratic Oath" is the oath of the Aesclepiads of Cos and the fundamental rule of the Coan school.

Nearby Egypt may have been not without influence upon the ancient "medical schools" of Greece, which as young "border cultures" were planted around the Eastern basin of the Mediterranean, upon the rich primeval soil of the Orient, and upon the school of Cyrene, in the Eastern part of "Africa Minor." There the accumulated experience of ancient Egypt may have been utilized and transformed: we do not know. But we do

know that before the days of Socrates, Cyrene was not distinguished by a higher intellectual life. Its later scientific development was chiefly due to the export of the panacea Silphion, a genus of the Narthex plant, the picture of which adorned the Cyrenaic coins. The physicians of Cyrene, so renowned in the 5th Century, had certainly part in the fame of this vegetable remedy—how well medical glory and a flourishing drug trade may go hand in hand was later shown in Holland.

In the development and the codification of the medical experience of Asia Minor and the transmission of this knowledge to Greek medicine, the early physicians' school at Rhodes played an important part—Rhodes, the blessed island, which established so many cultural associations between the civilizations of Greece and of the near and far East, cultural guiding threads which we are still trying to unravel.

All immediate knowledge of the medical school at Rhodes has been lost, but we are well informed as to the school of adjoining Cnidus, on the Southwestern peninsula of Caria, as also of the school of the island of Cos, the capital of which, bearing the same name, faced the mainland. In the rivalry between these two schools in the 6th and 5th Centuries B. C., Hellenic medicine had its origins, as we know them through the utterances of both streams of doctrine recorded in the Hippocratic writings.

At Cos, medical investigation and instruction profited unquestionably by the relation of the school with the temple of Aesculapius, whither patients came by sea from distant lands.

As an intermediary between the Coan physicians and the outside world, we encounter the municipal administration of Cos, a fact attested by extant documents. Whether the city took a hand in the education of young physicians is conjectural.

Everything speaks in favor of the assumption that, there as everywhere among the Hellenes, instruction was and remained

exclusively a matter of agreement between pupil and teacher. In the times of Plato, it had become customary for the pupil to pay the teacher a honorarium.

The bloom of Cnidus and Cos was synchronous with that of the older medical school of Croton, on the East side of the Southwestern promontory of Italy, and of the somewhat younger Sicilian schools of Acragas and Syracuse. The school of Croton was dominated by Pythagorean teachings, while the Sicilian schools were under the sway of the great Empedocles. Both schools excelled in anatomy, dietetics and botany, and exercised a fructifying influence upon the Athenian school at the island of Eubœa, founded by Diocles of Carystus.

Teaching on a grand scale was carried on in the medical school of Alexandria (founded 331 B. C.). There the Ptolemaic Academy was dedicated to scientific and medical research; famous investigators found board and lodging in its magnificent buildings and had at their disposal spacious meeting rooms, well stocked libraries and laboratories where anatomy and physiology were studied and expounded on a scale never dreamed of before.

Pupils flocked in crowds to the chairs of the great masters, Herophilus and Erasistratus.

Herophilus was prime-mover in the advancement of pharmacological investigations, for which Alexandria, as the leading emporium of drugs imported from the Orient, was the predestined place.

Although the school of Herophilus migrated later to Laodicea on the Syrian coast (facing the island of Cyprus), Alexandria remained the center of medical teaching down to the Arabian period. Here, indeed, from the 3rd to the 1st Century B. C., all branches of the healing art were cultivated under the great Empirics, eclipsing even the schools at the royal

courts of Syria and Asia Minor (Seleucids, Attalids, Mithridates).

Alexandria continued to hold her own even after medical education in Rome had found brilliant leaders in Asclepiades and his Methodistic school and later in Soranus and Galen, when Cæsar and several of his successors had become patrons of medical science. Alexandria again and again outshone Rome, e. g., under Rufus the dogmatist. In Alexandria, too, Methodism began to flourish side by side with the Pneumatic and Eclectic schools.

Unfortunately, the rivalry between the different schools, originally such an important factor in the advancement of Greek science, finally degenerated into futile and sterile logomachies. This state of affairs hardly improved even after the Roman emperors had put medical instruction in Athens, Constantinople and Alexandria upon a firmer basis by appointing salaried teachers and thereby establishing institutions of learning which, especially in the 4th century A. D., were very like our modern universities.

Even in this new guise, the old school of Alexandria surpassed all the other academies, including the Athenian, at which the great medical encyclopedist Paul of Ægina taught down to the times of Arab domination.

Nisibis and Edessa outlived the glory of Alexandria. In these Syrian seats of ancient learning, the medical texts of Greece were translated into Syriac and from the latter into Arabic. In the 8th century, direct translation from Greek into Arabic became the rule.

During the Syrian transitional period and the period of the fusion of the Persian and Arabic civilizations under Islam, the study of medicine flourished at the "Accademia Hippocratica" of Gondishapur, with its great hospitals in the foothills of Persian Chusistan; later, in the imposing hospitals and libraries

at Bagdad and Cairo, which finally were continued by Magreb, Andalusia, Morocco and Spain.

Great clinical teachers like Rhazes blazed the trail for the systematization of the writings of Ali Ibn al Abbas and Ibn Sina, whose voluminous works, almost unsurpassed as comprehensive expositions of medical science, were for centuries the text-books for medical study in the West.

Thus, starting from and guided by the teachings of later Hellenism, the medicine of Islam rose to eminence within a few centuries, while in the West the way was thorny and beset with obstacles.

Europe had never had schools like those of Edessa, Nisibis, Gondishapur, or Alexandria. The excellent results attained in Rome by Greek private teachers were in constant danger of being obliterated in the bubbling cauldron of the metropolis.

In Rome, there was no academy comparable with that of the Museion at Alexandria, or the later universities. In Rome, the school seldom survived the teacher. After the ever recurring storms of the great racial migrations, there survived only the scattered remains of the rhetorical schools, which, even in the days of the Ostrogoths, never attained the dignity of medical schools. The same thing was true of the princely courts of the Visigoths in Spain (where literature was at least cultivated) and of the Vandals in Africa Minor, where medicine retained some lingering vitality even into a late period.

Cassiodorus, whose family came from Syria, planned the establishment of a university at Rome during the time of his chancellorship under Theodoric and his successors. After his resignation (540 A. D.), he founded on his estate in Vivarium near Squillace in Calabria (south of Croton), a school for the cultivation of Christian knowledge and for the transmission of Greek wisdom, and here medicine was taught in the Greek language and by Latin translations.

At that modest but ingeniously planned monastic school on the shores of the Ionian sea, in ancient Magna Græcia, divine and secular wisdom was taught according to the "Institutiones" of Cassiodorus, but not in conformity with the advice given by St. Benedict, who neglected the sciences. Later on in France and Germany, supported and directed by Irish and Anglo-Saxon monks, the Carolingian renaissance, at the convent schools of Fulda, Reichenau and St. Gallen, began modestly to cultivate medicine on a small scale, after the Cassiodorian prototype, as we learn from countless manuscripts of St. Gall, Reichenau and Cassel, and from scattered French manuscripts even before the period of progressive scholastic teaching at Chartres and Tours.

In Germany and France, the teachers were clerics, while for several centuries to come, the monasteries in Italy manifested a certain aversion to the cultivation of the sciences; the cathedral schools offered only a preliminary education for holy orders.

However, under the influence of faded ancient prototypes, the Lombards of Northern and Southern Italy established secular schools. Of these, the school at Benevento, at its height in the 9th Century, could boast of 32 instructors in the secular sciences, including medicine.

At the beginning of the 9th Century, in the seaport town of Salerno, south of the bay of Naples, there existed a medical school which was conducted by laymen. The beginnings of this school are veiled in darkness, and all attempts to trace them to the Benedictine monastery of Monte Cassino (120 kilometers north of Salerno) have been unsucessful. The school of Salerno was already flourishing at a time when Monte Cassino was still innocent of science. An influence from nearby Benevento is possible but not demonstrable. However, further south was ancient Elea, and adjoining it "Magna

Græcia," where just then the Greek began to be a living language, to flourish in the daily life of the people as well as in commerce even down to the 14th Century.

Ancient surgical practice had also been preserved as family tradition and passed from one generation to the other in remote mountain villages of Southern Italy and in Sicily, to attain celebrity and influence later on.

Before the close of the 11th Century, the literary output of Salerno was scant as compared with that of the other cities of Southern Italy, for politically and otherwise these were still faintly influenced by Byzantium, so that translations from Greek into an awkward Latin were made until late in the Middle Ages.

At the dawn of the 12th Century, the Englishman Adelard of Bath, traveling from Salerno southward to "Græcia major," received there instruction on magnetism from a Greek philosopher who was "well versed in medicine and natural science."

Throughout the 10th and 11th Centuries the art of medicine remained at a comparatively low level in Salerno, where conditions were very like those on the islands of Cnidos and Cos in the past: medical guilds in daily practice, protective hills covered with forests, running rivers, mineral springs in the neighborhood, the see of a bishop, then of an archbishop, a sanctuary attracting crowds from far and near in search of miraculous cures, a port carrying on some commerce with the Levant and which was to become considerable during the Crusades.

And for centuries there flourished near Salerno another mighty culture, that of the Saracens, already prominent in medicine and dominating Sicily and some parts of the mainland since 827. Their power came to an end at the close of the 11th Century, but without any diminution in their cultural influence.

Until late in the 13th Century, far-seeing Norman and

Hohenstaufen princes promoted science, and then from Salerno, as a base, medicine started its victorious march toward the West.

In the days when the Saracens fought their last battle for the possession of Syracuse, Robert Guiscard, duke of the Normans, offered shelter to the Carthaginian physician Constantine, a fugitive from Africa Minor.

During his extensive travels in Egypt and Syria, Constantine had amassed a rich store of Islamic medical science, and to his place of refuge he brought numerous manuscripts of Arabic physicians of the 10th and 11th Centuries. Of his activities in Salerno we know nothing, but apparently they were not extensive.

Constantine soon departed in search of a quiet retreat for the pursuance of his studies. This he found at Monte Cassino where the eminent abbot Desiderius, of Lombard birth, and a promoter of science, welcomed the wanderer. Constantine then became a member of the order of St. Benedict.

Constantine's translations and commentaries of Arabic and Greek works, destined to make their way in Europe, were received with open arms at Salerno, where a vigorous literary activity set in a few decades after his death (1087).

Almost the entire medical literature of Salerno, which for a while enjoyed world wide fame, originated before the middle of the 12th Century, the greater part of it, under Constantine's influence, in the first decades of this century.

Thus Salerno became the literary center of Europe. The works of the "monk of Monte Cassino," and their Salernitan elaborations and commentaries, found their way across the Alps into Germany and France, where they were appreciated more than in Italy. There it was chiefly the young School of Bologna which appropriated and elaborated the Salernitan teachings and there the latter were amalgamated with Arabic doctrines, which a century after Constantine's death had be-

gun to pour in from Toledo into Western Europe and Italy through the translations of the Lombard Gerard (of Cremona).

The origins of Montpellier, the second most famous mediæval medical school during the Middle Ages, which began to flourish during the 12th Century, are likewise veiled in darkness. There, Roman vestiges buried in ancient Narbonne, may have come to life. In any case, medicine began to be cultivated simultaneously with the circulation of the new mass of translated material from Toledo, after the translations made by Constantine and the Salernitan literature had gained currency. Or, at an early date, through Spanish Jews and others acquainted with Arabic medicine, the knowledge of the Moors, antedating Gerard's translations, may have found entrance in Montpellier.

All we know for certain is that the temporary animosity existing between Montpellier and Salerno was soon submerged by the common high esteem in which Arabic science was held, so that in spite of some opposition, the latter began to flow in a broad stream into all the mediæval universities of the West. Their modest precursor, the "Civitas Hippocratica" at Salerno, which had been founded without Papal authorization, was, perhaps, also the prototype of the medical school of Montpellier.

Medical education became the common function of all the universities founded in the 13th, 14th and 15th centuries and there was no further demand for special "schools of physicians." The latter were submerged by the teaching of medicine in the mediæval as well as the modern "Universitas literarum." Wherever special "medical schools" have continued to exist or new ones been founded, the instruction given by them, as compared with university teaching, is found to be of an inferior quality.

WAYS AND MEANS OF RESEARCH IN THE HISTORY OF HYGIENE

Translated by

ALBERT ALLEMANN

WAYS AND MEANS OF RESEARCH IN THE HISTORY OF HYGIENE

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IS a discussion of this subject still necessary? Is not hygiene simply a part of medicine and its history an integrating factor in the history of medicine? We often encounter this point of view, but while it seems to be self evident, it is not correct.

Certainly the scientific development of hygiene is one of the most important objects of medical science and the presentation of the origins and growth of this branch of science is one of the tasks of medical historiography. But just as applied hygiene (practical sanitation) goes, in many of its trends, far beyond the limits of medicine, so the history of hygiene extends into distant fields which do not concern the history of medicine at all. Yet must medical and medico-historical ideas direct the historian of hygiene as guiding lights toward a full comprehension and just appreciation of the hygienic impetus in conditions, events and sanitary measures of the past.

It was the Greek spirit that first clearly grasped the aims and inwardness of hygiene. This fact alone would extend the field of its history over 2500 years—a mighty space of time, indeed! In far older periods of Oriental history, however, the careful observer meets, here and there, with hygienic ideas and aims which, though only dimly comprehended, were yet carried out with clear purpose. But the historian of hygiene should not be satisfied with what has been realized or even merely planned in the field of hygiene. The subjective fac-

tor in hygienic work of the past should in no wise constitute the sole, let alone the decisive, viewpoint for the historian. Everything in the collective life of humanity, which has from the beginning affected the health of the individual or the race for good or evil, must be considered and closely examined with regard to external and internal conditions of life, to commission and omission, to work and thought, to customs, laws and religion. The history of hygiene begins therefore with the primeval history of mankind.

But with this inevitable extension of investigation into the "objective," "instinctive" or "immanent" (subconscious) hygiene of early man, does our subject run any danger of being merged and submerged, without any clear line of demarcation, into the great sea of cultural history? Not at all! It has a clear purpose of its own and a simple mode of inquiry with reference to the whole puzzle-headed complex of cultural phenomena.

True, our subject is a part of the history of culture and, on its subjective side, a part of the history of the human spirit similar to, yet different from the history of medicine itself. The history of hygiene skirts with intention great areas of cultural activity, even though it does not entirely ignore them in passing. Military systems, law, the organization of armies, art and science, concern it but little, if at all. Religion, also, is of interest to the historian of hygiene in special phases only, viz., its rites and cults, which are rooted more deeply in the inner nature of the human spirit than the preceding cultural phenomena.

First and foremost, it will be necessary to make a comprehensive investigation of the external conditions of life among all ancient peoples from hygienic viewpoints and here it becomes most apparent that the history of hygiene is, in reality, a new science and that it might even be considered an absolute novelty. On the other hand, the relations between medicine

and religion, which have been frequently dealt with and are certainly worthy of investigation, are for the most part of a hygienic nature. It is these, above all, which come first to mind when we consider "history of hygiene," and along with them, of course, the sanitary measures employed by public hygiene in the past. In both fields, it may seem at first sight as if the history of hygiene were a very old, well cultivated even "overworked" science. But this viewpoint is wide of the mark. In few fields of science do we encounter such a mass of musty, shop-worn notions carried along as guiding principles throughout the literature. This will be at once apparent, if a serious and careful examination of the facts is undertaken. Here too, an immense array of facts has, during the last few decades, been brought to light by the tireless labors of a whole army of historical archæologists, particularly in the field of pre-classical antiquity. As a solitary example of the recent change of viewpoint, I mention the following occurrence. Being in a diffident mood, a year ago, I called the attention of one of our foremost authorities on the Nilotic culture to certain statements in a comprehensive work "On the Historical Development of Public Hygiene in Ancient Egypt," published twenty-two years ago, enumerating point after point with the query: "Is this correct?" In every case, he answered with a blunt "NO!" And all that was in one of the best productions of one of our most prominent medical historians.

Such is the status of the well-worn pathways, not only indeed in pre-classical antiquity, but also throughout the Middle Ages, in regard to which a complete change of viewpoint is taking place. It is plain that entirely new pathways must be opened up. The historian of hygiene is in the same position as the modern historian of art.

The latter is no longer satisfied with examination of the great works of painting, sculpture and architecture. He follows up with close attention the influence of style and artistic

taste on the appearance of living rooms, of the furniture and objects of common use, on costumes, on finery, personal adornments and suchlike, testing all phases of human existence as to their artistic content. In like manner, the historian of hygiene must examine closely the whole life of man in past ages, in all its external relations, as already indicated above, and ever and ever must he put the question: "What is its hygienic importance, what its hygienic significance to our minds, equipped with the advantages of science and experience and clarified thought?" Dwellings, settlements, food, clothing, the care of the body, exercise, sexual relations, as also many things so closely related to hygiene as the disposal of the dead, must all pass in review before our eyes, if we are to gain the true historic viewpoint. Over the whole world, the historian of hygiene must diligently and faithfully follow up the researches of the historian of culture and the work of archæologists, with that sense of values which the modern hygienist cannot be without.

Every question in the public and private life of the past must be approached from a different angle, to decide whether we should rely more on written tradition or on the findings obtained from excavations. We cannot do without the one or the other and it is bad enough when now one, now the other, fails us. Thus, our literary knowledge of the construction of houses and cities before the time of the Roman Empire was very incomplete, until excavations of recent decades, on the Euphrates and the Tigris, in Asia Minor, in Greece, in Crete and Cyprus, on the Nile and even in the North of Europe, threw considerable light on habitations. In Palestine, too, our only data about dwellings and furniture three thousand years ago, as drawn from the modern life of that region, have been gradually replaced by the findings of excavations around the ancient cultural centers of Jericho and Sichem. In other regions, stone sculptures and mural paintings, terracotta objects, bronzes

and pictures on vases tell us not only of the deeds of gods and heroes, but also about kitchen and dining room, banquets, dwellings and court yards, hunting and exercise, games and dances, clothing and foot-wear, personal ornaments, baths and the care of the hair, in all their hygienic and non-hygienic relations. Pictures in old manuscripts, tapestries and mural paintings of the Middle Ages give us full and detailed information, thus supplementing, what inscriptions on stone and clay, on papyrus, parchment and paper have told us. But the historian of hygiene can stop at the column of Hercules just as little as the Phœnicians. He must cross the seas with Columbus, Magellan and Cook, to distant coasts, where novel hygienic questions find novel and significant answers, among the Incas, Mayas and Aztecs, the Cliff Dwellers, and Polynesian Islanders. Wherever man has set his foot, the historian of hygiene will find work to do, even where native languages have long died out and only vast areas of ruins, through their plans and plastic monuments, give us obscure but eloquent hints as to the total hygienic complex of the locality.

The method of research by which the historian of hygiene examines these widely scattered remains of past ages and elicits worthwhile answers from them, follows two main lines but, is in reality, one and the same. The basic data for a just appreciation of past conditions are partly archæological, partly anthropological, although anthropological data must still be obtained and examined by archæological methods. But for this very reason, it becomes, from year to year, more needful that the pioneers of archæology pay greater attention in their researches to the needs of anthropologists, while the latter should, in their turn, stress the pathological phases of their subject. Here the history of hygiene, with its simple yet comprehensive queries, has a truly important mission to fill. It must take in the total research-methods of archæology, anthropology and historical pathology, if past hygienic conditions are to be fully

cleared up. Prehistorians now regard anthropology as a coefficient of equal importance with their own subject. The archæologist has also become accustomed to pay attention to cranial contour and skeletal posture in his investigations, but this is not sufficient. From the start, say, during excavations in an ancient cemetery, it is essential that human remains be taken up and preserved as carefully as the precious artefacts found with them, so that anthropologist and pathologist alike can examine them at leisure, if not present at the time.

In passing through halls of exhibits, containing rich collections of earthenware, alabaster vases, bronze work, small sculptures and ornamental objects from some ancient burial place, recently excavated, one often finds that inquiries as to the fate of the human remains found in these earthen mounds and rocky capsules are met by a shrug of the shoulder. This should not be. Human documents are thus carelessly left to perish, documents which might answer our questions concerning the health and disease of peoples thousands of years ago.

Is it less interesting for the historian of human culture to know that living and dwelling conditions compelled the "gay" fishermen and hunters in the prehistoric past to lie helpless on the straw of their clay cabins and to sink into an early grave than to investigate the ornamental figures scratched by them on moist clay or etched on stone and bone during the long winter periods? This also applies to the earlier and the more highly developed phases of antique culture.

In recent public works in upper Egypt and Nubia, the British Government has, in a far-seeing manner, made a clean sweep of the old haphazard methods and set a commendable example to all other nations. In making the immense archæological inventory of the wide areas which will in future be covered by the waters of the gigantic Assouan Dam, the Archæological Survey of Nubia at once consulted medical men who had specialized in anthropology (anatomy) and pathology,

with the result that their reports on human remains brought to light material from more than 10,000 bodies, of such great significance that their findings easily take a place beside the best data of professional archæologists.

In this way, the historian who investigates hygiene in the past, by the archæological method, may obtain material which enables him to draw conclusions from all other findings of similar nature, to draw upon the sum total, as it were, to determine how the total hygienic ideas of a people influenced their modes of sanitation, to render historic pronouncements on the hygienic conditions of whole periods of time, on the average duration of life, on morbidity and mortality, hundreds and thousands of years ago. Even today, the results so far attained are of surprising range and importance, revealing, as from a great distance, the early status of man, when threatened by grave diseases originating from generally unfavorable conditions of life or from special pernicious influences.

Though no longer an infantile science, palæopathology can still be immensely widened and developed by the methodic and conscientious examination of the remains of every newly discovered ancient cemetery over the whole earth. But in utilizing the results of these investigations, we are still in the primary stage. And yet it is just here that we have the surest touchstone of all other lines of investigation, although here, as everywhere, caution and discretion are necessary. Thus, the frequent occurrence of chronic infectious diseases in early mankind cannot always be attributed to unhygienic habits alone, as in the case of his many grave disturbances of general nutrition.

By the study of acute and chronic infectious diseases and their influence on the health of the people of past ages, the history of hygiene comes again into closest contact with the history of medicine, which, for a long time past, has cultivated this field intensively yet cannot give us a complete answer to a question of fundamental hygienic importance, namely: What

have been the therapeutic and prophylactic procedures of past ages with reference to devastating epidemics?

Here, indeed, the professional medical historian has, in a measure, failed us to date, particularly as to the Middle Ages, which have indeed been slated and rated as backward, although in the prevention of leprosy, they were independent and successful in their initiative, going far beyond antiquity in that respect. What they accomplished gave them the idea of combatting bubonic plague by means of shutting the gates of towns, quarantine, compulsory notification, and isolation of patients and even, municipal sanitation. The idea of infection, completely unknown to ancient medicine and while mentioned later, always a dead letter, came triumphantly out of the East and acquired a vitality all its own in mediæval medicine, alongside of the traditional trumpery of humoral pathology.

Conceived in this sense, fostered and cultivated with a definite purpose, it becomes the aim of the history of hygiene, as of all history, to render belated justice, to set forgotten and misunderstood facts in their true light and to put them in the place of honor they deserve, even if, in some instances, the historian has to do this at the expense of the exaggerated conceit and extravagant boasting of the modern world. Happily, the reverse is usually the case. It is only through the progressive knowledge of our time that the historian can justly evaluate the hygienic aims and endeavors of the past, the intuitive gropings of that instinctive hygiene which, feeling its way through the darkness of thousands of years, found the right path. It is only the steadily progressive comprehension of new truths that give us the correct measure for an objective appreciation of the past.

THE HYGIENIC IDEA AND ITS MANIFESTATIONS IN WORLD HISTORY

Translated by

FRANK J. STOCKMAN

THE HYGIENIC IDEA AND ITS MANIFESTATIONS IN WORLD HISIORY

OLD familiar childhood recollections and beautifully contrived poetic fantasies of ancient and modern impress flatter us with the notion that, at least in the field of hygiene (as was seriously taught, centuries ago, of many phases of human knowledge), the acme of enlightenment and achievement was already attained in man's earliest infancy; that, in this science, at least, the beginning of wisdom was synchronous with the genesis of things in general.

Such teachings haunted the science of chemistry for the longest period. As late as the seventeenth century, it was assumed that Tubal-Cain was her greatest master, and that wise Solomon, while building his temple, knew more of the mysteries of chemistry than possibly the great Geber, Paracelsus, Basilius-Thölde [1] and Andreas Libavius together.

This false idea, as being self contradictory, eventually annihilated itself. But numberless ages ago, our ancestors along the Baltic Sea and the Bay of Biscay, or on the Highlands of Pamir, the residents along the Euphrates or the Nile, are still supposed to have imparted the most important lessons in hygiene, in healthy living and immunity from disease. Even today, some assume that this is incontrovertible and self evident. A well informed man will hardly venture to offer valid objection to that old and oft-quoted catch-phrase anent the "life comformable to nature." In fact, it would be possible to devote a whole volume to an account of the many times that

[1] Sudhoff is of opinion that the writings of Basil Valentine are the work of the editor, Johann Thölde.

the cry "Back to Nature" has resounded in its innumerable variations; well nigh every possible view of the universe and a stately array of marvelous philosophizing would necessarily be presented; a lengthy jeweled chain of brilliant names in the history of human thought would pass in review.

I shall not commit the heresy of denying each and every justification of this cry, even though there is more beating of the air on this point than is commonly surmised. I shall be content with demonstrating that the paradisiacal condition of a long life, free from care, with a late unencumbered old age, was by no means the rule in prehistoric and ancient times. It is true that, as compared with the present, those times could boast of superiority in some, but by no means in all respects. Upon inspecting the many early Egyptian and Nubian crania, for instance, we are astounded at the perfect preservation of the teeth, although the extensive abrasion of the masticatory surfaces is rather startling, suggesting simple, suitable fare, but mainly of vegetable character, rich in cellulose and with a generous adulteration of sand particles. We become rather thoughtful, however, on finding in the majority of adult skeletons from Upper Egypt and Nubia of five to seven thousand years ago, signs of a disease which today appears only under the most unhygienic conditions, and then hardly to such degree as it formerly affected a tremendous majority, even in the third decade of life, causing ankylosis of the joints and spine with almost absolute immobility, so that at an early age these unfortunate people became helpless dependents. Osteoarthritis deformans in that "Golden Age" afflicted humanity of both sexes with such frequency and severity as to stagger all power of imagination in this our own period, so corrupt with "refined culture" on the one hand and misery on the other. Even then, constant sojourn along, upon and in the waters, even more perhaps the dwelling and sleeping upon the damp ground, in wet pits and caves, was a fruitful source of disease.

I have purposely begun with an account of conditions in the subtropics, where for a long time the cradle of mankind lay beneath the palm trees. Yet, the hygienic coefficient of life among the early inhabitants of Northern Europe, derived from a study of osseous remains, differs but slightly from the results of investigation along the Nile. Less attention has been paid to pathological findings in the archæological researches north of the Alps, thus restricting the material to more modest proportions; but such osseous remains as have been carefully studied exhibit exactly the same tendency. Rudolph Virchow's "cave gout" in man and beast has long since been incorporated in historical pathology; the primitive Germans, who interred their heroes in the long stone passages of the "giant chambers," suffered to an appalling degree (almost ninety per cent of adults) from gouty diseases of the bones and joints. Dietetic customs along the Nile and the Baltic Sea were certainly the most diverse, but, in the manner of abode, perfect parallelism existed in one respect, namely that of dampness: whether the habitation were a lake dwelling over the placid water, or a rustic hovel, depressed below the surface of the ground to the depth of a meter, only gradually (at least in the case of sleeping quarters) emerging, from the pits which, from the Stone Age to La-Tène became constantly more and more shallow. A moderate advance, perhaps, but highly important!

Although climate may exert only a minor influence upon the character of habitation, this is not true in the matter of clothing. Enthusiastic as we may be about the light, hygienic clothing of the Egyptians, Babylonians, or even of the Greeks, we must nevertheless properly evaluate the wisdom of the North Alpine people, whose men were clothed in warm trousers and waist-coat, their women in long skirt and jacket. Perhaps the Greeks migrated from the North in similar garb, and, in a warmer climate and under altered conditions, learned to know and prize the light, convenient, Mediterranean or subtropic cos-

tume of cloth simply thrown about the body—a warning against premature generalizations about clothing problems for all climates, even when we exclude those of the polar regions!

Viewed in the light of hygiene alone, classical antiquity, Greece and Rome, represents a cultural pinnacle of almost incomparable height.

The Greeks, a master people (with a substratum of slaves), for the first time in history, and in a scope and degree never again approached, undertook universal training of boys (in some phratries, of girls also), with a view to the harmonious development of all the physical faculties and to the attainment of the greatest measure of strength, dexterity and self confidence, of physical perfection and beauty. The system was founded upon daily exercise from earliest youth to ripe manhood, under the supervision of experienced and practiced leaders, who not only strove to make it viable and successful, but were capable of intelligent specialization, exacting from each physical entity the highest possible accomplishment, with constant reference to general vigor. The teacher of gymnastics became the professional "gymnast," who strove to comprehend the normal functions of the body, vying with the medical fraternity, who again studied the value of gymnastics for a healthy physique and took from its storehouse of anatomic-physiologic knowledge the plumb line for estimating the possibilities of each individual. With the aid of general dietetics, the physicians deduced the norms for the application of gymnastics to the prevention of body ills and as an auxiliary in the treatment of general or organic disorders. Under this beneficent rivalry between professional gymnast and physician, gymnastics itself became a scientific system of physical exercise and invigoration, of hygiene of movement and occupation, such as we today, with the aid of modern technique and instrumental precision, are intent upon creating anew.

With this central endeavor of Hellenism, physical invigoration by daily gymnastic exercise, the rest of personal hygiene was in great measure associated, viz., care of the skin by washing and bathing, by swimming and massage; physical cleanliness, including care of the hair and clothing; as well as regulation of diet, rest and sleep, and of the sexual life. The regulation of the latter function in the gymnastic exercises of girls was divorced from prudery and had a definite eugenic aim: vigorous offspring.

The public officers of Greece were engrossed with other questions of hygienic importance. Town planning, arrangement of streets, sunning of houses, sewage disposal and water supply were carefully considered and purposefully regulated, especially in the culminating cultural period of the Age of Tyrants. The Romans, among whom solicitude for the purity of grain and potable water was recognized almost as a religious and state duty, with their eminent talent for solving great questions, contributed much to public hygiene. In the days of their world empire, water supply, drainage, road-building, town-planning, food-control, heating, and baths were regulated with a thoroughness which evokes our respectful admiration even today. In the cult of Vesta and Juturna, the Roman early evinced an inherent sense of the fundamental necessity for purity of food, which can proudly take its place beside the justly extolled cult of food-hygiene of the Orient. We shall deal with the latter immediately; for Græco-Roman antiquity, we must again repeat that, although hygienic requirements were partly based on cult-hygiene, these peoples soon outgrew this purposeless infancy and set themselves conscious hygienic goals, devoted themselves to their attainment in a large genial manner, and accomplished results which, in addition to constituting a scientific supervision of the life of the individual, will forever merit admiration as the first attempt (conceived and exe-

cuted with genius) at personal and public hygiene with definite aims: indirect prophylaxis by increasing the vigor and resistance of two whole nations.

On the other hand, what is the significance of the extolled cult-hygiene of the Egyptians, Babylonians, and even of the Jews, who never conceived of hygiene directly and with intention, the subject appearing in pre-Hellenic times as something incidental or as an almost negligible side-issue? Modern historic research does not support the legend of a Moses leading his people with deepest wisdom and confident, purposeful clarity over the road of hygiene in religious garb, thousands of years ago; the theory is as far removed from truth, perhaps, as the assumption of a perfect natural hygienic condition of mankind at the start. The hygienic contributions of the Western Asiatics (especially of the Semites) to humanity are enormous, but they lie in a totally different sphere, as we shall perceive.

A few preliminary words on the negative side. It is no longer correct to regard the ritual hygiene of Judaism as a singular phenomenon, as in former days, when it constituted the only remaining specimen of an entire cultural cycle, buried under the ruins of centuries, from which it has only just been unearthed, with many elucidating disclosures. In the midst of the tides of racial intercourse flowing and ebbing from the Euphrates to the Nile, we can imagine the Jewish people exposed to cultural currents from which it adopted and adapted much. What are today considered fixtures of ancient Semitic cult-hygiene, originated almost exclusively after the Exodus, partly, therefore, after the time during which the people of Israel had been exposed for decades to the influence of racially and intellectually kindred civilizations along the Euphrates and the Tigris. To trace externalities of custom to their origins is consequently difficult. In the period especially represented by compilation of the Talmud, the Jews had for centuries been influenced in hygienic matters by Greek science, from which

they assimilated and amplified whatever seemed suitable for adoption. In estimating and evaluating the hygiene of the Jews, this fact should be borne in mind, without in the least detracting from their merits; claims to special originality alone are thereby given a new aspect.

Among all peoples of antiquity, meat diet was, so far as the domestic animals are concerned, a sacrificial cult in the first instance; everywhere, on the Jordan, Tiber and Cephissus a sacrificial inspection was combined with this, which exhausted itself mostly in sophisms, but also (particularly in Mesopotamia) contributed a fund of experience which prepared the way for a sanitary meat-inspection, and imparted a viable, interpretative basis to future hygienic knowledge. The same is true of cult cleanliness which, as has already been shown, was not less developed among the Greeks than among the Orientals along the Euphrates, Jordan and Nile, upon whom (including the Jews), the Grecian amplification of an intentional personal hygiene exerted undoubted influence. Even ritual uncleanness of woman under special circumstances, is ancient property of Greece. Pope Gregory the Great, in eliminating this Jewish atavism from Christian custom, performed a liberal and noble service to womanhood, by leaving the question of church attendance during menstruation and puerperium to the free decision of the individual, thereby effectively removing the whole matter from "cult-hygiene"—a landmark in the emancipation of woman from unwarranted guardianship, which cannot be commended too highly. But to return from this digression!

There is no longer any doubt that the Jews borrowed circumcision of males from Egypt, while the origin of the custom for both sexes is traceable to Central Africa. The fact that the custom bears no subjective hygienic impress does not deprive it of objective hygienic value, any more than in the case of other customs originating in entirely different spheres of thought. But the hygienic importance of circumcision of

males is minimized by the proof of the non-existence of syphilis in the Old World in pre-Columbian times, as is today generally assumed. To cite congenital anomalies (e. g., phimosis) as an argument for general circumcision removes the whole question to another sphere. Clitorotomy, of identical religious origin, has to date not been proclaimed a hygienic measure. That Judaism did not adopt this ritual custom of the Egyptians is explained by the fact that, in the temple cult of the Jews, women originally played no rôle, in fact, were forbidden entry to the temple. The question here arises, whether at some period in the history of Israel, only the priestly tribe was circumcised, or whether from the beginning, circumcision characterized the whole people as sacerdotal.

But let me not be misunderstood! In the history of hygiene, as well as in the history of general culture, these questions of cult-hygiene are of transcendent interest. None, however, is to be considered a landmark equivalent to the gymnastics of the Greeks, the hygienic vision of Hellenism and the achievements in public sanitation of the Romans. Two of the greatest hygienic thoughts of mankind owe their origin to Semitism, especially to her intellectual prime (Judaism being the bearer, intermediary and perfecter): the weekly day of rest and the direct prophylaxis of disease.

The first will be immediately evident to all, even though it has not yet been clearly recognized and proclaimed as a hygienic manifestation of prime importance. Babylonian civilization probably had a precursor of the Jewish Sabbath. In Babylonian astrology, the 7th, 14th, 21st, and 28th days were ill-starred; to these was added the 49th (7 x 7), counted from the beginning of the preceding month. No foods could be baked or roasted (nor those prepared in this manner ingested); change of clothing, sacrifices, public acts, and medical treatment were interdicted; in fact these days were inauspicious for the execution of any project. Through these numerous

inhibitions, the "unlucky" day became, in part, a public day of rest—in part only—and it might seem that from this emanated the suggestion of the Jewish Sabbath. But nevertheless, what a wealth of physical and spiritual blessing was poured upon the Jews by this, their holy day, their day of rest! More than any other factor, it gave them strength to assert themselves among other races; and by contributing this hallowed day to Christianity and Islam, they thus imparted its hygienic blessing upon the greater part of the world. Had Judaism given nothing more to mankind than the establishment of a weekly day of rest, we should still be forced to proclaim her one of the greatest benefactors of humanity.

What can be said as to the second thought, direct prophylaxis?

Although Greek medicine became of incomparable importance in general human progress and bases its title to fame chiefly upon the substitution of the investigation of natural ætiology for the supernatural dæmonic medicine, which ruled the whole of pre-Hippocratic Orient and Occident (Mediterranean and North Alpine) and still enslaves part of the world, it is a most interesting fact that, despite its theory of natural causation, Greek medicine was blind to the fact of contagion of direct transmission of disease. Whence so glaring a defect in the face of such keen perception of the processes of nature? Thucydides' history of the Athenian plague shows that these facts had not entirely escaped the Greeks, but Greek medicine passed them by, perhaps, because a natural explanation seemed impossible, since the populace so readily satisfied itself with the "Evil Eye" and similar imaginations.

Along the Euphrates, however, we come early upon the concept of a chronic, rarely curable disease, characterized by cutaneous changes and capable of transmission to others. Babylonian culture in fact readily drew the proper conclusion and translated knowledge into action: Those affected with

this disease must be debarred from intercourse with the healthy. Whoever was defiled by *iššubbu* (leprosy) was banished to the wilderness. Details regarding these matters are still wanting in original sources, no matter how often the facts transpire through the Assyro-Babylonian tradition. But in the Old Testament, we have a methodic inspection of a leper by the priest, who according to the diagnosis, isolated the patient temporarily or permanently, and admitted him again to free intercourse only after indubitable convalescence or cure. To be sure, it has never been determined (because indeterminate), whether the Zaraath of the third book of Moses represented leprosy exclusively; to see in it a harmless disease, however, degrades a serious austere procedure of one of the most outstanding legal codes in history to a silly farce. Any competent, unprejudiced investigation must lead to one conclusion, viz., that the majority of those suffering from symptoms enumerated in Leviticus xiii were lepers; the most important point historically is the fact that the Mosaic Law gave to mankind the idea of the imperative necessity of isolating those afflicted with a chronic contagious disease; in addition, the purification measures recommended in Leviticus for infected houses constitute the armament of modern prevention of epidemic diseases. In this connection, it makes little difference to me if the so-called Zaraath of houses had no relation to leprosy, and that modern prophylaxis is not derived directly from Leviticus. (It is neither evident nor probable that the place of refuge of the leper King Azariah-Uzziah represents a leprosorium in the mediæval sense.) The fact remains, however, that the whole concept of the transmission of serious disease by social intercourse with the afflicted, and of the consequent isolation of the diseased became property of the West by religious route.

When leprosy fell upon the ancient world from the East, and came to the cognizance of Greek physicians, especially

of Alexandria, these met its appearance with an admirable establishment of the semeiology, without penetrating deeper into epidemiological questions or recording prophylactic segregation measures. Egypt, where in Hellenic times leprosy spread and became established, was then in its principal sally-port in the West and is, even today, one of its most intensive fields of activity. From Egypt, the disease in sluggish epidemic form traversed North Africa, crossed the straits of Gibraltar with the continuous stream of travelers, and spread over Moorish Spain; at the same time the germs were carried by the constant migrations across the Mediterranean to Italy and Southern France, across Byzantium to the Balkan and Danube states. The network became especially close over Southern Gaul, and even further into Celtic domain, over which a Germanic stratum had been deposited; here, authentically in the sixth century, the thought of rending or cutting the threads of the epidemic which coursed over the lands was initially entertained. Enlightened princes of the Church, moved by the increasing misery of the people, on the strength of the sacerdotal code of the Old Testament, undertook the task of interfering, the shepherdess of the mediæval peoples knew her duty. The Council of Lyons (583) attempted to restrict the free migration of lepers! The edict of Rotharus, King of the Lombards, demonstrates what advances this idea made in sixty years; the acts of Charlemagne, one and a half centuries later, show the same trend; the leprosy decretals of the third Latern Council (1179) represent, in a measure, the last word of the Church. Apprehension of lepers became general routine in the territories of the ecclesiastical and secular princes of France and Germany; isolation camps were established everywhere, gradually increasing to thousands. Thither the lepers and suspects were taken, the former civilly dead for the rest of life. This system was mercilessly enforced for centuries with perfect success. In this tenacious

fight of centuries, the methods of which were borrowed from the Mosaic Code, the Occident triumphed over leprosy. Guided by this intellectual torch, it accomplished the first great feat in direct prohylaxis: methodical eradication of leprosy by consistently making the affected individuals harmless as carriers of the virus. Light from the East is transformed to pulsating energy by the European peoples, while the disease swings its lash unchecked in the Orient.

The same light, rising for Occidental and Mohammedan physicians alike, spent its luminosity over a second great battle, which constitutes an additional title to fame for the Middle Ages: the campaign against an acute infectious disease, which like the destroying angel, again coursed over the Mediterranean from the Orient, the plague. Stirred by the "Black Death," which arose about the middle of the fourteenth century, the public officials of Italy and Southern France, during successive decades into the next century, with Venice and Marseilles as pioneers, created the whole system of sanitary control of incoming vessels, of observation stations, isolation hospitals and disinfection procedures. All this was adopted by the Renaissance and is still practiced by modern hygiene, in more definite and rigorous form with relatively few changes. An energetic attempt to establish order in the infected cities was made, without, however, the consistency and purposefulness of the prevention of importation. Three dates may be cited in this connection: 1374, Venice, being again threatened by importation of the plague, denied entry to the city of all infected or suspected ships, travelers and freight; 1377, Ragusa, in Dalmatia, rejected all travelers from plague districts, who had not sojourned for a month at one of two designated points, without developing the disease; 1383, Marseilles erected her first quarantine station, at which, after rigid inspection of the vessels, all travelers and cargoes from

stricken or suspicious ships were detained for forty days, exposed to air and sunshine. These are the principles of preventive medicine in the Middle Ages, created by physicians and authorities in common endeavor, in amplification of an idea called into being by the campaign against leprosy.

Finally, another idea which can be counted among the great hygienic thoughts and contributions of the past, the spirit of Christian mercy, expressed in form of hospitals for the poor, aged, infirm, and sick; a noble social blossom of young Christianity, which sprouted on the Jewish tree, but developed in self-directed manner from the time of Basil the Great of Cæsarea. An idea which, in the early days of Byzantium, was an intimate sympathy with Greek medical science, as is evident from regulations governing medical service in the hospitals, preserved from the period of the Comnenes, while in Western Europe it was not until a much later date that healing the sick by actual treatment became the chief task of hospitals. Nevertheless, their hygienic importance was tremendous, since hospitals formed only a fraction of Christian eleemosynary institutions of mediæval and modern times, and served definitely as a pattern for the wonderfully developed system of socially benevolent institutions which constitutes one of the greatest claims of modern times to recognition in the field of applied hygiene. It holds its own with the scientific contributions of modern biologic medicine to hygiene, contributions which are the result of original thought and independent development, no matter how much is unconsciously related to the personal hygiene of the ancient Greeks; while the biologic concept of the theory of infection itself must be characterized as purely modern, since, after all, it owes the first clear conception to Girolamo Fracastoro (1546), finding in Ignatius Philip Semmelweis and

[1] Referring to the Byzantine family which occupied the throne of Constantinople during 1057–1059 and 1081–1185.

Joseph Lister its great, genially intuitive, practical interpreters, while Louis Pasteur and Robert Koch were its master investigators along purely scientific lines and thus the best equipped to rede its riddles.

HISTORY AND EPIDEMIOLOGY

Translated by

ALBERT ALLEMANN *and* FIELDING H. GARRISON

HISTORY AND EPIDEMIOLOGY

(1910)

WHAT bacteriological discovery has done in the last few decades, to elucidate the causation of diseases, assuredly deserves our admiration. Much more may be expected from this young science through the fact that early stagnation can now be easily forestalled by the prompt recognition of its fitful signs in the course of scientific discussion. The progressive historian, like a sentinel by the stream of time, follows the pioneer work of bacteriologists in clearing up ætiological problems with sympathy and good will, hailing every advance made with loud approval. Even where research methods in bacteriology sometimes run wide of clinical science, he is not much alarmed, knowing, as he does, that, in the impetuous quest for truth and reality, all roads at last come together.

But the historian may well be astonished when he observes the constant and almost intentional neglect of another and closely related branch of science, which supplements the biological investigation of disease germs in the laboratory, whether under the microscope, in culture media, by animal experimentation, on the sick patient, on successive generations of microörganisms, or on groups of diseased individuals, with reference to susceptibility and immunity. Epidemiology, in effect, introduces a third factor, namely the careful scrutiny of past records, which tell us what the clinician and bacteriologist already knows, yet something novel and different, namely the effect of ancient generations of apparently identical disease

germs under somewhat different conditions. It is easy to say that these earlier conditions were, in general, "more favorable" to the disease germs, but whether this be absolutely true or not is matter for extensive historical investigation.

The historian of epidemiology is always glad to obtain information from current bacteriology and clinical medicine. But does not history, too, supply information which, if neglected, may bitterly revenge itself upon bacteriologist and clinician, when the germs of future unimagined epidemics smite suffering humanity?[1] Has not, therefore, the historian, who sees those things, not the right, along with clinicians and bacteriologists who know their medical history, to raise his voice, and is it not even his duty to make his warning heard? Has the theory of development, which dominates biological science today, no importance in the science of epidemiology?

Do these low-grade unicellular organisms, unmasked in our time as the agents of disease, remain as they are, without biological change, through the thousands of years accessible to our scrutiny? Above all, do they always exert the same pathogenic effects in the same manner? This is, in itself, a question of basic importance, not only for the whole field of pathology, but also for the whole theory of development.

Even aside from the appearance of "new diseases," is it not of great interest to modern science to determine, by advanced historical methods, the initial time of appearance of acute and chronic diseases, in what cultural period, under what physical and cultural conditions? Will it not pay to reëxamine the accounts of epidemics and individual case-histories made by clear-headed observers within and without the medical guild, in order to determine, by expert methods, whether the total clinical picture, as well as its individual features, are entirely

[1] This was actually the case with the Spanish influenza epidemic of 1918–1919, which caused a higher relative mortality than the European War, and with which clinician and bacteriologist were incompetent to deal, verifying Sudhoff's prediction. [Ed.]

in agreement with present-day findings?[1] Will it not pay to make a pathological examination of the immense array of material opened up to us by excavation, such as the skeletons and mummies unearthed in Egypt, Peru and elsewhere? Have not the bacteriological and histological findings from these remains revealed facts which surpass our expectations?

Will it not avail to revise our concepts of sanitary measures of the past by the standard of success attained in the light of advanced epidemiological knowledge? May not the past be our teacher in this as in other respects? It is certain that we are in much better position now than heretofore to study the changes in the character and destructiveness of epidemics, as well as their pathological complications and sequelæ. That successive generations of disease-germs vary in their biological activity suggests the need of revision of our ideas along some lines not entirely identical with recent epidemiological postulates, catchwords and fashionable views.

We need, thus, to clear up the question of the impact and semeiology of earlier epidemics by the historical, bacteriological, clinical, statistical and other epidemiological means at our disposal, in order to recognize and prevent the spread of communicable diseases in our own time. It would lead me too far and be of doubtful advantage to stake out special aims. Much drivel, hitherto part and parcel of historical pathology, must be done away with, but this will ever remain a task of secondary importance.

[1] F. G. Crookshank actually did this in his study of early case histories of ergotism, encephalitis lethargica and other supposed sequels of influenza in the 15th and 16th centuries, which led him to his present view that epidemics have cosmic and telluric causes back of the pathogenic germs, that their semeiology and sequelæ are protean, and that family relationships exist between some diseases. [Ed.]

EPIDEMIOLOGIC RULES OF THE PAST

Translated by
FIELDING H. GARRISON

theurgy = divine or supernatural intervention in human affairs

EPIDEMIOLOGIC RULES OF THE PAST

(1919)

ON the subject of epidemics and popular diseases, there is general silence in the records of the distant past. The myriads of hieroglyphics in the ancient Egyptian temples and other public buildings say not a syllable about them; and the hieratic texts of the medical papyri are equally inscrutable. In this regard, the cuneiform texts of Mesopotamia are more communicative. Prophetic texts of all kinds betray the anxious concern of Assyro-Babylonian humanity about the scourge of pest and similar diseases, which were certainly not entirely quiescent in the Nile valley, little exposed as it was to the drift of epidemics. As prophylactic measures, the Babylonians had, at most, prayers, ritual procedures and the theurgy of priestcraft at their disposal. In the handling of leprosy alone, they stood upon the sure terrain of public preventive measures: expulsion of the lepers from the city and village communities into the desert, to become a welcome prey to wild beasts! "Never more shall he know the ways of his abiding place"—so runs the formula proclaiming outlawry. Here we have, before our eyes, indeed, the oldest known evidence of positive prophylaxis against communicable diseases, transmitted to us upon the stone landmarks of Babylon over 3500 years ago.

The sacred texts of the Jewish people tell of epidemic diseases and rites of atonement against them, how they were also connected with the inspection of lepers, and its practice by priests, in a form which, as conveyed in Leviticus, bears the

stamp of Mesopotamian influences, dating from the Babylonian Captivity. This codification of differential diagnosis in the accepted manual of the priestly caste commands our entire admiration, even in its earlier inchoate stage, and cannot be frittered away by hypercritical caviling. The 13th and 14th, and also the 15th chapters of the third section of the Pentateuch are weighty official documents in the history of preventive medicine which deserve to be written in letters of radiant gold, which have, indeed, become imperishable, in that, more than a thousand years after their first transcription, they were destined to be the germ of our modern prophylaxis against infectious diseases in another racial community, and in an entirely unique way: Light from the East shed over the twilight of Western peoples!

The next stage is to be found in Greek thought. The Greeks first conceived and carried out the sanitary improvement of town-planning, even in the age and with the coöperation of the great Sicilian scientific thinker Empedocles, in the 5th century B. C.; indirect prophylaxis of highest value, which the sage of Akragas was certainly not the first to conceive and which was carried out in Greek settlements everywhere.

The plague of Thucydides (430–429 B. C.), in all probability typhus fever, indicates a popular comprehension of the fact that an epidemic disease may be transmitted from person to person, that the carrier is a menace to his surroundings. Preventive measures were limited to "purification of the atmosphere," destruction of the "miasm" by lighting fires in the streets and public places of Athens. A miasm, arising from swamps, was regarded as the cause of malarial fever, and though hardly a thought of Roman growth, was identified with animalculæ, invisible to the naked eye, which rose from the swamps and were carried long distances by the wind. Among the physicians of classical antiquity, we find no clear conception of the transmission of infection by contact, although Galen

speaks, in one place, of the "seeds of pest" [1] which, indeed, must also be regarded as miasmatic. This doctrine was expounded in particularly prolix manner by the Pneumatic School, which concerned itself mightily with the hygiene of air, water and the soil. It is in Aretaeus, and even more definitely in Caelius Aurelianus of Numidia (Morocco) (5th century, A. D.), the transmitter of the teaching of Soranus (2nd century, A. D.), that we first encounter an explicit statement of the transmission of disease by contact (contact infection) and its restriction by isolation; but all that is plainly an importation of Oriental modes of thought, to which our author only refers in passing, while his own mind opposes and rejects it, as unworthy of a scientific physician and of the ethics of the medical profession. Thus the fundamental idea of infection, and a definite grasp of the prophylactic measures implicit in it, could not take root in classical antiquity. It was reserved for the actual Middle Ages to conceive serious official measures against the spread of epidemics, which were consciously, and even dutifully, derived from the leper ritual of the Jews, with its fundamental concept of isolation. Long before, in the East, the book of Leviticus had already engendered a school of thought, apart from Judaism, particularly among the fathers of the Christian Church. In his ever memorable hospital-city at Cæsarea, Basil the Great materialized the centric idea of charitable sick-nursing in the loftiest manner, and even provided for and erected an isolation-house or home for lepers. In the course of centuries, leprosy had spread from the East to the Levantine coasts in the most insidious and sluggish man-

[1] Galen: Opera omnia. Ed. Kühn, Lipsiae, 1824, VII, 291. For Sudhoff's exegesis of the Galenic "sperm of pest" (τινὰ λοιμοῦ σπέρματα), see Mitt. z. Gesch. d. Med. Leipz., 1915, XIV, 227. The learned K. F. H. Marx, in "Origines contagiæ" (Carlsruhe, 1824) gives countless examples of the intelligent use of the words "contagion" and "infection" by the writers and physicians of antiquity, but this was mere phrase-mongering by the learned, just as people today talk glibly of hydrogen ion concentration or the reticulo-endothelial system, without knowing much about them.

ner. As a littoral infection, it had impressed even Aretaeus and Caelius: the rule was to drive the lepers inland. During long periods of time, the oceanic littoral of Spain and Gaul became infected with leprosy by coastwise traffic, even in antiquity, but it was not until the the 6th century A. D. that the disease had attained such frequency in the interior of Southern Gaul that it became a matter of pressing moment; whereupon the Supreme Council of Lyons, in 583, reacted to the situation with an edict putting rigid limitations upon the free movement of lepers in the country. There soon followed further ecclesiastical ordinances, which are based upon the exactions in Leviticus. The leaders of the Church derived from the instructions given to the Jewish priesthood of the old dispensation the impulse, and even the obligation, to carry out similar procedures. The Zaraath mandates lived to see their own resurrection. Even in the secular regulation of the Lombard "Edictus Rothari" (644), isolation of lepers became the vogue. As a just consequence, the idea of contagion now gradually became the motor power in the development of an entire system of preventive measures, at first limited to lepers and persons suspected of leprosy. Even in the narrow sphere of restricted social relations, compulsory regulations were prescribed for the banished unfortunates. They could not go barefooted on public highways, they could not touch any articles laid out for sale, even with the prescriptive gloves they wore; whatever they touched must be bought and paid for. They had to announce their presence by blowing a horn or shaking a rattle, if any one approached them unawares. They must stand facing the wind, if any one addressed them. Some warning sign had to be displayed, even on their garments. Even in the holy ground of a church, these isolation measures obtained, unless there were special chapels for lepers in the leper-houses, or churches for lepers in the leper-colonies, which were usually downstream in relation to particular localities. Whenever

lepers were admitted to general religious services, they had to enter the church by special doors and go to particularly isolated places on either side of the nave, often separated by high partitions, which only permitted a view of the altar through very narrow slits, or in special galleries. In the aisles assigned them, special basins of holy water were attached to the walls for the use of lepers. How rigorously this segregation from the ranks of free people was carried out by law is well known. With solemn ceremonies, the person known to be leprous was excluded from the community of people, condemned to civil death, and directed to associate only with his fellow sufferers until death. Hard, but effective, was this rule of exclusion. In the course of centuries, it freed France and Germany from the contagion by a system of isolation colonies for lepers, which, at the height of the widespread infection, were no less than 20,000 in round numbers.

Leper inspection, the regular examination of all suspects and carriers, attained an unusual development, first at the hands of the superintendents of the leper colonies, the "masters" of these organizations, later by specially appointed physicians and surgeons, by the corporate associations of physicians in the cities and by the medical faculties. Many local inspectors came to enjoy particular confidence and reputation, and received encouraging marks of consideration from distant patients and municipal authorities, who ordered doubtful cases to be examined by them at these points. These suspects received "protocols of inspection" (*Schaubriefe*), written out in prescribed legal form. Printed examples of these, dating from the 16th and 17th centuries, are extant, filled out in due legal form, and we even know the "terms," or stated intervals of time, at which such inspections and re-inspections (e. g., in Nuremberg) were held. This prophylactic method of combating a particular chronic infectious disease had thus become a highly elaborated official ritual, divorced, in the end, from

all ecclesiastical features; yet its origin in the religious rite has this curious trait, that it started with the least easily transmissible of all chronic infections, which thus became the chosen herald of the doctrine of contagion, while more flagrant examples, such as trachoma or gonorrhœal conjunctivitis, were apparently ignored, even though responsible for the popular notion of an infectious "evil eye." Reflection over this curious phenomenon will, however, lead only to one inevitable conclusion, which robs it of all its strangeness, namely that along with leprosy, an infection of chronic aspect, there must have been coincident one or more acute general diseases, beginning noticeably as contagious, but submerged [1] under the general pathological concept of lepra. Be that as it may, this meticulous system of warding off the contagion of leprosy so occupied the everyday thought of physicians and communities, that people came to see allied conditions in a more intelligent and clear-eyed way. In the 13th century, so forward in science and knowledge, the general concept of "contagious diseases" became current, and, in compliance with mediæval custom, was crystallized in mnemonic verses, of which Bernard de Gordon preserves an example, of date 1303. A distich mentions 5, then 8, later 11, finally 13 infectious diseases from which people were to protect themselves and the carriers of which were to be avoided, to wit, plague, exanthematous fevers, phthisis, anthrax, trachoma and gonorrhœal conjunctivitis, scabies, erysipelas and whatever else passed for it. This versified wisdom was also carried over into practical sanitation. Municipal authorities were ordered to put such patients outside the city gates, to forbid them any traffic in articles of food and drink, and so on. All this is achievement of the "gloomy Middle Ages," hitherto penalized, with

[1] Sudhoff's actual expression is "subsumed," by which is meant that many cases of syphilis and psoriasis were mistaken for leprosy in the Middle Ages.

tardy justice, as the period of "medical scholasticism." What the 13th century saw and attained, became, in the 14th century, a pressing need of the day and hour. In the matter of recognition of contagion and prophylaxis by isolation, the most rigorous line was taken at the instance of physicians by the city authorities of Northern Italy and Southern France, when the dreadful doom and devastation of the bubonic or pneumonic plague, otherwise the Black Death, fell upon humanity, overwhelming terror-stricken Europe in ever-widening waves throughout the second half of the 14th century. The sacrifice of human life even exceeded that of the frightful world struggle of 1914–1918. The dire need of the times, activated by the newer insight into the nature of disease, brought forth, in a few decades, the entire system of legal restriction and quarantine, as we now know it. It was created, in all its essential features, during the period 1347–1400. Indeed, to be exact, the pest epidemics of 1347, and later, were to the Middle Ages and their far-flung preventive measures what the cholera epidemic of the early thirties of the 19th century was to the modern community-hygiene of cities and industrial centers. The initial conditions for this advance in sanitation were created, in fact, by the thoughts and observations of many decades. For the realization of a great idea, the time must be ripe. During the great epidemic waves of the 6th century known as the "Plague of Justinian," which was rampant for at least 60 years after 532, A. D., physicians and authorities, alike, in spite of all the homicidal terrors of the pestilence, resignedly fold their hands and have vouchsafed us not a recorded syllable about it. But the Black Death of the 14th century brought forth a huge literature of prophylaxis, in the shape of pest-rules and pest-tracts written by physicians, a sign that these physicians had learned to stand upon their own feet and to think for themselves. A few years later, we encounter the assertion that people now knew more about

epidemic plague than the lauded physicians of antiquity, nay, preventive measures on a grand scale had already been promptly and vigorously instituted. In the first year of the epidemic (1374), the city of Milan, by means of a prompt sanitary cordon and Draconian edicts, succeeded in keeping the pestilence at bay, as it stormed past the city, but for one year only. But people in other cities became observant and were ready to learn something. The lessons of experience were costly but not in vain. People looked ahead and were on their guard. As the pest began to approach Venice about 1370, the order went forth that no plague-stricken persons, no suspects or suspicious articles were to be permitted inside the city (1374). Other cities began to put plague-carriers outside the gates. Those who attended them were isolated. Special nurses were appointed, and priests were ordered to notify authority as to every case of plague that became known to them in administering extreme unction to the dying. On the further shore of the Adriatic, Ragusa established a landing station, far from the city and the harbor, where incoming suspects had to spend a month in the open air and sunlight. Whoever had traffickings with them had to be isolated (1377), and as it began to transpire that the 30 days of isolation (*Trentina*) were not adequate, the period of segregation was increased to 40 days (*Quarantina*). Thus did quarantine come into being and was shortly thereafter instituted at Marseilles (1383), where a quarantine station for travelers and cargoes of ships was erected. In the cities of the inland, a sharper watch was maintained at the city gates, houses of ill-repute were first aired, then fumigated, the household goods were sunned and later scoured with soap. All trash, and also bedding of plague-patients, was burned, and these collective measures were delegated to particular officials. Domestic animals were also under control. The cities were kept clean, with control of streets and water-supply. Some decades

later, letters brought in by post were fumigated, and gold money coming into the town was soaked in vinegar to cleanse and disinfect it. Thus the theory of quarantine, as a barricade against pestilence, existed, not only in germ, but almost completely developed, in the early years of the 15th century. The Renaissance period is not entitled to essential credit in this regard, since it rather suppressed many germinal ideas relating to prevention and only retrieved its deserts in the comprehensive treatise of the great Veronese physician, Fracastorius, on contagious diseases (1546). When syphilis, in the middle of the last decade of the Quattrocento (1495), began to attract general attention, the weapons employed by the 14th century against plague were raked up, particularly in the South German cities, but naturally, without much effect. The administrative measures against plague in the 16th, 17th and 18th centuries, are nothing new, and even the further development of a military cordon against epidemics is of no special significance. That people could travel only with health certificates, like the passports and bread-tickets of today, indicates an excess of empty formality rather than a highly vitalized prophylaxis against epidemics. On the other hand, in combating tuberculosis, the 17th century made a logical well-considered beginning in the Latin countries of the South. Not only were the clothes, bedding and other personal effects of phthisical patients required to be burned, but even glass spittoons were introduced to prevent infection, and consumptives were restricted in social intercourse with other people and even forbidden to marry. Why all this should die out again, even when people had a clear notion of infection, to wait upon a more thoroughgoing clarification of ætiology for its revival, forms another page of history which we shall not turn today. We shall content ourselves for the present with a recognition of the fact that the stoppage of epidemic diseases is, in great part, an achievement of the 13th and 14th centuries,

in other words of the Middle Ages and in particular, of the Western world; its first great conquest, in comparison with the Orient, since the downfall of an ancient civilization. This was the first token of its call to give the world a second great revival of medicine, beginning in the 12th and 13th centuries, establishing its first stations through Paracelsus, Vesalius, Paré, Harvey, Haller, Bichat, and its latest in Johannes Müller, Pasteur, Koch, upon whose work our present day medicine is still based.

AIMS, MEANS AND METHODS IN MEDICAL ARCHÆOLOGY

Translated by

ALBERT ALLEMANN

AIMS, MEANS AND METHODS IN MEDICAL ARCHÆOLOGY

THROUGH the brilliant and eloquent writings of the late Alexander Conze, Hermann Usener and Brunne, we are in position to define the scope of archæological science, which was called into life by the intuitive genius of Johann Joachim Winkelmann, and later attained a wonderful development at the hands of Ottfried Müller, Friedrich Wilchker, Edward Gerhard and Otto Jahn. It is true that the highest aim of modern classical archæology, the full understanding of the artistic side of the soul of ancient Greece, concerns medical history only indirectly, and what we might regard as coming under the head of medical archæology of the ancient Orient, of Greece, of the Oriental and Occidental Middle Ages and of the Renaissance, would, from this lofty viewpoint, appear to be of antiquarian interest only. And yet it has basic principles and methods fully in common with "archæology," in the exclusive sense of the term. Even as philology, as the fundamental science of all historical study of spoken and written language, concerns itself with the texts and uses the ear as an essentially perceptive sense, so archæological research bases itself on perception. The eye and the sense of touch are its means to an end, while monuments and remains are the objects of its research. In medical archæology, too, it is these material remains which speak to us, and these can be fully understood only in connection with writings transmitted to us, while, on the other hand, as real objects, they aid in clearing up and completing the ancient texts. Yet we should go too far if we sought in archæological data the spirit which

revives the dead letter. Medical archæology is therefore devoted to the study of the minor documents of the private life of the past, of domestic "antiques," of hygienic documents from a medical viewpoint, for instance, of the care of children, of nursing, of the care of the body in every aspect, of clothing, of private and public baths, of sexual life, of commerce and transportation, hygiene of food, disposal of the dead, etc. To the foregoing two objections may justly be made: 1. In all this, you preach nothing new. Certainly not. But I preach something very essential, if the history of medicine is to be productive of results. 2. What you propose is mere history of medical culture, but why endeavor to make it a new department in medico-historical research! True! I answer, but for that very reason, medical history has until recently been entirely confined to the literary-æsthetic field of causal relations, translational conditions, interrelationship and influences of the various sciences—whether rightly or wrongly I do not consider here. It seems to me necessary to map out this important field along broad lines, and to indicate its methods and means, which must be taken from those of general archæological research. Here, too, the principles of philological research, the sifting and verification of the facts of tradition, as also the interpretative method must be our standard, whether we examine small bronzes or medallions, or cameos, or vases, or tombstone reliefs or mirrors, or terracotta figures or temple structures, or amulets or objects in common use. In the case of special medical or surgical instruments, too, we must ever consider the congruence between form and idea, form and purpose.

MEDICINE IN THE STONE AGE

Translated by
DAVID RIESMAN

MEDICINE IN THE STONE AGE

(1909)

UNEXPECTED vistas into the far distant past of the human race were opened by the great discovery of O. Hauser in the lower grotto of Le Moustier. The skeleton which he had found was fully exposed to light on August 12, 1908, by H. Klaatsch in the presence of Hans Virchow and Wilhelm Rehlen. This skeleton, a representative of the Neanderthal race, was buried perhaps 20,000 or even 90,000 years ago in the lowest quarternary near its contact with the tertiary. By the side of the skeleton were found tools and weapons which the owner had no doubt used during life against the beasts of the forest and against marauding enemies. Perhaps the utensils were laid by his side that they might serve him on his journey into the dimly-conceived beyond.

We know nothing about the slowly emerging conceptions of another world or of disembodied spirits of that remote time, nothing of the inner life of our European forerunners. That there was solicitude within the tribe of one for another may fairly be inferred from the burial of the dead, even if the purpose of the burial was nothing more than to protect the corpse from being devoured by wild beasts. If our remote ancestor gave thought to his dead, he by that token was not likely to refuse aid to the living. In that way was born the medicine of the Stone Age, no matter how low our estimate of it may be. Although in a sense comparable to the concern of the animal for its young, it nevertheless very greatly surpasses it.

However, as far as medicine of the Stone Age is concerned, little is gained by a knowledge of the deference paid to the

dead and the presumed care and aid given to the living. It is exceedingly difficult to penetrate deeply into this matter, as the obstacles are almost insurmountable. The remains of that remote period, in the absence of any trace of written traditions covering a space of tens of thousands of years, are so meager that one despairs of their interpretation on a medical basis.

It is practically hopeless to attempt to separate from the tertiary flints and from the fragments of eoliths any cutting instruments that might have been used to open abscesses or to excise thorns and splinters. Even the improved stone implements of the Palæolithic Period can hardly be considered as having been designed for highly specialized purposes. Bony remains from the earliest diluvial epoch are so rare that authorities may readily interpret the sparse normal findings as pathologic, as has indeed been done in the case of the Neanderthal man since the time of Rudolf Virchow. In the later Palæolithic period of the Magdalenian, the cutting and sawlike tools appear much more capable of being interpreted as medical instruments.

There was, however, an earlier time, medically so far entirely sterile, which offers some hope for the discovery of objects bearing upon the history of medicine in the Stone Age. This hope is largely based upon the remarkable carvings on mammoth teeth and reindeer horns and upon the mural and ceiling paintings of the primitive inhabitants of Western Europe, especially of France. Although the representations of the human body among the Palæolithic peoples in no sense approach the artistic rendition of the mammoth, aurochs, horse, reindeer, etc., it is quite possible that new discoveries of cave paintings and bone carvings may eventually supply us with details of medical objects or of implements suggesting their use in the healing art. This, however, is a pipe dream that may never materialize.

What actual medical facts are found in the vanishing Palæo-

lithic and in the Neolithic Age? The magnificent primitive art has disappeared abruptly. New races appear on the scene in Western Europe which are no more highly gifted than the peoples of the Stone Age elsewhere. Their ceramic industries as well as the scratches suspected to be some form of writing, are for us totally silent and meaningless. Nothing remains as a source of study save certain instruments, skulls and skeletons.

We are at once struck by the fact that diseases of the osseous system, such as rickets and arthritis deformans, supposed to be sins of civilization, are already present in Neolithic man. Some claim to have found bones showing syphilitic disease, but that claim requires more proof. It is quite surprising that, only in a few instances, have Neolithic bones showed evidence of tuberculosis. True osteomyelitis, however, is seemingly not rare.

The study of the age and ancestry of our own microorganisms, if properly approached, may lead to most important revelations.

Not only do the bones of Neolithic man show evidence of disease or impacted arrow heads, but they also show traces of attempts at the correction of deformities as well as of suppuration during the process of healing. Some of the corrective efforts challenge our admiration. Recently Karl Jaeger found 53.8% of good unions of prehistoric fractures as against 46.2% of bad unions, surely a noteworthy achievement on the part of prehistoric man. Furthermore, on the basis of the treatment of skull injuries Jaeger attributes quite a respectable knowledge and skill to the first-aid healers of the Bronze and Stone Ages.

Trephining, while not a frequent operation, seems to have been employed as early as the Neolithic period. It is only rarely possible, however, to discern a connection between an antecedent injury and the operation. In the case of surgery of primitive peoples of today this is the rule as far as the

operation of trephining is concerned, although it has noteworthy exceptions.

Nevertheless it is within the realm of probability that men of the Stone Age, especially in Gaul, were led to trephining procedures by the good results following the removal of bone splinters and depressed fragments. It is, of course, a popular practice of our own day to see the basis of all primitive medical efforts in the supernatural and in superstition, which, however, does violence to numerous facts of medical history.

The success following trephining for skull injuries remained firm in tradition and eventually led, through analogy, to the same procedure in severe headaches, etc., which may have been found to disappear at times in skull injuries after the bone defect had been widened. It became a practice, chiefly in Gaul but also in the north of Europe, to treat diseases of the brain by the operation of trephining, as is demonstrated by the large number of trepanned skulls, over two hundred, found in the dolmens and burial caves of France.

One often finds on the vertex or in one of the parietal bones, usually the left, or in both parietal bones, more rarely in the forehead, circular or oval holes with smooth edges, at times thickened by bony overgrowth, which are beveled inwardly so that the hole in the inner table is a little smaller than that in the outer. The operation was evidently performed with a sharp chisel-like or pointed sawlike flint instrument. The beautifully wrought serrated chisels made of flint and of obsidian, which were found in the German excavations in Abusir in Egypt, and exhibited last summer at the International Historical Congress, would serve admirably for trephining if held in a wooden shaft. Nothing quite similar has been found in France up to the present time, and as regards Egypt we know nothing of operative opening of the skull during the Stone Age.

The Neolithic skulls are supplemented by another discovery, which at first sight would seem to obscure the matter, but

which in reality, on further consideration, helps to clear it up. I refer to the so-called rondelles or sawed out buttons, of which so far about fifty have been found in the early Gallic graves. Some of them are perforated in one or two places or are provided with notches, suggesting the thought that these rounded bone plates were worn perhaps as protective amulets or as curios by the trephined individuals themselves. The first surmise is the one most commonly accepted.

We are aided in this matter by the skull of an individual trephined during life, found in the dolmens of Lozère. From the margin of the cicatrized trephine opening round disks were cut out after death, which show very sharp edges, and are proof of the efficiency of the instruments of that age, which surpass in a marked degree the tools of some primitive people of today.

Why were such round disks sawed out from the dead skull? We must reason from the probable indications for operations to the disks themselves. It is probable that bony amulets were used as a prophylactic or curative agent in epilepsy and other convulsive disorders and in persistent headaches. Perhaps a supernatural efficacy against the diseases named was attributed to the disks removed from the edges of the therapeutically produced skull defects.

The desire for amulets from skulls must have been quite overpowering, if it led primitive man to set aside the regard for the dead and the ancestral worship so generally attributed to him. Perhaps it was only the skulls of the enemy that were put to this use.

Traces of still another procedure on the skull are shown in some of the discoveries from the dolmens of central France. One finds at times on female skulls a shallow depression running almost the whole length of the sagittal suture, which is joined at the back by another shallow groove, running like the letter T from right to left. Manouvier, the first observer, calls

this peculiar exfoliation of the skull the sincipital T. It is evident that the scalp was divided down to the bone by two deep incisions running at right angles. The wound thus made in the hairy scalp may have been kept open with a hot iron or by means of some other irritant procedure until the surface layer of the outer table was thrown off. Could this have been a substitute in women for the trephining operation in men? Is it an accident that up to the present only 6–9 female skulls have been found bearing this scar, which may have coincided with the parting of the hair? Or was this rather considerable surgical interference undertaken for some other purpose? It is the practice of some of the South Sea Islanders to make deep perpendicular incisions on the forehead as a treatment for headache and other conditions. Did Neolithic man have the same purpose in view in the performance of the sincipital T? In that event, it would be nothing more than a substitute in women for the trephining operation. Some have thought that it might represent a form of punishment.

At the meeting of the Société française d'histoire de la médecine in Paris, in 1908, I expressed the tentative belief that this early practice of sagittal and frontal incisions in the skull by the dolmen people of central France might be connected with pericythism and hypospathism which the Alexandrian physicians used as a means to combat mucoid discharges and diseases of the eye, according to Celsus, and which, with all manner of modifications, were in use the world over, particularly in *Gallia comata* or interior Gaul.

Next to terrifying convulsions nothing was so dreaded by primitive man as diminution or loss of eyesight. Against such a serious eventuality man proceeded, we may assume, with that most powerful weapon, a serious operation. This, however, is only an assumption which has much in its favor but is not proved.

We can say with considerable certainty that as early as the

reindeer period in western Europe, during which man exhibited marked artistic ability, and surely in the Neolithic Age, there was a connection between the treatment of bone injuries by means of a sort of splinting and of bold surgical operations with a supernatural amulet therapy, which implies a somewhat higher stage in the healing art. This is true particularly of central Gaul, but also of Switzerland, Germany, Scandinavia and of the lands of the Danube, as we are able to appreciate more and more clearly through the many discoveries in these countries, countries that became more densely populated during the receding Ice Age.

The habit of trephining and the use of rondelles did not disappear with the termination of the Stone Age, although the gradually spreading custom of burning the dead in the Bronze Age has to some extent obliterated the traces of these customs. Here and there, however, particularly in the La Tène culture, definite traces are found. Quite recently there were discovered in Gallic graves between Berne and Thun near Munsingen, trephined skulls dating from the second and third centuries B. C. Gradually, however, the surgical practice of trephining the skull, as well as the sincipital T, went out of use to be replaced by something else which was certainly no more "rational."

DISEASE DEMONOLOGY AND HEALING CUSTOMS OF THE TEUTONS

Translated by

JOHN C. HEMMETER

DISEASE DEMONOLOGY AND HEALING CUSTOMS OF THE TEUTONS

(1912)

DISEASE and death have always made the deepest impression on the soul of early man. Whether life came to a close at the end of a mysteriously long drawn out illness, or whether the joyous human was annihilated with terrifying suddenness, in either case there arose, in opposition to the horror, the urgent question: "What is the nature and what the origin of this dreadful thing?"

Death from hæmorrhage and death from strangulation were familiar from the daily routine of hunting and the struggle with different enemies. But what opened suddenly the sluices of the blood-vessels causing one's kinsfolk to bleed to death? What invisible force obstructed the air passages from within, causing the growing infant to clutch convulsively at his throat and finally die of suffocation?

In the smoky clay hut, one has often felt some pushing or pulling thing that sat on one's chest or neck when one awoke screaming with fear and bathed in perspiration,—an awful incubus that almost choked one to death in the night. In the same way, a dreadful something attacks us nightly, not merely hovering above us at intervals, like the nocturnal or noon-day nightmare, but firmly fastened in our bodies.[1] And yet the nightmare is an impressive personal experience. Very similar

[1] Compare the familiar passage in the Hippocratic treatise "On the Sacred Disease": "But terrors by night and fevers and delirium and jumpings out of bed and fleeing away—all these they hold to be plots of Hecate" [etc.]. [Ed.]

was the springtime experience when storms raged outside, when chills alternating with fevers attacked us, shook us and worried us with restless dream-chasings and long after tortured us with miseries not realized by our house mates: uncanny invisible things, yet very perceptible, almost tangible things surround us, lie in wait for us, attack us, like crafty enemies,—disease spirits, demons of disease, which from the intuitive feeling for causality, which influences our fantasy, are embodied in varied shapes, depending on whatever has been seen or felt at the time. Mysterious above all else, was an invisible something, alive and effective in ourselves and our intimates, as well as in our enemies, but which deserted the body at death, and left it forever—the soul. Ever and anon, the suspicion is awakened in early man that departed souls play their parts in the cohorts of disease entities, souls of our kin and of our enemies.

With the Teutons also, the souls of the departed joined the great army of demons;[1] which as elves, nightmares, sorceresses, sprites, goblins, sweeps along with the retinue of Odin and Lady Holla, winged, ubiquitous, and domiciled in the wildest recesses of the woods. Sometimes the disease demons appear in the actual world under the manifold aspects of the diseases themselves, such as stringy wormy things creeping under the skin, or as worms in wounds and in the cavities and secretions of the body. With the Teutons, the incarnation of the wriggling worm as a disease-demon is very general; the worm, from which it metamorphoses into some winged thing and flutters away, or the ugly, slimy, creeping toad. Along with Mar, the spirit of the dead, who worries the surviving kinsfolk with oppressive dreams or fills them

[1] This is also an essential feature of the Chthonian cult of the ancient Greeks, for which see Ann. Med. History, N. Y., 1917, I, 35–53; Bull, Johns Hopkins Hosp., Balt., 1918, XXIX, 332; Proc. Charaka Club, N. Y., 1919, V, 35–50. [Ed.]

with amatory longings, entering frequently through crevices and holes of the hearthplace, there are various forms of incubi, the direct spiritual descendants of the nightmare, the race of elves (*Elbs*), who practice their magic as disease-demons especially during fevers. Personally they bring about various elfin-diseases by projecting their vicious paralyzing missiles [1] into the skin, the body, the blood, the joints and limbs, or by the bare contact with their less noxious breath, they cause swelling of the limbs, or they suck greedily at the blood, the bone-marrow [2] and legs or attack the human being in passing, with any kind of transient affliction, so that after such an attack it was said "the Elbs had him." That other disease-demons attack man, will appear from the personifications contained in the ancient terminology of disease: *nessia* (burning), *nagedo* (gnawing), *stechedo* (sticking), *troppho* (dripping, as of the blood), *crampho* (cramping), *gigichte* (gout). Demons of contact cause erysipelas, inflammation of the lymphatic vessels or anthrax. Stroking demons (moon-struck) bring about facial palsies and mental derangements, smarting blisters and gangrene. Biting, pinching, scratching, urinating demons cause the cutaneous manifestations of cancer, hæmorrhages, itch, freckles and phlegmonous inflammation, also penetrate to the stomach, causing gastric ulcer (*magolizado*). They rack nerves and sinews as demons of gout; fell to the ground as striking-demons in apoplexy and epilepsy, smite us with blindness, with swelling of the salivary glands (parotitis); cause, as thrust-demons, "hiccough" and *"nösch,"* which attack heart and uterus; as pricking-demons, inflammation of the lungs and the pleura, with stitches in the sides, and sunstroke; as choking-demons strangulation (croup, diphtheria); as binding demons, rickets, and phimosis; as grip-demons (*hardgreip, widgreip*) fainting fits and the cramps of

[1] In Anglo-Saxon medicine, "elf-bolts." [Ed.]
[2] The Vampyrism of Slavic medical folk-lore. [Ed.]

uræmia, eclampsia and epilepsy; as blowing-demons,[1] diseases of the eyes (especially conjunctivitis of newborn infants), anthrax blisters, also smallpox and pest, which latter may come roaring after pitiful humanity as dragons and serpents, dragging poor people out of their caves and killing them by spewing poisonous fumes upon them.

There are other small creatures that practice their secret arts on us, such as dwarfs and sprats, who induce paralysis, delirium, mumps, and in others stings, palsy, scrofula, and cramps, and nightly oppress and choke us; who in particular, bring pernicious fevers, so that the Anglo-Saxon word *"dweorg"* (dwarf) simply means fever. Evil demoniac "rogues" bring pestilences to man and beast, the influenza (*skalmo, skelma*) the Black Death in carrion vapors, which afford a vague premonition of the danger of infection lurking within them, just as "rogues legs" in half-decayed steers and calves, are regarded as the embodiment of "pest rogues."

The disease demons who live in the forests are regarded as less harmful wights and imps. States of stupefaction induced by them are personified as *"dusel"* (dizziness), or as yellow-bellied female spirits, who knit yellow garments with yellow needles, yellow frocks, which they throw over our bodies as jaundice or redness of the skin (*Pellmergen*), as cutaneous erysipelas or the thickened skin (*Schwellmergen*) of œdema. This already discloses, as a direct personification of a local illness, a more advanced concept of the nature of disease, which in a purely empirical way, from the very beginning, was a concomitant of belief in the entire army of disease demons controlling the acute and chronic infectious diseases and the many nervous disorders. This belief, which is termed in Gothic *"daimonareis,"* affiliates itself with the demon-lore of the New

[1] Compare this complex demon-lore with similar phases in Assyro-Babylonian medicine, e. g., in the incantations against disease in Lenormant's "Chaldean Magic," London, [1878], *passim*. [Ed.]

Testament and develops into the mediæval *deofolseoc* (devil's disease) and *deofolseocness* (demoniac possession). As to therapeutics, the ancient Teutons were, as usual, beset by most elementary empiricism at the start. Evidences of this primitive observational medicine have almost entirely disappeared. There was, however, an almost immediate immixture of demonistic concepts.

Wounds would be cleansed and bandaged with healing vulnerary herbs; if some bled profusely, then dried vegetable powders were sprinkled over them and the bandage was tightened. But the procedure did not always prove successful and for this reason, it became customary to apply stronger remedies, with which we will shortly become acquainted. This was done at once and very generally as a preventive measure, i. e., it became customary to apply them right at the start, since other symptoms frequently developed in a sudden, unaccountable manner during the healing process. These dangerous and mysterious happenings were, in effect, the disagreeable traumatic diseases which today we have learned to trace back to infection, viz., septicemia, wound-erysipelas, wound diphtheria, hospital gangrene and tetanus. All these fearsome phenomena were regarded as "uncanny fellows," personal influences of evil-disposed creatures from the spirit and demon-world, or wicked spells of malevolent human beings, who had learned to mobilize the world of evil spirits, or had succeeded in making them serve their ends. Or had one been derelict in his devotions? Had one's duties to the kindly folk-gods been overlooked, causing them to punish us with suffering or to grant to the evil clan of elves, whom they otherwise held in check, the greedily utilized privilege of injuring us? For all these things, measures had to be taken promptly and at the proper time. About primitive man lurked terrors on all sides, which it was the duty of sage counselors, male and female, to alleviate. In questions of

healing disease, the feminine element was particularly apt.

Supernatural diseases, including all not immediately accessible to the senses, might well be divine punishments, to be atoned for by penances, whether with bloody or bloodless sacrificial offerings.[1] The officiating priest kept these demons of pestilence away from the people. Odin is, however, also the father of magic. As a sun-god, he dissipates the gloomy host of nightly wanderers, he the mighty disperser of elves, the vexer of incubi. Nevertheless a direct sacrifice to nightmares was customary since incubi are sometimes well disposed, are expert in herb-lore and knowledge of plants to be dug up at nights, and their uses. The adoration of the goddess Eir, who was especially proficient in healing is of later date; she personifies nursing as practiced by mild womanhood. Odin, however, remains the principal god of healing; his healing "Wotan's finger" is for a long time a power of French and English kings (who are descended from him), curing, by the Royal Touch, goitre and scrofula. Formerly, this province of healing was associated with the god Thor, the mighty protector in sickness and danger, the destroyer of evil spirits. But Odin the Wise was familiar with all secrets of the magic which could be opposed to the demon-hosts, viz.: "helpful healing proverbs," "life-runes of prolonged efficiency," "helpful staves and preventive runes," and "staves of curative power."

All that is essential in anti-demonic healing magic is contained in the whispered, spoken, chanted or loudly shouted *word* that was written on bits of wood or tree-bark or on the skin of the patient, for example on his hand. Such magic formulæ or "spells" (charms) have come down to us in great numbers from all related Teutonic languages; in particular

[1] Compare with the prophylactic ritual of the ancient Greeks, systematized by Erwin Rohde as apotropaic, cathartic and hilastic, and the ritual sacrifices, described by Robertson Smith as honorific and piacular. See, Proc. Charaka Club, N. Y., 1919, V, 45–50. [Ed.]

charms for the healing of wounds, to check bleeding, and for the prevention of swelling and gangrene. Thus, in Wolfram von Eschenbach, in accordance with ancient Teutonic custom, Gawain says, after application of the bandage, *"zer wunden wunden seqen"* (of wounds to wounds a blessing). Again and again we read in the "blood-blessing" *"stant plot fasto"* (stand quickly firm), *"verstand, du bluotrinna"* (stop! thou bleeding!). But the other eventualities are not overlooked; *"dyn stekent, dyn swillent, dyn killent, dyn vulent, dyn stinkent, dyn swerent, dyn rennent, sholt laten,"* ("Thy stinging, thy swelling, thy torturing, thy raging, thy stinking, thy festering, thy running, shall cease") is a command of the mighty "spell" to bring about undisturbed healing. Effective verbal magic of this type was common to early Teutonic folk-medicine in the treatment of many other diseases: for example, "worm spells," which drive the nesso-worm with nine smaller nesso-worms from the marrow through veins, tissues and skin, out of the body, or which kill them or drive them out as maggots from abscesses; "fever spells" which dissipate or drive away all fevers; "fracture and dislocation spells" which must be uttered along with the stroking and kneading of massage and which help to knit broken bones properly; "eye-spells" which heal discharges, swelling, pains and cloudiness; "cramp-spells," which cure epilepsy, malignant growths, podagra, intestinal gout, colic, chills and "running gout"; "consumptive-spells," which remove all kinds of consumption; "swelling-spells" which remove tumors and glandular swellings (*kyrill*); "teeth-spells" which relieve toothache and dental worms; "birth-spells," which must be spoken before the knees of the woman in labor, to bring the child hale and hearty into this world and remove the after-birth, as Oddrun sings them "lustily" for Börgny in the Edda, assisted by birth-runes, which are "painted," as "healing-tokens," "on the hands and ligaments."

Bits of paper similarly inscribed (*zouborgiserib*=magical scripts) were hung in small cases (*plechir*=shining things) about the body against diseases or were tied to the sick limbs (*ligaturae*=bandages) or worn as amulets [1] to "break the disease" (*Suchtenbrechen*=disease-breaking). But verbal spells serve to "transfer" diseases to other places or to trees ("bough-runes," which every one, who would become a physician, must learn) or into animals. Such charms were also spoken and sung whenever healing and magic herbs (vulnerary and apotropaic herbs) were gathered; also in brewing potions and other practices, such as passing and crawling through clefts in trees, or directly over the unconscious patient, or in circling his wounds with a gold ring ornamented with runes; or on the first application of iron or bronze rings on to the limbs as a protection against demons,[2] even on leaping at the end of summer, through the bonfires [3] the smoke of which people attempted to absorb and retain in their clothing to insure immunity against fevers.

To be sure, these and many other healing customs may have been employed without apotropaic spells. For that purpose, new gestures, modes of dress, and equipment gradually came into use: wooden masks, hats, cloaks, purses with rather comical contents, such as talons, claws, nails, hairs, small bones and suchlike magical rubbish as is used all over the world by disease conjurers (Shamans, medicine-men). Thus, images of the gods were immersed in water to give it special healing power, and cakes, baked in the shapes of mighty heal-

[1] For similar practices in English medical folk-lore, see Black: Folk Medicine, London, 1883, or Garrison: History of Medicine, 3. ed., Phila., 1922, 34.

[2] For the use of amulets by all peoples throughout space and time, see, Garrison History of Medicine, 3 ed., Phila., 1922, 30–41. In Georg Kaiser's "Sacred Comedy," *Die jüdische Virtue*, plagiarized without acknowledgment by Arnold Bennett as "The Jewish Widow," the Assyro-Babylonian cult of amulets is amusingly depicted in the antics of Holofernes.

[3] Johannisfeuer.

ing gods, were eaten.[1] Wooden arms and legs were hung up as votive offerings in the sacred groves;[2] magic stones, with or without runic inscriptions (life-stones), were worn as amulets.

All this was regarded as "medical" healing-lore, practice of medicine and helpful therapy, in aid of eliminating existing diseases or of preventing any disturbances of health that might threaten. Whatever, at first sight, might seem to be a simple, natural method of treating disease, would often reveal none the less, an element of superstition. Thus, in the hand of the "physician" who was carrying out a rolling massage of the abdomen for abdominal trouble, there would be found a beetle, or some other creature, intended to catch the disease or its demon respectively. Again, while fumigating a part of the body with the stupefying vapor of narcotic herbs, intended to drive away the demons of pain, a spell was softly muttered or a magic verse was sung. Demonism, as a concept of disease, is after all, empirical in its origin; a modest element of truth is contained in all such figments of the imagination, which acquire, only later, a luxuriant, redundant vitality, to develop finally as a mighty army of hostile agents of disease, besieging humanity on all sides, and taking form and semblance from a kind of pathological figuration, to which all species of human and animal monstrosities have contributed. In this way, the illusory visions of nightmares acquired new substance and novel, seemingly documented proofs of existence, for example, the intestinal or external parasite as a personification of the disease-demon. Pathogenic parasites and disease-demons are closely related.

The conjuration of demons is, as a rule, magic practiced by the individual to protect or free him from individual demons,

[1] For an account of these "Heilbröte", see M. Höfler; Janus, Amst., 1902, VII, 189; 233; 301. [Ed.]

[2] For many pictures of Greek, Germanic and African votive offerings, see, E. Holländer, Plastik und Medezin, Stuttgart, 1912, 175–235. [Ed.]

whereas bloody sacrifice by the tribal priest is designed to protect the whole tribe against devastating assault by the whole army of disease-demons. But there have been also examples of an almost general incantation against possible demon-invasions, "whatever elf may have been involved."

All conceivable combinations of supernatural magic-therapy with physico-chemical pharmacology and mechanotherapy appear throughout the ages, but, even to this day, a decisive victory of the rational element is not yet apparent in the sphere of folk-medicine, not even among the Teutonic races and nations.

PALÆOPATHOLOGICAL PROBLEMS AND POSTULATES TUBERCULOSIS IN PREHISTORIC TIMES

Translated by

GEORGE PANEBAKER

PALÆOPATHOLOGICAL PROBLEMS AND POSTULATES
TUBERCULOSIS IN PREHISTORIC TIMES

PREHISTORY, the sister of history, is still in her teens. At first snubbed by professional historians, and though sometimes, even today, to be seen in the fantastic swaddling-clothes of dilettantism, prehistory has slowly succeeded in attracting respectful attention.

Prehistory will no longer permit herself to be outpaced by her older sister in critical acuity and rigor of method, and she draws her material from entirely different sources.

What can it matter if, by advancing knowledge and elaboration of prehistoric material, the domain of prehistory itself is crowded by "ancient history"? The thinking prehistorian will gladly hail advancing light in so far as he is receptive to any advancement of knowledge, in his own as well as in adjoining fields.

For even in the vast realm of the worthy muse Clio, methods of research, of evaluation of material have expanded. The spade and the objective data of antiquity have long ago acquired equal value with the written documents, of which palæontology, also, unless appearances deceive, is not entirely devoid. Etruscan, Hittite and Central-American inscriptions, for example, are still as enigmatic as are the earliest scrawls and pothooks on prehistoric stones and walls and tools.

Palæopathology also, has early and prehistoric records, delving sometimes deeper than the universal history of nations, states and civilizations; but that is, in great part, a matter of

viewpoint, above all of method, often even of concrete interrogation. What is here early history? What is prehistory?

Shall we say, for instance, that the history of measles begins with the differentiation of its total clinical picture from that of the manifestations related to all other exanthematous fevers? In a "strict" sense, this might be justified in part. In a still "stricter" sense, we well might say that the history of an infectious disease begins on the day when its organized pathogenic agent was discovered and its total bacteriology satisfactorily cleared up. Yes! and in the case of measles, are we still dealing with its earlier or its earliest history? And who can guarantee that, in one case of infectious diseases, with known organized pathogenic agents, we may not some day experience further biological and ætiological surprises?

This is indeed really more than a mere "matter of taste," but it does go to show that, here as everywhere, caution, sobriety and critical deliberation are essential.

Nevertheless, the scientific establishment of the clinical picture, its differential-diagnostic demarcation, are the most important steps to be taken in the history of a disease. But now another problem presents itself with inexorable need, namely to trace and elucidate the often veiled appearance of the particular pathologic entity through the whole medical literature of the past or its origins. This is often a difficult historical and critical undertaking, not only because medical writers always viewed the pathologic manifestations through the spectacles of their own opinions, but, because, above all, the objective recognition of a fact and its simple visualization in writing is no easy task.

No people of antiquity had more talent for observing and describing what they saw than the Greeks; and better observers than Hippocrates and his school have never lived. Read attentively five hundred of his case histories, and then try to re-

discover, to identify them in modern clinical descriptions. This may be difficult, but finally you will arrive at a fairly satisfactory conclusion. But if you have read, studied and analyzed five hundred of those ancient case histories, you will begin to hesitate, and your hesitation will increase as you continue to study the material. The amount of our knowledge has materially increased in time,—but has also our knowledge of the diseases really existing in antiquity increased? I do not believe that every honest laborer in this field will joyfully affirm this proposition. It seems to me that some day we must undertake an exegesis of the question: what are the limits of possibility for the identification of diseases from medical delineations of past times, for example in classical antiquity?

The question will be still more complicated if we approach the delineations by laymen of all kinds, of which those dealing with the diagnosis of leprosy in the Old Testament, and the attempted solution of this problem, afford a classical instance.

Various modifications and unconscious falsifications, often prompted by the wishes, aims and tendencies of the investigator, or even of whole groups of investigators, are here decisive factors upon which I shall not dwell, flagrant as they are. In brief, we are driven involuntarily to look around for other than literary sources in this dilemma of identifying the diseases of the past. Here also, we must resort above all to the spade, which will demonstrate its efficiency and yield finds of utmost value, antedating the written records. Consultation of the ossuary archives of the past was, in fact, instituted long ago. We must continue to study them with ever greater assiduity and improved methods in all diseases which leave their marks on the cranium and skeleton.

Unfortunately, it is possible in only a few localities on earth to obtain information beyond the skeleton about diseases

of inhabited regions of the remote past, in which religious ideas prohibited the preservation of bodies by desiccation and other measures.

It has already become customary to utilize the evidence elicited from desiccated soft parts and cutaneous coverings of Old and New World mummies in the solution of problems about the history of disease. An example we shall give later will illustrate this method. But even here, our knowledge is still in a state of flux. Only the dogmatist will dispose of the evidence prematurely and speak of "final results."

Valuable for research are the endeavor for truth and the single stages of investigation, with their preliminary findings, but of chief importance are the development and improvement of methods of research, the results of which afford the new material of science, on the basis of which we may continue our labors.

One of the most interesting problems in the history of disease is that concerning the first appearance or, better, the age of tuberculosis.

It would be worth while to sift and collate the extant casuistic archives of this disease, as found in prehistoric skeletons. But this does not concern us at present.

Of European material, we need mention only the skeleton of later Neolithic provenance, unearthed near Heidelberg some years ago. Here a series of vertebræ had been destroyed in a typical manner and the spinal column was consequently anteflexed. This finding shows how the tubercle bacillus performed its murderous work on the body, even more than a thousand years ago.

For a while it was believed that ancient Egypt had been freed of this scourge of mankind, and this seemed to be an excellent argument for the correctness of our belief that victims of incipient phthisis were sent to the Nile to be cured. But the excavations undertaken by English investigators, espe-

cially by Wood Jones and Grafton Elliot Smith, have thrown quite a different light on this problem and the fact seems to be fairly well established that even during the Predynastic period, tuberculosis of the bones, and probably also of the lungs, was fairly common on the shores of the Nile. Of decisive importance was especially the close examination of a 3000 year old mummy, the results of which swept away all doubt.

It is highly instructive to study the observations made on a series of ancient Egyptian and Nubian skeletons (published by competent authorities in the valuable reports of the Archæological Survey of Nubia) and to realize how the investigators gradually became convinced of this fact.

In Bulletin No. 3 of the above mentioned Archæological Survey, attention was called to this finding.

For another important finding we are indebted to the excavations made (November and December, 1909) in an old burial place near Dakka on the Nile, in the ancient districts of Pselchis. Of ten excavated prehistoric skeletons, four showed pathologic changes in the spinal column. These four skeletons were taken out of two graves, one of which contained two skeletons, namely of a man and woman; both showed carious destruction of several vertebræ. Another tomb contained two skeletons of male adults and of a 9 year old boy. One of the adults showed a marked bend of the spinal column due to the destruction of two vertebræ, while, in the boy, five vertebræ were corroded and baked together into an irregular lump of bones.

Further investigation will be necessary to demonstrate the tuberculous nature of all these bone diseases.

We are therefore confronted by two alternatives: (1) either by an epidemic of tubercular disease affecting a whole family or other relatives, or (2) certain circumstances may have induced a number of tuberculous persons to repair to the banks of the Nile near Dakka, where we might assume there was a

health resort which attracted tuberculous patients. The first assumption seems to have the greater probability in its favor.

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In the establishment and amplification of diagnostic possibilities, we owe much to a new method, for the elaboration of which we are indebted to Dr. Marc Armand Ruffer, director of the Egyptian Sanitary and Quarantine Department in Alexandria, who for a number of years was engaged in the microscopic examination of normal and of pathologically altered mummy-tissues.[1] The highly interesting results of his investigations were published in the Cairo Scientific Journal (1910, IV, No. 40), in which he describes all the details of his method and presents a survey of his findings to date. His staining methods enabled him to discover atheroma of the arteries, anthracosis of the lungs, croupous pneumonia, cirrhosis of the liver, phosphatic and uratic calculi in the bladder and the pelvis of the kidney. The Egyptian hæmaturia parasitaria, already discovered long before by other means, he placed on a firm ætiological basis by the finding of calcified bilharzia eggs in numerous cases. Bacilli were found several times in the pulmonary and hepatic tissues. In one case, the blood vessels of the liver were found to be filled with microorganisms resembling plague bacilli, and it needed only the demonstration of a plague-boil to ascertain the diagnosis of bubonic plague. Multiple abscesses with colon bacilli were also observed in one case.

The application of these ultra-modern methods to material of the most ancient kind, which, let us hope, will also be applied to South American mummies, does not justify us in drawing a final conclusion as to the problem of prehistoric tuberculosis.

Dr. Ruffer has not yet succeeded in staining tubercle bacilli from material 3000 years old. That is as yet a postulate for

[1] Like Johann Czermak, 60 years earlier.

the future. In admitting this fact, we wish to declare that sober investigation has nothing to hide. It conscientiously registers even negative results. What is shrouded in darkness today, may be brought to light tomorrow. Investigation is at work.

GALEN: THE NEW CORPUS MEDICORUM GRAECORUM AND THE MODERN MEDICAL WORLD

Translated by

GEORGE PANEBAKER

GALEN: THE NEW CORPUS MEDICORUM GRAECORUM AND THE MODERN MEDICAL WORLD

AT the close of the most gigantic struggle ever waged for Science, for the control of physical forces in aid of the cure of disease and the preservation of health, we encounter the arresting figure of Galen.

Galen synthetized, sifted, re-arranged all the knowledge of organic life and its manifestations in the scheme of nature which the Greek natural philosophers and physicians had investigated and elaborated after the time of Hippocrates.

He was familiar with the achievements of all these investigators, even those who after the composition of the Hippocratic Corpus had concerned themselves with the structure and functions of the human body, with its disturbances due to pathogenic factors themselves, with all the dietetic and pharmacological means for the relief of these disturbances. He had further at his disposal the whole gigantic medical literature of the Greeks, from all the seed plants of learning and culture on the shores of Asia Minor, the outlying islands, and the lecture halls of Alexandria.

Upon all this abundant material he drew freely, but not without testing it by independent observation and biological experiment. Whatever he appropriated, however, he chose *ad libitum,* disposing of the originals quite arbitrarily, so that in most intances we are unable to tell how much is his own and what conclusions he formed.

For nearly two thousand years, everything was regarded as of Galen's own creation and he was venerated as the greatest master of Greek medicine. But now we have begun to be more

skeptical. His work has sunk in our estimation, or at least he is not as highly thought of as in the period when he was laid aside as superannuated, although his comparative greatness continued to be recognized.

Today we approach him in another frame of mind, today we look at him from a different angle, today we want to know what he found ready to hand, what he preserved, what he made known to us directly, what he borrowed from others and what he has transmitted to us in disguise.

As a matter of fact, his disguise is more impenetrable than the obscurity investing the great Encyclopedists of later Alexandrian and Byzantine medicine, in particular Oribasius, Alexander of Tralles, Ætius, and Paul of Ægina. Here, too, we were deceived for a while, and some of these authors were credited with a greater independence and originality than was really due them. With Galen, all this is quite different. His mode of expression and his descriptions of fact are everywhere his own.

Facile is his style, easily he wields the pen, too easily, indeed, and often his expansive discourse trails off into unimaginable emptiness; in the incessant flow of words, his tenuous line of thought becomes intolerably stale, flat and wearisome, although he always has something to say.

From his earliest youth he wrote and dictated, wherever he happened to be and however employed. The flow of words never ceased; the thin thread of his thoughts never broke. But we must admit that he always had his subject well in hand.

Well grounded in mathematics and philosophy, he had fully absorbed and digested the data of biology and the principles of medical practice, not only by committing them to memory, but by subjecting them to scientific revision by observation, recasting and retesting. This is especially apparent in his treatment of anatomy and physiology.

And yet here also we are justified in asking, and we must ask again and again, how much of the anatomical material he exploits is due to his own observations and how much did he borrow from his predecessors, e. g., from the eminent Marinus?

Perhaps everything! We cannot tell; but we must admit that the manner employed in the "Anatomical Encheiresis," where he makes the reader assist, as it were, at his dissections and experiments in vivisection, shows that he had verified every detail of anatomy for himself, at least in the animal body.

But, at the same time, we become aware of the close relation between structure and function in his doctrines and investigations, of the dangers lurking in the Galenic modes of thought and elucidation through his tendency to explain everything in terms of teleology, a facile, cocksure and superficial line of argument which seems to make even the notion of further investigation superfluous.

This shallow rationalism and dogmatism permeates not only Galen's morphology and physiology but also his medical theories. We become reconciled to it when we perceive how his works reflect the genetic process of his own development, in its precise methodology and honest endeavor, how through individual study and acquisition of experience, he begins with the theoretical disciplines, which through the enormous industry of his acute mind, he soon masters, proceeding thence, as his experience enlarges, to the practical phases.

For the acquisition of a large fund of such experiences he had ample opportunities: in wound surgery during his long years of service as physician to the gladiators in Pergamum; in internal medicine through his extensive practice everywhere, especially in Rome. And he never failed to make a mighty noise about all this in his writings, with all the vanity and self-complacency of the Levantine Greekling. As with so many others of his kind, Rome had attracted him, as a light does a moth, or a beautiful woman the admiring glances of men.

Although what he tells of his wonderful successes in the great city must be regarded with judicious skepticism, there is no doubt that his professional services were eagerly sought by the higher classes of society and even by the court. By his public lectures and scientific demonstrations, which the Roman intelligentsia attended in vast numbers, he added greatly to his fame. His topics were chiefly biological problems of general interest, on the anatomy and physiology of vertebrates, which he tried to identify with the structure and functions of the human body by means of vivisections and reasoning of definite teleological import. His specious explanations of physiological problems, as showing the purposeful element of design in the Creator, his ingenuity in setting up the common sense of the average man as the supreme judge in scientific questions, were particularly adapted to the instruction of such lay audiences. And so it was, too, with his handling of pathology.

During the latter half of the second century A. D., the whole terrain of normal and pathological biology, as well as of medical practice, was in a state of utter confusion.

Owing to the divergent tendencies of the various "schools"—so characteristic of the intellectual life of the Greeks—with their one-sided and exclusive tendency to stress certain epistemological methods, biological processes, natural phenomena, pathogenic agencies and elementary substances of the organic and inorganic world (as manifested by the Empiric, Methodist and Dogmatic Schools in humoral, solidistic and pneumatic pathology) a great restlessness had brought later Hellenistic medicine almost to a standstill.

In this war of opinions, Galen remained nowise neutral. In the hope that with the birth of this child, tranquillity would enter his house, which was torn by conjugal discord, his father had named him Galenos the "Peacemaker"; but true to the quarrelsome habit of Greek savants, Galen, the zealot, took his

stand and with derision, flung his gauntlet into the face of his opponents.

On the other hand, his acute intellect had prompted him to study at the fountainhead all the conflicting tendencies of his own time as well as of the past; with the theories he absorbed also their net results, and, in his systematizing Greek mind, he digested and elaborated them and made them his own by turning them into something new through his native ingenuity. And all this rehashed material was finally transformed and unified by him into an organized body of medical science upon a Hippocratic-Dogmatic basis, as he himself conceived it.

His whole personal and mental disposition had made it evident from the beginning that he would become an exponent of Dogmatic tendencies.

His system is based upon the humoral theory as taught by Polybus, the son-in-law of Hippocrates. In this view, the fluid constituents of the body are the most important factors in pathological processes. Galen's endeavor to appear as the fundamental renovator of Hippocratic doctrines secured him an ever increasing sphere of influence.

In this capacity, as a renovator and conclusive synthetist, appearing at the time when the medical science and biology of classical antiquity had begun to decline, Galen becomes to us of special significance. It was a piece of rare luck for historical investigation that so many of his books were preserved, although, on the other hand, we cannot but deplore that these lavish remains of his mental activity exercised such a baleful influence upon medical science from the end of the antique world in the fourth century, throughout the Middle Ages and down to modern times. In spite of all that, if we wish to study the biology and medicine of classical antiquity at its source, if we want to get acquainted with it for purely historic or methodologic purposes, we must consult his writings. Therefore, and for various other good reasons, the recent series

of the "Corpus Medicorum Græcorum" begins with a number of Galenic treatises.

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It is worth while to take closer cognizance of this novel, long anticipated and significant enterprise and inquire, what is its purpose?

It is a purely philological undertaking, no medical historian nor, indeed, any physician having any part in its publication. True to the slogan voiced as the watchword of Hellenic philologists, "historiography must take possesion of ancient medicine," and carrying out this program in the narrowest way, the editorial staff has decided to do without even the advice of any medical man.

We merely wish to register this point, without attempting to criticize the intention of the editors, easy as this would be, since in order to justify their procedure, the philologists have advanced a characterization of medical historiography which, as a matter of general publicity is far from a truthful presentation of fact.

Be that as it may, one thing is certain: first class labor, planned on a grand scale, has been consecrated to an important task.

At the same time, modern medicine and natural science begin to see what is applicable to natural and especially to living organisms and what applies beyond peradventure to the whole field of biological research, namely, that each and every biological fact can only be completely understood in relation to its growth and development and furthermore, that this applies not only to biology as such but to every "exact" natural science as well.

For many centuries, indeed, for more than two thousand years, all the natural sciences, including medicine, represent, so to say, a living organism, which can be comprehended

and understood only in its development. Goethe's famous dictum, "The history of a science is the science itself," still holds true today and is even susceptible of wider application.

For the exact sciences as well as for biology, including, first and foremost, medicine in its rôle of applied biology, historical investigation is an indispensable supplement. Only the full knowledge of its development can secure for natural science, in the largest sense, an uninterrupted progress and the avoidance of gross errors in investigation.

For the understanding of the history of natural science, including medicine, the study of the only great period that can be seriously compared with modern medicine is of paramount importance.

The study of the modest beginnings of natural science and of the healing art, as practiced in prehistoric times by primitive peoples as well as by the highly civilized nations dwelling on the shores of the Euphrates, the Nile, and Ganges and the Yangtse Kiang, holds out an undescribable charm to the historian of science. It is an enticing task to study the wondrous flowering of Arabic-Persian science and medicine, and to inhale the fragrance emanating from the luxuriant blossom of resurrected Hellenic wisdom, but still more intriguing to creep through the briars which fence around the coy buds of the mediæval Occident, albeit today some may still sneer at them instead of admitting how hopefully they protected the tender shoots destined to develop into the fruit-trees of modern science and eventually to overtop even the lofty trunk of Greek natural philosophy.

Slowly, too slowly, it grew up, adding one layer of cells to the other, but finally it came into its own, outshining the hoary wisdom of Chaldea and all the wondrous flowering of Islamitic civilization.

Do not sneer at those modest beginnings! The poor Cinderella of yesteryear is the proud princess of today, and whoever

has eyes to see may behold through the ragged Salernitan gown the charm of youthful limbs.

But all these things are tidbits to be relished by the specialist, "Biterolfic forest-Latin," hardly of any great interest and value for those who wish to understand the great complex of intellectual culture and its value to modern people. Their day is done and their influence at an end.

This, I must repeat, was almost exclusively the first great period of a scientific study of nature, commencing 2500 years ago, with overtones that were sensed for a thousand years. Only modern science comes anywhere near it in importance. Only its literary products, along with the foundations of modern medicine in the sixteenth century, deserve to be studied as both a pattern and a danger-signal.

Modern science has attained to man's estate. The storms of adolescence, weathered by its own inherent strength, are behind it, and today it is mature and cautious.

Apart from his ceaseless labors in thousandfold directions, the active investigator needs hours of quiet contemplation in which to meditate, not only on the evolution and upward advancement of his own science, on the achievements and struggles of its great pathfinders, but also on its periods of stagnation and decline, and their causative factors.

Let the scientific classics of the last four centuries be the wellspring of the modern investigator in his moments of intimate recreation; but let him also repair at whiles to the youthful science of the Hellenes, who for the first time in human history took up the serious study of nature.

And Hellenic science, too, had its youthful days of storm and stress, its period of mature manhood—and its declining years of senescence and decay.

Modern science is in no danger of becoming a blind follower, of lapsing into superficial imitation. But we shall gain a deeper understanding of our own aspirations, from the study

of those incomparable beginnings, which already compassed so much, those shining prototypes, and thus we shall also be warned not to commit ourselves to rash speculations or to stubborn adherence to erroneous theories, however ingenious they may appear.

Blessed is the man of science who enjoys the great companionship of the ancients—they are flesh of his flesh, sharers of his successes and errors, of his joys and deceptions. Let us then reaffirm the toast: "Whatever is Greek must, in the end, prevail," for Greek thought abides on the heights of freedom, on upward pathways which science once deserted, indeed, but at the risk of its very existence.

ANCIENT ITALIAN REPRESENTATIONS OF HUMAN VISCERA AS VOTIVE OFFERINGS

Translated by

ALBERT ALLEMANN

ex voto = offering made in pursuance of vow.

ANCIENT ITALIAN REPRESENTATIONS OF HUMAN VISCERA AS VOTIVE OFFERINGS

(1901)

AT the meeting of the German Physicians and Naturalists of 1898 Dr. A. Körte of Bonn reported on an excavated temple devoted to Amyntos, a pre-Æsculapian healing god, in which numerous representations of "healed limbs" as ex-votos were found, among others a leg with large varicose veins. At the close of his lecture, Dr. Körte showed the audience two terracotta pieces, doubtless from ancient Veii, representing parts of the human trunk with open abdominal cavity, exposing the viscera. These pieces Körte also regarded as ex-votos from the temple of an Etruscan healing god. Any other supposition, such as the preparation of such figures for the instruction of physicians in anatomy, would require definite demonstration out of hand.

The figures excited lively interest among the medical historians present, and led the Königsberg anatomist, Ludwig Stieda, to make an intensive study since published, of this little known subject.

The pious custom of offering to a healing god images of diseased parts of the body in precious metal, bronze, stone or terracotta, is very old and exists with slight changes even today as a religious rite, as those familiar with Heine's Pilgrimage to Kevelaar will remember: [1]

Die kranken Leute bringen
Ihr dar als Opferspend'
Aus Wachs gebildete Glieder,
Viel wächserne Füss' und Händ'.

Und wer eine Wachshand opfert,
Dem heilt an der Hand die Wund'.
Und wer einen Wachsfuss opfert,
Dem wird der Fuss gesund.

A collection of such votive offerings, as they are still found in upper Bavaria, was exhibited at the Medico-Historical Exhibition at Düsseldorf. These offerings are still made as "sacrifices" by sick people seeking relief by pilgrimages to holy places. Only in exceptional cases are such images proffered as mementos or thank-offerings for a healing miracle at a holy place; as a rule, they are more nearly like the "five golden mice" sent as an apotropaic offering to appease the wrath of the God of Israel (I Samuel ch. 6). In like manner, the votive offerings of human limbs found in old Greek and Italian temple-ruins must, as a rule, be considered as apotropaic or propiatory offerings, and only exceptionally as representations of "healed limbs," or thank-offerings. In most cases, they are votive offerings made by sick people beseeching a cure. Indeed the vicinity of temples of famous healing gods or goddesses was often the site of a well-developed industry, in that parts of the body were extensively manufactured in baked clay, and offered for sale to health-seeking visitors. That even people otherwise sound and well sometimes left images of the feet or sandals in the temple, before or after a journey, has sometimes been overlooked.

Dr. Stieda has made a list of all the plastic ex-voto images of various parts of the human body which he could find in Roman museums: heads or half-heads, faces (masks and half-masks), eyes, ears, noses, lips, locks of hair, arms and hands, legs and feet, sexual organs, parts of the skeleton and viscera. Most of these were already known and have been described in haphazard fashion. The well known marble thorax in the Vatican museum, erroneously described as an anatomical prep-

aration or as a votive offering, is probably, as Stieda surmises, a fragment from the cover of a sarcophagus or a mural ornament.

Representations of viscera have scarcely been mentioned so far, and yet they are not at all rare and are of special interest.

There exist, in plenty, images of human trunks of both sexes, without head or legs. The lower abdomen is often wrapped in cloth; the thoracic and abdominal cavities are open and show lungs, heart, liver, stomach, intestines, spleen, kidneys and bladder, usually in coarse imitation. In most cases, the different viscera seem to have been fashioned individually in clay and then inserted within the terracotta body before baking. Besides these distinctly recognizable images of the human thorax, there are curved pieces, like hollow tiles, the convex anterior aspect of which shows the gaping slit of an incised chest or abdomen, revealing the thoracic and abdominal viscera; also flat plates or disks with plastic representations of a group of human viscera, frequently surrounded by a double border, which, in its upper part, shows traces of the severed ribs. To date, these disks have never been mentioned or described.

The trunks with open abdominal cavity, as well as the disks showing the viscera, are often different in respect of the arrangement of the various viscera, but even now, although only a portion of the material is as yet available, images of similar type may be sorted out and classified, and some specimens are even identical with others in every respect. But how true to nature are all these visceral representations? May we assume that they were copied from nature, after dissections? Certainly not! Nor can we assume any traditional knowledge from the times of human sacrifices. Severe injuries, sustained in war and peace, may sometimes have exposed to view the organs of the chest as well as of the abdomen, but these certainly did not serve as models to the artist in plastic clay.

He transferred what he saw in sacrificial animals to human anatomy, without copying them too closely. Thus in the visceral representation we find the liver invariably "lobed" just as "scientific" anatomical illustrations by physicians, also based on animal dissections, represented it down to the 16th century. This was a very coarse error, which a single dissection of a human body would have at once corrected. Yet it was Vesalius who at length obliterated this mischievous superstition of a thousand years' standing, although his first anatomical atlas of six plates (*Tabulae sex*) shows that he himself perpetrated the selfsame blunder at the start.

The representations of the liver in the Etruscan votive offerings do not slavishly follow any special animal, as is the case with the livers used for divination in Mesopotamia and Etruria, but demonstrate, only in a general way, the lobed character of the liver of mammals (sheep, dog, ape).

Without going into further details, let me stress the fact that these visceral representations show how the Etruscans conceived the inner structure of the human body and its viscera. The simplicity of their notions need not excite our wonder, since the common people of today have a not much clearer view. But it is something new and almost unexpected that the ancient Italians held fast to these concepts for sacrificial purposes in the temples of the healing gods through the creation of a formal art of lesser kind.

Votive offerings of limbs and of visible parts of the body have always been very common. Images of the heart, to ward off cardiac disorders of physical and psychic kind, are still offered today by pious minds. Other internal organs, too, are often found among ex-voto images of recent times, even entire lungs, fashioned of wax and wood, around the Salzburg region, although plastic representations of the whole *situs viscerum* have not yet been encountered. The sick Etruscans undoubtedly offered such images when they believed they were

suffering from internal diseases, even as they offered the image of a head, arm, hand, leg, eye, etc., when one of these organs was diseased. But why offer the open human body with its contents to the healing god or goddess? Why not simply the torso of the trunk, when something was wrong inside? Were they afraid that the eye and the healing thought of the Olympians might be arrested at the surface of the body? The unopened trunk was probably only offered in changes of the form, in curvatures of the spine, in injuries and in such diseases of the chest and abdomen as were externally manifest. The Etruscans took things conscientiously. The patient felt that he was suffering from an internal disease, but since he could not tell where, he offered the whole content of the chest and abdomen to his god in an image. Sometimes the image was limited to one of the two body cavities. In one case, the representation of the intestines probably points to intestinal colic, dysentery or persistent constipation. It will require some strenuous mental effort to master this unusual line of thought, which involuntarily suggests augury or human sacrifice.

Images of pathological conditions do not seem to occur among the votive offerings of the Etruscans, although this has been claimed. They are indeed exceptional elsewhere. Wherever an industry of making ex-votos developed and the patient, coming from afar, bought one of these images with a small sum of money, an imitation of the diseased organs would be unthinkable. As thank-offerings of healed patients, who may have existed even in Etruria, a representation of the previous diseased condition may have been possible. But for this purpose, they took costly material, gold and silver, with the result that such offerings are not found today, since they were melted down on account of their value, the material being used elsewhere. We can, therefore, investigate only parts of the body in bronze or marble or most commonly in baked

clay. Their small value has protected them from the destruction which was the lot of wax images, if they were used at that time. But these figures of baked clay, some of which preserve the crude form in which the soft clay was pressed or kneaded, these evidences of a mechanical lesser art, coarsely as they were often painted, rarely showing any artistic value, except in the treatment of the head, these objects possess a cultural interest of the highest order. They deserve the consideration of the archæologist as well as of the historian of medicine. They should be more carefully and completely collected than heretofore, to be eventually arranged, in well ordered series, in the Museum of Historical Medicine somewhere and some day to be erected.

FEMALE GENERATIVE ORGANS AS VOTIVE OFFERINGS

Translated by
FIELDING H. GARRISON

FEMALE GENERATIVE ORGANS AS VOTIVE OFFERINGS

(1913)

WHOEVER visits, in his travels, the world-famous shrines on either side the Alps, will not fail to notice sundry testimonials of pious faith in the shape of parts of the body fashioned out of noble metals (usually silver), which are found suspended in these retreats. They bear witness to a fixed belief in the power of the Madonna or of certain saints to relieve bodily ills, as well as of the custom of leaving, in token of joy and gratitude, an image of the part of the body healed (usually the foot, hand or heart) as a permanent votive offering at the shrine.

Arms, legs, eyes and hearts make up well nigh the entire quota of such votive offerings today and even wax images are still to be found, liable to rapid melting, it is true, through their direct employment in the pious cult, but all the more plentiful in the wax-work displays in the Cattle Market at Munich and elsewhere. Much less frequently do the male potencies figure in this species of commerce, but hernias and votive toads for sick and sterile women, or female breasts, to insure lactation for the long hoped for heir, are still fairly plentiful.

In earlier times, people were more innocent. Votive images of the generative organs were frankly set up to ward off the evil magic practices of witches and cobolds, so that the young couple might have steady assurance of fruitfulness and a large family. Even in ancient Greece and Tuscany, the sexual life of men and women played an important rôle in the wealth of votive offerings suspended in the temple of healing gods.

The joys of wedded love were to proceed undisturbed by the sorcery of evil powers. Every function of the growing or fully developed body was to be preserved in its pristine splendor, and the fruits of wedlock were to be safeguarded against the curse of disease up to maturity. And when the fruit began to mature, Nature must continue to lavish her quiet blessings undisturbed; the pledge of love must be born freshly and joyously into life and imbibe from the breasts of the blooming mother enduring foundations for health in the silent months to come. And all organs serving the purpose of protecting and cherishing the growth of the child, including those around the portals of birth, must be preserved in vigorous health throughout pregnancy, labor and puerperium, those fateful, care-laden periods in the lives of our beloved and tolerant womankind.

The pictures herewith provided will visualize to the reader better than any further verbiage how, out of stone, noble metals or inexpensive terracotta, were fashioned the organs, to preserve the integrity of which was the whole aim of all who desired cheerful enjoyment, happiness and good fortune from the gifts of Venus, Priapus and Venus Eileithyia.

In the picture from the temple of Hygieia, which serves the first of our illustrations, we can discern only an arm and a leg between the wreaths on the temple walls, beside the image of the goddess; while the beseeching woman, with her cakes and garlands, hopefully pours out a libation from her wine-jug as she approaches. But the pelvis, from which the little world-citizen must be delivered, and the body which protects him are to be displayed, in like manner, as also the swelling breast, which is to nourish and strengthen him, and the womb itself, so expressive of the dangers incident to pregnancy, labor and puerperium,—all these must be imaged, if the goddess is to extend her special favor.

NB. Pictures illustrating this page are to be found in Monatschr. f. Geburtsh. u. Gynäk., Berlin, 1913, xxxviii, 185–199.

Even the placenta, that hateful hindrance to the ultimate relief of the groaning, anxious mother, was not forgotten in the plenitude of images set up in the temple as symbols of faith and forethought, when the hour of danger approached. At the extreme moment, this was conveyed to the shrine, or, if the goddess had loyally fulfilled her divine mission, it was fashioned in costly stone, with laudatory inscriptions, or of noble metals, to be offered, in hope and confidence, hopefully on bended knees: "Isias implores,"—"Onesima thanks."

HEALING MIRACLES OF SS. COSMAS-DAMIAN AND CYRUS-JOHN

Translated by

ALBERT ALLEMANN

HEALING MIRACLES OF SS. COSMAS–DAMIAN AND CYRUS–JOHN

(1905–1906)

ON examination of the entire tradition as to the wondrous cures of the two Anargyroi, we shall find that the miracles of these Christian martyrs, are, as in other episodes of like nature, unquestionably related to the most ancient Æsculapian temples, even at the places of their martyrdom at Agai in Cilicia and later at Cyrrhos, where their bones were preserved and the first miracles occurred. But much more important are the circumstances under which the thirty traditional miraculous cures were performed at Constantinople. Here, after the cure of the great emperor Justinian, who is said to have been given up by his physicians, their worship assumed unlimited proportions.

In the reports on the miracles, we can easily recognize the usages of the old healing temples of Æsculapius and the Dioscuri in Asia Minor and Greece. As we read of the temple sleep, of the appearance of the twin gods in a dream and of the healing ceremonies, one might almost fancy himself transported to the old Greek places of worship at Epidaurus and other healing temples. The information gleaned from ancient Greek and Roman miracles of this kind affords a new insight into the meaning of *thaumata* and *iamata* in the ancient Æsculapian temples, of which they form an exact counterpart, even in externalities.

Similar in every way were the miraculous cures at Menuthis, Just as the miracles of the sainted twin brothers Cosmas and Damianos afford many details of historical value concerning

the healing ceremonies in the Asclepieia, so a study of the miraculous cures of Saints Cyrus and John at Menuthis, in the little church of the Evangelists, hard by the ancient sea-side temple of Isis, then visible to distant mariners and widely known as a healing temple, furnishes us valuable information as to healing customs in the Isieia.

The ardent but uncritical reports of healing miracles at the altar containing the bones of the martyrs, also disclose the temple sleep as practiced everywhere else at the close of antiquity. This temple sleep sometimes resulted in a direct cure, so that the patient woke up healed; on other occasions, the patient received instructions in his dreams. Here, too, we see the incubants, the saints, pass through the rows of sleeping patients healing and giving advice.

Often the cure has already begun on the pilgrimage to the temple and is completed when the patient passes the sill of the temple gate, without any further intercession of the martyrs. Often the patients are converted from erroneous religious doctrine. In other cases, a cure takes place through touching the martyrs and by kneading, friction, palpation and breathing on the diseased part. Often inunctions with the oil of the holy lamps or cerous substances and salves are prescribed, or bathing of the diseased organ in the holy fountain or in the temple bath, where all appurtenances of the ancient baths seem to have been on hand. Other external applications, such as poultices of soft bread, of clay, lentils, cheese and olive kernels, even powdered glass applied with water and honey and other substances, were prescribed for a cure, also all kinds of internal remedies, e. g., water drinking, wine drinking, eating bread, figs, herbs, lemons. Animal substances are sometimes used internally and externally, e. g., excrement of camels, flesh of crocodiles and serpents, or salted quail meat, bacon and veal. The saints and their enthusiastic chronicler protest specially and energetically that these and

many other measures have nothing at all to do with the medicine of Hippocrates, Galen or (pseudo-) Democritus, who at that time enjoyed an especially great reputation. A physician who gave expression to this view was severely punished when later, in his trouble, he had to ask the saints for help. Sneering contempt of the shortcomings of the physicians is found throughout all the miraculous chronicles. In the reports of miracles from Menuthis, we find no mention of such operations as were performed in the Asclepieia and in the temple of Cosmas and Damianos at Byzantium, but all kinds of indirect measures, e. g., instructions for finding the small magic image with holes in all its limbs, which kept the patient exorcised, or floggings which led to bursting of a tumor of the head, thus freeing worms or larvæ of flies.

These chronicles of miraculous cures (6th–7th Century, A. D.) thus give us much insight into the healing customs in the Isieia and at the same time afford a valuable addition to our knowledge of the state of medicine in Hellenistic Egypt at the close of antiquity.

AIMS AND METHODS OF INVESTIGATION IN THE HISTORY OF MEDIÆVAL MEDICINE IN WESTERN EUROPE

Translated by

JOHN RUHRÄH

AIMS AND METHODS OF INVESTIGATION IN THE HISTORY OF MEDIÆVAL MEDICINE IN WESTERN EUROPE

(1912)

MEDICO-HISTORICAL problems of the Middle Ages excite only moderate interest and understanding among historians of civilization even now. Accurate studies of the original sources are, therefore, urgently needed. One must not, however, at the outset, close the avenues of knowledge at the start by mechanical labeling and hasty judgments as to values, for this method does not fill, but only serves to cover, extensive lacunæ. Investigation must be undertaken on the broadest and most thoroughgoing basis.

As regards special historical literature of genuine worth, it must be studied and edited, as also Latin translations of early mediæval literature which can nowise be traced to Southern Italy.

The scanty origins of a particular literary work should be most carefully noted. Early Salernitan writings are directly associated, as also translations of the same into the folk language of Northwestern Europe. The real literature of Salerno, both before and after Constantine, should be restudied completely, as also the modest beginnings at other seats of learning in Europe. Arabist and scholastic medical literature are related. Compendiums and concordances are less to be considered than writings of practical import, such as diagnosis, prophylaxis, treatment, and lastly, manuscript records of recipes, opinions, counsels, urine inspection, observations on the pulse, bloodletting, instructions for cupping and such related

subjects as health regimens, and especially physiological and pathological conditions in relation to age, sex, season, travel and epidemics. The Middle Ages were not sterile in these things and Arabist influences were by no means so exclusive as is believed. The marginalia in the scholastic mediæval literature of medicine often give us clear hints as to prevailing differences of opinion and of uncertain provenance of texts in manuscript and incunabula.

What must be reviewed and studied, apart from real medical literature and cultural aspects of medicine and hygiene, is an enormous, iridescent, many sided material. The rank of physicians and other health officials, the methods of apothecaries, hospital management (in Christian, Byzantine, Indian, Moslem, and special hospitals), and the relation of physicians thereto; nursing orders (including many fraternities and sororities that are now nearly forgotten), the hygiene of cloister life, food and care of the body, as also, infirmaries and schools, the psychological influence of state and municipal ordinances, popular medical laws and usages, later state care for the status of our profession and its aftergrowth, hygienic police regulations of all kinds, business and trade; baking, brewing, slaughtering methods, hotels, bath-houses and houses of prostitution, jails, information books, municipal account-books, exchange notes; guide-books, embassy orders and chronicles are fields of investigation and sources of material which require a continual outlook on the Orient, Byzantium and antiquity. The historians of hygiene must scrutinize, as with a magnifying glass, all that remains of the life of the people, such as eating, drinking, pleasuring, games, sexual intercourse, sickness, death and burial, beggars and tramps, school methods, military matters, land and sea voyages and caravan trade. Famine and epidemics finally lead us back to matters of genuine medical significance, particularly in the last century of the Middle Ages, dominated, as it was, by prophylactic measures of vast scope.

SALERNO
A MEDIÆVAL HEALTH RESORT AND MEDICAL SCHOOL ON THE TYRRHENIAN SEA

Translated by

JOHN C. HEMMETER *and*

FIELDING H. GARRISON

SALERNO
A MEDIÆVAL HEALTH RESORT AND MEDICAL SCHOOL ON THE TYRRHENIAN SEA

AFTER reaching Cava dei Tirreni the summit of the mountain range which limits the coast line of the Apennines (south of the Gulf of Naples), and on the north forms a terminal coulisse for magnificent Sorrento, on the south for even more enchanting Amalfi, we are treated, as we descend, to the gradual vista of another bay, the gulf of Paestum, which, towards the south, is lost in the distance, ending at the neat sea resort, Agropoli. For those who wish to study in detail the wonderful temple at Paestum, this camping ground is best visited in the morning hours, before the noonday swarm of visitors from Naples and Salerno has arrived to desecrate the peace of the sea and the solemnity of the temple.

About the beginning of the 11th century, Lombard piety had erected a cloister at Trinità della Cava, and as we come down from the airy heights of this Benedictine convent to the broad sea bight, our attention is drawn to a provincial group of houses, which seemingly plays hide-and-seek in the spaces between the arch of the bay and the jagged shoreside mountains. Snuggling into every hill-fold, they creep into the intervals between the heights and the shore, to find a shelter from the wind at the foot of the towering giant peaks. These mighty massive mountains, 1500–1800 meters high, running north and east, close to the ancient health resort, here skirt the wooded shores, which they have warded from earliest times, affording a security as well to the bosky valleys, through which roaring brooks course on their way. Some decades before the

Christian era, Horace, it seems, was fain to regard Salernum as a favorable resort; more than this cannot be gleaned from his epistle from Vala; but the intimation that the place once held a group of scholars, who had cultivated medical instruction in the days of classical antiquity, is a wholly unproven embellishment of overweening posterity. Salerno needs no embellishment or adornment. Its fame is well and truly laid, as we shall presently discover.

The oldest historical evidence that Salerno was a medical school and seed-plant of well instructed bedside physicians goes back to the beginning of the 10th century A. D., but, for many excellent reasons, its origins can be traced back to a much earlier period. This assumption does not spring from partiality by any means. On the contrary, the source of its transmission, reluctant and caviling as it seems to us, must, for that very reason, be regarded as more probably veracious. It is derived from France. In the Empire of the Merovingians and of the Emperor Charlemagne, a defective or merger clerical medicine had developed in early mediæval France on slender literary tradition, which was compassed and assimilated only to a very small degree. This pseudo-science manipulated a few Latin texts purporting to be derived from Hippocrates and Galen, and these were used as a didactic basis for instruction. The more deficient the knowledge, and the more devoid of experience the tradition so slavishly followed, the more vain and conceited became its protagonists. Swollen with the conceit of knowledge gained in the instruction of the Frankish-Germanic Heribrand of Chartres and others, a representative of this monkish medicine, who had no real experience, practiced as physician to the West Frankish King, Charles III, the Simpleton, whose reign began in 898. This was the priest and physician Derold, later Bishop of Amiens, who was medical confidant of the King and his body physician. Queen Frederune meanwhile, had as confidant another physician whose name is

withheld by Richer of Rheims, the transmitter of our story. He does, however, tell us that this queen's physician was a Salernitan. Thus we gather that, even in the 9th Century, a clinical school of instruction existed at Salerno, that its reputation had extended to the south of France, and that a queen had thence obtained medical counsel for the needs of her own person and her children in health and disease.

In matters pertaining to diseases of women and children, the medical practitioners of the Gulf of Paestum enjoyed, even at that time, a splendid reputation, far better, indeed, than that of the clerical physicians of the Franconian schools at Chartres and on the Loire. For these had been fed on formal book learning and further, by reason of their clerical status, were not supposed to have anything to do with obstetrical matters.

This difference in training between the clerical and Salernitan physicians is further emphasized in Richer's account. It was so great that the court used to amuse itself after dinner with prearranged wrangles of opposing representatives of the healing art, at which the glib pupil of the learned cloister school had the advantage over the doctor of Salerno, as far as repartee was concerned. Richer describes how a verbal contest between the exponents of the two schools reached its climax when the unwilling table companions vied with each other in poisoning experiments, which almost ended the Salernitan.

Thus, in poison lore and knowledge of antidotes, French clerical medicine of this period possessed a perilous advantage. Bearing this fact in mind, we can easily understand what the learned Richer implies in the three divisions of medicine, which he substitutes for the Alexandrinian categories, dietetics, pharmaceutics, and surgery, namely: "farmaceutica," "cirurgica," and "butanica." By "farmaceutica" he evidently means knowledge of poisons, and by "butanica" knowledge of healing herbs.

In knowledge of Gallic poisonous plants, the native physi-

cian outpaced his South Italian colleague. If Richer, however, inclines to represent the Salernitan as helpless and unfamiliar with medical terminology, this would not tally with the fact that the Greek language, used for centuries and constantly revived through commerce between Byzantium and the Levant, was also employed for everyday business. Three hundred years later indeed, the great Hohenstaufen emperor Friedrich II, published his famous laws for Southern Italy, both in Latin and Greek. The vanity of clerical book-learning demanded that the Salernitan physician at the West Franconian Court be pictured as devoid of all learning, for Richer insists most emphatically that "he lacked even the rudiments of learning," and making every allowance for the bias of the clerical chronicler, this may have been partly true. As a matter of fact, Richer adds to this account of the Salernitan another trait, which, coming from him, becomes a distinction of the highest order. The Salernitan is said, "to have possessed very great experiences from the soul of nature."

This then is the badge, with which Salernitan medicine is ushered into history: *"ex ingenio naturae,"* from the soul of nature, with which they had maintained contact and whence they derived their medical experience. The praise is a bit exaggerated. They did not delve so deeply into Nature's ways, these teachers of untold generations of Salernitan graduates. Even in the 9th Century, book-learning was not their pride so much as practical knowledge, open mindedness and personal experience at the sick-bed. This is the tremendous advantage which Salerno can claim for itself in contrast with the formal book-wisdom of the learned North Alpine clericals. Nevertheless, freedom from all prejudicial fetters could not have existed, certainly not entirely; since dependence on the ancient family and guild traditions of medical practice was the order of the day, and such practice had flourished for more



SALERNO: MEDIÆVAL HEALTH RESORT AND MEDICAL SCHOOL

than a thousand years throughout Greater Greece, and Sicily, indeed, ever since the days of the Eleates and of Empedocles of Acragas (Girgenti).

To be sure, the lofty flights of that great period had spent themselves long ago. It had been customary to regale oneself with pitiable bits of Greek tradition, translated into Latin in the southernmost section of Italy, or derived across the sea from Africa and Numidia, where, up to the times of the Vandals, an advanced intellectual civilization, even medical culture, existed. What had been preserved, however, in patches here and there in Italy, among Goths and Lombards, nowise averse to scientific pursuits, were surgical methods and features of bandaging, and at Salerno especially, the modest beginnings of a general art of healing. This art followed the example set by the Lombard lay schools of upper Italy and particularly of nearby Benevento, which had previously adopted the plan of the rhetorical schools and was fostered and patronized by many a highminded duke, such as, Authari and Arichis and their wives, Theolinde and Adelpurga. The art of medicine began to be transmitted to groups of students at Salerno about 800. If a duke resided at Salerno, he had no possible influence on this teaching. At any rate, Salerno became a lay school, like the great university at Benevento, which far outshone Ravenna and Lucca in the 9th Century. It is said that, about the middle of the 9th Century, Benevento employed as many as 32 instructors at one time.

We know that the school at Salerno never prospered to that extent. Moreover, it was a medical school of pronounced lay character, perhaps through Lombard influence. The lay features of the school, however, never merged into anti-clerical tendencies. While it is demonstrable that clerical physicians attended the Salernitan School in almost all periods, the clerical status was never a required qualification for teaching, as it was in nearly all subsequent mediæval schools. These, indeed,

usually obtained their charters through Papal decree. Pilgrims and sick people had flocked to Salerno in a much earlier period. About 500 A. D., a bishopric, subsequently an archbishopric, had been established there.

Thus everything had contributed, and, in a most auspicious manner, to the foundation of a superior center for the practice of healing. It was most advantageously situated as to climate, being a seaside place, completely protected against cold and dry north and west winds by mighty mountains, nearly 2000 meters high, while nestling, wooded hills afforded enjoyable relaxation by the shady banks of lively brooks. At this ancient objective of pilgrimage for the sick, there was an intelligent priesthood, willing to work harmoniously with the guild of physicians, which practiced its healing art according to inherited rules and was bent on the eventual transmission of this art to a constantly growing student body. No wonder, then, that Salerno, finally following the lead of the sacred island of Cos, appropriated or acquired the title of "Hippocratic City" (Civitas Hippocratica), as being an abode of learning and an asylum for the sick, emulating the example of the great Coan physician Hippocrates as a matter of duty and its pride. The ideal thus set was a very high one, for the medical greatness of Hippocrates has never been fully equaled, let alone surpassed. The ideal held up to Salerno was thus, to all intents and purposes, unattainable. But, in thinking of Salerno, one is reminded of the art of healing as cultivated at the Asclepian Temple at Cos, the medical school associated with this Temple of Health, and the sick who streamed to it. At Salerno too, there must have been sanatoriums and hygienic buildings, in some modest degree, like those around the Asclepian Temple on the far off Island of Dodekanes.

The designation of Hippocratic City implies not only a true healing community in the Hippocratic sense, but also a place where medicine was practised and taught in the very

best Greek tradition. Indicative of this aim, Richer has coined a splendid motto for this city of physicians on the Gulf of Paestum, namely: a permanent foundation of medical knowledge acquired by experience from the great teacher "NATURE." That would indeed have been exact and genuine Hippocratism in medical art; but even in this ideal, Salerno only prospered to the most modest extent. Indeed, Salerno, as a whole, can only be gauged by small measures. Medical scholarship, literary erudition, profuse learning and the recreation of medical literature—such things were not sought after at all in early Salerno. Thus much Richer and his clerical colleague, with confirming authority, had correctly grasped from the beginning; and things remained in about this status in the 10th and 11th centuries. At Salerno, there was the same eager interest in translations from Hippocrates and Galen, and in surrogates then designated by terms which can be understood only with difficulty at the present day, namely the Passionaria and Receptaria, in current use in those times, both in Italy and beyond the Alps. [Passionarius is the term assigned to a pseudo-Galenic work. The Breslau Codex speaks of a work on the treatment of disease which was assembled in 1150 and called Passionarius, but at that time it had already been known for 400 years. Receptaria: from Receptarius, the provision of medical prescriptions for large apothecaries.] They were conscious of no need for additional literary sources of instruction. The aims in this respect were so modest that the material at hand was deemed sufficient. Stress was laid rather, as formerly, on practical courses in internal medicine and probably also in surgery. We are by no means certain that the Lombard physician Warbod (Guaripot or Gariopont), who lived about the middle of the 11th century and to whom the so-called "Galenic Passionarius" (a work on the nature and cure of diseases) is ascribed, was actually connected with the School of Salerno. The only reliable information we receive

about him at best, namely that he was both a man of learning and a physician (*literis eruditus ac medicus*), but furnishes additional proof that, as late as 1050, a distinction was made at Salerno between learning and medical practice. Here, then, in contradistinction to the so-called learned or monkish medicine, knowledge acquired by reading and erudition were no longer regarded as the physician's main proof of qualification. And this is, indeed, the chief glory of Salerno in its early days, i. e., in the 9th, 10th and the first half of the 11th Centtury. We can speak with certainty of only one literary product of early Salerno, namely an "Antidotarium," for convenient use in the medical school and in practice, therefore preëminently a practical help.

Such Antidotaria had been compiled on the basis of tradition during the period of transition from late Alexandrian to monkish medicine (about 300–636 A. D.). Even during the late period of monkish medicine, such Antidotaria were still compiled, and are still contained in Oriental manuscripts dating from the time of the Merovingian and Carolingian rulers. At Salerno also, the masters of the School had come together to discuss the therapeutic formulæ in common use, had revised and recorded them according to preëstablished criteria based upon experience.

This collection of clinical prescriptions, a hand-book of therapy, was enlarged in the course of decades, as new or altered formulæ were found to be particularly effective and were so taken into this compend of treatment.

Except where this collection was directly or indirectly attributed to one of the great masters—to Hippocrates or Galen —it remained nameless for a long time, like all other medical literature of the time. It was simply the "Antidotarium" of the School in daily practical use, with every item an indispensable remedy for daily use.

Between the third and fourth quarters of the 11th Century,

a very discernible change in the literary activity of Salerno takes place. I do not desire to implicate the Compendium of clinical practice attributed to a Salernitan called Petrocellus or Petroncellus, who may be more closely related to the Salernitan School than Warbod. Most likely, he is of older provenance. Further historic investigations are necessary on this point. The influence which Constantine the African exerted on the literary creations of Salerno is, however, evident and manifest. This Constantine, tradition reports, was of Christian persuasion and born in Carthage. He is said to have made journeys into the Levant and far into the empire of Islam, where he completely assimilated Arabic medicine before he came to Italy (about 1070). When he appeared in Salerno, that city had been under the dominion of the Norman, Robert Guiscard, since 1075. Constantine died as a monk in Monte Cassino in 1087. The tradition of this place has stamped him as a "miracle man from the Orient," but the actual reasons for this designation are probably not of a convincing nature. His personal relations to the Salernitan school were very transient, but his medical publications were of considerable extent and importance, and became known under the name Constantinus, Monachus Cassinensis, since 1080. Those most certainly written by him found a willing and almost eager reception and application in practice. He became the exponent of an extensive new endogenous literature. A comprehensive general handbook of medicine was among his works and merits special mention. It was in two parts, theoretical and practical, each comprising ten books. Constantine published this hand-book as his own personal work, calling it "Pantegni" (meaning the "Total Art"). He took this title from the Greek which, in those days, was still in common usage in Southern Italy. From the start this work soon attained an almost unparalleled importance at Salerno. In addition to this "Pantegni," Constantine produced a short guide

or introduction to medical practice, which was a kind of medical vade mecum to be used in traveling. These works are merely free and partially abbreviated translations from the Arabic. Constantine may have had good reasons for not announcing them as such. Indeed the so-called vanity of authorship could have played no essential rôle here.

For six generations, the Saracens had been in Sicily and must have cultivated the medical science of Islam, which, in the meanwhile, had steadily increased in importance. As far as scientific material and method were concerned, this Islamic medicine had far excelled the monkish medicine of the West, even the Salernitan.

It would have been an extraordinary and curious exception to historic process, if no knowledge of this Arabic medicine had penetrated to Salerno and the adjacent Italian peninsula during this long period of peaceful neighborly existence and extensive commercial intercourse.

As Saracen settlements were not wanting in Southern Italy, one is forced to the conclusion that Arabic medicine was interdicted or even tabooed at Salerno and through the rest of Italy. For these reasons, Constantine kept the names of the real authors of his main works the *Pantegni* and the briefer *Viaticus* (advisory medical compends for travelers) a secret and published them under the protection of his own name, a sort of literary shield afforded by his brotherhood in the order of the Friars of Monte Cassino. The real authors of these works were Hali Abbad and Ibn al Dschazzar.

In this way, the best of Islamic medical doctrine came to Southern Italy and Salerno in the form of translations by Constantine.[1] The loftiest achievement of Arabic medicine, however, the Canon of Avicenna, which at that time already

[1] Sudhoff has since prepared a separate monograph on Constantinus Africanus, which will give his ultimate views of Constantine's relation to European medicine. (Ed.)

dominated the motherlands of Islam about the Euphrates and Tigris rivers, remained unknown to the West for fully another century. And this was a particular piece of good fortune. The contrast with what had been traditional and conventional in medicine would have been too great.

Hali Abbad, Ibn al Dschazzar and the other Arabic authors of the 10th century, whom Constantine had plundered, were closer related to Greek medicine, even in the half-degenerated form in which Salerno possessed it, than the all too clever and artful Avicenna. They were accordingly more readily comprehensible and palatable to the Salernitan physicians. It is a fact of actual providential significance that this earlier and more reasonable variety of Arabicized Greek medicine first became current in the West through the labors of Constantine, as a preliminary to the later importation of maturer Arabic literature *en masse*. The latter was translated about 1170–1180 at Toledo, under the direction of Gerard of Cremona, and soon dominated all Western medicine.

When Constantine was walking the halls of Islam, Avicenna had evidently not yet penetrated to Carthage and Sicily. As Constantine was ignorant of the final phases of Arabic medicine at the end of the 10th and the beginning of the 11th century, I do not believe in his legendary travels in the far East. He only knew the Arabic writers, authors of the first half of the 10th century, and probably gathered his literary knowledge, as well as his manuscript treasures, in Africa and Sicily. He made a regal gift to Western medicine by translating these manuscripts on Monte Cassino.[1]

The Hellenistic tendency which Constantine encountered during his visit to early Salerno, was reënforced and confirmed by his collection of Hellenistic writings, fished up and reorganized out of Arabic translations. These included genuine

[1] A Salernitan document of date, 1103, actually designates him as "Constantinus Siculus" Constantine of Sicily.

Hippocratic treasures, such as the Aphorisms, the Prognostics, the Management of Febrile Diseases, with such regal Galenic pearls as the Ars Parva, the urine and pulse lore, derived from Byzantium. All these treatises continued to be used until far into the middle of the Renaissance. Long afterward, no one realized that it was the forgotten Constantine who had bound these priceless literary gems into a garland, to be known as the Articella (Ars Parva) in the 15th Century, and to be printed in countless editions. Everything that Constantine had offered in a Latin form befitting the time (just prior to 1087) was eagerly received and studied at Salerno. To physicians about the Gulf of Paestum, it was actually a revelation of the best in medical literature and was ravenously assimilated.

They promptly began to prepare larger and smaller "teaching abstracts" or compends of the whole of internal medicine and its branches, as if the school had long been waiting for such an heuristic pattern. These were compiled out of the "Pantegni" and the total literary donation of Constantine, after the models and patterns set by him. All these emulations, rival productions, whether condensed or extracted, bore the impress of Constantine's intellect, without disregarding, however, his knowledge of ancient Greek and of Greek efficiency. On the contrary, ancient experience was fused with new doctrine and transformed into a practical summary, for daily teaching and routine practice.

Now more than ever, Salerno became the most distinguished center for oral and textual medical teaching in the West, and maintained this reputation for more than a century. It was Constantine who made Salerno articulate and eloquent.

Through the writings of Constantine, the young literature of Salerno soon extended into all lands. It became dominant all over Northwestern Europe, until it was buried beneath the exuberant overgrowth of a newer medical scholas-

ticism from Toledo. Then new seats of learning came to be created at Montpellier, Paris, Bologna, Padua and elsewhere, and before these, the luster of Salerno, the parent of a long line of brilliant 12th Century practitioners and medical authors, began to fade.

Of the fusion of ancient Salernitan with Constantinian knowledge, only one example need be mentioned—namely—the Salernitan "Antidotarium," digested according to Constantinian notions, but later known, with many new prescriptions, as the "Antidotarium" of Nicolaus. In like manner, every new edition of a medical treatise bore, from now on, an author's name.

That many reforms in medical teaching went on at the School from the end of the 11th Century is also highly probable, if not demonstrable in detail. We know particularly of reforms in anatomy. While formerly only one inadequate text-book of human anatomy was available, namely the Anatomical Primer of Galen, wrongly called the Anatomy of Copho, after a Salernitan professor of the first half of the 12th Century, there now arose a whole series of anatomical manuals, which not only treated of animal structure, as with Galen, but were expressly designed for teaching by and with the cadaver of animals. Thus the first great step forward was made through instruction in the technique of dissecting. Anatomy was no longer merely a mnemonic device, something to be memorized, but was designed to instruct young physicians by objective teaching over the cadaver. This was an advance of great importance, even though the next step, anatomical demonstration on the cadaver of a criminal, was to become routine practice at Bologna after 1300. Anatomical teaching over animal cadavers had already been carried on in Rome, particularly during the days of the Empire, even also in Alexandria, as we know from Galen, who flourished in the second half of the 2nd Century B. C. Galen's teaching was

based mainly upon simian anatomy, but he relates that the Alexandrian school possessed a human skeleton and taught by it. At Salerno, as in the University of Leipzig *circa* 1500, teaching was based mainly on porcine anatomy. The inner structure of the bristly hog was regarded as similar to that of man, which is certainly true of the porcine liver, while in the mobile, springing ape, the liver is very deeply lobed. This lobed appearance is to be found in all mediæval text-books of anatomy that are based upon didactic charts of the late Alexandrian period.

Later on, in the period of the great Hohenstaufen emperor, Frederick II (13th Century), there were said to be didactic demonstrations on the human cadaver at stated intervals, but a proof of this assertion, probable as it seems, has not been found to date.

But every observation which could be made upon the living body now came to be forwarded in the palmy days of Salerno from the time of Constantine on. Directions for testing the pulse and forming judgments from it, examination of the urine, fever lore, repeated observation of the sick person and frequently a goodly number of directions for special medical practice were all a feature of High Salerno in the 12th Century, and were held in great esteem for centuries to come. Effective cures were singled out and collected, practical therapy was, in fact, developed systematically and dietetics, as an important detail in a general treatment of disease, was never forgotten. Astrology, on the other hand, was practically ignored in the best days of Salernitan medicine, although it was extensively followed in the contemporary medicine of Islam as well as in nearby Sicily in the Norman period, as we know from a picture of a chronicle of the early 13th Century, representing the sick-bed of the Norman King, Wilhelm II, who, like his shrewd predecessors and his Hohenstaufen successors, fostered Moslem culture in his realm.

We see, by the bedside of the dying monarch (1189), the fanning servant, the Arabian physician Achim, who studies the urine after the Salernitan fashion, and, at the foot of the bed, an astrologer. Just about 1200, when the Englishman, Daniel of Morley, transmitted the Arabic starlore to Europe, this astrologic delusion fastened upon the medical profession until late in the 16th Century. It is one of Salerno's best titles to fame that, in its best period, it held itself aloof from this erroneous trend, while Bologna made medical astrology one of the three leading disciplines in the medical curriculum.

The accomplishment of Salerno in gynæcology is set forth in the text called "Trotula" (a common name of womankind at Salerno), which was rewritten and enlarged under Arabic influences in the medical compendium of Constantine. Obstetrics remained commonly in the hands of midwives, who were probably often recruited from the women of professors' families. But in the daily conduct of normal labor, medical aid was sought, as is evident from the directions for protecting the perineum and for suturing it when lacerated. Personal experience of midwives was not ignored by unprejudiced physicians, who got along very well with these women and referred to their practical knowledge in various hand-books of practice, another proof of the close leaning of the learned Salernitan physicians toward actual experience. It was also not exceptional for cultivated women to take a keen interest in the medical knowledge of the School, as is recorded of a learned matron of the middle of the 11th Century.

More respectable than the somewhat slender achievement of Salerno in gynæcology was its development of the scattered shreds of Italian experience and observation in surgery during the latter half of the 12th Century. In a collective surgical manuscript, which exists in duplicate at Bamberg, and of which a third copy has so far been found at Cambridge only, everything of consequence has been culled out of Haly Abbas and

loosely arranged, with fragments from the antique. I have called this MS. the "Bamberg Surgery." But the genuine experience of Salerno, and what it took over from other sources, was cast into the form of a surgical vade mecum, based upon his own surgical lectures, by Roger, the son of Frugardi, a Lombard noble of very considerable surgical talent, who gave public instruction in clinical surgery at Salerno for many years. In this brief compend, the actual experience of a natural born surgeon can be read between the lines on every page. The wealth of illustrations, with which a skilled South Italian miniature painter has decorated the book, will give the reader a good impression of the versatility of this Salernitan surgeon of Lombard strain. For an entire century this, the first mediæval text-book on surgery, dominated teaching and practice in this specialty. We know, for instance, that in 1230, an excellent practical operator, who had served as a military surgeon in the Albigensian wars, based his lecture-courses at Montpellier on the manual of Roger, adding his own personal experience thereto. Roger's book became the accepted canon of surgery in the Middle Ages, and was employed for many decades as a stable substructure, upon which other men's personal observations and experiences were to be overlaid. In this way, it was continually enlarged and extended in editions appearing at Florence, Bologna, Montpellier and elsewhere. These ever swelling "Roger-glosses" were specimens of a type of literature peculiar to the middle of the 13th Century, a type which had been cultivated at Salerno for many a year. Even the newer Arabian surgery, as it was translated from Avicenna and Albucasis at Toledo, was often incorporated into the original Salernitan Roger-glosses, especial in vogue. Roger and Roger-glosses were translated into the vernacular, into French and German, and thus served to instruct the unlettered operators in the principles of Salernitan surgery.

Materia medica, prescription writing, pharmacy of antique,

and Oriental provenance, as well as Arabian apothecaries' lore, found their way into the West through Salerno. The Book of Simples of Platearius and the Antidotarium of Nicholas were the leading Salernitan texts in this field. The literary and practical phases of mediæval balneology were also based upon the work of a Salernitan, Giovanni, son of Gregori, who first described the healing springs around the Bay of Naples from antiquity on. Finally before 1350, Salerno enjoyed the particular distinction acquired, by the fact that Frederick II conferred upon this medical school the right to examine and license all young physicians and surgeons who wished to practice in Southern Italy. Anatomic instruction by dissection is particularly stressed in this ordinance.

The flowering time of Salerno covered the period of the Crusades (1096–1270) but had little relation to the episode beyond the fact that many a returning warrior found a convenient haven of rest, for healing of wounds or illness, in this well known and highly esteemed medical center, on his way home. The legend of the healing of an English prince at Salerno and of the subsequent composition of a rhymed Regimen of Health by the Salernitan School corporation has, indeed, no foundation. In fact, the verse

"Anglorum regi scripti tota schola Salerni"

is mere mystification. The Regimen owes its origin in collective form to the great Catalan thinker, Arnold of Villanova, one of the greatest physicians of the Middle Ages, who, from his special predilection for Southern Italy, took occasion to gather a number of scattered verses of hygienic and medical import, which had been current in Italy, and particularly in France, for two centuries, adding thereto, in modest measure, some of his own devising. He issued the whole, with a prose commentary, under the rubric "Salernitan." We must therefore get out of the habit of

attributing verses like "After eating one should stand, or walk a thousand paces," or the un-Salernitan variant "After eating one should rest, or take a little nap," with deadly certainty to Salerno. The fame of Salerno is secure enough. For example, in the impressive reference to it in the "Armer Heinrich" of Hartmann von Aue (*circa* 1200), when the sick knight can find no relief at the famous medical school at Montpellier, he proceeds, at the instance of the highest medical authority, to Salerno, where he finds, among many wise physicians, "the best masters." Only a few decades before, Salerno was celebrated in verse by the greatest Latin poet of the 12th Century, the unknown Rhineland "archpoet" and laureate of the emperor Friedrich Barbarossa, the friend of the great chancellor Reinald von Dassel and the author of the "General Confession," the verses of which are still preserved for us in our student songs. When he visited Salerno in 1165, this poet sang its praises in these memorable verses:

"Laudibus aeternum nullus negat esse Salernum.
Illuc pro morbis totus circumdatur orbis,
Nec debet sperni, fateor, doctrina Salerni."

"Everlasting praise is the meed of distant Salerno,
Thither from every land come the sick in throngs unnumbered,
Never to be contemned is the skill of its lofty teaching."

Such was the name and fame of Salerno in its best period, and if it actually sustained a severe injury through its conquest by the Hohenstaufen emperor, Henry VI, in 1194, just when it had attained a venerable eminence through the proficiency of a Maurus or an Urso in natural philosophy, it attained to even greater prominence when Henry's son, Frederick II, made it the official medical teaching and examining center for his whole South-Italian kingdom, as we have seen. With the

end of the Hohenstaufen régime, the fame and influence of Salerno began to wane, even though occasionally, from time to time, some well known physician got his training there. During the Middle Ages, the predilection for the medicine of classical antiquity seems never to have died out entirely at Salerno, any more than in Southern Italy where, even in the 12th Century, direct translations from Greek manuscripts were instituted by the Sicilian court. While the rest of Italy and all France were in the bonds of Arabism, Salerno never submitted to the intellectual domination of Arabic science. Even a life-span before Petrarch, Niccolo da Reggio, at the instance of the house of Anjou, heralded a new order of things, by reviving the circulation of Greek medicine, from Salerno, and particularly Galen, in literal translations from manuscripts at Naples copied verbatim from Constantinople. Having gained an acquaintance with early Arabist doctrine through Constantine, Salerno again, as in the first instance, threw off the shackles of scholasticism, at a time when their weight was everywhere else intolerable and fatal to progress.—*"Laudibus æternum!"*

HYGIENIC DIRECTIONS FOR TRAVELERS DURING THE MIDDLE AGES

Translated by

JOHN RUHRÄH

HYGIENIC DIRECTIONS FOR TRAVELERS DURING THE MIDDLE AGES

(1910)

A NOT uninteresting species of mediæval medical literature, little noted to date, is found in the *"Regimina pro iter agentibus"* which are adumbrated in various parts of the Canon of Avicenna and other Arabian writings as well as in contemporary European medical compends [1] such as Bernard de Gordon and Gilbertus Anglicus. Twelve years ago, Leopold Senfelder published such a regimen, already noted in the literature, viz., the *"Traktat über die Seekrankheit."* This is the *"Consilium cuidam domino ituro per mare"* by Galeazzo of Saint Sophia, which contains no mention of sea-sickness, indeed, but copious directions for everything else pertaining to sea voyages. The other related writings on sea travel are only a special sub-variety, elicited and popularized by the pilgrimages to the Holy Land. Hygienic regulations for travel are not entirely wanting; for peaceful traveling—such as that for a Saxon nobleman journeying to see Matthias Corvinus, published by me in the Jubilee Festschrift of the University,[2] and for military campaigning, with sections on camp hygiene and on bodily preparation for battle. A *"Consilium pro iter agentibus,"* a *"Regimen pro iter agentibus in mare,"* the above-mentioned abstract by Senfelder and a *"Reigerung (Regierung) uff dem wege gen Jherusalem zu; Regimen ad terram sanctam"* may be cited as examples, all from out the

[1] Even Paul of Egina (625–690) gives a chapter of directions for sea-voyages, including sea-sickness. (Ed.)

[2] Studien zur Geschichte der Medizin Leipzig, VIII.

end of the 15th century. Worthy of particular note is the comprehensive character of the prescriptions for sea-sickness (at once an evidence of their inefficiency), reaching the apogee in an infallible remedy, that of placing a cupping glass over the stomach. Interesting are the instructions to bring suspected drinking and cooking water to boiling before usage, of the possibility of protection from vermin by frequent washing of the body and clothing, or the injunction that beds in the inns should always be freshly covered, and, if not, the traveler should take the precaution to sleep in clean underclothing to prevent infection, especially syphilis, inasmuch as nightshirts had not come into general use at that time.[1] But there is also an important manuscript, much older, entitled *"Capitula Friderici Rogeri Romanorum Imperatoris de regimine et via itineris et fine perigrinatum,"* a large work in three volumes, written by a hitherto unknown medical author and clerical physician, Adam of Cremona, for Emperor Frederick II (1194–1250) also belonging to the first half of the 13th century. It handles the material in a sagacious way, beginning with the *"Regimen peregrinantis ante principium itineris"* treating amply of the *"dieta volentibus pugnare,"* of all vegetable and animal food-stuffs and of drinks from the traveler's viewpoint, and of all the evil experiences of travel, from scorpions and poisonous snakes to lice and fleas, from general exhaustion to the course of wounds and blisters forming on the feet.

[1] *"Metus morbi Gallici, cui adhibenda est cautela, ut lecti recentibus ac limpidis lintheamentis vestiantur et si fieri semper non possit, ubi est suspicio in linea camisia mundi dormitio fiat."*

A TURNING POINT IN HOSPITAL ADMINISTRATION IN MEDIÆVAL EUROPE

Translated by
JOHN RUHRÄH

A TURNING POINT IN HOSPITAL ADMINISTRATION IN MEDIÆVAL EUROPE

THE general diffusion of syphilis about 1495 has been made responsible for many curious effects upon civilization and some of these are mutually contradictory. For example Block asserts that the bath-houses were destroyed in a few years, Pagel that public bathing took a strong upward trend. Both statements are contrary to historical fact. Nevertheless in mediæval Germany, whither we must turn if we are to solve these questions by documentary proof, one is everywhere convinced, from a survey of the great masses of evidence, that syphilis was widespread and that the use of mercurial inunctions in treatment exerted a profound effect upon hospital conditions in Europe.

No one ever thought of attempting to cure a patient in a leprosarium, which was regarded simply as a place of refuge and an isolation hospital to prevent the spread of the disease. In spite of the thorough nursing and care of plague patients in hospitals, in which isolation was the chief aim as in Germany and France at the end of the 15th Century, it is in the Holy Ghost Hospital that we first encounter purposeful treatment of disease in general hospitals, which had hitherto been almost exclusively refuge, victualing and nursing houses without medical treatment and with no express intention of healing. This first came to be otherwise through the example of syphilis, which about this time began to be treated with mercurial inunctions and fumigations: in other words, a direct effort at healing with known remedies was begun in hospitals and was soon demonstrating its efficiency in attaining this

end. Under the influence of the East (Constantinople and the world of Islam), medical attendance in illness began to be rendered during the 13th Century by the Order of Hospitallers to its members. In Germany and France, the results were not striking, but here and there in Italy, possibly also in Spain and north of the Alps, regular medical service began to be rendered in hospitals during the first half of the 16th Century, and the strongest impetus to this innovation came, if we are not mistaken, from the syphilis cures. The whole subject, however, needs thorough investigation from the time of the Crusades; our ideas must be revised and our data ascertained by going back to the original sources.

THE ORIGIN OF SYPHILIS

Translated by

ALBERT ALLEMANN

THE ORIGIN OF SYPHILIS

IF the proof *e consensu gentium* were admissible in questions of science, the American origin of syphilis would be settled. The view, several times in the course of centuries generally accepted, and just as often rejected, that syphilis, which began to be spoken of throughout Europe in the years 1495 and 1496 (or about two or three years after the discovery of America), was imported from the Bahamas or Greater Antilles on the first voyage of Columbus, has been received during the last twenty years and is quite generally believed. But in the history of epidemics as elsewhere, not everything that is twittered by the sparrows on the roofs corresponds with the facts. The adherents of the theory of the American origin of syphilis have been unable to produce new facts. Skillful combinations and corroborative material from allied fields of science, not used before, helped to fill this painful defect. But the mode of its first appearance, in particular, seemed to add support to modern epidemiologic viewpoints, which applied directly to the history of syphilis at the end of the fifteenth century, led to the assumption of the infection by a new disease of a population which had never before come in contact with it.

No serious objection can be made against this procedure in itself. Consciously or unconsciously, all modern historians carry the modern scientific trend of thought into their conception and evaluation of the past, often to better comprehension of remote periods, particularly so in the history of general diseases. But in this we must not twist the facts themselves to suit current beliefs.

The direct claim that syphilis was brought to Europe by the few sailors of Columbus, who returned from Haiti in March, 1493, is first encountered in tangible form in 1539, or if the question is approached with much good will, in the year 1525, still a whole generation after the event! What is more, the witnesses must either be directly rejected as biased, or their testimony was, in an entirely uncontrollable manner, put at the mercy of authorities who had a strong commercial interest in the claim of the importation of syphilis from America. It is really a painful task for a historian of neatness and accuracy to be forced to entertain such "proofs."

That the disease is again and again called "new" by laymen as well as by physicians proves, of course, just as little that it was brought from America as the rejection of this hypothesis, on the other hand, leads necessarily to the conclusion that the ancient world was infected with syphilis. Indeed, the negative proof, recently undertaken, that the admirable physicians of antiquity would surely have recognized syphilis clinically as a disease *sui generis,* if, even in those early days, it had attacked humanity by the horizontal route, lacks all probability. In the field of infectious diseases, ancient medicine suffered from marked weakness of vision. Not even the much simpler connection between gonorrhœa and epididymitis was recognized. But it must be conceded *a priori,* that just as leprosy spared the northern coasts of the Mediterranean down to post-Christian times, so also syphilis did not perhaps make its entrance into those regions until later. The literary proof that syphilis existed in Greece and Rome must, for the present at least, be considered a failure, thanks to the researches of von Notthafft-Drerup and Bloch. It is better to lay it aside until more certainty is attained by the pathologic examination of osseous remains, which belong without any doubt to prehistoric ancient or early mediæval times.

It is believed that the study of bones has furnished a full

demonstration of the existence of pre-Columbian syphilis in America, but the careful examination of the whole material on hand made by Dr. Hrdlička, at the instance of the Smithsonian Institution, has completely dissipated this illusion. Not a single bone of undoubtedly pre-Columbian origin with sure signs of syphilis has been found in the New World. On the contrary, the frightful frequency of syphilis in Indian graves of the seventeenth and eighteenth centuries seems to force the conclusion that the disease was brought on this untainted race by the Europeans. Moreover, evidences of ancient relations between the civilization of the Euphrates country and Central America are continually increasing; also the European remains of bones from prehistoric and early historic times are beginning to bear witness that pre-Columbian syphilis was rather a feature of the Old World. Yet it seems to me that osseous remains are still wanting which admit of the indubitable diagnosis of "bone syphilis," although experienced men like Lannelongue and Gangolphe make this assertion. More positive are the findings on recent cadavers, which are without hesitation recognized as syphilis.

Direct proofs of the importation of syphilis from America in March and April, 1493, are therefore nonexistent; nor are there any proofs of its existence in America before October 12, 1492, when the ships of Columbus reached the Bahama Islands for the first time, nor prior to October 28, when he landed in Cuba.

But how about the indirect proofs? The adherents of the American theory of syphilis always pretend to see nothing extraordinary in the fact that the new disease, with which the men of Columbus are alleged to have been infected, had time to spread from January 16, 1493 (the day of departure from Haiti), to March 4 (the day of arrival of Columbus' vessel in Lisbon), to March 15 in Palos, to March 31 in Seville, and to the end of April in Barcelona. They

do not consider it extraordinary that this alleged importation was not mentioned by the physicians in Palos, Seville and Barcelona, nor in Bayona, on the northern coast of Galicia, where Pinzon was compelled to land. To me this seems an act of violence, the more so as these investigators mention, at the same time, grave forms of syphilis which spread as an initial epidemic of a disease newly imported from the tropics *via* the Spanish seaports throughout the country, and carried to Arragonese (Southern) Italy, especially to Sicily and Naples. There the disease is said to have been transmitted by Neapolitan courtesans to the army of Charles VIII, with his picked French troops held in severe discipline, and his Swiss and German mercenaries. Through them it was conveyed on the retreat to Central and Northern Italy, and after the discharge of the mercenaries, to France, Switzerland and Germany, although this would not exclude a direct importation from the southeastern coast of Spain to France and the Italian Riviera. Such is the latest theory, yet the physicians of the time had noticed nothing of all this before the disease, in terrible epidemic form, attacked the victorious army in Naples! Nay, if we examine the facts closely, not even then!

But the importation and spread to the Spanish and Italian seaports, which took place, unnoticed, as it is claimed, has little probability in itself and is the less in agreement with the ordinary course of events, the more violent the initial epidemic; for it must be mentioned that the people of Spain and Italy were acquainted for more than a century with the importation of epidemic diseases by the sea route, and they had learned to combat them with embargos and quarantines. They already regarded such diseases from the point of view of anticontagionistic police regulations. In spite of all this, everywhere this complete oversight!

In Spain itself, no voice is heard until June 18, 1495.

This voice comes from Barcelona, but it says just the opposite of what the American theory requires. On June 18, 1495, when Charles VIII had already been for some weeks on his retreat from Naples, Niccolo Scillacio, professor of philosophy at Pavia, who had just been promoted to the degree of Doctor of Medicine, finds a number of cases of syphilis in Barcelona, and the physicians of the Spanish seaport tell him that the disease was brought in from Southern France a short time before. Furthermore, it can be proved, from the travel notes of a German physician, that syphilis was not known in Barcelona in September, 1494; that throughout all Spain, nobody mentions syphilis during the fall and winter of 1494, and at the beginning of the year 1495. Any extraordinary symptoms of a spreading epidemic were therefore not noticed in Spain until about the beginning of the year 1495!

And what about the much heralded epidemic in Naples from March to May, 1495? It is empty "historical" babble!

Careful researches in the Neapolitan archives and in all the old chronicles leave no doubt as to this. Syphilis was not known there as a new disease before the beginning of the year 1496, and a general knowledge of syphilis was not established in the other parts of Central and Northern Italy before the spring of 1496; and this knowledge was partially, perhaps exclusively, spread by the little book of Scillacio, which left the press March 9, 1496, under the title: "Novus morbus, qui nuper a Gallia defluxit." For the frightful decimation of the garrison at Naples, under the Duke of Montpensier and the Constable d'Aubigny, during the winter, spring and summer of 1495–1496, typhoid fever, and not syphilis, was demonstrably responsible.

At the time when Niccolo Scillacio first hears of syphilis in Barcelona, describes it and sends the information to his teacher at Pavia, syphilis is already known in the middle Rhine

region of Germany. Johannes Tritchemius claims to have met with it there as early as 1493 (at Sponheim, archbishopric of Mainz). Hieronymus Brunschwig, surgeon in Strassburg, found it there in the same year. The Cistercian prior John Nibling noticed it even as early as the beginning of the nineties of the fifteenth century in the region about Heidelberg. At all events, syphilis was discussed at the diet of Worms, which opened March 26, 1495, and is put down as a new sign of the divine wrath, which threatened sinful humanity, in an imperial edict drawn up August 7th, printed copies of which were sent to all parts of the empire, making known to everybody, and especially to the municipal authorities, the terrible new disease or pest called the "böse Blattern (rendered by "malum Francicum" in the Latin translation published shortly afterward, thus justifying the expressions "grosse vérole" and "mal franzoso," which were already current among the people of France and Italy in those days). On August 16th the Emperor Maximilian takes another step. In a special letter, he warns his good city of Augsburg against the loitering of pigs in the city, as they are apt to spread the new pest.

A few months later, under the influence of the Blasphemy Edict of August 7th, 1495, with its Draconian punishments, an energetic preventive movement begins throughout the west and south of the empire, spreading toward the north, against the carriers of this "new disease" (already recognized everywhere by the mere words "böse Blattern," and known to every one). Applying the old defensive measures against leprosy, all syphilitics are banished from the cities everywhere, in so far as they are not permanent residents; home people are isolated as far as possible. From Besançon to Nuremberg, from Strassburg and Mainz to Vienna, in a few weeks or months, even before the winter of 1496–1497, the country roads are full of syphilitics, a large number of

whom are courtesans and servants of bath-houses and brothels, which alone might almost suffice to create the idea of an epidemic of syphilis, and which must have contributed in the highest degree to the spread of the disease, although the people were now acquainted with it. In Germany and Northern Italy, both closely connected, culturally and politically, a syphilis literature appears in the spring and summer of 1496 which, without the casual connection just mentioned, would be one of the most extraordinary phenomena in the medical world-literature of all times.

To clear up once and forever the initial syphilis epidemic of 1495–1500 in Germany and Northern Italy, I have examined, in many cities of middle and Southern Germany, all the documentary material directly bearing on this question; but wherever I thrust my spade, the same results were obtained: there is no trace of a violent epidemic of syphilis. In some places where city documents of the times are existent at all, a sudden interest is manifested; in other places syphilitics in less or greater numbers are found; the defensive measures described above are taken for the protection of the inhabitants after the old recipe,

> "O heiliger Sankt Florian
> Verschon' unser Haus, zünd andre dafür an!" [1]

and thereby the spread of the disease is efficiently assured. In many places, spasmodic efforts against syphilis are made with much pomposity, but they collapse after two or three years, frequently after one year, as the disease, depicted by high church authority and the highest civil authority with all the terrors of divine wrath, is indeed recognized as extremely troublesome; but is found to be of relatively slight danger and not entirely new; moreover, people learn of a treatment

[1] "Oh! holy Saint Florian
Spare our house; burn rather other peoples' down!"

which cures the disease in a few weeks. Finally, the preventive measures in the German cities were limited to the isolation of resident syphilitics and syphilitic servants of citizens, in small special hospitals (*Franzosenhäuser, Blatternhäuser*), where they were treated at the expense of the city. In spite of numerous cases, erroneously diagnosed as syphilis under the influence of widespread syphilophobia nurtured by the authorities, we find only moderate and even small numbers of patients everywhere; and as to the money spent, the expense accounts of the cities mention not nearly as large sums as would be expected even during a slight plague epidemic; in short, about the same figures as we have today.

If we pass over to France and England, we find absolute silence in the records. This is also true of the chronicles in so far as they do not come directly under the German Imperium (Franche Comté, Flanders). True, the disease is found everywhere, but it makes no impression, either on the common people or the learned classes. In France, Scotland, etc., the authorities merely pass measures of expulsion and isolation. The fact that there are countries in which the disease attracts little notice disproves the vaunted argument of its epidemic character. The severe initial epidemic, claimed by some writers, would also have been described by the chroniclers of those countries with full details and impressiveness. Could the destructive disease have been limited to Germany? To concede this would mean to bury the "syphilis epidemic" at the close of the fifteenth century in a coffin of sheer impossibilities!

What, then, are the real facts? How was the knowledge of syphilis gradually developed?

In the center of the alchemistic studies of the Occident, which began in the eleventh century and produced at the end of the thirteenth the ripest fruit of this work before the six-

teenth century, viz., the works of pseudo-Geber, stood from the beginning mercury, antimony and arsenic. In these alchemistic circles, whose close relations with the surgeons of Italy (and later also of France and Germany) I have elsewhere pointed out, the therapeutic and metallurgic needs received always about the same attention. It was just as much their aim to remove disease products from the human body as to make gold and transmute the metals. Of what use was gold if the capacity of the body for pleasure could not be preserved?

From the twelfth century dates the use of reguline mercury (the acridity of which was softened by the admixture of such organic matter as saliva, fat, etc.) for inunctions. To this not only local but also constitutional effects were soon ascribed, as it was noticed that as the intestinal secretions were increased by the internal use of mercury, so salivation in percutaneous application had desirable humoral therapeutic effects. In the course of several generations, the practitioners learned to set apart from the great number of skin diseases treated with mercury a group which was favorably influenced by inunction, nay, was even completely cured. It was also found that this effect was far milder, and more equable and yet safer, if the open lesions of the exanthemata were avoided, and the "healthy" palm of the hand, the sole of the foot, the back of the kneejoint, the sternal region, or the sides of the chest were selected as sites of application. Thus far, this knowledge had developed in the time we first recognized it (at the end of the twelfth or at the beginning of the thirteenth century), in the works of the Italian surgeons. Even the indispensable local treatment of the mucous membrane of the mouth was already generally known at that time, in spite of the fact that salivation was considered, from theoretical viewpoints, as the curative principle, as the mode of ex-

cretion of morbid humors. This knowledge penetrates also the circles of the medical practitioners and, about the middle of the fourteenth century, we meet for the first time with a comprehensive name for these chronic skin diseases, which, of all the numerous forms of scabies, i. e., chronic eczemata and kindred cutaneous affections, can be brought to a cure, namely, "scabies grossa."

The whole process becomes intelligible to us if we remember that the time was not so distant, when, in cases of late syphilis, a probational inunction treatment would be used, and where the favorable effect of an inunction cure would be regarded as the best test for syphilis. It will therefore be difficult to reject the conclusion that the cultural *milieu,* in which the universal mercuric inunction treatment of a constitutional disease with cutaneous complications was developed and reached its full perfection, cannot have been free from spirochetal infection. It was but natural that the same remedy should have been given a trial in the well known leprosy, and equally natural that such trial should fail. The result could only lead to clearer differentiations of the chronic disease, curable by mercury, from leprosy.

But let us proceed. This process of separation seems to have begun in Italy, where at the end of the twelfth and the beginning of the thirteenth century, the physicians had occasion to get in closer touch with leprosy. At all events this knowledge was transmitted with Italian surgery in the thirteenth and fourteenth centuries to France, it was not cultivated there, at least in the same manner, before that time, for which the alchemistic medical knowledge of Spain and Southern France, as set forth in the works of Arnoldus of Villanova, seems to furnish a proof. Be that as it may, in the fourteenth century this knowledge proceeds in Northern Italy and Southern France from east to west. But instead of the term "scabies grossa," in Southern France the name "variola grossa" was introduced, which under

the form of "grosse vérole" had been adopted by large classes of people and had established itself firmly. But in Southern France the last step, too, was made, and the final knowledge gained, since, during the fourteenth century, perhaps even earlier, it was discovered that syphilis is transmitted through sexual intercourse. This had been considered true of leprosy, but was now gradually limited to "scabies grossa" (or "variola grossa"). This knowledge developed in the spheres of courtesans, *souteneurs,* debauchees and their faithful, confidential, sagacious counselors, the masters of surgery (and barbers), and it remained essentially limited to these strata, which were united by common interests. We get a view of these conditions from the minutes of court proceedings at Dijon, of the year 1463, in which a courtesan confesses that she had kept off an unwelcome suitor by telling him that she was sick with the "gros mal." This, then, was the common terminology in these strata of courtesans, prostitutes' bullies, debauchees and barber surgeons, who have to this day their own sexual argot. This was about the middle of the fifteenth century and probably earlier, as the genial Charles, surnamed Daremberg, shrewdly perceived many years ago. From "gros mal" (of the language of the courtesans in Southern France) is also derived "mal franzoso" (a common term among the same social strata of Northern Italy,) and for the cure of which a Bolognese surgeon collected the prescriptions—fumitory syrup and whatever else was later used against syphilis—in his secret formulary. But this new knowledge was for some time essentially limited to this society of courtesans and their counselors, the barber surgeons. Only little of it penetrated into wider circles, only enough to give people a faint idea of it, to be remembered when, in 1495–1496, the report of the new disease spread from Gaul throughout the world. Experienced men, like the popular poet of Verona, Giorgio Sommariva, and the Veronese physician, Natale Montesauro, declared: "Well, that's the disease

which the people call 'mal franzoso.' " The term had therefore been current in Northern Italy for at least half a century.

"Scabies grossa," "variola grossa," "grosse vérole," "gros mal" and "mal franzoso." These were the changes rung on the term, from which everything else may easily be deduced. It is clear that there was at first nothing opprobrious in the term "mal franzoso," but it is equally clear that after the invasion of Charles VIII, the wrath of the Italian people gave a sarcastic *pointe* to the words. The medical historian of today will gladly confess that the "mal français," the "morbus gallicus," the "Franzosenkrankheit" can justly claim the right of citizenship in the history of medicine; for these words constitute a title of honor for the surgeons of Southern France, who, in the fourteenth and fifteenth centuries, through careful observation, unmasked an insidious disease, feeding on the vitals of humanity, and thus first opened the way for its prevention and eradication.

But perhaps they took another step forward, alone or in common with the Italian surgeons, who were also learned in alchemy. And this leads me to the last objection made by the adherents of the American theory against the pre-Columbian existence of syphilis in Europe, viz., the "helplessness of the physicians," an objection which was only possible through complete misconception of all historical data, since the facts are directly opposed to this view.

Differing from all other "new" diseases to which medical practitioners apply remedies and curative methods from analogies as trial treatments, differing, I say, in this respect, syphilis appeared simultaneously with its method of cure and, indeed, with the particular method which (if we pass over the often tried and always abandoned arsenical treatment) is today still considered the safest, and is still in vogue, with slight modifications, after four centuries. Furthermore, this syphilis ther-

apy, appearing simultaneously with syphilis in tangible form everywhere, in Nuremberg, Augsburg, Munich, Milan, Verona, Perugia, stands out as an unique fact, without equal in the history of therapeutics, completely unknown in ancient times and therefore curtly rejected by the haughty "Rinascimento", a completely new procedure which was demonstrably developed only during the previous four centuries, with all its peculiarities, with all its details, as a finished method, which could not possibly have arisen in two or three years, because it could not bring any real curative results in any other disease.

From the West this knowledge is carried to Northern Italy, both the knowledge of the disease and the knowledge of its treatment, as Sommariva's *"empirici ab occidente"* unequivocally states; this means from Southern France, which, indeed does not entirely exclude the supposition that such knowledge was once brought there from Italy by Lanfranc and his companions about the end of the thirteenth century. And thus the merits of the discovery of the new disease and its specific treatment must perhaps be divided between France and Italy. It is even possible that the old Marano theory is again revived in a new form, that the Arabian and Hebrew physicians banished from Spain in 1492, did bring in their satchels not indeed syphilis, but the mercuric inunction treatment and applied it to the disease which they had known not only in Spain, but also in France, Italy and Germany. I will not go into further details concerning the facts for and against such a conception, as this is of no great importance in the broad general view which I have tried to give you in the briefest manner possible; yet all these things are interesting and reveal to us a number of new problems.

I will close in the belief that I have shown you not indeed "the origin of syphilis," from the knowledge of which we are today as far removed as from that of all other infectious dis-

eases, but to have pointed out in a short sketch the origin of observations and events which have led by intricate paths to one of the most important and far-reaching conquests in the field of general medicine, viz., to the discovery of syphilis and its treatment.

THE LITERARY REMAINS OF PARACELSUS

Translated by
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THE LITERARY REMAINS OF PARACELSUS

(Delivered before The Historical Convention in Rome, 1903)

WHEN the honor of speaking before this distinguished assembly was conferred upon me, the subject I selected was naturally Paracelsus, with whom my name is intimately bound up.

Besides my personal relation to Theophrastus Paracelsus Hohenheim, this great physician of the Renaissance period of science deserves to be remembered in the Eternal City where he sojourned four hundred years ago. On this solemn occasion, medical Germany in all its centuries of scientific achievement could present no greater man than Paracelsus, in universality of thought and practical achievements or in the originality and geniality of his world-encompassing genius.

No German savant has ever been more Teutonic in spirit than this Swabian nobleman born of a Swiss mother, who, returning from his wanderings over every country of Europe, was still unspoiled and unaffected by foreign ways.

I beg you to receive in a spirit of hospitality the few words of a compatriot on his literary work, his precious scientific legacy to the world.

Paracelsus was born at Einsiedeln, Switzerland, at the end of the year 1493. His father was a practicing physician. In 1502 the family moved to Villach in Carinthia, where his father was his first teacher. He later studied at German, French and Italian universities, taking his degree of doctor of medicine from the University of Ferrara, in 1515. After long wanderings and journeys through Spain, England, Denmark,

Russia, Prussia, Poland, Hungary and Croatia, he returned home, scarcely thirty years old. After a short residence in Salzburg (1524) he appeared in the Upper Rhineland sometime in 1525, wandering to and fro, healing and teaching. When he began to record his experiences and his novel ideas, based upon continual observation of nature, is uncertain; but we know that he began early to jot down sundry medical, chemical and other observations of his own or important communications of other people. On such stray travel-notes are based, for instance, the two "Manualia," which he left in the hands of Johannes Homelius et Pettau in Styria. These, however, cannot be regarded as authentic.

It seems that, even in his earlier years, he had planned a comprehensive work on internal pathology and therapeutics, which, according to an uncertain tradition, was to number 53 books. Only three complete books are extant, namely, the sixth book on the tartaric diseases; the seventh book on the "diseases which deprive a man of his reason"; the ninth book on "contractures." These specimens go to show that Paracelsus essayed to describe diseases from the viewpoint of their interdependence, in families or groups, instead of following the beaten track and handling them *a capite ad calcem.* In his manuscript remains, there is no lack of preliminary sketches, but unfortunately no outline of the general plan of this great work has been preserved.

To the same period belong the following eleven tracts, of which two manuscripts of each are extant, viz., on the origin and causes of dropsy, phthisis, jaundice, colic, apoplexy, worms, diarrhea, gout, deafness and colds.

Amongst other great works planned during this pre-Basel period are the "Paramira," dealing with the general ætiology of diseases, as conveyed in the doctrine of the five entia in the Paramirum primum. This was perhaps the most important theoretical work of Paracelsus, and, in my opinion, it was

completed before he settled in Basel. It received the finishing touches in the years 1529–30 at latest. The whole work, at any rate, is animated by all the youthful enthusiasm of an impetuous innovator.

Also the "Archidoxæ," the fundamental text of the new specific therapeutics on a chemical basis, were composed during this period of storm and stress, as well as the treatises, "De Renovatione" and "De Restauratione" and his first book On Long Life. In his "Herbarius," he also made preliminary sketches for a book on German medicinal plants; also preparations for meteorological and balneological treatises.

In the midst of these literary pursuits, he received—at Strassburg or at Venenburg on the Rhine—a call to the University of Basel, where his literary activities were diverted into other channels.

Only a small portion of the *"Medicinæ physices et chirurgiæ, librorum quorum et ipse auctor"* on which he was to base his lectures at Basel, had then been planned, let alone completed. Only the seven books, *"De gradibus et compositionibus receptorum et naturalium,"* may have been in rough shape at that time, as being directly connected with his pharmacological and therapeutic writings, albeit of an intermediary rather than of a reformatory character, in other words, well adapted to introduce his audience to a world of new and strange ideas. Other books prepared for lecture purposes are those dealing with the preparation of inorganic and vegetable remedies ("De Preparationibus"), the manuscripts of which were suddenly discontinued, whence we may assume that he lectured on this subject during the winter semester 1527–28.

He also had under preparation a short course of lectures on purgation and phlebotomy, apparently in connection with the above mentioned "eleven tracts." In the fourteen books of the "Paragraphs," he presents, in the form of aphorisms, a short pathological and therapeutic summary of the more

frequent diseases, while in the "Liber de Icteriis," another kind of disease is more exhaustively discussed. In the two books "De morbis ex tartaro oriundis" he gives a thorough monographic elucidation of the ætiological basis of this group of diseases, newly established by him, by means of leading paragraphs in Latin with exhaustive German commentaries superadded.

During the idle dog-days of the year 1527, he gave a course of lectures on the semeiology of the urine and the pulse, and continued his commentaries on the Aphorisms of Hippocrates, and probably also on the "Poemata Macri de virtutibus herbarum."

As a doctor of both branches of the healing art he did not neglect surgery. While his lectures on internal medicine were still partly delivered in Latin, a course on injuries to various tissues and organs and one on external surgical diseases was presented in German.[1]

These lectures, of which several manuscripts have been preserved, abound in first-hand observations and original ideas regarding those branches of surgery. If we consider that his academic career in Basel covered at most 1½ years, probably not more than 10 months, we must admit that in this short period, Paracelsus developed a really feverish literary activity, while occupied with many visits to patients and botanical excursions with his pupils, as the records relate. But even that did not suffice. His other scientific plans went on with the preparations for the Basel lectures, and his free literary labors were incessant.

His teaching at the university prompted the conscientious man to take stock of his experiences, to summarize them, and to give an account of the reach of his ideas in theory and

[1] Paracelsus was the first to lecture on medicine in German. The first medical book to be written in German was the *Spiegl der Artzny* of Lorenz Fries (1519).

practice. We begin to see how the wealth of observations was poured out into every novel surgical, medicinal and philosophical treatise, new molds for the pure gold of his ever increasing knowledge.

But even then he was not yet "through," for he was ever growing, ever gaining new material from his observations in God's free nature, in the laboratory, at the bedside,—ever melting down the old forms to create new works, such as, for instance, his treatises on tartaric diseases and wound surgery, in the different versions that have come down to us.

During his sojourn in Basel, besides the sketches for lectures, he wrote the five books *"De vita longa,"* an abstruse treatise on the prolongation of life and the combating of disease by efficacious therapy. Also the manuscripts *"De Podagricis"* seem to go back to the Basel period, if not at an earlier time. They already contain, in fact, the preliminary studies for the Paramirum II and the Paragranum.

In my opinion, the last work written in Basel was the *"Bertheonea,"* presenting the first draft of a general surgical pathology and therapeutics, which remained a torso. This work is important as fixing his then standpoint as to the infection and healing of wounds, the causes of ulcerations and the formation of abscesses. The introduction to this work is of great cultural and historic interest. Some of his general surgical ideas were written down in Colmar and partly based on the already existing text in the seven books on open wounds (*"Von den offenen Schäden"*).

At the same time, Paracelsus began to tackle syphilology, which in those days was treated as a branch of surgery and to which he devoted most of his time, indeed, seemingly all of it, for one and a half years. The results of these studies were laid down in a series of separate monographs: *"Vom Holz Quajak"* (On Guaiac Wood); *"Drei Bücher von der französichen Krankheit"* (Three Books on the French Disease);

"Ursprung und Herkunft der Franzosen" (Origin and Provenance of the French Disease); *"Spitalbuch"* (Hospital-book).

However, we must not assume that the period of 1528–30 was exclusively devoted to syphilology. For his studies of the watering places in Switzerland and the Black Forest, nearly completed already in the pre-Basel period, were then given their present shape and presented in the books on natural baths (*"Von den natürlichen Bädern"*). Furthermore, there is the legend of his alchemistic studies in Esslingen (the alleged ancestral seat of his family), in the year 1529, although the few extant fragments of practical alchemistic content, if genuine, point to an earlier date.

In accordance with the custom of his time, Paracelsus published in 1529 the first "Practice of Astrology," to which (I conclude) was added an epilogue addressed to the astronomers (*astronomos*), in which he attempts to elucidate his general astrological standpoint. Thereafter he continued to publish his annual prognostications almost regularly, at least down to 1539, that is to say, for ten years. He seems to have found particular amusement in jotting down these quips of his tricksy humor, although the pecuniary remuneration could not have amounted to much.

In 1528–29, he seems to have been occupied also with epilepsy and hysteria, for at least his books *"De Caduco"* and *"De Caduco Matricis"* point to this time, as do his sketches for the *"Paragranum."* Of the latter work, in particular, numerous readings and concepts have been preserved, which by their acrimony remind us of the catastrophe in Basel, while in the completed version of this important work (written in the spring of 1530) he expounds, in pointed manner, the general principles of the healing art, namely knowledge of nature (terrestrial and cosmic physics), chemistry, and a pure, benevolent attitude on the part of the physician. In this fundamental work he was directly led to a reconsideration of the ætiology

of diseases, which already established, years before, in the *"Volumen medicinæ Paramirum,"* but which he now dealt with frequently in his investigations of the origin of syphilis, throwing the whole matter into a new light.

The Paramirum II, completed, for the most part, in 1531 at St. Gall, appeared now in an entirely different, a more concrete form, in which he laid more weight on the practical points—at least in comparison with the high-flown, conscientious philosophical treatise of his younger days, of which I will not give any detailed account.

At the end of the year 1530, during a sojourn in Nördlingen, he wrote his two books on the Black Death (*"Zwei Bücher von der Pestilenz"*), either offhand or at the instance of friends, just as a number of small tracts on comets and the like owe their origin to the comets of 1531 or 1532.

Bitter poverty and confessional quarrels, though not depriving the "poor patients" of their faithful physician, did deprive medical science of its most industrious literary worker (1532–35).

He was swallowed up by the *mare magnum* of philosophical and religious speculations, but I will not go further into the results of this defection from medicine—a long series of important theological writings.

During these years of mountain solitude, he also composed twenty-three books entitled *"Volumen primum suæ philosophicae de divinis operibus et secretis naturæ"* and the *"Volumen secundum de vita beata."* Perhaps the thoroughly original books on miners' diseases (*"Bergsucht"*) can be allocated to, or were at least revised in this period, for he frequently mentions them during the years following, and indeed from Innsbruck may have revisited his old retreat in the mines of Count Füger, in the Oberinntal.

Emerging from the sea of misery and theological seclusion, he encountered near the Brenner the approaching Black Death,

in whose face he flung the popular *"Pest-Büchelein"* dedicated to the city of Sterzing (1535).

Investigations of the tartaric diseases and the mineral springs at Engadin and Pfeffers mark the end of his missionary labors.

In the summer of 1536, he published the first two volumes of the *"Chirurgia Magna,"* and he gave his investigations of the tartaric diseases their final literary form (for Pastor von Brandt of Eferdingen). In Moravia, he again took up the "French disease" (as the third book of the *Chirurgia magna,* which remained a torso). In the summer of 1537, he began to write his *"Astronomia magna seu philosophia sagax"* of the microcosm and macrocosm, the result of a long string of preliminary sketches and also incomplete. In this work, one of his most genial attempts to comprehend the universe, he wanders far away into the realm of the occult.

The nine books *"De natura rerum"* are as far as they are genuine, a bold mystification, however well their occultism fits in with his own association with the occultists of Eferdingen and the *"Philosophia Sagax."*

New quarrels and jealousies of his Viennese colleagues thrust him rudely back into the stern world of realities, and in the sharp air of the Corinthian Mountains, he wrote his aggressive seven *"Defensiones"* and the *"Labyrinthus Medicorum,"* in which we encounter again the unconquerable fighter for the clearly recognized principles of progress, the true reformer of medicine in all his native ruggedness, his crystal clear depth and purity. To the last two years of the reformer's life in and around Salzburg, only a few theological tracts can be assigned. This ends the chronological review of his literary remains. Though only half of the output of his medical writings has been preserved, his productivity would be enormous, even if a longer span of life than forty-seven years had been allotted to him, and is all the more astonishing in that the greater part of his brief life spent itself in wandering to and

fro under the most adverse conditions. The restless wandering, so unsuited for scientific labors, necessarily exercised no inconsiderable influence upon the character of his literary productions.

However rapidly Paracelsus may occasionally have worked, he never took his task lightly, but returned again and again to the themes which fascinated him, in order to bring them to greater perfection. Of these productions, several elaborations have come down to us which unfortunately lack internal continuity, for which defect the various interruptions, and disturbances of his roving life are mainly responsible. Not only were previous drafts frequently used as dedications to influential persons, but manuscripts just completed were given to powerful city magistrates, in the hope of hastening the printing! Thus, when expectations were not realized, Paracelsus found himself without a single copy. In one or another of his stopping places, he would often intrust a manuscript to the care of people whom he thought to be reliable, and then find that he could not get his manuscript back; and many another manuscript was stolen or lost, to be sometimes found, after many years, by one of his disciples, who either copied it or had it printed in its incomplete form.

On the other hand, many versions of his writings have come down to us, which show distinct traces of progressive development and of revision in all stages, thus illustrating how Paracelsus always struggled with the form of expression, how, when irritated with one task, that he frequently dropped the pen, waiting for a more auspicious hour. The lines often jotted down in moments of rage, or dictated to his pupils under the spur of the moment, were later, in a period of mental repose, given a polished form and a more moderate expression.

Thus we have numerous larger and smaller treatises, paragraphs and fragments written in every possible stage shaping and preparation, but comparatively few bearing at the start that

stamp of perfection in which he desired them to be transmitted to his contemporaries and to posterity. This fact, above all, must be borne in mind in sifting and evaluating the literary remains of Paracelsus. To this circumstance must be ascribed the often vulgar, objectionable and irritating expressions and the occasional awkwardness and abstruseness of his style, for Paracelsus writes well in other places. We must remember that he was as painstaking in the shaping of his productions as in the excogitation of his lofty and comprehensive ideas, or as he was faithful in his care for the physical and spiritual welfare of his patients. In all phases of his activity, he was ever a sincere and intrepid seeker and fighter for truth! But in the evaluation and editing of his works, no matter in what state they may have been transmitted, there are particular difficulties, which must be borne in mind and dealt with.

If we want to do him justice and arrive at a correct estimate of his literary personality, we must base our judgment on his complete works and on nothing else, even though a prospective complete edition contains all the preliminary sketches and drafts, with an express statement of their merely relative value, as fragments. A careful, sympathetic study and understanding will explain away many of his contradictory statements and the apparent incongruities of his doctrines.

Furthermore, we must bear in mind that for Paracelsus every day meant a step in advancing knowledge, that ever searching, ever looking forward, he never stood still! that every hour unfolded to his mind new vistas! that from every case coming under his observation he derived new information. At the same time, the creative imagination of the analytical and constructive thinker never ceased to recast and develop the eternal flow of new experiences, while the basic principles of his novel views are illuminated and apparently confirmed by the ever changing manifestations of life in man and nature.

In the introduction to his "Chirurgia Magna," this unceas-

ing striving after knowledge, kept always at the boiling point by the ardent desire of a burning heart to succor suffering humanity, was described by the reformer in touching language of simple grandeur, toward the end of his career, in the summer of the year 1536.

When we see how many of his books, written in times of storm and stress, remained uncompleted, we must sadly confess that if in the fair city of Salzburg an unkind fate had not brought to an untimely end the stormy progress of the impetuous innovator, had the Olympian calm of advanced age permitted him to complete the edifice of his immense learning and lofty ideas, how different today would be the scientific reputation of Paracelsus! but even so, modern science begins to comprehend more and more the towering greatness of the man.

LORENZ FRIES AND THE FIRST WORLD-MAP CONTAINING THE NAME "AMERICA"

Translated by

FIELDING H. GARRISON

LORENZ FRIES AND THE FIRST WORLD-MAP CONTAINING THE NAME "AMERICA"

(1908)

FROM the date of Pantaleon's Prosopographia (1565), Lorenz Fries was, in consequence of his family name, regarded as a Hollander (Frisian); but by the middle of the present century, the claims of Strassburg to his nativity had already begun to monopolize attention. He was born in the last quarter of the 15th century in Alsace, probably in Colmar. He has even recounted experiences from his earliest childhood in Alsace and neighboring Switzerland. He probably got his schooling at Schlettstadt, after which he studied medicine at Montpellier, where he probably got his doctor's degree. A request on my part to Montpellier for confirmation of this doubtful detail has remained unanswered. Up to 1518, Fries practised medicine in Colmar, but left the city in disgust. For eight months thereafter, he was city physician at Freiburg (Uechtland) as appears from a still extant receipt for salary of "Dr. Laurentius," and as he himself relates in his tract on Sudor anglicus. In March, 1519, he settled in Strassburg. In the following year, he acquired citizenship through his marriage with the daughter of a Strassburg glazier. In the year 1525, he renounced his citizenship to return to Colmar, where, in February, 1528, he met Paracelsus. In September, 1529, we find him at Diedenhofen (Villa Theonis), in July and August, 1530, in Metz, where he died not later than 1531. That is all we have been able to ascertain about the life of our physician to date. An almost complete exhibit of his many writings was made at the Historical Exposition at Düsseldorf. (See Catalogue of this Exposition).

THE FIRST WORLD-MAP WITH THE NAME "AMERICA"

(1900)

Under the title "Who Baptized America," an editorial of the Allgemeine Zeitung of June 4 breaks a lance for the sponsorship of Martin Waldseemüller, whose credit for the actual bestowal of the name has remained unassailable, in spite of the latest assertions. Only as to the first appearance of the name "America" on a map of the world, do I disagree somewhat with the editorial writer.

Through the combined labors of Matthias Ringmann and Martin Waldseemüller, the geographical work of Ptolemy (text and maps) was given a new form at St.-Dié on the Meurthe. Without mention of their names, the Strassburg publisher, Johann Schott put their work on the market in the largest format and in splendid style in 1513, in a more condensed second edition in 1520. These new laurels of his great rival stirred the envy of another enterprising Strassburg publisher, Johannes Grieninger. He too must have his Ptolemy, and entrusted the rapid execution of his plan to a contemporary Strassburg physician, Lorenz Fries of Colmar who, for some years past, had acquired name and fame through his "Mirror of Medicine," and other minor writings published by the Grieninger establishment, and who was, at least partly, prepared for such a task by his mathematical and astronomical studies (he was an iatromathematician). After a year and a half of strenuous labor, the Grieninger-Fries Ptolemy appeared on March 12, 1522, in a somewhat smaller format than the Schott publication, but quite as sumptuous in get-up. The maps were also somewhat reduced, but were increased by three new ones, so that the Fries Ptolemy now contained 50 maps, as against the 47 of the Waldseemüller edition, 50 maps which were again reissued by Willibald Pirkheimer (1522) and Michael Servetus (1535 and

1541) and were at length supplanted by the maps of Sebastian Münster. One of these three new maps, the "Orbis Typus. Universalis, Juxta, Hydrographorum, Traditionem," bears, in the legend above, the superadded inscription "1522. L. F.," whereby Fries stamps it expressly as his own. And indeed, this new map differs in many respects from the Waldseemüller map appearing in the same volume, changes not always for the better, however, even when some progress is evident, e. g., where Fries disposes of the three East Indian peninsulas. But one merit may be claimed without question for this Friesian marine chart, namely that, for the first time, the Waldseemüller name "America" appears upon a printed map of the world, while Waldseemüller himself has left the new continent nameless, both on his marine map and upon his special map of America, the "Tabula Terre Nova(e) F. D. W. (fecit Doctor Waldseemüller)," which Fries reproduces. But even the descriptive text attached to Fries's marine map treats the name "America" as coeval with Europe, Asia and Africa, in other words, establishes it as the fourth among the continents of the world.

Furthermore, that Fries, in adding so much individual, if inconsiderable, matter to the work of his predecessors Ringmann and Waldseemüller, was not self seeking as to the deserts of others, is shown by his express declaration at the end of the seventh book, preceding the series of maps, that it was Martin Ilacomylus, *pie defunctus,* who drew the maps; *"Huic igiter et non nobis (si bonæ sunt) pacem et custodiam in celesti Jerarchia . . . exopta"*—a belated bit of justice, shameful, in particular for the editor and publisher of the Strassburg Ptolemy of 1513 and 1520.

LEONARDO DA VINCI

Translated by
FIELDING H. GARRISON

LEONARDO DA VINCI

(May 2, 1919)

ON this day, physicians, too, should remember the man who, four hundred years ago, closed a life of unparalleled activity, who was, indeed, the greatest and most successful investigator of anatomy and physiology in his period, in spite of the fact that his anatomical findings were destined to be buried for four centuries, and to exert no special effect upon his time. No one, since the days of Galen and the Alexandrian anatomists, no one, before the Belgian, Andreas Vesalius, ever dissected the human body with such patient and purposeful zeal and ability as this great artist and scientific thinker. Throughout the whole active period of his life, he was occupied with dissecting, having first assimilated the book-learning accessible to him in the anatomical and physiological texts of his time, in order to fix his ideas in the drawings he made. As an artistic anatomist, he endeavored to clarify his notions of the external configuration of the body, by studying the effect of the underlying structures, the bony framework, the mechanism of the joints, muscles and tendons, in tensing and relaxing the outer parts. But it is as an experimental biologist that he shines today. He strove to comprehend the structure and function of the whole organism, even in the closed cavities of the skull and the thorax, and what he saw and understood he sketched in unforgetable pictures. With a few strokes of the pen, he elucidated morphological relations with a completeness not approached again before the time of Friedrich Merkel.

With expert surety, he demonstrated that the uterus, for-

merly regarded as bilocular or multilocular, is, in reality, a single chamber. In the heart, he delineated and described structural peculiarities which have had to be rediscovered in later centuries, notably the atrio-ventricular band of muscle in the right heart, which Holl has rightly named after Leonardo. He identified and elucidated the system of ventricles in the brain by successful injections of melted wax. He showed the topographical relations of the muscles, nerves and blood-vessels in the extremities by series of cross-sections. Long before the timorous beginnings of frozen-section anatomy, he investigated the structure, site and function of each and every muscle. He first ascertained and established the statutory position of the fœtus in utero in a memorable drawing, to mention one more detail.

With remarkable zeal, he sought to clarify his ideas as to the function of the heart, its valves, it muscles and muscular bands, and the hydrodynamics of the blood-current in the heart and great vessels. So energetic were his labors, so keen his vision in pursuit of this problem, that it is certain he all but comprehended the greater and lesser circulation, although we cannot definitely assert that he anticipated the discovery of William Harvey. The data so far ascertained in his manuscripts and drawings justify no such conclusion.

But if Leonardo must forego the credit of this triumph as an expounder of the mechanism of the body, the sum of his achievement in anatomy and physiology, as revealed in some 700 drawings with explanatory text, is of the most eminent kind. It is only necessary to glance at these wonderful drawings, executed in the last forty years of his life, to realize how deeply he penetrated into the structure and physiological workings of the human body, how much he attained by experiment, how much closer he came to the truth in his drawings, making a break with tradition at the start, finally compassing the inwardness of form and function by simple inspection.

The anatomical drawings of Leonardo da Vinci, now reproduced in eight volumes, with explanatory text and translations by Sabachnikoff, Piumati, Vangensten, Fonahn and Hopstock (1898–1916), constitute one of the costliest documentations of the endeavor of the human mind to loosen and lift the veils that cover the ultimate mysteries of life.

The master who painted the Last Supper in Santa Maria della Grazia at Milan, he who sought to immortalize the mysterious charm of womankind in the enigmatic glance and smile of Mona Lisa, stands also in the front rank of the masters and makers of biology. On the four hundreth anniversary of the day of his death, Medicine, with wondering, reverent gratitude, extends to him the laurel wreath.

MEDICAL DATA IN GREEK PAPYRIC ARCHIVES

Translated by

FIELDING H. GARRISON

MEDICAL DATA IN GREEK PAPYRIC ARCHIVES

(1906)

THE thousand or more Greek records of the past, which have come down to us on papyric scrolls or pottery (*ostraka*), throw many a ray of light on modes of medical thought and practice in Ptolemaic and Roman Egypt, distorted and refracted as they seem, when visualized through such cloudy glass-panes as tax-bills and tax-receipts. Through these none the less, we learn much about the hygiene of food products, the beverages, the industries, the food-supply, the public baths and barber-shops, the production of oil, the traffic in oils and perfumery, the introduction and sale of drugs for medicinal purposes, for temple-usages, as reagents in embalming, and the like. There is much of medical interest in the sexual life of the Egyptians in its various manifestations and appearances, even down to the taxation of public prostitutes. There was an attempt at preventive regulation of marriage, as patterned in the marriage contracts, with a single eye to the possibility of divorce, so that, the quondam husband had to pay for the expense of his recent wife's confinement, if it occurred a certain time after the legal separation, while the competition of plural marriages and similar extravagances, although legal, was vigorously opposed. All which goes to show that the pale Egyptian dame was a thorough-paced, purposeful woman of "modern" type. The care of children, the business of wet-nursing, circumcision in both sexes at marriageable ages, the sale, maintenance and reproduction of slaves, all this is set forth in informing manner, as also the

making of wills and the notification of death. The preparation of mummies and the cost of the same, their transportation, the affection and respect in which they were held at the annual memorial ceremonies, are all accessible to us, while descriptions and attests of disease alternate with other medical certificates, such as the results of affrays among Egyptians, of whom even the senators were always ready for a fight. The nursing and healing of the sick in the Asclepieia and Serapieia, and later in the Christian Nosocomia and hospitals, live before our eyes. Unexpected disclosures as to the fees of physicians, their personal transactions in and out of their profession, their official status, and the many devices employed in medical and veterinary practice, are also forthcoming. Even medical texts and many suggestive bits of information about the practice of magic are conveyed to us in respectable quantity in these most valuable documents, which afford a veritable moving picture of snap-shots, revealing the life of Hellenistic Egypt in alluring plenitude.

MEDICINE AND ART

Translated by
EDWARD B. KRUMBHAAR

MEDICINE AND ART

(1906)

HE, to whom the Saviour-like calling of the physician has been revealed in all its fullness, asks no longer about the connecting threads between medicine and art; he sees, with a wide sweep of vision, the wonderful shining texture of all the arts, how they weave into and through each other as the great comforters of mankind, which relieve us from all earthly ills, great and small, even though the respite be brief.

Thoughtful consideration may place the art of sound—divine music—nearer the art of medicine than sculpture or the arts of drawing or painting. In fact, it was once regarded as a branch of the art of healing, that earnest, holy and yet so charming art, and consoler, Music!

Sculpture and painting have perhaps never appeared thus directly as factors in medical treatment. And yet the artistic Greek soul took over these also into its therapeutic scheme, in its directions for the care of the pregnant woman. During this most divine and richest period of her life—when her being is filled with a sense of beauty in forming a new being, which shall, in its turn, illustrate the eternal yearning for beauty of form, the Greeks arranged that during the months of expectation, when her fantasy roamed freely and untrameled, the pregnant woman should be surrounded by beautiful sculptures, so that her ability for plastic creation might develop the more effectively amid the suggestive impressions associated with these very material evidences of creative power. The old Romans,

too, thought the pregnant woman so holy that they always looked upon her as a sanctuary, like the holiest parts of their temples.

. . . . . .

In using the term "the Savior-like calling of the physician," we of course do not mean to confuse it in any way with revealed religions. How could a physician wish to wound the religious sensibilities of his fellow men! At the bedside of the sick, he has too often thankfully welcomed religion, that great healer of sick souls, with the glance of understanding in her inspired eyes, greeting her as his greatest ally. Whoever regards the expression, "the Saviour-like calling of the physician," as too high-flown must quarrel with our dear mother tongue, when, in the years of her youth, long ago (although she is still today in the prime of life!) she called "the Saviour and "the healer" (den Heiland and den Heilenden) by the same name. He will also quibble with another mother of the thoughtful, the science of History! For History teaches us that of all the gods of sunny Greece there was one who, longer—I might almost say more intensively—than any other, opposed the gentle power of the new Saviour of Mankind. This was the mildest and most merciful of the gods of Greece, tender to every sorrow, the very sound of whose name carried consolation to the Grecian ear—Æsculapius, the God of the healing art.

Into his temples fled all those great heathens who, without bitter or malignant intransigence, kept away from the God of the Christians. In the temples of Æsculapius the Saviour (Ἀσκληπιος σωτήρ), they too sought a cure for their spiritual misery, for all the evils of that soul-sick period in his temples. The most splendid of these bore over its portal, as an urge to spiritual preparation on the part of those seeking help and deliverance from so many sufferings, the beautiful words:

ʽΑγνον χρὴ υμοῖο ϑνωδέος ἐντὸς ἰόντα
ἔμμεναι ἁγνεῖν δ'ἐστὶ φρονεῖν ὁσία

which Johannes Ilberg's harmonious paraphrase renders as follows.

Dem Reinen öffnen sich des Tempels Schranken
Des weichrauchduft unwallten, jederzeit,
Wir heissen's fromm sein. Aufwärts die Gedanken
Das ist die Reine, die der Gott gebeut.

(To the pure, the incense-clouded temple-gates are always opened. We call it piety. Let it ennoble your minds! What God wills alone is pure.)

Penetrated with this lofty and priestly aim of dispensing purity, the spirit of Medicine seems to us still more worthy to clasp hands with her sweet sister, Art.

Thus viewed in the light of History, the spirit of Medicine was predestined to go hand in hand with her soothing, gentle yet earnest twin sister, Religion. The health-dispensing temples of Æsculapius afford another charming example of this companionship.

With inimitable naïveté, which found its justification in the deep sympathy between the two arts of healing and consolation, consecrated Christian healers of the sick almost unnoticeably slipped into many temples of the Dioscuri and of Æsculapius, the "gracious healer also of the little people." The twin brothers and Christian martyrs, Cosmas and Damian, like Æsculapius and the divine twin brothers of the heathen, used to appear in dreams to those seeking help by sojourning through the night within the temple halls and gave instructions for the cure of bodily and spiritual ills. In needful cases, as with Æsculapius and his assistants, they went to work themselves, and removed foreign bodies, which they placed in the sleeper's hands, or even made use of the knife and so dressed

their wounds that the morning found them healed; and yet, at daybreak, no signs of the surgeon's activity were apparent in the bedding and flooring!

How the cult of these health-dispensing brothers spread from its home in Asia Minor over all Europe is shown not only in the foundation of an order of knights bearing their names, which was consecrated to the care of the sick and disposal of the dead in the Crusades; but also throughout the entire medical life of the Middle Ages—and that plunges us into the midst of our theme! There was scarcely a medical or other institution caring for the sick which did not bear St. Cosmas or St. Damian or both, on its coat of arms; or did not celebrate their festal day in September with a solemn carousal, according to the good old custom!

And does not the seal of many a medical faculty (even in austere Protestant regions) bear the images of these old medical saints, just as the gentle mother of Jesus graciously reveals herself to "those of other faiths" on the coat of arms of our Alma Mater of Leipzig. For in the domain of the arts and sciences, the only difference in the various religious beliefs is in the way in which they aim at the common goal of the divine, which manifests itself in them all as the same consoler, healer and uplifter. One of the mightiest medical scientists of the 19th century has expressed this idea with impressive grandeur:

"Thus the divine graciously reveals itself through the whole of creation to various people in various ways. To those endowed with a rich and noble imagination, it reveals itself through the imagination; to the pious through the spirit; to the learned through wisdom; to the strong through the magnitude of its creations; in all these ways, however, it is the divine that is being honored by each in his own way."

Thus wrote Johannes Müller, the greatest physician who ever taught medicine at the University of Berlin; and with this in mind, we may fully comprehend and appreciate an exhibition devoted to the union of the past of medicine with the creative arts. Thus may we appreciate the richly represented ecclesiastical art of past centuries in its incidental glorification of the art of medicine, in Johannes Müller's sense, in the service of the highest in both its sister arts, in the service of the consoler, the healer, the divine.

. . . . . .

In one more sense can creative Art helpfully reach out its slender hand to its sister, Medicine, and in another special way fulfill its lofty task—as consoler and healer for the practitioner of the healing art, the physician himself. To-day, in time of trouble, he stands particularly in need of such a holy comforter, to remove his cares, smooth his brow and clear his troubled eye; a comforter who will offer him the healing draught of divine imagination—heaven born idealism from the crystal clear kingdom of art,—so that, healed and refreshed, he will go forth with the new spirit of the unfathomable and inexhaustible idealism of the German physician. The crown of thorns of his profession, no longer painfully pressing on his brow, will be to him a crown of light in his boundless love for suffering humanity and in his never-ending ardent desire to alleviate, to comfort and to heal!

PAINTING AND HISTORY OF MEDICINE

Translated by

ALBERT ALLEMANN

PAINTING AND HISTORY OF MEDICINE

THE creative artist and the true physician have one outstanding property in common, which they alone possess in fullest measure, namely the single eye to reality, the all-embracing insight, the great gift of seeing things as they are, which impels them to pierce all risks, to see the kernel within the shell, the quickening play of life underneath the surface of things. A divine gift which, like any other precious gift, may also make for unhappiness! A sensitive man, with finely adjusted nerves, who possesses the gift of penetrating insight in unusual measure, will suffer thereby since he cannot suppress it, since he must exert it everywhere and always, even when agreeable illusion means happiness. But this does not concern us here! The fact that great artists, even the most idealistic and unworldly, possess this divine gift of vision, of unconsciously grasping what is real under all conditions, apart from the facture of genre-painting, of "pictures from life," or even of "still-life," makes him an involuntary recorder of reality in his time, even when he has no desire to delineate manners and customs. For this reason, the paintings of the great masters of all periods, more particularly of the "simple" periods, devoid of antiquarian element in artistic presentation, form pictorial archives for the historian of culture and especially for the historian of the healing art.

The importance, therefore, of the painter and sculptor for the medical historian does not lie merely in the fact that they seize and preserve on canvas the outward appearance and intellectual personality of great physicians and dentists. No, portrait galleries have never been our weightiest concern, al-

though something essential to our purpose. Portrait galleries are, in a far wider sense, arsenals of the history of culture, and to a small but not considerable degree, of the history of medicine.

One phase of art I shall, indeed, ignore, viz.: the service rendered by drawing, painting, and plastic art for centuries in completely reproducing the objects of our scientific research in anatomy, physiology and pathology. No, the graphic arts as handmaidens of our métier will not be considered here. We have here to deal only with the freely creating curly-haired god-child of the free, royal mistress, Art.

For anatomical purposes, we therefore consider in a Rembrandt only how he conceives the anatomist and his audience in their intellectual character and work, how his artistic eye has envisaged them, in comparison with his contemporaries, great and small, in their "Lessons of Anatomy."

Near at hand are the arresting canvases of the Dutch painters, above all, as they have seen the physician at his work, at the bedside of an old man, of a beautiful girl, of a feverish patient with glittering eye, of a cachectic with moribund look, of the love-sick and those who love, themselves love-sick. All these types and countless others have been fixed by the brush and pencil of the painter hundreds of years ago. They represent eternally old yet ever new sidelights from the experience of followers of the healing art; but as a delineator of reality, the artist has given these paintings the shifting light of day in all details and, incidentally, he has quite without intention transmitted it to the history of the art of medicine.

The artist of the present day, who takes us into the consultation room, usually shows us a young girl patient, bending slightly forward, as she presses the snow-white covering to her swelling breast while the grave doctor auscultates her back, saying "Breathe deeply, please," or the physician as he applies the laryngoscope to a little diphtheria patient, sitting

on the lap of his trembling anxious mother,—the age of auscultation and the laryngoscope.

The artist of about a century ago shows us the physician with gold-headed cane and costly snuff-box, as he patiently grasps the forearm of a lady in hoop-skirts—the age of ordinary pulse-taking; or how, with sharp lancet and grave mien, he makes a few punctures on the arm of a struggling half-clothed little miss, whose mother turns away in fright—the early period of vaccination.

Some centuries earlier, the doctor would have held a decanter-like flask to the light, while the patient sits beside him or lies in bed, or in an earlier period, while a doltish young chap stands by with a straw basket of peculiar shape:—the age of uroscopy; or the heavy-bonneted, long-gowned, physician stands, with important mien, at the high arched window, gazing at the stars, with strange instruments in his hands—the age of astrological prognosis of disease or iatro-mathematics.

Again we look into a room in an almost insolent state of disorder, where at one end, good for nothing men are joking with women, while at the other end, an abscess is opened in the back or arm of a patient, or an operation is performed on the head or foot, or bloodletting or cupping is done, or a tooth is pulled or a beard shaved, while bandaged patients or crying children are brought in. Man is eternally the same; but his procedure, his vessels, his bandages, his instruments, his manipulations are ever changing. What we have painfully to guess from text-books and manuals of the distant past is revealed to us at a glance in a picture of the time. For example, the use of an old Roman bone forceps from Pompeii in the mural fresco of the wounded Æneas.

Thus consultation rooms, sick-rooms, surgical amphitheaters and hospital wards, as represented in painting, are invaluable documents of the theory and practice of our art, just as true to life and as real in all their details, if not as sharp and witty

caricatures, as the cinematographic pictures of the Doyen operations or of recent groups of the Paris Medical Faculty. In spite of their satirical tendency, these too will be, later on, important illustrations of the history of medicine.

And just as the many voluptuous and delicate paintings, or ironically penciled or painted caricatures of our seashore artists, such as *"Face à l'ennemi"* and the like, fix the life of our fashionable bathing resorts, so have the minor artists of the Renaissance, as well as its great masters, observed the voluptuous life in the ornate baths and bath-rooms of our imperial free cities, thus transmitting to us the medical features of Turkish baths, just as faithfully as the unhygienic gorging and drinking bouts in these bath-houses, with the Poggio-like detail of a loose mixing of the sexes.

But even in serious paintings of the highest artistic value, we find depicted for us the healing miracles of Christ, apostles and the saints, documenting the nervous diseases of those times, which can still be observed even today, showing that these pictures are true to life, while others, for instance, of Saint Vitus' dance, are hardly seen in the same form today.

The proof that such pathological phenomena have remained the same is of great importance for the history of diseases, but the great paintings of the past have furnished us inventories of diseases that have died out or have assumed a much milder character; they form irreplaceable archives which, for instance, represent, clinically true to life, and with a pitying brush, all the various forms of leprosy in Western Europe, with their disfigurements and mutilations. From these, one could compile an atlas of leprosy which, in fidelity to nature, would hardly be inferior to our best modern atlases of skin diseases, with all their superlative color prints.

In like manner, the horrors of the plague epidemics have been preserved with incomparable skill, e. g., the form and color of the bubo on the thigh of Saint Roch, and many other

details which give us a clear and convincing picture of the pathology of the past.

And, how much can we not learn as to the obstetrics of the past from paintings representing the birth of Christ, with the details of the stable, not strictly adhering to tradition, the manger and quadruped indwellers of the stable, the magnificent curtained bed, the little bath-tub for the child, the contents of which are tested by the naked foot of the nurse, and all the little details employed in the care of infancy, the sponges, diapers, swaddling clothes, little cradles and tiny wicker beds; all taken from real life in these exquisite Dutch paintings, as were the very earthly Netherlandish mothers themselves, a type much beloved by painters along the lower reaches of the Maas and the Rhine, as in North Germany, also to some extent. Here, I will merely mention with what fondness and tenderness, nursing has been represented for us through many centuries in the paintings of hospitals, with their nurses, attendants, hospital gardens and so on. How instructive are the pictures of apothecaries' shops with their complete, lavish, and artistic stock in trade. Here we see precious theriac in preparation under official supervision, prescription table and the handling the scales. How interesting in details and total layout are the laboratories of the alchemists, from which came all our methods of investigation in chemical and biological science, as also the rows of chimneys in such works as those at Elberfeld, Höchst, Ludwigshafen and elsewhere!

So also, the quackery of our day can find its gallery of ancestors among the theriac vendors, strolling charlatans, cataract couchers, tooth-drawers, or the mesmeric and other séances—and their baubles. Of all these and of many other things which the creative arts offer to the history of science, much more might be said, but let this sketch suffice.

theriaca = antidote to poison

AN HISTORICAL MUSEUM OF THE HEALING ART

Translated by
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(1901)

RECENTLY the energetic officers of the Germanic Museum in Nuremberg, with the coöperation of Richard Landau, a Nuremberg physician well versed in the history of medicine, invited the German Surgical Society and the Congress for Internal Medicine, to participate in the organization of a Section of Medical History in the Germanic Museum at Nuremberg. As early as 1893, Max Emmerich, at the Nuremberg Convention of Naturalists, had suggested the formation of such a section, side by side with the very interesting Pharmaceutical Section, which had been organized by Hermann Peters. A considerable sum of money was contributed by one of the two learned societies referred to, but the execution of the plan, which will be warmly greeted by every physician interested in medical history, will require much time, even when the project is under way. Nuremberg itself, moreover, will never be able to solve the problem in a comprehensive way.

The Germanic Museum has for its object the collection of all possible cultural data concerning the Germanic races, so as to present a complete picture of the development of culture on German soil. Now, if it will also collect to the fullest possible extent, the cultural documents concerning the healing art, it will at best be able to present a very interesting section of one of the most fascinating domains of human culture. As the Germans, however, have appreciably advanced medical science but did not invent it, the Museum will present mere fragments of a developmental history which can be understood fully only

when viewed as a whole. No matter what wealth of instructive material the Nuremberg "Medico-Historical Cabinet" may gather together, it can never dispense with the need for a historical Central Museum of the entire healing art. Such a Museum, alas! does not yet exist anywhere, but it is an absolute necessity for learned research, as well as for well-rounded medical education, and will furnish much material for the instruction of all classes. Such a learned institution would even be of immediate practical utility.

Let us take a concrete case. A new "water apostle" has arisen in the person of Father Kneipp. You may tell the fanatical adherents of the new fashion as often as you like, that these are old, revamped methods, that have been tried decades ago, and in part abandoned. You will be answered with shrugging of the shoulders—"professional jealousy of the medical soothsayers!" But take these same enthusiastic supporters of the "New Doctrine," into an Historical Museum of the Healing Arts, to the section of the "Water Cures," and show them, on the walls and the cases, pictures and caricatures from the beginning of the nineteenth century of ladies in wide skirts held up high, wandering over the dewy grass in slender bare feet, with the old attendant behind them carrying their shoes and stockings. Then show them the writings of the "Water Cocks" of Schweidnitz from the middle of the 18th century. Then carry them back, past Jerome Cardan, Barzizi, Bianchelli and Savonarola, to Asclepiades and Hippocrates, and they will become suddenly mute.

But let us tarry for a moment in the section of "Water Cures." It begins with the highly developed balneology of antiquity, the ritual regulations of ancient nations for the purification both of the healthy and the diseased, the bathing arrangements of the Greek gymnasia and the schools of athletes, the curative springs of the Greeks, the public baths of ancient Rome, the baths of Baiæ, the heating arrangements in the bath-

rooms of Roman villas in the North. These things should be presented to the minutest technical details, and this may already be found exemplified here and there in some of the museums of antiquities, but nowhere in a form which permits modern specialists to gain a complete understanding of these matters. The mediæval baths, with their luxuriant developments, can help us to visualize the life of the common people of those times. Then come the general and local sweat baths for the cure of the "French disease" and other illnesses, the "bathing pilgrimages" of the 16th century, with their wealth of illustrative material, as presented to us by the Renaissance wood-cutters; the delicious pictures of manners and customs drawn with the bold pen of a Poggio. Finally, we come to the extraordinary development of balneology in the last few decades, the almost endless variety of the equipments in our bathing resorts, the development of sea bathing on all European coasts, with its interesting differences in seascapes and patrons. All these things should be visualized in reproductions, plans, small models and authentic objects. What an overwhelming picture of many sided life and activity of efforts to heal diseases and to preserve health through the centuries would be unrolled before our eyes! In truth, this would be not merely a "dead" Museum for scholars, this would be an institute for public education of the noblest sort. And yet, we have only indicated one comparatively small section of medical activity, with a mere hint of its infinite variety.

In the same way, mechano-therapy could be represented from the dawn of culture onward. The gymastic exercises of the Greeks are not the beginning. Their massages, "kneadings," inunctions and the like, may be regarded for the most part as therapeutic measures. The apparatus for the reduction of dislocated joints, as used by the Hippocratic school, has been pictorially represented in a manuscript of Apollonius, but who can make use of such records except philologists? All the

apparatus and equipment, which have been invented and constructed in the course of centuries down to the present day for this purpose alone would form a museum in themselves. And how many things are being "invented" anew, which were recognized as useful long ago, and which experience has either approved or rejected? The loss of continuity with the past has caused an endless waste of work and effort, and has resulted in enormous injury to life and health, when adequate knowledge of the experiences of the past might have prevented it. But this is a phase of the subject which I will not take up at this time.

The development of surgical instruments—what a grateful subject for the archæologist, for the physician, for the historian of culture, even for the instrument maker of our own days! Consider merely the scalpel alone, in its changing forms throughout the centuries. Today we give our scalpels the smoothest possible metal handle, into which the steel blade can be smoothly fitted. Instrument makers of about 15 years ago were not a little proud of this achievement, but the old Romans had already done the same thing. For dull cutting operations the surgeon of today turns his scalpel about and severs the tissues with the flat edges, but this also had been done by the Roman surgeon. Almost every one of the Roman instruments could be used at both ends. Such Roman surgical and ophthalmological instruments have been excavated in great numbers in the Rhine provinces and surrounding territory. The archæologist Lindenschmidt, of Mayence, has had a handsome collection of such instruments reproduced in brass, which can be bought for a trifling sum. Every surgical clinic ought to have and employ such a collection for the introductory lecture on operations and instruments, but in how many of our schools is such a collection to be found? The answer would probably prove embarrassing Professor Deneffe, of Ghent, has collected over 800 old surgical instruments, and has placed them

in glass wall-cases, so that his students may see them constantly. The Museum of Historical Medicine should follow the development of the surgical instrument in all its forms (probe, needle, scissors, forceps, spoon, scraper, etc.), among all peoples and should present it to you, in the original form, in reproductions and in pictures, in its minutest details.

Then, in connection with the instruments themselves, the various operative methods could be represented, e. g., the gradual perfection of the methods for the amputation of limbs, depicted by illustrations and appropriate apparatus; the treatment of wounds since Homer, and as represented on ancient mosaics; plastic operations, from Indian rhinoplasty onward; lithotomy with the requisite apparatus, cataract operations; also the operations for "stones in the head" and other varieties of quackery, in their inexhaustible wealth of pictures and caricatures; vaccination, with its touching (and sometimes mocking) glorification in art; to say nothing of its literature and instrumental technique. Then we come to the wide field of eye surgery and its development, trephining with its varying instrumentation. All this represents an almost illimitable domain in itself.

Plastic operations lead to a discussion of the steps taken to replace lost tissues. Replacing teeth is the most familiar of these procedures. This could be historically depicted, from the artificial teeth found in old Etruscan skulls down to the great variety of forms and methods employed in the last few decades. Not less interesting is the development of other forms of reconstruction, such as artificial limbs and organs of all sorts, from wooden legs, to artificial eyes, tympanic membrane and larynx.

Another section could be devoted to the efforts of physicians to illuminate the interior of the body beginning with the specula found in Pompeii, which, in their comparative perfection would already indicate a considerable degree of development. From

the different forms of vaginal and rectal specula, we could proceed to the mouth depressors, ear specula, laryngeal mirrors, nasal mirrors, ophthalmoscopes and allied instruments, such as have been produced in many allied forms in the last few decades and finally, to endoscopes and photographs of mucous membranes of the bladder and the stomach, as well as Roentgen apparatus. Then we could present historically other diagnostic methods such as palpation, percussion, ausculation, succussion, both in pictures and by means of the instrumental aids to these processes.

A new departure in such an exhibition would be the history of the care of the sick. Here we would represent sick-rooms, hospitals, gardens, etc., showing not only the appointments, from couches to kitchen ware, but also the various devices used in maintaining the patient's position, apparatus for lifting, wheel-chairs, and the various corporations that devoted themselves to the care of the sick, the clerical and knightly orders, the Knights of St. John, the Teutonic Knights, the Lazarists, the Orders of the Holy Ghost, the Elizabethan Sisters, the Beguin Nuns, the Beghards, the Alexian Brothers, the Sisters of Charity, the Deacons and Deaconesses, army and Red Cross nurses, relief societies and sanitary organizations, all these things would by themselves almost fill a great historical museum. The last named developments, so popular today, make the transition easy to folk medicine, which is related to the old priestly medicine, while the history of prehistoric medicine glides unperceptibly into the medicine of living primitive man. The folk-medicine of civilized peoples represents today (as it did formerly) a section of the scientific medicine of earlier times, the essence of which has been faithfully preserved for centuries by the common people, along with so many other valuable things of popular origin which go back to prehistoric times, that is to "primitive man." The temple medicine of the Greeks likewise belongs to folk medicine. Here we are

fascinated by the temple inscriptions, with their stories of cures, and by the votive offerings, as they are found among the Romans and Etruscans, e. g., the stone, bronze, silver, gold and terracotta members (arms, legs, heads, eyes, ears, breasts, genitals and intestines). In the form of wax votive offerings, brought to the altars of the saints, these objects still survive in the religious customs of many localities. We shall be able to represent the statues and temples of the old gods and heroes of the healing art, the benisons of the ancient Germans, the amulets of Oriental peoples, afterwards imported into Rome, and surviving in various Christian cults. Nor can we forget the patron saints of various diseases, as reflected in such names of diseases as St. Veltlin's disease, St. Quirin's penitence, St. John's revenge, St. Anthony's fire, St. Vitus' dance, etc.

The wealth of material offered by primitive folk medicine is amply demonstrated by the Ethnologic Museum. Arranged according to other historical viewpoints, all this can well be taken up in the Medico-Historical Museum, as well as other aspects of primitive or folk medicine. For example, we should have to collect the various medicines with their indications; drugs of all sorts, with directions for their use, as this information is gathered up by our scientific travelers and by missionaries directly from popular tradition.

Of course, along with scientific medicine, we should have to exhibit also the drugs of antiquity, the Middle Ages, and modern times, with their changing names and modes of use and sources of supply, as well as the various technical preparations in every form—for example salves, pastes, plasters, liquids, powders, pills, masses and collyria, particularly the interesting Gallo-Roman collyria stamps of the oculists. Then there would be the entire pharmaceutic armamentarium of mortars, scales, boiling and distilling apparatus, pots, jars, flasks, etc., in short the entire picture of the art of the apothecary, as mentioned above in connection with the Germanic Museum.

Room would have to be found for the history of diseases as preserved in reports, inscriptions, pictures, monuments, "pest medals," "pest crosses," pest amulets, comet coins and all sorts of "dollars," or in the collections of thousands of gatherers of these tokens of diseases of the past, notably in the collection of Privy Councillor Pfeiffer of Weimar.

"The Physician at the Sick-Bed" is a picture which can be made most attractive, from standpoints of both the history of civilization and the history of art, and the directors of such a museum will be absolved of the charges of glorifying the individual, if along with all the horrors of recent and bygone times, they present not only such a picture, but also the portraits of the great physicians of all times who have manfully fought against the terrors of diseases. A medical portrait gallery must not be lacking in such a museum, and the portraits could be attractively supplemented, in a spirit of reverence, by all sorts of little personal relics. And we must not be unmindful of the development of the medical profession and of medical education. The medical faculties have a wealth of material suitable for exhibition purposes if it can be got at.

Finally, we must mention medical manuscripts, incunabula and subsequent printed works, of which the illustrated portions would already have been found very useful in other directions. For example in the history of anatomy, which I have not yet mentioned, the history of anatomical illustration does not yield to any other group in volume and artistic worth. An historic library of the healing art as a whole would be an absolute essential to such a Museum. Although this colloquial sketch has not even barely outlined the riches that could be offered, I must conclude. My object was merely to indicate in a cursory way what a many sided interest such a Medico-Historic Museum would have, and of what great value it would prove to be. Everything would have to be systematically built up and de-

veloped from materials which would have to be collected and sifted for decades.

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The above was already written, when the newspapers brought word of the great achievement contemplated by a Parisian savant, in founding a Museum for the History of Medicine. No doubt whatever treasures of the Medical Faculty Brouardel expects to exhibit in the three rooms of the Sorbonne, will prove highly interesting, instructive and well worth seeing, something that will form a shrine of pious memories, worthy of such a cultural center as the Paris Medical Faculty. But, no matter how incomparably valuable the material may be that time and chance have assembled and preserved in such an honorable resting-place, it will have little in common with what we have recommended in these pages, viz., the foundation of a complete collection illustrating the history of medicine, arranged from a strictly scientific viewpoint. It has much less in common with it than the Historic Exhibition of the Natural Sciences and Medicine at the Düsseldorf Convention of Naturalists (1898) or the Medico-Historical Exhibition of Giacosa in Turin a bit later.

But will the idea here developed really ever take root, perhaps in Berlin? Shall we wait, until some one elsewhere has done something in this direction? There is no longer much time to lose. Rust is constantly eating away the instruments in the attics of the old hospitals and clinics. Year by year, the relics of bygone medicine become harder and harder to get together, so that in many respects there is danger in delay. In America there may be perhaps some rich Mæcenas to further this purpose, but in Germany, only the state could bring about the realization of such a plan.

On the occasion of the laying of the corner stone of the

German Museum at Munch in 1906, I gave an account of future developments of the subject, and mention a few here.

Even prehistoric times offer something of medico-historical interest. We have not yet determined beyond doubt which of the many instruments, from the chipped flint artefacts of Eolithic times to the most delicate types of Stone Age knives and saws, the primitive surgeon of the Paleolithic or Neolithic Age used for his bold operations, but on the other hand, witnesses of his activity in all stages of success and failure are indubitably preserved for us in the hundreds of skulls of his fellow tribesmen, which he had the temerity to "trephine" for grave illness. He thus performed one of the most serious and aggressive operations with inadequate instruments, but, none the less, he had the art to achieve the desired end-result; so that many of his patients, cured as demonstrated by natural changes in the trephined bones, could for many years thereafter continue their life as huntsmen. It is to be assumed that the skill of the primitive surgeon was not confined to operations on the bones (and long series of well healed long bones, restored to perfect function, testify to the skill of the operator), but evidences of operations on the soft parts would naturally be nonexistent after tens and thousands of years, nor do the drawings of Stone Age artists afford any information on this point.

Much more variegated is the picture presented to us, parallel with prehistoric medicine, and often contemporary with it, in the medicine that once flourished along the shores of the Euphrates and the Nile, as yearly excavations and researches demonstrate to us anew.

Just as the "Germanic Museum" will be able to illustrate the early history of botany and zoölogy by the stone inscriptions from the research expedition of Queen Hatschepsut (those on the temple walls of Deir el Bahari still showing the medicinal plants and the sea creatures of Erythræa); just as chemistry begins with the Edfu inscriptions, so the stone archives of the

Nile country and the land of the Two Rivers have preserved for us documents of priceless value in the history of medicine. Here we can see the kneeling operator, performing circumcision on grown youths, with the nephrite knives handed down from the Stone Age. We see him performing the operations on the toes, or on the shoulder or on the back, with the same instruments. We see represented the prescribed number of midwives leading the proud Queen to the bed of labor, under the supervision of the god Chnum, and the wet-nurses prepared to nurse and care for the future king. Bathing and shaving the body are there represented, as also the pale Egyptian performing her toilet with all the gentle refinement of the woman of the world. She was quite modern in that her eye cosmetics were prepared with the prophylactic intention of keeping away the dreaded trachoma from her beautifully inset, almond-shaped eyes. The stone chronicles also present many realistic details of the children's quarters, just as the papyri preserve not only the delicate flavor of the love life of the Egyptians, but also the physicians' prescriptions and the certificates and other documents of town and country practitioners.

From the banks of the Tigris, there have been handed down the ingratiating reports of court physicians, and of those who hoped to be such, addressed to the Supreme Majesty and the exalted court ladies, concerning injuries of princely officers or illnesses of favorite members of the harem. The Code of Hammurabi uses plain language concerning the status of physicians and concerning operations. Just as finds from the Pyramids made us acquainted with the likenesses of ancient physicians, so the land of the Two Rivers gave us the nearly 5000 year old seal of the physician Urlugaledin, with the tools of his daily craft, the gigantic cupping glass and the copper phlebotomy needle and cupping-lamp, for so these engravings have been interpreted.

Even in those days, there was "temple healing" as will be

demonstrated by the "Plantlists" from the temple of Ninib in Babylon, when these finally reach Germany, along with hundred of other hieroglyphics from the same excavations. Temple medicine of infinitely greater variety and attractiveness existed in Asia Minor and Greece, as demonstrated by the Asclepieia and Amyneia, recently excavated at Cos, Athens and Epidauros. Along with incomparable treasures of art and architecture, these reveal a profusion of efforts at healing of all kinds. They present an unbroken continuity for centuries, up to the Asclepieion at Pergamos whither the credulous Galen went for treatment. They include the Isieia and Serapieia in Hellenistic Egypt and elsewhere. These also deserve to be excavated, even though they were to lead us to the times when, in these temples of the healing gods or Dioscuri, Christian healers, like Cyrus and John, Cosmas and Darmian, Zenobius and Zenobia, or even the archangel Michael, were included and the Iamata of Aesculapius became the miracles of the Holy Martyrs. What treasures of art, what attractions from the standpoint of the history of civilization, would be unveiled in these sections devoted to temple healing in our future Museum of Medical History; in the adjacent rooms, how many items of interest about suffering humanity in need of healing and salvation! In these rooms, we should find the great Christian saints of healing and nursing, the plague patrons St. Roch and St. Sebastian, St. Anthony, who cured ergotism, St. Vitus who cured convulsions, St. Dionysius, who cured syphilis, the pitiful St. Martin bringing healing to the lepers and that gentle nurse of the leprous, the good St. Elizabeth of Thuringia, St. Quirinus, who cured glandular diseases and many another up to the Mother of God herself, Santa Maria della Salute, who graciously kept pestilence away from Venice and Munich and many other cities. In the widest sense, this would be space sacred to the embodiment in art of the desire of afflicted humanity for the healing of its ills. Taking it

in detail, it would be a priceless store-house of records of medical history. To take only one example, the very angel who incises and heats the plague boil of St. Roch, employs the entire surgical armamentarium known at the time of the naïve artist. These records would further be invaluable for the history of diseases which have scourged mankind, diseases whose phenomena have been faithfully represented by the truly great artists of the day, many of whom actually studied these phenomena of disease in hospital.

Similar thoughts would be aroused by study of the Donaria, which, beginning with the temples of Eschmun in the Orient, would lead us in an unbroken series past Egypt and Asia Minor, past destroyed Veii and Athens to the sanctuaries of the Island in the Tiber, to the silver hearts on the walls of St. Mark's, to the Pilgrimage of Kevelaar and the quiet chapels of Upper Bavaria, to the votive offerings found in the wax shops of Munich. These are physical representations of "healing faith" which will be extinguished only with mankind itself.

But even the physical side of the healing art is rooted with all its fibers in antiquity, and must be pursued from its first signs and material manifestations in the ancient Orient and its transformation into science in sunny Greece, through the centuries, so that it may be represented in the Museum of Medicine in all its differing manifestations. Let us, at this moment, view one example only in its most significant sites.

Would not the section devoted to Cnidos and Cos alone be of immense interest, with the exalted figure of Hippocrates II in its midst? Over his head, in a niche of the wall of his classroom, we should place the wonderful Æsculapius of Melos, wrought by Praxiteles, with the longing impulse to relieve suffering reflected in his impressive noble countenance. And then the section devoted to the long flourishing Medical School at Alexandria, where Herophilus and Erasistratus extend to each other the hand of fellowship; and the school of Rome in

the time of Galen; the later schools of physicians of Asia Minor and Byzantium with its pale aftermath and the school of pharmacology of Nicandros, Aratus, Crateuas, Dioscorides, which has such a treasured monument in the Codex Anicia Julianae, with its magnificent pictures of animals and plants. What a brilliant and enchanting picture will be unrolled, of the first rebirth of Greek medicine among the Arabs in Bagdad and Toledo, to name only two of the findings of excavation at Edessa and Gondeschapur in the ante-rooms, then the magnificent medical schools, hospitals and libraries of Islam, and then, surrounded by its Gulf, mediæval Salerno, still and solemn, with the famous School which was the embryo of an European university, the school developed under the eagle eye of that towering genius, Frederick II, the Hohenstaufen, who was the first of northern rulers to recognize in entirety the importance of the medical profession and its influence upon the state, the first to express this understanding in far-reaching laws. How wonderful and flushed with success is the triumphal march of Italian surgery from Salerno to Bologna and Padua, with by-paths through Calabria and Umbria! Surgery becomes conjoined with the study of anatomy, of which a Michel Angelo becomes enamored and a Leonardo, with the monumental attention to detail and the tireless devotion to technique which his genius carried silently to completion. If all the designs of the Codice Atlantico were to be used for the reconstruction of small models, the studies alone would fill an entire room. In anatomy and physiology, the genius revealed in Leonardo's drawings at Windsor almost overshadows the greatness of that glorious Belgian, Vesalius.

In the dawn of the European Renaissance, medicine again rekindles and now, depending on its own light, follows the path pointed out to it by Francesco Petrarca, knowing and far-seeing even in the bitterness of misery and pity, to the glorious temple of honor in which Andreas Vesalius, Paracelsus and

Ambroïse Paré proudly stand together while an ever increasing number of the great fill the broad halls of honor of modern medicine; in the vanguard, William Harvey, Albrecht Haller Giovanni Battista Morgagni, Leopold Auenbrugger, François Xavier Bichat, François Magendie, Johannes Müller, Virchow, Semmelweis, Lister, Pasteur and Koch.

But whatever may be connected with all these great personalities and grouped without restraint about them, there must be apart from this briefly sketched development of medical science in the course of thousands of years, a specialized presentation in countless side rooms, of the many separate branches of medicine, for to the great majority of visitors to such a museum, these will speak a livelier and more comprehensible language once the exhibition is complete. Let me give just a few hints about the details.

Tuberculosis museums have already been founded, and with perfect right. In a comprehensive Museum of Medicine, however, as the historian of medicine imagines it, all diseases, above all the great diseases of the common people, must be exhibited, their history, the history of their prevention, the isolated case, the epidemic. This would naturally lead us to the history of hygiene, which, by itself, is a complex of tremendous proportions. First, the care of the body, beginning perhaps with the baths, which were already found in ancient Egypt as public and private enterprises, even in the remotest villages. Then perhaps the baths of the Orient, which were already of cultural significance. In Rome, the Thermæ demonstrated in their proud magnificence, a previously unattained height of public spirit. In the Middle Ages, the baths attained a remarkable many sided development. Finally, in our day, baths have again attained great public significance, assuming in the bath-room of the ordinary citizen, a special development which let us hope, will still not be completed for a long time to come.

Even in antiquity, the curative bath was extensively culti-

vated. One need think only of the many bathing resorts and healing springs about the beautiful, sinful Bay of Naples. The bathing pilgrimages of the Mediæval Period excite our interest, as well as the curative baths and the baths "de luxe" of our own time. Would not the history of balneology alone, in the Orient and the Occident, in all its different forms, bathing in the open, sea bathing, etc., be sufficient to fill a small Museum by itself, to say nothing of the many artistic shapes in which the two female bathing figures of the beautiful Susanna and Bathsheba have been presented. In these artistic representations, the playful spirit of the artists has even added many technical details of the bath in lavish profusion, as dictated by the prevailing customs of their time.

Closely connected with bathing are the care of the body, gymnastics and massage, which reached such a remarkable development in antiquity. Later came the leech and venesection, cutting and trimming of the hair and beard, the care of the hair and gums, up to the manicures and chiropodists of the last few decades. We must so mention the great variety of cosmetic substitutions. The hygiene of clothing, as well as the unhygienic features of clothing, offers a wide field for illustrative material, up to the divagations of today, which in their æsthetic and hygienic aspects are not free from objection.

Then the problems of providing water for cities and villages, sewers and sewage disposal, in fact the entire question of city-building, constituted, from the most ancient times, an important factor in public health. These problems had already obtained partial solution in antiquity, but, in any event, can be followed in their progress and retrogressions most instinctively. The same may be said of the public and private hygiene of food-stuffs.

Aside from clothing, the evolution of the sick-bed would require adequate presentation, for this leads directly to the other sections. There is no doubt that hygiene has played a

great and important part in medicine, and, under my direction, at the Hygiene Exhibition in 1911 and, if God wills, in the future Dresden Museum of Hygiene, the subject has been, and will be, adequately developed. But, for the sake of hygiene, we must not, in stepmotherly fashion, brush to one side matters proper to the healing and care of the sick, for they are not less rich in their concrete and pictorial development, and certainly not less important.

From the heroic medicine of Homer, which already carried everything (even epidemiology) in its roots, the treatment of injuries, which is so graphically described in the Homeric recitals of heroic combats, has always played an important part. From its methods of bandaging, conservative treatment was further developed, while the necessary removal of limbs made useless paved the way for improvements in operative technique. But the endless wealth of detail in the evolution of surgery cannot even be adequately hinted at in bones of discussion. Furthermore it must be remembered that the development of surgical instruments, up to the Röntgen apparatus of yesterday, would require a very large subsection in itself.

A center of attraction in the Museum would be the rooms devoted to pregnancy, birth and puerperium, the care and education of children. This would be comparable with the collection of cribs in the National Museum. We know how artists have always been attracted by the "Visitation," by the birth of the Virgin Mary and St. John, (which they have represented either simply or with a wealth of splendid detail). The Christ Child, which the blessed Mother holds on her knees or nurses at her breast, the feastings in the lying-in rooms of the joyous Netherlands, the lonesome mother at the cradle or the sick-bed of her darling, all these things have been, and still are, depicted over and over again by artists. All this, in its truth to nature, along with the history of obstetrics proper, with its "chairs," positions, instruments, apparatus, would give an

overwhelmingly complete picture of this branch of medical activity. Then there are the numberless other trifles in ceramic art, the "lying-in dishes," teething rings in artistic form, nursing bottles, the diapers, binders, tables, children's bath-tubs, baby carriages, baby chairs, etc. All these represent problems put up to the arts and crafts of every age to solve, and the solution of these problems is irresistibly fascinating to every beholder.

The nursing personnel who care for those most in need of care, the young mothers and their sucklings, should likewise be represented, as well as the general subject of trained nursing, one of the noblest manifestations of helpful, Christian love of humanity. We should wish to present the development and organization of nursing in orders and guilds. There should be space for showing the growth and development of hospitals through the centuries, up to the magnificent structures of recent times, and the plain but well thought out barrack buildings of today. All this would be shown in models, pictures and plans, even in complex detail. In truth, the Museum of Nursing would occupy a special place of honor in the general Medical Museum. The entire history of the status of physicians, with the corporations, ceremonies, etc., is intimately connected with this honored subdivision. Beside the gallery of those men and women who have distinguished themselves in the care of suffering humanity, there should be also a gallery of honor of those other great distributors of blessings to mankind, the most distinguished physicians of all times. Then also we could arrange a most instructive exhibition of the evolution of Medical Education, including the instruction of the subordinate persons required in the arts of healing and nursing. We could show the progress from old medical schools and temple schools, to the gleaming palaces of modern universities and their immense laboratories and institutes, constantly spreading out in space and increasing their apparatus and equipment. We need

mention only one, namely microscopy, from its humble beginnings, to the brilliant achievements of the Jena microscopic plant, but thousands of other essential aids to research must be exhibited. Some of these things, to be sure, are already on view at the "German Museum."

A large space, although surely no place of honor, must be given up in this Museum of my dreams, to the various manifestations of charlatanry and quackery of all times. These phases long ago found their arch-protagonists in Thessalus, and in Crinas of Massilia, who during the early years of the Roman Empire wandered through the streets of Rome, with a tom-tom, like a circus performer, all for the sake of ensnaring patients. They are represented today by the shepherd quack who only recently made a practice of cutting off the hairs of the neck of beautiful and ugly alike. For the enlightenment of the people and the combating of this cancerous growth, nothing would be more efficient than such a Museum of Quackery, representing its ever changing manifestations. In essence, quackery is ever the same. In its "good" forms, it is simply an impudent abstraction from previous epochs of scientific medicine. In its worst forms, it is the degeneration and distortion of the borrowed material, of most exaggerated type, often completely reversing the original material or thought, with the most harmful consequences. In the process, these impostors unscruplously exploit the need of the most pitiful of earth's creatures, the hopelessly ill, to say nothing of their exploitation of the folly of imaginary disorders and the fashionable naughtiness of modern "society."

But let us make an End! One could chat about these things for hours and not even begin to exhaust the subject.

JULIUS LEOPOLD PAGEL

Translated by
MAJOR G. SEELIG

JULIUS LEOPOLD PAGEL

MEMORIAL ADDRESS (1912)

BY inclination and by predisposition he was a scholar in the truest sense of the word, measured both by his formal knowledge and by his literary activity. Even his thesis for his doctorate dealt admirably with an historical subject. Although he was a pupil of August Hirsch,—the founder of the discipline of historico-geographic-pathology,—and although he revered his master's memory, Pagel himself showed no lively interest in developing the historic aspect of pathology or epidemiology. He claimed rather as his own, the purely literary field of history. Through his indefatigable study of medical history, he acquired an encyclopedic command of facts,—a fullness of information scarcely rivaled by that of any present day scholar. He sought constantly to expand even this broad scope of knowledge, and to systematize his facts while he added to them, always sifting, selecting and registering. Isolated historical facts only began to take on value for him, when they had been properly placed in the fabric of systematized medical history.

It is obvious that such an attitude of mind was necessarily a stimulant, particularly in the field of medical history. On the other hand, it had its drawbacks. Pagel, of course did not neglect the study of original scripts; indeed he showed zeal in his labors over French manuscripts of the Middle Ages. It is a fact, however, that he could not become very much centered in this interesting period of the cultural development of Europe. The Middle Ages always remained for him a dark and sterile period, without particular value, despite the serious and intelligent efforts that he devoted to the study of them.

His life's history can be briefly told. He was born on May 29, 1851, at Pollnow in Pomerania, and was always proud of his Pomeranian birth and his geographic kinsmanship with Rudolph Virchow. He began his studies in Berlin in 1871 and for the rest of his life was loyal to that cosmopolitan city. In 1876, he settled down as a practitioner in Berlin, became lecturer, Titular Professor, and finally Associate Professor in history of medicine. Indeed he rarely crossed the outskirts of Berlin, industriously engaged as he always was at his desk, in the practice of medicine and in his library studies. His practice gradually narrowed down to duties concerned with public health. His doctorate thesis,—"The History of the Medical School of Göttingen University during the 18th Century"—has already been alluded to. There followed years of industrious work in his profession and his beloved avocation, until he sent several contributions to "The Biographical Lexicon of All Times and All Peoples," edited by August Hirsch and A. L. Wernich. These contributions attracted the attention of the old teacher Hirsch, who, in 1885, invited Pagel to collaborate with him and then later, after the death of Wernich, turned over the editorial management of the Lexicon to Pagel. This Lexicon will, for a long time, be an indispensable aid in historical work. Later (in 1901), Pagel revamped and enlarged the nineteenth century section of the work, added portraits and furnished an historical introduction.

Thus early was he engaged in large encyclopedic researches, which, while they well represented his power in literary efforts of bibliographic character, nevertheless did not offer full scope to his capacity as an investigator. He later created for himself the field of activity most attractive to him. He has told us, in vivid words (in the C. E. Daniels Festschrift number of Janus), how fate furnished him contact with the Berlin manuscripts of anatomy and surgery by the fourteenth century French surgeon, Henri de Mondeville. In 1889, he published

an edition of the anatomy of this learned French surgeon, whose estimable influence on the development of surgery in the Middle Ages he fully recognized. He did not however, realize that Mondeville had largely drawn from a previous work on the same subject, by Henry.

Three years later, Pagel published a second large work on Mondeville,—an admirable treatise on de Mondeville's surgery. For more than ten years he busied himself with commentaries on de Mondeville's work and its influence on the medical history of the Middle Ages, and he stimulated the publication of quite a number of students' dissertations on this subject. His edition of Mondeville is truly a literary feat, but strange to say, evidencing the thanklessness of such tasks, has never received merited recognition in France. The translation and introduction by the Parisian surgeon E. Nicaise (1893) is undoubtedly an excellent piece of work, but it rests largely on Pagel's efforts, and utterly fails to take the place of the original Latin text, for purposes of serious scientific research.

Before the completion of the Mondeville translation, Pagel busied himself with another manuscript study, an edition of the minor surgery of Wilhelm von Congeinna (Congenis) from a manuscript of the Erfurt Amploniana, originally the library of a Lower Rhenish physician of the 15th century. This little volume was issued on the seventieth birthday of Rudolf Virchow. Following this came the so-called surgery of Joh. Mesuë. At the same time, Pagel also busied himself with Walther Agilon, Hugh of Lucca, Jamerius, Bernhard de Gordon, Guglielmo Saliceto; translated the Concordanciæ and the Areolæ of Johannes de Sancto Amando (13th century) and the treatise on ophthalmology of Alcoatim; finally, he published a new edition of the Anatomie of Master Richardus. All this activity falls within the period of 1893–98, years in which Pagel was incredibly productive, for he was also outstandingly active during the period along other lines, writing his Medical

Deontology (1896), his introduction to the Study of Medicine (1890), The Development of Medicine in Berlin (1897), and above all others, his twenty-five lectures entitled "Introduction to the History of Medicine" (1898), rich in bibliographic material, particularly from the newer special literature, and a systematically arranged medico-historical bibliography covering the years 1875–96, serving as a continuation of A. Pauly's Bibliographie des sciences medicales. (Paris 1874) The two works last mentioned are both mature products of Pagel's now highly developed power and knowledge. In 1899, after Puschmann's death, Pagel, as the most qualified man in his specialty, took over the editorship of the Virchow-Hirsch Jahresbericht and held it until his death, building up this publication and expanding it in exemplary fashion.

The last ten years of Pagel's life were naturally less productive, for his health was not quite up to par. But, even so, he continued to be remarkably productive, turning out such work as his Outline of a System of the Cultural Aspect of Medical History (1905). In this work, he expounds, in somewhat too literal fashion, the interpretation of Wilhelm Stricker's Beitraege zur aerztlichen Kulturgeschichte (1865), of the "border region, between practical medicine and many other sciences." He attempted to sketch, on the very broadest lines, the relationships that existed from the very beginnings of humanity, between Theology, Philosophy, Jurisprudence, Natural Sciences, National and World History, Belles Lettres, Poetry and Art on the one side, and Medicine on the other. This was, beyond doubt, an original and worthwhile undertaking, weakened however, by the fact that it was too exclusively literary in concept; for it must be admitted that the author was, after all, not fully equipped to gauge to its fullest extent, the relations between medicine and culture in general and those of general culture to medicine and the medical profession.

Pagel's Tables of Medical Chronology (*Zeittafeln zur Ge-*

schichte der Medizin) (1908) is a very clear and useful tabular arrangement of the important events in medical history. In 1909, he issued a new edition of the mediæval manuscript surgery of Jamerius (Jamatus), dedicating it to the memory of his loyal life's companion, Marie. Short journal articles, necrologies and other casual contributions flowed steadily from his pen, even during the period of his larger activity. He wrote a large number of critiques, which he published preferably in the international journal, "Janus." He also wrote a short biography of Virchow. Finally there must be mentioned his participation in the large Handbook of Medical History (*Handbuch der Geschichte der Medizin*) that Puschmann at his death left as a well laid out plan, having already selected some of his collaborators.

It was a very promising thought to present the history of medicine in the form of monographs written by representatives of all the special branches; however, the various outstanding men refused to contribute. After all, knowledge along special lines is only a partial qualification in the task of writing history of this sort. That only partial results were obtained in the execution of Puschmann's plan cannot, of course, be charged against the worthy editors. Neuburger's introduction to the modern period is a brilliant *tour de force* and Pagel's exposition of Western Medicine during the Middle Ages is indeed worthy. All in all, the editing of the three large volumes which appeared from 1902 to 1905, was a most painstaking and responsible piece of work, an accomplishment that may always lay claim to recognition. These volumes will be used for years with profit. Pagel's eagerest thought and most unselfish affection flowed in his efforts for the *Jahresberichte* as the tasks nearest his heart; nor did these affectionate labors perceptibly lessen even when he entered the shadow of his approaching end, a shadow which he, with the clear, clinical eye of the physician, discerned before that fatal day on the 31st of January. The

void left by his death will be hard to fill. We knew that the work done by him for fourteen years was in safe and competent hands. He had practically completed the report covering the year 1911, when his death occurred, and in this, as in other directions, he has left to the younger generation a rich legacy which must be protected and nurtured, if it is to continue to bear worthy fruit. Truly, there is in German and Austrian territory no lack of competent recruits who will joyfully labor on in the field which Pagel cultivated with so much zeal, spirit and accomplishment. His memory will be always honored, his glory will be always bright, of that we may be sure.

JULIUS PREUSS

Translated by
MAJOR G. SEELIG

JULIUS PREUSS

(1914)

MORE than three months have slipped by, since Preuss has gone from us, but for only a few days have I had knowledge of his death. He must not die without comment, for what he has done is unforgetable as an accomplishment in the broad field of medico-historical effort, a field which he commanded as did few of his predecessors and none of his contemporaries. I learned from him and his family, early in the year, that he was very sick with a laryngeal ailment and had sought health in the south; but as I did not suspect cancer, I had hoped for a disease of longer course. I was traveling during the latter half of September and October and as no political or medical papers reached me, I was without the news that Health Officer Preuss died September 23, 1913. Some years before his death, I had the good fortune of an hour's chat with him at my hotel in Berlin, after vainly seeking him over the north end of Weissenburgerstrasse. That short hour was enough to create in me an enduring esteem which found expression in occasional letters. In the one hour that we were together, he permitted me, the non-Jew, to see so deeply into his soul that I knew his hope was to be a classical philologist,—this man, whose practical course of life made his dream impossible because he was a Jew. He had become a physician and his remarkable talent for historical and philological investigation directed him to the study of the history of his specialty as an avocation, and in particular to that branch which inevitably attracts every Jewish

physician of the old stamp, namely, Biblical and Talmudic medicine.

This subject had been pursued intensively by many industrious scholars, both Jewish and non-Jewish, even during the last decade, but seldom with full knowledge of the subject and still more seldom with an historical perspective. Too often there was substituted inspiration, a necessary but, as often happens, an unreliable aid. Julius Preuss never lacked in his work either the inspiration or the devotion so essential to thorough accomplishment. But from inspiration he derived only the incentive which spurred him on to the mastery of difficulties. Never did he permit it to obscure his historical judgment in its incorruptible service toward the establishment and enunciation of truth. Cool to the very heart, he was; love of the people of Israel did not cloud his view. Enthusiasm for their superior viewpoint did not make him see the straight line as crooked. For these very reasons, Dame History has laid laurels upon his grave, as a memorial to him, the master of historic criticism, the upbuilder rather than destroyer.

The story of his life is quickly told. In a certain Jewish house of the village of Schönebeck, in the Uckermark, he was born in September, 1861. He received his academic education in Angermunde and Prenzlau. He studied medicine in Berlin with such brilliant success that the much feared examiner, Virchow, said to him, "You can think medically." He had prepared himself to think properly by his thorough study of the Talmud under the learned rabbis of Prenzlau and Berlin, until he was independently able to handle old texts, lexicons and original sources of knowledge, so necessary in all antiquarian studies.

After many years of isolation, spent at home in country practice, he moved to Berlin and settled in a somewhat better quarter of the metropolis. There he practiced faithfully and

at the same time, turned out a continuous series of admirable investigations in Biblical-Talmudic medicine and hygiene. In 1907, when I first got to know him personally, he had already completed two dozen papers, all of equal worth and all equally authoritative. And to the joy of real historians, it was permitted him to crown his labors by publishing all his work in a standard volume, entitled "Biblical-Talmudic Medicine: a Contribution to the History of Medicine and General Culture."

This book must without doubt be characterized as one of the most, if not the most worthy of contributions to medical history that has appeared in the last half century. To this book of Preuss, further investigations, covering various periods, will have to be added, if we hope to maintain a critically historical attitude toward some of the questions that he raised.

MAX HÖFLER

Translated by

JOHN RUHRÄH

MAX HÖFLER

(1915)

DEATH, who, out on the battlefields of the East and the West, has taken away so many of our rising generation, has not spared those who had already contributed much to science and practice, with promise of an even riper harvest for the future. He has also reaped his harvest at home, even among the best of our profession.

On December 8, 1914, a cancer of the liver swiftly carried away one of our best experts in medical folk lore, one of the finest historians among the physicians, one of the most widely known balneologists of the Bavarian mountains and a doctor of the real old school, not yet 67 years of age, Max Höfler.

His father, with Herder, was the founder of the healing iodine bath establishment at Tölz. That Max Höfler gradually attained a world-wide reputation was no more than his desert. He was born in Tölz on March 6, 1848, and studied in Munich and Würzburg, under the direction of Nussbaum. He served as volunteer surgeon in Field Hospital, Number 9, during the war of 1870–71 and returned, decorated with the military service cross, to study until 1872, when he received his medical degree. By 1873, he was already settled as a practitioner and physician to the mineral bath in his native town, but he widened his mental horizon by frequent journeys, not only through Germany and Switzerland, but into Holland, Russia and Italy. He sharpened his vision as much by much deep digging in the mines of knowledge as by many sided, open-minded observations and consecutive thinking. In this industrious worker and collector, there was nothing of the

paltry, eager pedant. He was a pathfinder, a master investigator, who went his own way. There was more in him than a good physician to peasants and mineral baths, more than an admirable connoisseur of the land and people of Isarwinkel, more than a well informed collector of isolated facts of folk medicine. Taken all in all, he was a rare combination of excellent parts harmonized by a charming, sagacious personality. One must have seen him in his home, among his native foot hills, in his wholly sympathetic, harmonious environment, to realize how much there was in him, how much he was a product of that environment; and although he never deserted the ancient cultural milieu to which he owed his deep rooted strength, few could sense how much he had outgrown it. Like a noble tree, he remained rooted to the soil, no matter how tall it grew or how fine and clear the air in which the tree-top towered.

To a boundless wealth of observed and collated facts from his country side and people, as well as from libraries of the history and literature of folk lore, or from the wonderland of language-lore, past and present, he brought his own personal endowment. His clear orderly thinking brought the coherent together and with intuitive talent, sharpened by varied experience, he elucidated the innermost nature of what he had observed in life.

Early in his mountain home on the Isar, he began his studies, which were eventually brought together and published in two volumes of admirable and noteworthy investigation. "Folk Medicine and Superstition, in the Bavarian Highlands, Past and Present," appeared in 1888 and "A Medico-topographical Account of the Isarwinkel" in 1891. It is remarkable how in the next twenty-five years, from this starting point of "folk medicine" and "superstitions," his knowledge and ideas about folk knowledge and its historical aspects spread widely and deeply, from his Barvarian homeland to the Germanic and the Celtic lands.

Next he studied the most significant manifestations of folk medicine, as seen in the heathen and Christian cults, from the Leonhard cult of Upper Bavaria to the tree and forest cults, to demonism in folk medicine, and especially to the occurrence of disease demons. Interesting, too, are his accounts of the cult of healing cakes, of figured cakes from Gallo-Roman times to such present day remains as are seen on Shrove Tuesday and Easter, St. John's Day, All Soul's Day and Christmas, no less than at birthday, child-bed and baptismal festivities, and at weddings and deaths. He made this a special field of study and collected specimens, which, through long patient investigation, he explained clearly, e. g., the significance of pretzels and of heart-shaped healing cakes. Another line of investigation he pursued relates to sacrificial anatomy and organotherapy in folk medicine, which appeared in 1908 in a brilliant monograph, a remarkable collection of facts marshaled with astonishing mastery. This study was entitled "Organotherapy in Popular Medicine and its Relation to the Sacrificial Cult." [1] A later contribution concerned the organotheraphy of the Gallic Celts and the Germans. No one has made such profound studies of the medicine of the old Germanic and Celtic tribes as has Höfler, through his extraordinary historical equipment and his linguistic ability. This is manifest from his comprehensive account of the ancient Teutonic healing art in Puschmann's "Handbook of Medical History" and lastly by his finest and best work, "Popular Medical Botany of the Germans," [2] which appeared in Vienna in 1908.

This is full of original views, new ideas and an astonishing array of facts. In his later years, he busied himself particularly and profoundly with ancient Celtic medicine and these studies resulted in the following works: "The Gallic Druids

[1] "Die volksmedizinische Organotherapie und ihr Verhältnis zum Kultopfer."

[2] "Volksmedizinische Botanik der Germanen"

in the History of Medicine," [1] "The Druids in Relation to Gallo-Celtic Folk Medicine," [2] "Gallo-Celtic Balneology," [3] "Popular Medical Botany of the Celts," [4] and "Sun-Worship in Gallo-Celtic Folk-Medicine." [5]

His comprehensive exposition of the old Germanic-Celtic healing art, completed before his death, will appear in *"Kultur der Gegenwart"* at the close of the war.

Höfler devoted many years to thorough-going and successful investigation and collection of old German words for diseases. In 1894, there appeared, in Vienna, a paper on the sources of the popular German names of diseases, and in 1899, he published the work which makes his name immortal, the *"Deutsches Krankheitanamenbuch."* This consists of 922 pages of large format, in two columns of fine print. It is a work of an untellable wealth of essential material, winnowed and presented with great clearness, a work that is at once most welcome and indispensable to workers in philology, folk lore and the history of medicine. This book brought him honors from the learned medical world and at the suggestion of Johannes Hoops, the Philosophical-Historical Faculty of Heidelberg University conferred on him the title of Doctor of Philosophy *honoris causa.* The Bavarian state named him Court-Councillor in 1896. Tölz named him *"Hochverdienten zum Ehrenburger"* (most worthy of honored citizens). His finest monument, however, was created by himself in his works, a complete consideration of which is out of the question here. In the beneficent quiet of Isarwinkel, he was a skilled country physician of that oft visited health resort, the iodine bath at Tölz. He was also one of Bavaria's ornaments to German science. His name will live.

[1] "Die Druiden der Gallier in ihrer Beziehung zur Geschichte der Heilkunde."
[2] "Die Druiden in ihre Beziehung zur gallokeltischen Volksmedizin."
[3] Gallokeltischen Badewesen."
[4] "Volksmedizinische Botanik der Kelten."
[5] "Die Sonneverehung in der Volksmedizin der Gollokelten."

IN MEMORY OF JOHANNES MÜLLER

Translated by
FELIX NEUMANN

IN MEMORY OF JOHANNES MÜLLER

(October 7th, 1899)

TODAY Coblenz, the center of our Rhenish province, pays homage to one of the most celebrated sons of the Rhineland, a man, who will be always regarded as one of the greatest scientists of our century. The thoughtful citizens did not want the century to pass without having erected a worthy monument to a citizen, who was born at the early part of a new century, and who in the middle of the century, when he had reached the zenith of his fame, was unexpectedly snatched away. We of the lower Rhine want also to wreathe with laurel the monument of one of the greatest biological scholars and one of the great scientific leaders of Germany.

Johannes Müller was born of Catholic parents at Coblenz on July 1, 1801. His father was a cobbler. Under the sad and oppressive condition of the French occupation, the quiet but very intelligent boy passed his childhood in the little house on "Jesuitenstrasse." The blank wall of a neighbor's house was his only view from the living room. The whitewash of this wall was broken in many places, producing contours in which the boy's vivid fantasy perceived forms and faces, which none of his people could acknowledge. Was the boy a dreamer, a visionary? Notwithstanding their limited means, the parents did everything to give their son an education, supported in their praiseworthy efforts by Councilor Johannes Schultze in Coblenz, the chief of all the schools in the Rhine Province. It seemed obvious, that the boy would enter into the service of his church. When he was in his

eighth year, he spoke of becoming a priest, but the rich external nature of his native province, its flora and fauna, attracted him from boyhood, and he collected plants and insects. In the fall of 1819, after rendering his year of army service in the Engineer Corps, he entered the University of Bonn, just opened, to study medicine and natural sciences, having for three days hesitated whether he should study theology or medicine. His mother was deeply affected by the choice of his study; but the time came, when she was very proud of her famous son. After he had made up his mind, he progressed with great persistency, aspiring with all his power to attain his aim, and to become later on the teacher and leader of his co-workers. The life of a student of that period was full of interest. Müller was a member of a *"Burschenschaft,"* but the sublime science of nature and its phenomena mastered him, and he served her with passion and zeal. He became, even in his second year, a candidate for a prize, the first one offered by the new university: "On the Respiration of the Fœtus." He won this prize and his prize-essay is known to be one of the best essays ever submitted to a faculty. For another essay which dealt with a question of natural philosophy, he received in December, 1822, when only 21 years old, the degree of doctor. For the next three semesters, he studied at the University of Berlin and prepared himself for the final examination. His main scientific purpose was to concentrate his studies on exact observation. Müller became a natural scientist whose train of thought was strictly philosophical; he could not be further influenced by an aprioristic natural philosophy and became a leader in this movement of far reaching consequences. In Berlin, anatomy became the main object of his studies. He returned to Bonn in the fall of 1824, where he became instructor at the university. He was an incessant worker. The death of one of his intimate friends, whose physician he was, made a very deep impression on him, and

caused him to give up his practice. In 1826, at the early age of twenty-five, he was already assistant professor, and married the next year. He dedicated to his fiancée his ingenious essay on fantastic visions in the dark (*Ueber die phantastischen Gesichtserscheinungen*), a work, which, next to his treatise "On Comparative Physiology of the Sense of Sight," is regarded as his most important contribution to natural science. On account of overwork, he suffered in 1827 from a serious breakdown, which caused him to be more careful of his health upon recovery. He became full professor in 1830, and in 1833, he was called to Berlin, to become successor of Rudolphi in the chair of anatomy and physiology. At this university, he taught for the next 25 years, being the last professor who combined the two disciplines, anatomy and physiology. Medical students and young physicians from all over the world came to Berlin to study and to work under him. He was one of the leading men at the university, a position maintained until his untimely death on April 25, 1858. Müller's capacity for work was astonishing. He wrote 20 independent books and about 250 essays, and designed about 350 plates to accompany his treatises and essays. During the 37 years of his activity, he published almost every fortnight some new contribution to science, each accompanied by a plate or two, designed by himself. Everything he wrote reveals his great scholarship, and is a wonderful contribution to science. In reviewing his works and labors, we wish to point out that Müller was the first to prove by experiment two of the greatest practical discoveries in the physiology of the nervous system, viz., Bell's law of the different functions of the anterior and posterior roots of the spinal nerves, and the theory of reflex action. Of the greatest importance were his investigations of the blood, his discovery of the sticky substance of the cartilage, of the chondrins, his discovery of the lymph heart of the Amphibia, and his proof of the laws of phonation.

In the early Bonn period, he had already concluded his investigations of the structure and evolution of the glands. He worked for a number of years on the history of the development of the genital organs. In 1833, at the age of 32, he began his monumental "Handbook of Physiology," which he concluded seven years later. This fundamental work is really an encyclopædia, covering the whole field of animal and human life and its functions, equally distinguished by the logic of his scientific method and his comprehensive control of facts. But Müller achieved great things apart from physiology. Equally meritorious if not greater, are his contributions to comparative anatomy, systematic zoölogy and palæontology. He also investigated the Echinoderms, and the study of the maritime invertebrates had a great fascination for him. Müller spent most of his time in his laboratory, incessantly working, but during the university vacations he left Berlin, to explore the maritime animal life of the Baltic and the North Sea, and of the Adriatic and the Tyrrhenian Sea. Next to his work, the sea interested him most, until an awful shipwreck on the Norwegian coast, in which he lost one of his young friends, changed his love into abhorrence.

Müller's contributions to pathology are also important; his untimely death prevented him from concluding his investigations on the pathology of tumors. In the history of science, there can be hardly found such another all-round investigator as Müller, both in the variety of his work and in the fact that he always brought it to successful conclusion. But "restlessness is man's best activity." He never was contented. As soon as he had solved one problem, he attacked another problem. Even his countenance seemed to reflect the work of his mind, and yet the dream of his life was to spend his last years in a cottage situated on the banks of his native river, the Rhine, surrounded by his family and his books. But it was deemed otherwise! His life was cut off in the midst of

his activities, like an oak-tree struck by a hurricane. And he seemed to be hard as oak, austere, bitter, inflexible, Titanic. And yet there was something priestly in him. Virchow, the great disciple of this great master, describes him as follows: "The worship of nature, which was his vocation, united his pupils just as in a religious community, and his grave and priestly manner accounts for the impressionable reverence, which each of his pupils felt and experienced. His features were austere, but the great mind was expressed in every line. And yet what a contrast when his face was lit up by smiles! In such moments, Müller was enchanting and his intellectual grandeur was impressive." There exist several portraits and engravings of Müller, but no artist has succeeded, as those, who were in daily contact with him, assure us, in representing him as he was. There was a family-tradition, that his people were descendants of an old Roman family, and Müller's face and stature seem to verify it. We of the Rhineland will think of him in that way, and also always revere him as a powerful and incessant worker in the service of science.

GOETHE AND JOHANNES MÜLLER

Translated by
EDWARD B. KRUMBHAAR

GOETHE AND JOHANNES MÜLLER

(1899)

IT was a wonderfully gifted child that was born to the shoemaker Matthias Müller and his wife Maria Theresa (Wittman) in their house in the Jesuitenstrasse of Coblenz on July 14, 1801. He was their first born and was baptized Johannes. In him, a quick understanding, open mind and lively imagination were united in a most promising combination. Quietly contemplative and introspective, he played happily at home at his childish games: he could spend hours at a time tracing the imaginary figures formed by the crumbling and clinging plaster on the wall opposite the living room, and his fertile imagination was easily stimulated ever to create new pictures therefrom. The dreamy boy was full of energy and determination, however, when persistent zeal was required to carry through any little enterprise he had undertaken.

His schooling was not of the best, to begin with, so that the boy had to supplement it by reading. A lucky accident put Goethe's works into his hands and he took to them with avidity. In leisure hours, the beautiful river valleys about Coblenz were explored—his father was the son of a vintner of the Moselle—and flowers, butterflies and beetles were collected Even dissections of animals were already began.

Goethe and Nature! Under these influences Müller spent his youth. But they did not obscure the deep impression made on his active mind by the imposing celebration of the mass, the semi-darkness of the church aisles, the magnificence of the high feasts. The desire, expressed even as a child, to devote his life to the church was soon found to conflict with

other aspirations. It was not until the third day of his course at the Hochschule in Bonn, however, that he bade farewell to theology and decided to devote himself to the study of natural science. The study of organic life in nature was to occupy the rest of his life; but it never estranged him from his church.

A close sympathy with Goethe and Goethe's many-sided biological activities and a thorough saturation of his mind with Goethe's scientific method of reasoning constituted a real and important step forward for the young biologist. As if lost in dreams, the medicine and natural history of those days rested quietly in the shadow of the system of Nature Philosophy expounded by the gifted Friedrich Wilhelm Joseph Schelling. This system evolved all natural phenomena from the idea of the absolute and endeavored to spiritualize all natural laws and turn them into laws of perception and cogitation, in consequence of which all natural phenomena seemed to disappear. Even the greatest investigators had fallen before the power of this theory and research came to a standstill, as people were chiefly concerned with bringing everything into line with this system. In this confused era, Goethe, the scientist, had kept himself free from all such philosophic fragments of the imagination. Upon him fell the task of saving the great principle of observation.

Even Johannes Müller was buried for the moment in these antitheses of the Nature Philosophy, which had such a deceptive appearance of intellectual brilliancy. Nevertheless his first important scientific works—which in loftiness of conception and execution, breadth of view and magnitude of aim were the most important of all his writings—these are full of the spirit of Goethe and his scientific method; and much, even in its superficial arrangement, closely follows Goethe's doctrine of colors.

What particularly drew Johannes Müller into Goethe's way



GOETHE

(1786)

of looking at colors was the start from the subjective manifestations which Goethe was the first to lay down as physiological phenomena. Then, by observations made upon himself, Müller developed further this subjective physiology of sensation. Stimulated chiefly by Goethe's theory of colors, Müller, back in his Berlin student days, had planned with Seebeck a long series of investigations into the effect of colored light on vital phenomena. These, however, never materialized.

Following thus in Goethe's tracks and saturated with Goethe's spirit for more than ten years, Müller, at the beginning of the year 1826, finally plucked up courage to address himself in writing to the old master at Weimar. A lucky chance has preserved for us this letter and Goethe's answer.

In the autumn of 1825, Müller finished his work "On the Comparative Physiology of the Visual Perceptions of Man and Animals, with an Investigation of the Movement of the Eyes and of Human Vision." In the beginning of 1826, it was published by Knobloch of Leipzig, in a volume of 462 pages, illustrated with charts and tables. The motto was taken from Goethe, and one of the sections was entitled "Fragments on Theories of Color, especially Goethe's Theory of Color."

As soon as it had appeared (February 5, 1826), Müller sent the book to the master as "the gift of a hitherto silent and unknown follower" . . . "Your scientific investigations, both as regards their method and their content, have been for many years the inspiration of my efforts to penetrate the secrets of nature by observation and experimentation. Now at last I have the good fortune to make public acknowledgment thereof." Goethe's interest in the matter he takes for granted; for does it not deal with "matters concerning the theory of colors and the theory of metamorphosis"?

Müller's letter is long and penetrating. Together with the highest esteem for the aged master, every line expresses a proper assurance of his own worth and the conscious feeling of the

value of his own work as an active investigator. And Goethe, in his courteous answer by return of mail, on February 23, expresses his joy at meeting Müller again in the renewed cultivation of his scientific work and concludes with a "cordial farewell grasp of the hand."

But these two great men were again to come together. It is not known whether Johannes Müller also sent to the master at Weimar his work on fantastic visual appearances of 117 pages, which he finished in September, 1826, but it is not improbable. In any case, he discussed the matter thoroughly with Goethe when he visited him in Weimar in 1828. In a state of complete mental repose in a dark room, Müller could see brilliant figures in the "dark visual field," "as a reflex of internal organic conditions in other parts"; but still he was not entirely able to call up such pictures voluntarily. Goethe, however, possessed the gift of being able, with eyes shut, to call up voluntarily into the dark visual field the picture of a flower or some variegated Gothic rose window; the figure thus produced would constantly change its form and color in kaleidoscopic manner from the center outwards. "A difference between two natures, of which the one possessed the poetic constructive power to the fullest extent, while the other was directed toward the examination of reality and of that which actually happens in Nature." Thus did Müller some twenty years later express the difference between Goethe and himself, in speaking of his conversation with Goethe in his celebrated "Handbook of Physiology."

These allusions may suffice to show the great influence exerted by Goethe upon the greatest biological genius that the Rhineland has produced in this century. It is a particular pleasure for us to be able to call attention to this while the Goethe Festival is still being celebrated on the Rhine. May these lines serve as a mite of thanks, brought here to the Rhine with joyous heart, in memory of the man to whom physiology and comparative anatomy owe such an illimitable debt!

GOETHE'S PHYSICIAN, PRIVY COUNCILOR ABEL

Translated by

ALBERT ALLEMANN

GOETHE'S PHYSICIAN, PRIVY COUNCILOR ABEL, (1792)

IN his "Campaign in France" Goethe, in describing his pleasant sojourn at Tempelfort and the interesting, often merry conversations around the convivial board of evenings, tells among other things the following:

"A very skillful and witty physician also took part at our semi-saturnalia and I little imagined, in my high spirits, that I should need his services so soon. But to my vexation, he burst into a loud laugh when he found me in bed with a severe rheumatism, which I had contracted from taking cold, so that I could hardly move."

He does not give the name of this physician. It was the Privy Councilor, Johann Gotthelf Lebrecht Abel, born at Halberstadt in 1750, who first practiced medicine in his home town but, during the later seventies of the 18th century, established himself in Düsseldorf. He later attained the professional honors of the period, and died, as Privy Councilor and Director of the Sanitary Commission, on September 27, 1822.

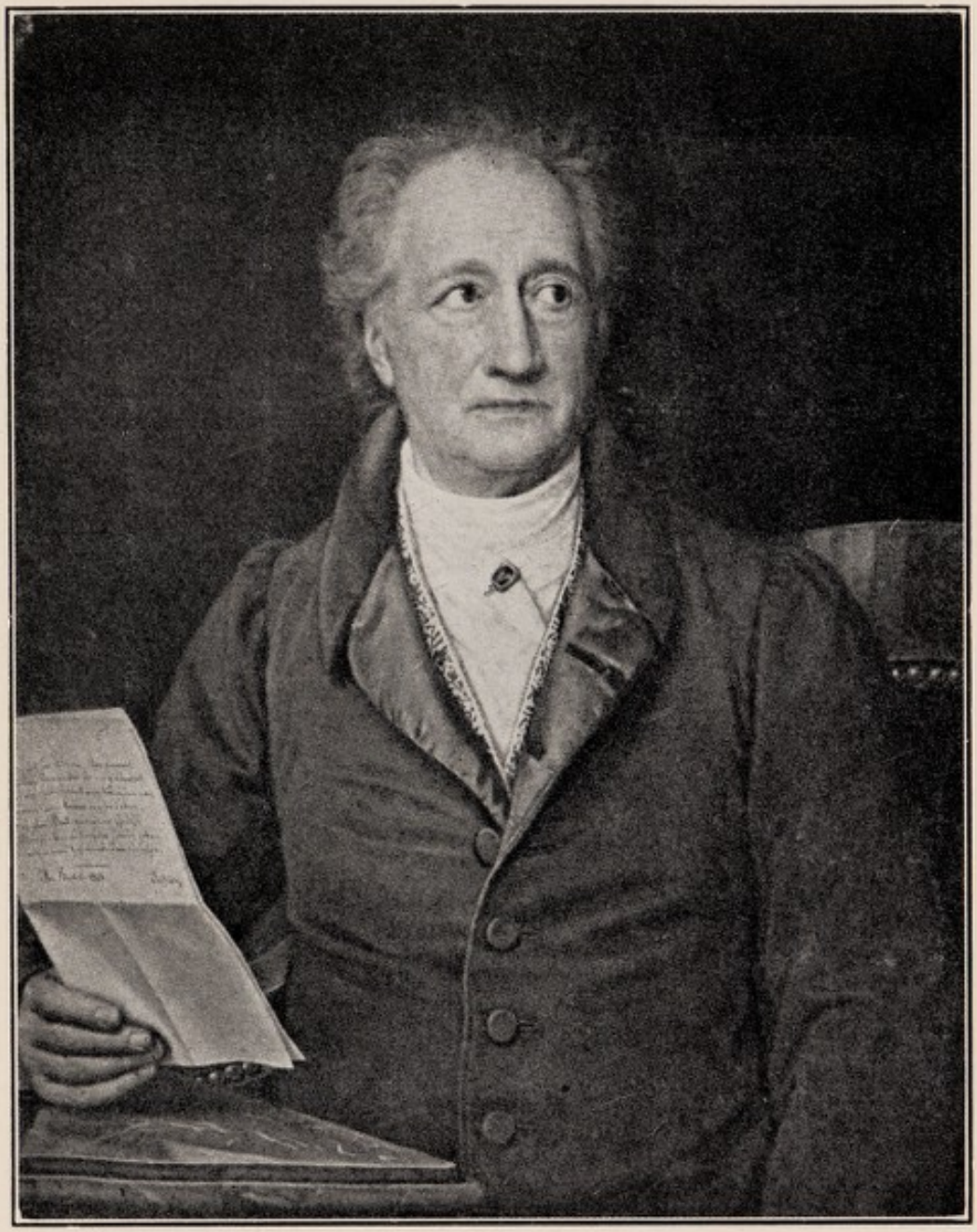
Whoever has followed his career in Düsseldorf with a friendly eye cannot but experience a feeling of great satisfaction that Goethe mentions him in such a distinctive manner. It is plain that he was highly esteemed in the family of Jacobi and in other circles of our town in spite of odious attacks to which he was exposed a little more than a year before. In September, 1791, he had, together with Ægidius Odenthal, Privy Councilor and Director of the Jülichberg College of Medicine, treated an Irish nobleman by the name of Maxwell,

who, while traveling, was taken sick with typhoid fever at the Hotel "Zweibrücker Hof." Odenthal, in a hateful way, published the disagreement of views as to treatment between the two physicians.

We put the pamphlet setting forth Abel's defense (Düsseldorf 1991), on exhibit. The pamphlet is dignified and well written throughout and thus wins our entire esteem for this excellent man.

When Goethe mentions, as his teacher, a Privy Councilor Hoffmann, "whose strange peculiarities were known from Mainz and the Electoral Court far down the Rhine," he means Christoph Ludwig Hoffmann (1721–1807), whose internal and external treatment of smallpox with camphor was often attacked during the sixties of the 18th century but found many adherents and was also employed in other diseases. Abel, too, says Goethe, "immediately prescribed camphor, which was an almost universal remedy. Blotting paper, rubbed with chalk and then covered with powdered camphor, was applied externally and camphor administered internally in small doses. But, be that as it may, I was cured in a few days!"

The relations of the Jacobi family with their physician continued to be of the best, as is shown, twenty years later, by a little book which J. F. Benzenburg dedicated, in common, to his dear friends, State Councilor George A. Jacobi, second son of the Philosopher, and Privy Councilor Abel.



GOETHE

(1828)

GOETHE AND MAXIMILIANE VON LA ROCHE

Translated by

EDWARD B. KRUMBHAAR

and

HERMAN T. RADIN

GOETHE AND MAXIMILIANE VON LA ROCHE

LET us tell of Goethe's first visit to the Rhine in the valley at Ehrenbreitstein.

It was in mid-September, 1772, when the poet had for the first time breathed Rhineland air, caressed and soothed by its sunlight, which within a week had awakened him to new life.

When on the 11th of September he made up his mind to tear himself away from Wetzlar, "all of a sudden" (as he wrote), "to abandon all that had been my happiness for four months!" he was lured in the depths of his soul toward the stream he had never seen, the stream which the faithful Merck had so attractively described to him. And as he wandered along the lovely valley of the Lahn toward the Rhine, lost in thought and dreaming of his "golden Lotte," Nature, his ever trusted friend, quietly cast her spell upon him, her "inarticulate" living voice whispered comfortingly in his ear; her austere charm softly, softly led away the sensibilities so easily aroused in the poet.

The sunlit stream flowed sweetly on through the heather —"Rausche, rausche, lieber Fluss Melodien zu—" Goethe's eye, "practised in discovering the picturesque beauties of the landscape, revelled once more in the contemplation of near and distant scenes, the tree-covered rocks, the towering castles and blue mountain ridges calling from the distance."

"Und frische Nahrung, neues Blut
Saug' ich aus freier Welt!"

"From Ems I traveled down the Lahn in a small boat, until at last the beautiful old Rhine opened up before me. I was charmed with the splendid situation of Oberlahnstein. But majestic and magnificent above all others appeared to me the castle of Ehrenbreitstein, which stands boldly forth in might and power. In most delightful contrast, the pretty little village of Thal nestled at its feet." There the easily found house of Geheimrat von La Roche offered a hospital reception.

There, he had been suitably announced by his friend, Merck, whom he hoped to meet there a few days later with his wife and son, as he himself has written. Goethe's best recommendation to the house, however, was doubtless his favorable criticism in the Frankfurt Gelehrten Anzeigen of February about "The History of Fräulein von Sternheim," the first novel of the talented mother, Sophie von La Roche, the friend of Wieland's youth. "The house, at the very end of the valley and on a slight elevation above the stream, had a free view down the river. Each window on every side became the frame of a landscape picture that stood out vividly in the brilliant sunshine. I never thought I should see such cheery mornings and such magnificent evenings."

Thus writes the poet—the Rhine obviously having already begun to work its ancient healing power—and then in a few words he sketches his relation to the dwellers in the house by the river: "To the mother I was bound by my literary and sentimental strivings, to the father by a cheerful philosophy and to the daughters by my youth." In vivid colors, he paints the chief characters, the mother, the father and the daughter Maximiliane, in greater detail in the thirteenth chapter of his autobiography.

The magnet of the house, the center of their literary-social activities was Madame Sophie von La Roche. "She was the most wonderful woman, and I know of no other who could compare with her," was Goethe's opinion pronounced some

forty years later. She had a slender, attractive figure, was tall and of an elegant appearance Her self reliance and equanimity were to stand her in good stead in her later life, often a troubled one; for the education of her two sons, at that time "children of dazzling beauty," depended almost entirely upon the fruits of her literary labors. These children alone could excite the always placid mother to more than emphatic utterance.

The poet lets it be plainly seen that the harmony of the life in the house on the Rhine did not suffer from Sophie's artistic activities. He was to keep up a constant epistolary correspondence with this unusual woman over many years. On his visits to Thal, however, he by no means neglected the master of the house on account of his wife.

In the school of the Kurmainz minister, Count Stadion, the orphan had grown up to be an efficient, highly energetic official with a liberal, cheerful philosophy, and as such, kept himself free from the sentimentality, gifted though it might be, of his time and—his wife. To be sure, he had also occupied himself with literature on his own account, but of a very different sort. Unfortunately, his frank letters about monasticism were destined to be not without influence on his subsequent dismissal from the service of two clerical Electors. The otherwise very busy man spiced with his cheerful gayety and simplicity the hours of familiar intercourse at the mid-day and evening meals.

Touchingly tender and paternal were his relations to his oldest daughter, whose happy simplicity and sixteen year old freshness quickly charmed Goethe's heart as well. "Small, rather than large of stature, gracefully built, with open, charming features, and the purest flower-like complexion imaginable." Thus she appeared to the poet, a blooming, mischievous, ever joyous Rhineland girl—the best possible cure for the lovesick poet, still longing for the blue eyes of the blonde Lotte.

There has been considerable controversy as to what originals Goethe had in mind in delineating the individual characters in his "Sorrows of Werther," and the poet justifies these questions, when he writes: "Thus I took the liberty of modelling my Lotte on the stature and traits of several pretty children, although the main features were taken from the dearest of them all." Let us leave it also undecided whether Maximiliane —"die Max," as Goethe always called her—belonged to that group of ladies who were not indifferent to being taken for the real Lotte. Nevertheless it seems certain that in the four weeks of voluntary seclusion, when he was writing Werther, some of the characteristics of "Max," which had been engraved on his heart, slipped into the picture of Lotte, as for instance the dark beauty of her eyes, upon which Werther feasted.

At all events, even in September, 1772, the spontaneous gayety of the charming Maximiliane had made a deep impression upon Goethe in the few days that elapsed before he resumed his wonderful homeward voyage by boat up the Rhine. The parting was less painful than at Wetzlar, as there was then every prospect of an early return. The poet, nevertheless, in his parting letter breaks out into those words of unutterable sadness: "not to-morrow, is nevermore!"——

The very first letters to the mother, Sophie von La Roche, could not say enough about both the daughters, "such angels," and speaks no less than three times of "Mademoiselle Max" and her "delicious postscripts."

It would be idle to try to determine whether this budding love always remained as "unselfish" as that for Kestner's Lotte, but certainly it remained just as pure!——

When two summers later (July, 1774), Goethe again came to the Rhine—this time on his way to Düsseldorf—and again visited the "Dale" near Ehrenbreitstein, no member of the La Roche family was there and his dear Max was already married in Frankfurt—a rather unhappy marriage with Peter Brentano,

a rich widower with children, to whom she was to present nine more.

The careful mother had thought to prepare a nice warm little nest for her beautiful daughter, when she engaged her, while in her eighteenth year, to the rich merchant. But there were many wrong figures in the maternal calculations!

Even Goethe found himself bitterly disappointed in his hopes for a natural friendly intercourse. He wrote to Frau Betty in February, 1774: "Max is still the angel who draws all hearts to her by the simplest and worthiest traits, and the feeling that I have for her, which should never give the husband any cause for jealousy, is the chief joy of my life." Brentano, however, seemed to think he had reason to be jealous and our poet could no longer write to mother La Roche, as he did in a letter of the end of February, "I shall never forget your Max as long as I live, and I shall always love her." By March, 1774, there were complaints; in May he had become elegiac: "The lovely Max I see rarely, but when I do, it is like an apparition from Heaven."

When mother Sophie laments the fate of her child, Goethe expresses his hope for a happier fate which "may still await the unfortunate angel."

When in March, 1775, Max's first child was born at her mother's house in Ehrenbreitstein, her old friend is tenderly solicitous about the "dear, little mother." In a letter to the "dear, dear grandmother" he sincerely hopes that "the arrival of the little mouse will change many things," and congratulates the father, Brentano, with a manly handshake.

A little later he explains: "I have kept my word with the dear woman and have promised her that if her heart should incline to her husband, I would like to come back. I am here again and shall remain to the very end, if she remains a spouse, housewife and mother."

Thus did the former ardent lover of his own volition regu-

late his relation with the "dear Max" who remained until her death the "good Max" and found a firm friend in Goethe's mother, who stood close by her, even after Goethe's departure for Weimar.

For years afterward, Goethe inquires with sympathy about the unhappy woman, whose fate became ever gloomier at the side of a blustering, fault-finding husband, who could not understand his gentle wife. She in turn became more warmly and intimately wrapped up in her children, particularly that gifted son of many sorrows, the most gifted of all the German romantic poets, Clemens Maria, who was born on September 8, 1778, in his grandfather's house at Ehrenbreitstein and had as his godfather the last Elector of Treves, the Archbishop Klemens Wenceslaus.

Clemens Brentano, himself richly endowed with bodily beauty, has preserved for us with filial tenderness a true and pious picture of his beautiful sorrowing mother in these verses:

Viel war ich krank, kam wenig an die Sonne,
Die bunte Decke war mein Frühlingsgarten,
Die Mutterpflege war mir Frühlingswonne.
Ich konnte oft den Abend nicht erwarten,
Wenn sie die Wundermärchen uns gesungen,
Das rings die Kinder in Erstaunen starrten. . . .
In weiter Kammer schlief ich und die Brüder,
Dann hört ich draussen: harte Worte klangen,
Bis eine milde Stimm' den Streit geschlichtet.
In unsre Kammer leise kam's gegangen,
Vom Bette schlich's zu Bette, gab uns Küsse
Und segnet uns auf Stirne und auf Wangen.
Ich war der letzte. Heise Tränengüsse
Fühlt ich aus Mutteraugen auf mich fliessen.
Ich wuste nicht, warum sie weinen müsse,
Ich traute nicht, den Arm um sie zu schliessen. . . .

And what sweet comfort did the child unconsciously afford the wounded woman's heart with the embrace of his clinging arms!

In the most appealing of Clemens Brentano's poetic figures of women, the sweet "Laurenburger Els," the picture of his passionately loved mother, so early lost to him, is easily recognized. In the "Chronicle of a Wandering Scholar" she is seen with her little boy in that wonderfully tender contest of song between mother and child:

O Mutter, halte dein Kinlein warm,
Die Welt ist kalt und helle—

O Mother, keep thy infant warm,
The world is cold and empty. . .

How bitter chill the rest of poor Max's life, before she went out untimely into the darkness!

FAUST IN THE RHINELAND

Translated by

ALBERT ALLEMANN

FAUST IN THE RHINELAND

FAUST on the Rhine! Perhaps you shake your head, worthy reader, and you think it may be right to love and esteem one's Rhineland, but to connect everything with the Rhine is too much of a good thing! But wait a little! When you have visited and studied the Rhineland "Faust Exhibit," in the Museum of Statuary at the Academy of Art, although it numbers only 133 objects—you will find it makes a goodly showing, and you will appreciate the men who have assembled this bit of Rhenish literature, art and occult sciences.

The first account of the great sorcerer, wizard and devil's confederate, Dr. John Faust, we owe to a Rhenish historian, Johannes Trithemius, Abbot in Sponheim, born on the Moselle, a man learned in the occult sciences and a contemporary of the magician himself. In 1505, he met Faust at Gelahausen, where he made the swindler take to his heels. Trithemius also tells how Faust, in his wanderings, came into the Rhine country and made the region around Kreuznach unsafe, how he boasted about his great knowledge of the art of making gold and promised every one mountains of gold. But it seems that none of the Rhenish princes bit at this golden bait—for to keep alchemists in order, to fill the always empty treasury by their occult labors had, at that time, not yet become the fashion. Faust was therefore satisfied when he acquired the then vacant position of schoolmaster in Kreuznach, which Franz von Sickingen obtained for him. But they learned only too soon that they had made the billygoat gardener. In disgrace and infamy, Faust had to take to the open in the darkness of night to escape severe punishment.

We cannot follow him to Heidelberg and Cracow, but we shall see what our great Cologne master of occult science, Heinrich Cornelius Agrippa of Nettesheim, and his well known pupil, the honest Dr. Johann Weyer, body physician to the court at Düsseldorf, have to tell of Faust.

When Agrippa was living in Paris in 1528, King Francis I sent for the German wizard. At court, Faust caused the royal princes, who were far away, to appear bodily—of course they had come through the air on his enchanted mantle. He showed the king his power over the spirits by filling all the hills with mighty armies, with war horses and fiery battle chariots and suchlike jugglery.

In the last year of his life (about 1539, the Devil took him), Dr. Faust was again in the lower Rhine country. After he had gone through numerous escapades and cheated many a simpleton out of his money, trouble again overtook the swindler. He was arrested and imprisoned at Battenburg on the Meuse, near Graave, the home town of Meyer. But his good fortune did not abandon him. He found a friendly jailer, whose kindness he rewarded with ingratitude. In the hope of profiting by the secret arts of his prisoner, the castellan, John Dorsten, sent him plenty of wine until the keg was empty. For more wine, the mocking swindler taught him the art of removing his beard without a razor. But alas! Many other similar tricks he performed in the Rhineland, but he finally got his due reward.

Our Rhenish writers, too, tell much of Dr. Faust; their reports are laid open for inspection in the Museum of Sculpture. The best known pictures of this adept in the Black Art are also to be seen, rogue's faces which hardly derive from any reliable tradition, but indicate the reputation he had acquired in the 17th Century. But in some of them we find already those traits of nobility which we associate with the truth-seeking scholar at his studies, as we are accustomed to visualize him today, in the light of the Goethean apotheosis of Faust.



GOETHE

(1832)

EASTER TWILIGHT ON THE AVENTINE

Translated by
EMILIE RECHT

EASTER TWILIGHT ON THE AVENTINE

HOW splendid the luxuriant green over the substructures of the Palatine! There lies the Villa Celimontana already half asleep amidst her cushioned groups of monumental pine trees! How crystal gray the horizon still glimmers through the pine-rows of the Cælius! Just one final glow in the East, even though the Sabine mountains begin to wrap themselves in shadows, and the first glow-worm lights to shoot up in the Frascati! Swiftly have the last vestiges of light faded in the East, but in the West the sky now takes on a saffron-golden hue, around the towers and walls of the cloisters and vineyards, ever flaming upward and upward and blending ever more richly red and rose in the glimmer. Majestically the glory of evening is shed over the Janiculus towards St. Peter, disdaining the new magnificence of the monument behind the Capitol, to which the day paid such willing radiant tribute! . . .

Silent the giant city lies in bold circle around the Aventine, to all outward seeming still; for the greater past, in its fields of ruins, keeps at a distance the trivial noises of humdrum day. Still and harmonious, before our absorbing eyes, lies the incomparable glory of centuries, which here found guidance, chiming together in mighty harmonious accords of colors, forms and—thoughts. It is as if everything about us were holding its breath, not to disturb the solemnity of the moment before its extinction.

But here a fine tone blends itself into the majestic stillness of the moment, so delicate that we almost think of searching for it with our eyes, since the ear is unable to apprehend such

fine vibrations. But it is there, this fine ringing, as if fully born from the solemn stillness of the evening. It is there, it swells softly and gains in volume and breadth and strength. It is there, and seems to climb from the arches and niches of Santa Maria in Cosmedin to the slender tower, to be poured, like a sighing breath, from its delicate columns or from St. Giorgio in Velabro opposite the four-arched structure of the gateway of Janus. And already the bell-like sound fills, with grand, simple solemnity, the whole valley even to St. Peter's and now floats in soft surges over the heights and depths of the giant city, in wonderful harmony with the sinking colors of the evening; not stormily or powerfully or even threatening, but softly, rocking and lulling, in still beatitude. As if the Easter evening had become sound itself—a longing, which has found its expression in speech.

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While we listen and muse, the darkness sinks deeper. In the east all is extinguished: only above the midmost Palatine is there a fading glimmer, like moonlit gray-white marble over San Pietro in Vincoli. But there is no moon in the skies! Has the Moses of Michel Angelo, as the artist conceived him, really arisen? Does he rack his mighty bearded head over the divine city on the Tiber? Does he wish to review the fate of his teachings, after nearly three thousand years? What the waves of the Euphrates, a long, long stretch of time ago, whispered into the ears of the great Mesopotamian thinkers is still potent. It served for the mighty development of the people who called themselves, in their own restricted sense, "The Chosen," and finally enveloped, like a spiritual royal robe, the shoulders of that shepherd of his people, the Egyptian-trained Moses, the hero of Jewish folk-phantasy.

It still reigns, even though it experienced the incisive

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EASTER TWILIGHT ON THE AVENTINE

changes of the teaching of him whom the Easter chimes (after a silence of long weeks) have again newly announced, he who even more deeply spiritualized the Kingdom of Israel and raised it to infinity, yet guided it back to earth, so that every one may carry its light in his bosom, whence it may shine again in mild charity, sacrifice and helpfulness for his fellowmen.

So shines today the "light from the East," even though the lights of the Occident blend themselves with its colors. Still speak to us the world-thoughts, audibly carried over on the rays of Eastern light in the sound of the Easter chimes. Long will their mild power over the people reign, shorn ever more and more of all cruel force and threatening compulsion, and radiating in simple purity the idea of redemption, which, nineteen centuries ago, emanated from the East, and converted the social thought, implicit in the message of redemption, into a guiding star for the life of all nations.

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Silenced are the Easter evening chimes over the Eternal City. We forbear to listen and to muse and stroll further out over the Aventine, following the last glimmer, as it fades in the West. We see the first stars twinkle over the palm gardens of the Maltese Priorates, new stars and ever new ones—and so the Past reaches out its hands to the Present, in token of practicable love for our fellow man!

THE END