

CHAPTER I

The Infancy of Medical Bibliography

ALTHOUGH printing from movable type began in the western countries about the middle of the fifteenth century, the amount of printed literature in any field remained small for some time thereafter. It was not until the beginnings of the sixteenth century that true subject bibliography can be said to have begun. According to Besterman¹ four medical bibliographies were published in the sixteenth century, but two more are listed by Thornton.² Each will be discussed here.

SYMPHORIEŒN CHAMPIER

(1472-1539?)

Symphorien Champier is generally considered to have been the first bibliographer of medicine after the invention of printing. His work, *De medicine claris scriptoribus*,³ is divided into five sections following the pattern laid down by the scholastics: ancient medical writers; philosophical

¹ Besterman, Theodore. *The Beginnings of Systematic Bibliography*. 2nd ed. London, Oxford University Press [1936]

² Thornton, John L. *Medical Books, Libraries, and Collectors*. London, Grafton, 1949.

³ Champier, Symphorien [Champerius, Symphorianus] . . . *De medicina claris scriptoribus in quinque partibus tractatus* . . . [Lyons, 1506]

XXIII

Plinius secundus nouocomen *Plinius.*

his p̄b̄is: orator: & historicus atq; medicus celeberrimus
necnon & equestris ordinis industria functus. *Natura*
lio historice libros. CCCVñ. opus quidem diffusum ac cras-
ditum: & alia multa composuit. perijt tandem cū I mēssa
nensi classe precesit ardentem vesunium imprudenter vs-
sendo quinquagesimo & sexto. s. vite sue anno. Hic itaq;
cum optimus & vir iustus esset: dum in hac traiani perle-
cutione puinciam regeret: xp̄ianoꝝ misericordia motus
quia videlicet multi necabatur ad traianū ip̄m litteras
dedit: asserēs innumera dolm multa quotidie obtrunca-
ri in quibus nil mali omnino deprehendebatur. Quibꝫ
p̄motos imperator: iussit non amplius xp̄ianos esse per-
sequendos.

Alexāder ap̄brodisicus medicus *Alexander ap̄brodisicus.*

græcus: doctrina singularis vir in secularibus litteris
valde cruditus mathematicus insignis: artis medicæ
instaurator: ingenio prestans. Scripsit non contēnda
opuscula de quibus ista ferantur. libri. p̄blemata & gre-
co in latinum a georgio valla translātī lib. v. de febribꝫ
lib. i. de anima. liber. l.

Alexāder yatroꝝ magnus sophi *Alexander yatroꝝ magnus grecus.*

ista grecus vir in medicinis valde peritus. Scripsit in
medicinis de morbis particularibus a capite ad pedes
lib. l. & alia multa.

Rabby moyses iudeus iraeliticꝫ *Rabby moyses iudeus.*

eo: dubitō vir vndecunq; doctissimus medicus singula-
ris buꝫ opuscula tante auctoritatis necdū apud iudeos
verū apud oēs medicos: vt velut alter Isaac habet⁹ fir.
De cuius opusculis ego tantum vidī subiecta. Ampbo-
ritimos quos collegit ex verbis galeni de omnibus libris
suis cōiunctes particulas. CCC. ser̄ multa alia scripsisse

Fig. 1. Champier, Symphorien. De Medicine Claris Scriptoribus.
1506.

medical writers; ecclesiastical writers on medicine; Italian
medical writers; and French, Spanish, German, and Eng-
lish (i.e., modern) medical writers. Within these divisions
the writers are listed more or less chronologically. There
is also a general author and subject index at the beginning

of the volume which is more of a detailed table of contents than an index. For each author cited there is a descriptive word or phrase identifying him and a description of his writings. From the point of view of printing, the entire volume looks like a manuscript; in all probability it was designed with the more familiar manuscripts in mind—much as the early automobiles were designed with buggies in mind.⁴ (See Figure 1.)

Symphorien Champier himself was a native of Lyons; a graduate of Montpellier in 1498; fellow of the medical school at Paris in 1515; physician to Charles VIII, Louis XII, and the Duke of Lorraine; patron of Servetus; historian of medicine; Renaissance courtier; scholar; compiler of one of the earliest medical dictionaries; as well as biographer of such scientists as Arnold of Villanova and Joannes Mesue.⁵ Although he was condemned as a heretic by the Inquisition after his death, he may be considered typical of his age and time.⁶ Because he was acutely

⁴“There is a considerable similarity in appearance between early printed books and manuscripts dealing with similar subjects. The form of the type used, the use of decorated initial capitals, writing in colors, and hand-painted illustrations all tended to make an early printed book look not unlike a good manuscript. This resemblance was sometimes even closer than one would have expected, since there was often a relation between the formal book-hand written in a certain district and the form of printed letters in that district.” E. Ashworth Underwood. *The Evolution of the Medical Book*. *Chemist and Druggist*; *Export Review*, 11 (no. 121): 63, 1950.

⁵Thorndike, Lynn. *History of Magic and Experimental Science*. N. Y., Columbia University Press, 1941, v. 5: 111–126.

⁶See, however, Lynn Thorndike's comment on this: “...when Scaliger called [Champier] ‘insolens, tumens, turgens,’ perhaps this

aware of all the currents of thinking which had come down to his time, Champier attempted the conciliation of Greek and Arab doctrines, hoping thus to unite the knowledge of Hippocrates, Galen, Celsus, and Avicenna into one unified system consistent with Church teachings. In this he failed; as a result he was censured by the Church and his body was exhumed for sentence.

Short manuscript lists of writings on medicine—as on any practical subject—probably existed long before Champier's time; if for no other reason than that students of medicine would have needed them in their studies. On the other hand, they were probably slight things of no great lasting value; otherwise we might surmise they would have been printed at the time of the spread of printing in Europe, much as the manuscripts of other useful works, the Galens, the Hippocrates, the Donatuses, the rhetorics, and the Church Fathers, were reproduced. Either there was not a really large body of medical literature to which to refer, or the purchasers of medical bibliographies were so few in number that early printers would not wish to risk their capital on such ventures.⁷ But with the multiplication of works by the printing press, at least one of these conditions changed. Soon there was a comparatively large body of literature to refer to, and this body of

should be interpreted as an indication that he was full of the 'spirit of the Renaissance'; that rare gas which the historical laboratory has never yet succeeded in holding in solution." *Ibid.*, p. 113.

⁷ Walsh, J. J. Debt of Medical Science to the Early Printers. *Scient. Month.*, 18: 181-195, 1924.

literature increased greatly year by year.⁸ Furthermore, because the literature in its printed form could be owned by so many people simultaneously, the number of people who might wish to refer to any edition of a work increased also. Under the stimulus of changing conditions, therefore, bibliographies in all fields began to appear, and we see a multiplication of a type of work which had existed earlier only in slight and inconsequential forms.⁹ We shall see later, also, how the multiplication of editions and copies required the information in the bibliographies to be more exact with imprints, sizes, and pagination carefully noted.

The first significance of Champier's work is that it reveals the existence, as early as the sixteenth century, of a real need for indexes to medical literature; that publishers were aware of this need and could now afford to issue bibliographies of medicine without fear of financial difficulties; and that a scholarly and professionally prominent man did not consider it belittling to produce such a bibliography. But there is another significance to the first bibliography on medicine, which has been brought out by Fulton in his Rosenbach lectures for 1949-50;¹⁰ that is, it was one means whereby the ideas of the Italian Renais-

⁸ Much has been written on the number of books printed at various times. See especially: Peignot, Gabriel. *Traité du Choix des Livres*. Paris, Renouard, 1817, p. vi; Pollard, A. W. *Incunabula* (In: *Encyclopaedia Britannica*. 14th ed. Chicago, Encyclopaedia Britannica [c1930] v. 12: 146-147.); and Iwinski, B. *La Statistique Internationale des Imprimés*. *Bull. Inst. Internat. Bibliog.*, 16: 1-139, 1911.

⁹ Besterman. *Op. cit.*

¹⁰ Fulton, John F. *The Great Medical Bibliographers*. Philadelphia, University of Pennsylvania Press, 1951, p. 4-10.

sance were spread to southern France and thence to the rest of Europe. Symphorien Champier had been physician to Charles VIII, whom he had accompanied when Charles invaded Italy in an attempt to back up his claim to the throne of Sicily and to a few other Italian principalities. There Champier absorbed the spirit of the new discoveries in science and the arts being made during the Italian Renaissance; returning to France, he transmitted the new learning and the new zeal for discovery shown by Titian, Copernicus, Leonardo da Vinci, and others to a wide circle of friends and disciples. The very arrangement of the *De medicina claris scriptoribus* shows the influence of the Italian school, for an entire section is devoted to Italian medical writers, a section comparable in length to that allotted to the ancient writers and to all other modern writers combined.

Symphorien Champier's work is thus also important because it shows the growth of medical literature after the discovery of printing, because it gives evidence of the distribution of books at that time, because it presents us with a picture of the esteem in which bibliographic work was held by important scholars of the sixteenth century, and because it is an example of the spread of humanism from Italy to France.

After the publication of Symphorien Champier's list in 1506, there were several other attempts at medical bibliographies, but it was not until the last decade of the century that any real advances were made in the techniques used in the first medical bibliography.

OTTO BRUNFELS

(1488-1534)

A bibliography similar in style to Champier's was published in Strasbourg in 1530 by Otto Brunfels of Bern.¹¹ This is a list of the writings of approximately three hundred eminent physicians, arranged chronologically, with an alphabetical index of authors (by first names), and with a rough classification of the specialties represented by the writers included. The prefatory essay of this work is valuable in itself for its compact history of medicine and for the short biographical sketches of some of the most important authors contained in the main portion of the work.

Just as Symphorien Champier can be considered a representative of the Italian Renaissance, so Otto Brunfels appears to mirror in his life the turbulence and change of the Reformation. He was born in Mainz in 1488, studied theology, and became a Carthusian monk. Later, however, he was influenced by the teachings of Luther and his disciples, and after several years of indecision finally renounced Catholicism to become the Protestant pastor first of Steinheim and then of Neunberg. Unsatisfied in this also, Brunfels turned to another interest—science—going to Basel to study medicine, from which university he received his degree in medicine in 1530, the same year in which the first volume of his great herbal was published. In 1533 he settled in Bern as city physician, continuing

¹¹ Brunfels, Otto [Brunsfeld, Othon]. *Catalogus illustrium medicorum, sive De primis medicinae scriptoribus*. Strasbourg, Schott, 1530.

his botanical studies there until his death from tuberculosis in 1534.

Brunfels has been called one of the four "fathers of the new botany."¹² He appeared at a time when the re-discovery of the manuscripts of earlier writers had led to the spread of ancient knowledge throughout Europe, when the printing press had been perfected to the point where illustrations could be faithfully reproduced, and when a school of scientific illustrators had already developed.¹³ It is not surprising, therefore, that the first real advance in botany since Pliny should have come at this time, nor is it surprising that the advance should have been preserved for future generations through printing. Brunfels' *Contrafayt Kreuterbuch*, although it is pictured as a description of local plants without any attempt at classification and with little botanical terminology,¹⁴ is the first attempt after

¹² Greene, Edward Lee. Landmarks of Botanical History; a Study of Certain Epochs in the Development of the Science of Botany . . . Wash., Smithsonian Institution, 1909. (Smithsonian Miscellaneous Publications, v. 54, no. 1870)

¹³ "The invention of printing exerted an important effect upon the literature of therapeutic substances. The prospect of preparing illustrations and descriptions of plants by separate processes had discouraged the production of really accurate, illustrated, botanical works . . ." Cecilia C. Mettler. *History of Medicine*. Philadelphia, Blakiston, 1947, p. 198. See also Arber, Agnes. *Herbals, Their Origin and Evolution* . . . New ed. Cambridge [Eng.], Cambridge University Press, 1935.

¹⁴ Brockhaus *Konversations-Lexikon*. 14. Aufl. Berlin, Brockhaus, 1898, v. 3: 619; and Singer, Charles. *Biology-History*. (In: *Encyclopaedia Britannica*. 14th ed. Chicago, Encyclopaedia Britannica [c1930] v. 2: 611) See also the Rosenbach lectures by George Sarton, delivered in January, 1953 (to be published).

Pliny to look at the plants themselves and describe them as they are.

Since Brunfels' *Catalogus* was published in the year in which he received his medical degree, it may very well have been the result of a compilation which Brunfels made for himself to care for his needs as a medical student. The printer of this work (Johann Schott) in contrast to Champier's printer¹⁵ had learned to use his printing press with more freedom and with less of a slavish following of the forms of the manuscript. There is much more leading between the lines of type; the headings are set off from the main body of the entry clearly and in a non-stereotyped form (see Figure 2), capitals are of a different font from lower case letters, and non-Roman alphabet letters (for example, Hebrew and Greek) are interspersed where needed. A clear, simple letter is used; interestingly enough it looks more Italian than does the type used by the Italophile, Symphorien Champier.

In Brunfels' work a short biographical account is given for each author, followed by a general description of his writings; in this, however, Brunfels has gone no further along the path to exact citation than has Champier. It is interesting, although futile, to speculate on the number of copies of Champier's and of Brunfels' bibliographies which were printed and the speed with which they were distributed. Certainly only a comparatively small number of copies has come down to us in America. (This is shown in the Union Catalog in the Library of Congress; a copy is

¹⁵ Said by Osler to be Jannot de Campis, although this fact is questioned by some. Osler, Sir William. *Bibliotheca Osleriana*. Oxford, Clarendon Press, 1929, no. 2264.

M E D I C O R V M.

DE PHILIPPO, & CHRYSIPPI quos A
dam discipulo. Et Philippo Epirote.

NON IGNORABILIS medicus Chryssippi discipulus. Apud Antigonū regem, amicum quendam eius, notæ intemperantiæ, mediocriter in hydropico morbo implicitum, negavit posse sanari. Cumq; alter medicus Epirotas Philippus se sanaturum pollicitaretur, respondit, illum ad morbum ægri respicere, se ad animum. Neq; eum res fecellit. Ille enim cum summa diligentia, non medici tantummodo, sed etiam regis custodiretur, tum malagmata sua deuorando, bibendoq; suam urinam, in exitium sese præcipitauit. Celsus libro tertio, cap. XXI.

DE QVINTO SERENO SAMMONICO.

QVINTVS Serenus Sammonicus, Gordiani iunioris paedagogus fuit. Cuius meminit Spartianus in Caracalla his v̄bis. Occisi sunt & in balneis plures, & in cœnis, inter quos Sammonicus Serenus: cuius libri plurimi ad salutem extant.

DE PAVLO AEGINETA.

PAVLVS uniuersam medicinam a Galeno & Orribasio, per innumeros fere libros traditam, in septem libros compendiose redegit. Suidas. *πῶλον κυρίως ἰατρὴν, ὑγραψάν ἰατρικὰ βιβλία διάφορα.*

DE ALBERTO MAGNO.

ET NOMINE, & eruditione, experientiaq; rerum multarum, magnum Albertum ego medicum fuisse non dubito, naturarūq; archanas vires perspectas has
d ij

in the Bibliothèque Nationale in Paris, but no copy is listed in the British Museum *Catalogue of Printed Books*. Unfortunately, the *Deutscher Gesamtkatalog* has not reached this portion of the alphabet.) We may hazard a guess that Brunfels' book was not a success because two other attempts at providing bibliographies of medicine appeared comparatively soon after his book; these are the appendix to Remaclus Fuchs' work *Illustrium medicorum qui superiori saeculo floruerunt, ac scripserunt vitae* (1541),¹⁶ and the list by Guolphgangus Justis or Justus (Wolfgang Jobst) published in 1556.¹⁷ On the other hand, as an alternative guess, we may conclude that copies of the work were consulted so frequently that they deteriorated physically and this may account for the present scarcity of copies, or else the success of Brunfels' work emboldened others to publish medical bibliographies.

REMACLUS FUCHS

(1510?–1587)

Since the list in Fuchs' work is just an appendix, and not the main body of the work, it is outside the scope of this history. Because it is often cited incorrectly as the work of Fuchs himself, it seems useful to mention here that it was compiled by Symphorien Champier, and not

¹⁶ Eloy, N. F. J. *Dictionnaire Historique de la Médecine . . .* Mons, Hoyois, 1778, v. 2: 280.

¹⁷ Jobst, Wolfgang (Justis, Guolphgangus). *Chronologia sive Temporum supputatio, omnium illustrium medicorum, tam veterum, quam recentiorum, in omni linguorum cognitione, à primis artis medicae inventoribus et scriptoribus usque ad nostram aetatem et seculum.* Frankfort-on-Oder, 1556.

by Remaclus Fuchs. Complete descriptions of it can be found in Eloy¹⁸ and in Haller.¹⁹ We might also mention, as a piece of general information, that many of the biographical sketches found in this work came to Fuchs from Otto Brunfels at the latter's death.²⁰

Just as the emphasis in Fuchs' work was on the biographical sketches and not on the bibliographic lists, so in Jobst's compilation the main purpose was to give an historical outline of medical thought; the writings mentioned in it were given only as examples. Neither Fuchs' nor Jobst's work is particularly good and neither influenced medical bibliography to the extent that Champier's did; nevertheless, they represent forms of literature of ancient and honorable lineage which are still in use today, that is, histories of medicine with bibliographic notes and bio-bibliographies.

CONRAD GESNER

(1516-1565)

It is well known to students of the history of bibliography that Conrad Gesner, the so-called "father of bibliography," never published the medical portion of the index to his great universal bibliography, the *Bibliotheca universalis* (1545). Various theories have been advanced to explain this defect, ranging all the way from the belief

¹⁸ Eloy. *Op. cit.*

¹⁹ Haller, Albrecht von. *Bibliotheca medicinae practicae* . . . Basel, Schweighauser, 1777, v. 2: 60. "Annexus in calce quorundam neotericorum medicorum catalogus, qui nostro seculo vixerunt. Auctore Symphoriano Campigio."

²⁰ See the biographies of Brunfels previously cited.

that Gesner, like many specialists, could not refrain from continuous polishing of the work in his own field and would never consider it finished, to the more unlikely suggestion that Gesner's literary executor stole the manuscript of the *De re medica* at Gesner's untimely death from the plague, in the hopes of publishing it as his own work.²¹ Gesner himself gives a half-hearted explanation of the delay as a note to the table of contents for the *Pandectarum*, the index to the *Bibliotheca universalis*:²²

the last two books are not here because of the short time available, but they will be produced separately as soon as possible, with the help of God, with one index for the whole volume and perhaps also an appendix of the first volume, which we regard as sufficiently complete.

Although Conrad Gesner never published his medical bibliography, we can speculate on the kind of work it would have been after examining the bibliography he placed in his *Chirurgia*.²³ Although this book does not really belong here, according to our definition of medical bibliography, since it is on a subdivision of medicine, it is discussed because it illustrates both Gesner's method

²¹ Bay, J. C. Conrad Gesner (1516-1565) the Father of Bibliography. *Papers Bibliog. Soc. America*, 10: 53-86, 1916.

²² "Duo postremi libri* ob temporis angustia in praesentia non additi; seorsum quam primum licebit, Deo facurente, prodibunt: una cum Indice in totum hunc Tomum: et fortassis etiam Appendice primi Tomi, quam satis luculentam habemus.

* XX De re medica

XXI De theologia christiana"

²³ Gesner, Conrad. *Chirurgia. De chirurgia scriptores optimi...* Zurich, Gessner, 1555.

of compiling bibliographies and the first appearance of analytics in printed medical bibliographies.

The *Chirurgia* of Gesner is a collection of texts on surgery, in much the same fashion as our present-day source-books which are compiled for students without access to the originals, or who perhaps lack the time or the linguistic facility to read the original. Approximately 150 of the leading writers on surgery are presented in selections ranging from half a page to twenty or thirty folio pages; appended to the volume is the bibliography, arranged alphabetically by the Christian names of the authors. The contents of the writings of each author are analyzed in minute detail, and particular attention is paid to the surgical portions of writers on general medicine, to whom readers would not be likely to turn for information on surgical matters, unless directed there. In addition, copies of the works are located in public or private collections. Only one thing is needed to make this bibliography a true analytic index: an alphabetical list of the subjects covered with references back to the pages in the main portion of the work where the authors who discussed these subjects are to be found.

We can only guess that had Gesner lived to complete his bibliography on medicine, he would in all probability have produced a work which listed not only purely medical authors but writers on medicine from other fields, even going so far as to analyze the individual sections of the works listed, so that small subjects as well as the larger fields would have been available to the reader. In this, however, Gesner was far ahead of his time, for it is not

until a hundred years later that we find another bibliography of medicine with the same thoroughness and completeness of indexing as are found in the *Chirurgia*; certainly, the two other medical bibliographies published in the sixteenth century are a retrogression from the high standards set by Conrad Gesner.

PASCHALIS GALLUS

(1567-1631?)

Of the two sixteenth century medical bibliographies which appeared after Gesner's, the first was the work of Paschalis Gallus (also known as Pascal Le Coq) entitled *Bibliotheca medica* (1590);²⁴ the second (which appeared the next year, 1591) was compiled by Israel Spach and entitled *Nomenclator scriptorum medicorum*.²⁵ These have both been considered to be condensations of the work of Conrad Gesner in inexpensive form²⁶ and the estimates of their worth vary considerably. Viets,²⁷ for example, considers the Spach work decidedly inferior to the one by

²⁴ Gallus, Paschalis (LeCoq, Pascal). *Bibliotheca medica; sive Catalogus illorum, qui ex professo artem medicam in hunc usque annum scriptis illustrarunt . . .* Basel, Waldkirch, 1590.

²⁵ Spach, Israel. *Nomenclator scriptorum medicorum, hoc est: Elenchus eorum qui artem medicam suis scriptis illustrarunt . . .* Frankfurt am Main, Bassaeus, 1591.

²⁶ Thornton. *Op. cit.*, p. 159.

²⁷ Viets, Henry R. *Bibliography of Medicine*. Bull. M. Library A., 27: 105-117, 1938. But in a personal communication Viets points out "Gallus is all medicine; Spach is largely philosophy, but is a better edited and a more carefully done job. The two books are so different in scope that they cannot be easily compared. Both Viets and Besterman are right—from different view points."

Gallus, while Besterman²⁸ feels that Spach improved considerably on the work of Gallus in the number of writers included, in the logic of the arrangement, and in the ease of use.

Paschalis Gallus, who lived from 1567 to approximately 1631, was a native of Poitiers, in which city he obtained his medical degree in 1597. Practically nothing else is known about him. His *Bibliotheca medica* is useful principally because of its list of Latin writers of medicine, which makes up the main portion of the work; this portion is arranged alphabetically by the Christian name of the author and is prefaced by an index of surnames. The rest of the bibliography is arranged by country and is decidedly inferior to the Latin list both in number of writers cited and in the information given for each work. Approximately 1500 authors are found in the entire work, but only the 1200 or so in the Latin list can be relied on. The annotations to the Latin list are taken bodily and uncritically from Gesner's *Bibliotheca universalis*, and they leave much to be desired. The name of each author is given in upper case type with space between letters; Greek type is employed where necessary; Gothic lettering is used for German authors; cross references from titles of works published anonymously to their authors are provided; copies are located; and some publishers and dates of printing are provided.

In this bibliography for the first time we come upon a work which can be studied today for its bibliographic information, and not merely as a curiosity or a stepping

²⁸ Besterman. *Op. cit.*, p. 27.

stone to later and more directly useful works. Although not so complete as Gesner, Gallus represents the first general bibliography of medicine arranged by authors which gives us adequate information about the items listed in its pages. It can be used in conjunction with Israel Spach; together they make a pair, since Gallus' contribution is important as the first fairly complete author bibliography, whereas Spach's work is valuable as the first subject bibliography of any standing in general medicine.

ISRAEL SPACH

(1560-1610)

Israel Spach, although a native of Strasbourg, took his medical degree at the university in Tübingen, after which he returned to become professor of medicine in his native city. He appears to have had very catholic tastes, both within and outside medicine, for he is also the compiler of an encyclopedia on gynecology²⁹ and a bibliographer of philosophy and of classical writers.

Spach's *Nomenclator scriptorum medicorum*, although arranged in minute classes and subclasses, contains both an alphabetical subject index and an alphabetical list of the Christian names of the authors cited. The minute classification seems quaint to us today, but Spach's realization of the need for alphabetical indexes to classed works is a real advance in the technique of bibliography making. This is the second great advance found so far, Gesner's use of analytics being the first.

²⁹ According to Professor T. P. Fleming, this edition (1597) was an enlarged edition of Gesner's 1566 work.

Since an expanding literature creates a need for guides to that literature, as well as providing economic conditions favorable to the investment of capital in the publication of bibliographies, it is natural that the development of medical bibliography in the sixteenth century was bound up with the development of medicine itself. A brief recapitulation of the highlights of medicine in the sixteenth century may, therefore, be useful.

The sixteenth century opened with the new spirit in medicine already in evidence. Mundinus' *Anatomia*³⁰ and Ketham's *Fasciculus medicinae*³¹ had already appeared in print by the time the century began. The *Anatomia* was probably the first western textbook on anatomy in more than a thousand years to be founded on human dissection; while the *Fasciculus medicinae* gave accurate references to the newly discovered works of ancient writers along with the new anatomical knowledge. How widespread was the interest in these works is shown by the fact that no less than thirty-three editions of Mundinus had been printed by the middle of the sixteenth century;³² but it was only in the sixteenth century that the culmination of much of the earlier work occurred, the revolution being completed in the writings of such men as Vesalius, Paré, Paracelsus, Fracastorius, and Fallopius.

At the start of the sixteenth century, anatomy and physi-

³⁰ Mundinus [Mondino] de Luzzi. *Anatomia* . . . Leipzig, 1493. See also, Walsh, J. J. *The Popes and the History of Anatomy*. *Med. Lib. and Hist. J.*, 2: 10-28, 1904.

³¹ Ketham, Johannes de. *Fasciculus medicinae*. Venice, Gregorius, 1495.

³² Thornton. *Op. cit.*, p. 14.

ology were taught from the Galenic point of view; by the end of the century, the emphasis had shifted to attempting to demonstrate the truth of the Galenic statements.³³ As Thornton has pointed out, "Up to the beginning of the thirteenth century anatomical teaching had been based upon the dissection of animals, but during that century it was superseded by teaching from the text. Later came the dissection by an assistant while the professor mechanically read from a book, but now [in the sixteenth century] arose a group of men determined to investigate for themselves."³⁴

The prime mover in this revolution was, of course, Andreas Vesalius.³⁵ Born in Brussels in 1514, the son of the court apothecary, Vesalius studied medicine at Louvain and Paris, where, as a pupil of Sylvius (Jacques du Bois), he came into conflict with the faculty over his refusal to accept the Galenic anatomy. In the preface to

³³ Singer, C. Some Galenic and Animal Sources of Vesalius. *J. Hist. Med. & Allied Sc.*, 1: 6-24, 1946.

³⁴ Thornton. *Op. cit.*, p. 32. On the other hand Thorndike and others hold that Hippocrates and Galen, re-translated from more correct copies during the Renaissance, were held in even greater esteem than during the Middle Ages.

³⁵ "The masterpiece of Vesalius is not only the foundation of modern medicine as a science, but the first great positive achievement of science itself in modern times. As such it ranks with another work that appeared in the same year, the treatise of Nicholas Copernicus, *On the revolution of the celestial spheres* . . . Between the two they destroyed forever the medieval theories on the subjects of which they treat." Charles Singer. *A Short History of Medicine*. N. Y., Oxford University Press, 1928, p. 88. See also his *Studies on the History and Method of Science*. N. Y., Oxford University Press, 1921, v. 2: 3.

the *De humani corporis fabrica*,³⁶ which he published after he had gone to Padua to teach at the University there, Vesalius sets forth in biting language the scorn of an investigator at authoritarianism in science.³⁷

Since it questioned hitherto accepted views of anatomy, the publication of the *De humani corporis fabrica* loosed a storm of protest by some influential people. These Vesalius at first undertook to answer, but finally he became discouraged, destroyed his notes, and left university life to become court physician to the Emperor Charles V (Charles I of Spain). This must have been a singularly unsatisfactory life for one so alert intellectually. It is not surprising, therefore, that in a few years Vesalius resigned his position at the Spanish court; he then began the travels, which are called by some a pilgrimage.³⁸ While in Jerusalem Vesalius was again offered his former position at Padua,

³⁶ Vesalius, Andreas. *De humani corporis fabrica, libri septem*. Basel, Oporinus, 1543.

³⁷ "It is true that this deplorable dispersion of the curative role brought a detestable procedure into our Gymnasiums, wherein some were accustomed to administer the cutting of the human body while others narrated the history of the parts. The latter, indeed, from a lofty chair arrogantly cackle like jackdaws about things which they have never tried, but which they commit to memory from the books of others or which they place in written form before their eyes . . . And thus all things are taught wrongly, and days go by in silly disputations. Fewer facts are placed before the spectators in that tumult than a butcher could teach a doctor in his meat market." Andreas Vesalius. *De humani corporis fabrica* . . . Tr. by W. P. Hotchkiss (In: Clendening, Logan. *Source Book of Medical History*. N. Y., Hoeber [c1942] p. 133)

³⁸ Cullen, G. M. Vesalius and the Inquisition Myth. *Lancet*, 1: 105-107, 1928.

which he accepted; but on the return voyage to Italy he died in a shipwreck off the island of Zante.

The intellectual ferment which produced the discoveries in anatomy is to be found in other medical fields also. For example, Philippus Aureolus Theophrastus Bombastus von Hohenheim, known as Paracelsus, said he considered it his bounden duty to destroy the teachings of Galen, Hippocrates, and Avicenna and to substitute for them the knowledge to be gained from actual investigations. Swiss by birth, Paracelsus led a wandering life, moving from one university to another throughout Europe, studying medicine and what would now be considered chemistry. He gained not only the theoretical knowledge of the schools, but the practical knowledge obtained from visiting and working in mines, vineyards, and industrial plants, all of which he mixed with a basically occult philosophy. When he returned to Switzerland to become professor of medicine and surgery at Basel, he so imbued his students with the idea of repudiating the ancient writers that it is said they prepared a bonfire of the classics.³⁹

Paracelsus' contributions to medicine have been evaluated differently at different times.⁴⁰ There seems little doubt that he made advances in chemistry and in occupational medicine. Because of the mixture of the obscene and the occult in his writings and because of his unpleasant personality, however, he spent the last few years of his

³⁹ Mettler. *Op. cit.*, p. 123. See also Garrison, Fielding H. Introduction to the History of Medicine. 4th ed., rev. & enl. Philadelphia, Saunders, 1929, p. 205.

⁴⁰ See for example Shakespeare's reference to him in *All's Well That Ends Well*, Act II, scene 3, "Both of Galen and Paracelsus."

life in wandering and disgrace, dying at the age of forty-eight at Salzburg as a result of a tavern brawl according to Garrison, or as a result of cancer according to Sudhoff.⁴¹

ECONOMIC CONDITIONS AND BIBLIOGRAPHY

It is interesting to note that medical bibliographies of the sixteenth century were published, for the most part, in European cities which were on the great river trade routes of the continent: the Rhine and its tributaries, the Main, the Rhone, and the Oder.⁴² These cities were cosmopolitan ports whose wharves held goods consigned there from many ports of the world and whose merchants traded far and wide for the foreign wares which their citizens demanded. In such a cosmopolitan atmosphere publishing has always tended to become established and to grow in a healthy fashion.⁴³ The importance of Venice,

⁴¹ Garrison. *Op. cit.*, p. 205. But see Sudhoff, Karl. Paracelsus, ein deutsches Lebensbild aus den Tagen der Renaissance. Leipzig, Oktav, 1936. (Meyers Kleine Handbücher)

⁴² The bibliographies were published in Lyons, Strasbourg, Basel, Zurich, Frankfurt am Main, and Frankfurt an der Oder.

⁴³ "Aus der Notwendigkeit, weitere Absatzgebiete zu suchen, bildete sich der Stand der Reisediener oder Buchführer heraus, die als Angestellte der Druckerverleger mit deren Büchervorräten volkreiche Städte mit lebhaftem Handel aufsuchten. Sie hatten den Geschmack und die literarischen Bedürfnisse verschiedener Gegenden zu erforschen und bevorzugten dabei naturgemäss die Zeiten, in denen viele Kaufstüge an einem Ort zusammenströmten, also die Kirchenfeste und die Messen. Bald wurden einzelne Buchhändler an ihrem Handel besonders günstigen Orten sesshaft, in erster Linie natürlich in Städten mit lebhaftem Verkehr, wie Frankfurt, Nürnberg, Augsburg, Nördlingen, Basel, Leipzig." Ernst Kuhnert. Geschichte des Buchhandels (In: Milkau, Fritz, ed. Handbuch der Bibliothekswissenschaft. Leipzig, Harrassowitz, 1931, v. 1: 737).

Rome, Leipzig, Paris, Lyons, London, The Hague, New York, Philadelphia, and Boston in the spread of printed books is probably due to their foreign trade, to the presence in the city, therefore, of both capital and foreigners with strange new ideas. In this, as in other facets of its work, medical bibliography has followed the trends of publishing in other fields.

CONCLUSIONS

Medical bibliography in the sixteenth century was truly in its "swaddling clothes" with a groping for a new and exact form of bibliography which would take care of the greatly enlarged stock of books available to the student, and which would meet the needs of scholars working with a new form of publication, namely printed books, with all copies of each edition exactly alike.

The earliest medical bibliographies gradually moved away typographically from books which resembled manuscripts to works which took into account the diverse possibilities of the printing press and the comparative abundance of paper and parchment. References gradually became more exact, giving, in the last few bibliographies of the century, a fairly complete citation: authors' names, titles of volumes, places of publication, dates, and pagination. Christian names had not yet been superseded by surnames as a means of identifying authors; the location of copies, so important when volumes were scarce, tended to disappear; at the same time exactness of citation was given a more prominent role.

In the sixteenth century the publishing of medical bibliography had not yet been standardized; much varia-

tion is still encountered. A relationship seems to exist between medical bibliography and the great outburst of activity in medical investigation occurring at this time; the economic effects of foreign trade on places of publication also appears to have influenced the development of medical bibliography. Some of these influences continued into the seventeenth century; at the same time new influences, notably the rise of clinical teaching, appeared.